



POWER ELECTRONICS

— SINCE 1999 —

**CONTROLLATE
LE VIBRAZIONI
E AVRETE IL
POTERE DI
CONTROLLARE
LA SOSTANZA
E L'ENERGIA
DELLA MATERIA**

***CONTROL THE VIBRATIONS AND
THE POWER TO CONTROL SUBSTANCE
AND MATERIAL ENERGY WILL
EVENTUALLY BE GIVEN***

JASMUHEEN



POWER ELECTRONICS

SINCE

19
99

**COMPONENTI E ASSEMBLATI DESTINATI AI
SETTORI ENERGETICO, AERONAUTICO, NAVALE,
FERROVIARIO, ELETTROMEDICALE, LASER, EOLICO.
I NOSTRI OBIETTIVI SONO DA SEMPRE LA QUALITA'
E L'INNOVAZIONE.**

*DEVICES AND ASSEMBLIES FOR THE ENERGY, AERONAUTICAL, NAVAL,
ELECTRO-MEDICAL, LASER, WIND POWER AND RAILWAY SECTORS.
QUALITY AND INNOVATION HAVE ALWAYS BEEN OUR MAIN GOALS.*

ULTIMO AGGIORNAMENTO GENNAIO 2015

UPDATED ON JANUARY 2015

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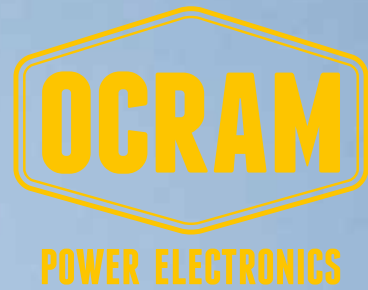
AA



The background of the entire page is a photograph of a wind turbine in the ocean. The turbine is white, with its blades extending into the sky. The water is a deep blue, and the sky is a clear, light blue. The turbine is positioned in the foreground, with its hub and part of a blade visible. In the distance, another turbine is visible on the horizon. The overall scene is bright and clear, suggesting a sunny day.

OCRAM POWER ELECTRONICS

opera nel settore dell'elettronica di potenza sin dal 1999, vantando una consolidata esperienza nella produzione di componenti (diodi ad alta tensione, ponti raddrizzatori per sistemi rotanti, convertitori di corrente, diodi di stringa, RC) e assemblati (inverter, convertitori) destinati a una ampia varietà di settori tra cui quello aeronautico, navale, elettromedicale, applicazioni laser, energetico e fotovoltaico.



OCRAM POWER ELECTRONICS

has been working in the power electronics sector since 1999 and boasts solid experience in producing components (high voltage diodes, bridge rectifiers for rotating systems, current converters, string diodes, snubbers) and assemblies (inverters, converters) that are used in a wide range of sectors including aeronautical, naval, electro-medical, laser applications, energy and photovoltaic ones.

<p>UN PO' DI STORIA: L'ESPERIENZA MATURATA CON SEMIKRON</p>	<p>Ocram nasce nel 1999 e inizia la propria attività nel campo dell'elettronica di potenza al fianco di un partner importante come Semikron, leader mondiale del settore.</p>
	<p>Il nostro personale si è formato presso lo stabilimento Semikron acquisendo, nel corso degli anni, importante know how su prodotti ed applicazioni.</p> <p>Le sinergie consolidate tra le due realtà nel corso degli anni continuano ancora oggi con ottimi benefici per entrambi.</p>
<p>OBIETTIVI DI CRESCITA</p>	<p>Nel corso degli anni, OCRAM è riuscita ad affermarsi nei principali mercati del settore acquisendo nuova clientela, allacciando nuove partnerships e estendendo i suoi servizi anche in ambito internazionale.</p>
	<p>Grazie alle risposte positive che riceve quotidianamente dai mercati, nel 2006 OCRAM ha ampliato la sua produttività espandendosi e spostandosi a Vicenza (Veneto) notoriamente più rilevante dal punto di vista strategico e produttivo.</p> <p>Oggi l'azienda punta, con vanto, all'innovazione attraverso importanti progetti tuttora in corso d'opera, ma anche attraverso le energie rinnovabili e la differenziazione dei prodotti per affrontare le sfide della concorrenza e conquistare nuove quote di mercato.</p>
<p>FILOSOFIA: LA SODDISFAZIONE DEL CLIENTE</p>	<p>Da sempre puntiamo sulla qualità, sia nella produzione che nei servizi di consulenza. Questa di per sé costituisce un punto di forza per la soddisfazione del cliente che alimentiamo ulteriormente con relazioni empatiche nei confronti della clientela e dei partners, con affidabilità, capacità di risposta e attitudine al problem solving.</p>
 	<p>L'esperienza e professionalità maturata nel corso degli anni, ci permettono oggi di offrire un elevato grado di personalizzazione, sia sui prodotti che sui servizi.</p>

<p>HISTORY: EXPERIENCE WITH SEMIKRON</p>	<p>Ocram was founded in 1999 and began working in partnership with Semikron, world leader in the Power Electronics sector.</p> <p>Our staff trained at the italian Semikron site and over the years acquired significant knowledge on products and applications.</p> <p>The synergy created between the two companies over the years still exists today with excellent benefits for both parties.</p>
	
<p>GROWTH OBJECTIVES</p>	<p>We have been successful in entering in the main European markets as well as acquiring new customers, founding new partnerships and extending our activities into new emerging markets worldwide.</p> <p>In 2006, due to the always growing market positive response, OCRAM expanded its production capability by opening a new operational site in Vicenza, strategically located in the centre of Italian manufacturing heart.</p> <p>Today, we proudly focus on innovation through important projects currently underway, as well as renewable energy and product differentiation, to face the challenges of competition in an always growing market.</p>
	
<p>PHILOSOPHY: THE CUSTOMER SATISFACTION</p>	<p>We have always focused on quality in both production and consultancy provision, as a strong point for customer satisfaction. We then build on our customer service by creating empathetic relationships with our customers and partners and through our reliability and our problem-solving attitude.</p> <p>The experience and professionalism that we built up over the years, allow us to offer a high level of customer service with reference to our products and services.</p>
	

**CERTIFICAZIONI:
L'ATTENZIONE PER
LA QUALITÀ**



**Ocram - Power Electronics è certificata:
UNI EN ISO 9001
ACCREDIA - CSI CERT.**

Con orgoglio ci impegniamo ogni giorno per sostenerla e per confermare i nostri standard qualitativi in ogni fase o processo aziendale.

PARTNERS



Consideriamo molto importanti le relazioni con le realtà che contribuiscono al nostro successo. **Partners affidabili e relazioni stabili creano le sinergie necessarie per poter affrontare le sfide dei nuovi mercati.**

Abbiamo creato nel tempo una fitta rete di collaborazioni, da quella storica con **Semikron** a quelle più recenti con **l'Università di Roma e staff di ingegneri per lo sviluppo di innovativi progetti nel campo dell'elettronica di potenza.**

**UNA EFFICIENTE
RETE DI
DISTRIBUZIONE**



Oggi i nostri prodotti e servizi, grazie a un'efficiente rete di distribuzione, vengono esportati in tutto il mondo.

Abbiamo clienti / distributori in:

Argentina	Grecia
Brasile	Spagna
Ecuador	Israele
U.S.A.	Ungheria
Canada	Polonia
Messico	Russia
Repubblica Ceca	Giappone
Bielorussia	Taiwan
Svezia	Indonesia
Gran Bretagna	Australia
Irlanda	Corea del Sud
Danimarca	Egitto
Norvegia	Svizzera
Germania	Repubblica Slovacca
Belgio	Slovenia
Paesi Bassi	Romania
India	Turchia
Italia	Austria
Francia	

**CERTIFICATION:
ATTENTION TO
QUALITY**



Ocram – Power Electronics is UNI EN ISO 9001 ACCREDIA – CSI CERT accredited.

Proudly, we strive daily to maintain this certification status and to confirm our quality standards in all our processes.

**PARTNERSHIPS:
ADDED VALUE**



*We consider relationships that contribute to our success as extremely important. **Reliable partners and stable relationships create the synergies required to face the challenges of new markets.***

*Over time, we have created a tight network of partnerships, from **Semikron** to the **University of Rome engineering staff** to develop **innovative designs in the power electronics field.***

**AN EFFICIENT
DISTRIBUTION
NETWORK**



Today, our products and services are exported all over the world thanks to our efficient distribution network.

We have customers /distributors in:

Argentina	Greece
Brasil	Spain
Ecuador	Israel
U.S.A.	Hungary
Canada	Poland
Mexico	Russia
Czech Republic	Japan
Belarus	Taiwan
Sweden	Indonesia
Great Britain	Australia
Ireland	South Korea
Denmark	Egypt
Norway	Switzerland
Germany	Slovakia
Belgium	Slovenija
The Netherlands	Romania
India	Turkey
Italy	Austria
France	



STAFF

MARCO FRIGO AMMINISTRATORE DELEGATO	MIRIAM TONIOLO RESPONSABILE AMMINISTRAZIONE	DAVIDE FRIGO RESPONSABILE DI PRODUZIONE
C. E. O.	C. F. O.	C. P. O.



POWER ELECTRONICS



— SINCE 1999 —

LEGENDA CAMPI DI APPLICAZIONE E TECNOLOGIE APPLICATIONS & TECHNOLOGIES LEGENDA



Controllo Motori

Convertitori per tutti i tipi di motori elettrici utilizzati in industria.

Motor Drives

Converters for all types of electric motors utilized in industry.



Energia Eolica

Convertitori applicati sui generatori eolici con funzione di eccitatori di campo. Presenti su turbine installate in tutto il mondo.

Wind Energy

Converters connected to wind generators as field exciters. Fitted on wind turbines installed all around the world.



Energia Solare

Con l'obiettivo di migliorare i costi e l'efficienza nei sistemi fotovoltaici, OCRAM produce diodi di stringa adatti a tutti i tipi di impianti.

Solar Energy

With a focus on cost and efficiency in photo voltaic systems, OCRAM produces string diodes suitable to all types of installations.

AC/DC

Alimentatori

OCRAM produce diodi ad alta tensione utilizzati nelle tecnologie per tests sui cavi, nelle apparecchiature per diagnosi mediche e nella produzione di film sottile.

Power Supplies

OCRAM produces HV Diodes utilized in cable tests technologies, in medical diagnostics and thin film productions.



Trasporti

Le forniture di energia, in tutte le applicazioni di trasporto, richiedono un'alta affidabilità dei sistemi per molti anni.

Transport Equipment

Power supplies, in every kind of transportation application, require high reliability of the systems over years of operation.

DIODI AD ALTA TENSIONE

HIGH VOLTAGE RECTIFIERS



01

Dispositivi sigillati ermeticamente in tubi ceramici. Adatti per connessioni a saldare o a serraggio. Possono essere montati in aria o in olio. Dispositivi con caratteristiche a valanga. Da 2,5 KV a 180 KV.

Hermetically sealed in ceramic tubes devices. Suitable for solder or screw connections or clip-on contacts. They can be mounted in air or oil. Avalanche characteristics. From 2,5 KV to 180 KV.

CARATTERISTICHE TECNICHE COME PUNTI DI FORZA

- > Tensioni da 2,5 KV a 180 KV
- > Correnti da 0,25 A a 30 A
- > Sigillati ermeticamente in tubi ceramici
- > Adatti per connessioni a saldare o a serraggio
- > Possono essere montati in aria o in olio
- > Caratteristica a valanga
- > Ingombro ridotto

CAMPI DI APPLICAZIONE

- > Elettromedicale
- > Test qualità isolamento cavi elettrici
- > Apparecchiature Laser
- > Apparecchiature a Raggi X
- > Film sottile
- > Alimentatori HV
- > Attrezzatura misura AT

OCRAM si distingue per questi plus di prima qualità: la capacità di **personalizzare ogni strumento modellandolo sulle esigenze del cliente anche per pezzi singoli**; l'assoluta **sicurezza in fase operativa** che garantisce l'incolumità da qualsiasi danno; **la puntualità nelle consegne** (zero delay policy) e una accurata assistenza al cliente pre e post vendita.

PUNTI DI FORZA ED APPLICAZIONI



AC/DC

ALIMENTATORI

**TECHNICAL SPECS
AS STRENGTHS**

- > 2,5 KV ÷ 180 KV
- > 0,25 A ÷ 30 A
- > Hermetically sealed in ceramic tubes
- > Suitable for solder or screw connections
- > Can be mounted in air or oil
- > Avalanche characteristics
- > Reduced overall dimensions

**APPLICATION
FIELDS**

- > Diagnostic medical equipments
- > High Voltage power supplies
- > Lasers
- > X-Ray equipment
- > Electronic beam welding
- > Electrostatic precipitators
- > Cable test Equipments

OCRAM provides its customers with the highest quality standards.

We can satisfy our customers' needs by **dimensionally customizing our devices**, guaranteeing the most accurate operational safety standards, in pursuing a **zero delay policy** and ensuring a total customer care.

STRENGTHS AND APPLICATIONS



AC/DC

POWER
SUPPLIES

DIODI AD ALTA TENSIONE

HIGH VOLTAGE RECTIFIERS

DS_OCR_O3
REV.00 - 22/04/2010

V _{RRM}	V _(BR)	V _{VRMS}	Types	I _{FAV} T _{amb} = 45°C A	I _{FAV} T _{oil} = 75°C A	I _{FN} T _{amb} = 45°C A	V _F I _F = 1A V	N	R _{thjα} °C/W
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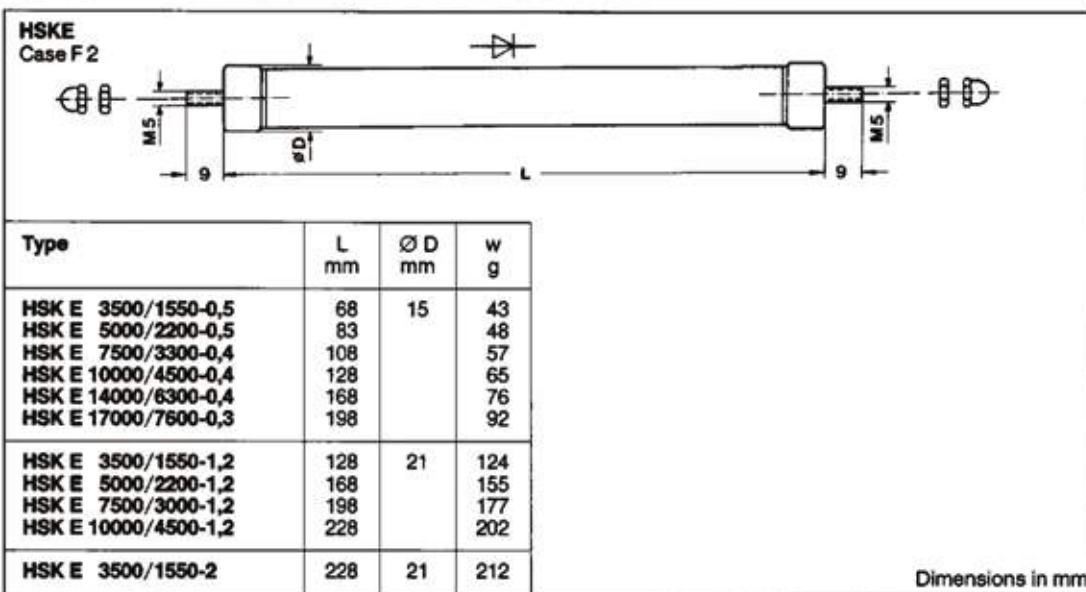
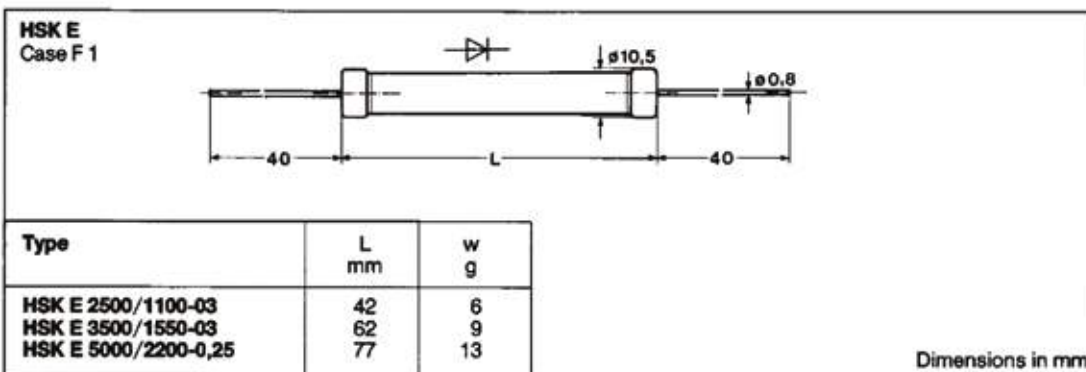
> **High Voltage Rectifiers < 50 KV HSK E**

6 000	7 500	2 500	HSK E 2500/1100-0,3	0,45	0,45	0,3	5	5	60
8 000	10 000	3 500	HSK E 3500/1550-0,3	0,4	0,4	0,3	7	7	50
12 000	15 000	5 000	HSK E 5000/2200-0,25	0,35	0,35	0,25	10	10	45
8 000	10 000	3 500	HSK E 3500/1550-0,5	0,65	0,78	0,5	8	7	25
12 000	15 000	5 000	HSK E 5000/2200-0,5	0,6	0,72	0,5	11	10	15
16 000	20 000	7 500	HSK E 7500/3300-0,4	0,55	0,66	0,4	16	15	15
24 000	30 000	10 000	HSK E 10000/4500-0,4	0,5	0,6	0,4	20	19	13
32 000	40 000	14 000	HSK E 14000/6300-0,4	0,5	0,6	0,4	27	26	10
40 000	50 000	17 000	HSK E 17000/7600-0,3	0,45	0,54	0,3	32	32	9
8 000	10 000	3 500	HSK E 3500/1550-1,2	1,5	1,8	1,2	8	7	10
12 000	15 000	5 000	HSK E 5000/2200-1,2	1,45	1,75	1,2	11	10	7
16 000	20 000	7 500	HSK E 7500/3300-1,2	1,35	1,6	1,2	16	14	5,5
24 000	30 000	10 000	HSK E 10000/4500-1,2	1,3	1,55	1,2	20	19	5
8 000	10 000	3 500	HSK E 3500/1550-2	2,9	3,5	2,0	9	7	-

Symbol	Conditions	HSK...-0,3 -0,25 -0,4 -0,5	HSK...-1,2	HSK...-2
I _{F(OV)}	tp = 1 s tp = 100 ms	1 A 2,5 A	2 A 5 A	4 A 10 A
I _{FSM}	Tvj = 25 °C Tvj = 150 °C	60 A 50 A	140 A 120 A	270 A 240 A
i ² t	Tvj = 25 °C Tvj = 150 °C	18 A ² s 12,5 A ² s	100 A ² s 72 A ² s	365 A ² s 290 A ² s
I _R	Tvj = 25 °C: V _R = V _{RRM} Tvj = 25 °C: tp = 10 μs	5 μA 0,5 A	5 μA 1 A	5 μA 2 A
I _{RSM}	Tvj = 150 °C: tp = 10 μs	0,4 A	0,8 A	1,6 A
Tvj Tstg		- 40...+150 °C - 40...+150 °C		
Case		F 1/F 2	F 2	F 2

< 50 KV HSK E

DS_OCR_O3
REV.00 - 22/04/2010



< 50 KV HSK E

DS_OCR_O3
REV.00 - 22/04/2010

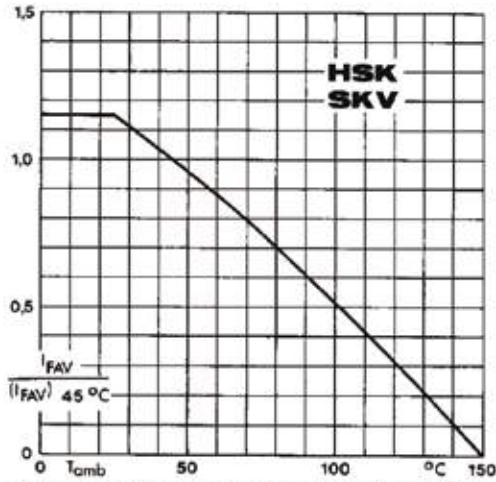


Fig. 1 Rated forward current vs. ambient temperature

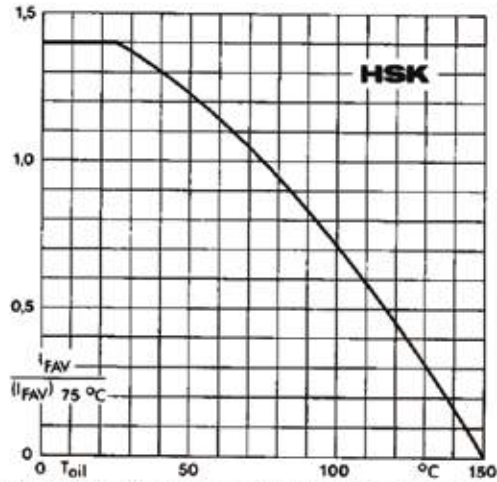


Fig. 2 Rated forward current vs. oil temperature

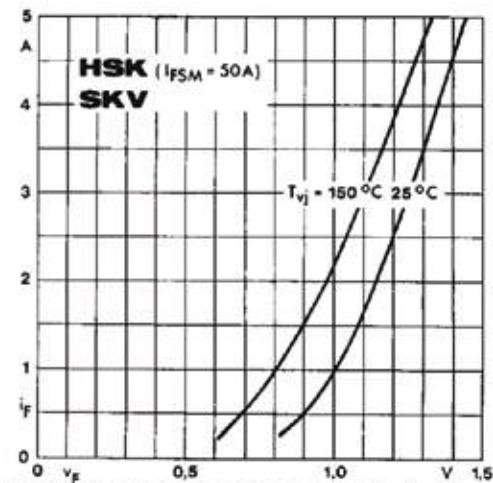


Fig. 5 a Forward characteristic of a single chip

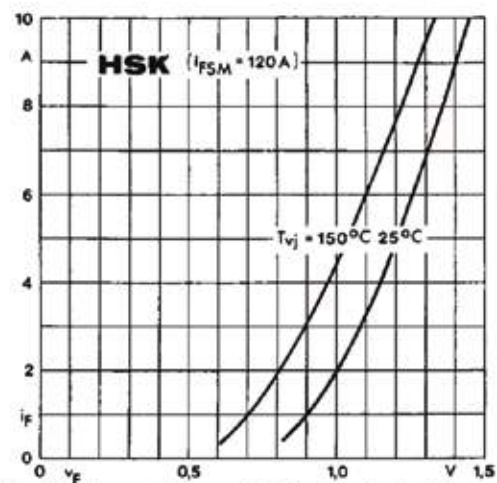


Fig. 5 b Forward characteristic of a single chip

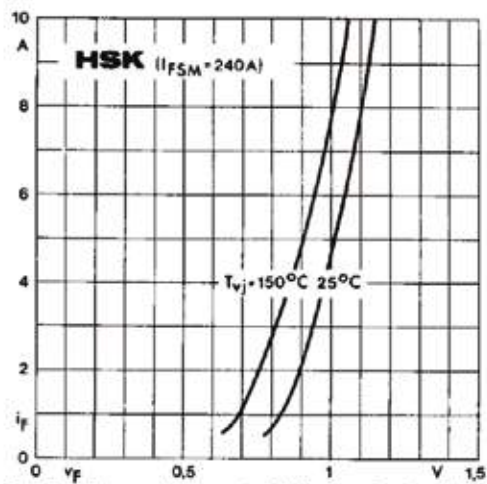


Fig. 5 c Forward characteristic of a single chip

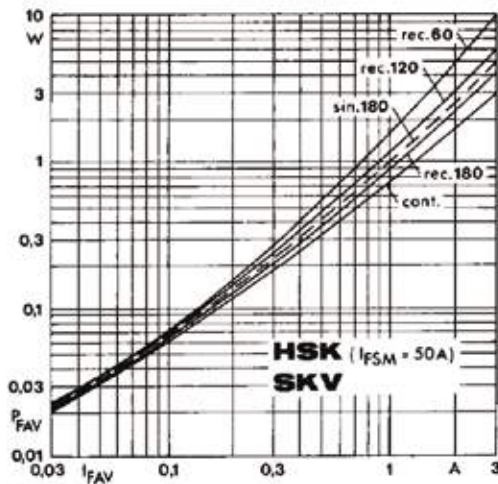


Fig. 6 a Power dissipation per chip vs. forward current

< 50 kV HSK E

DS_OCR_03
REV.00 - 22/04/2010

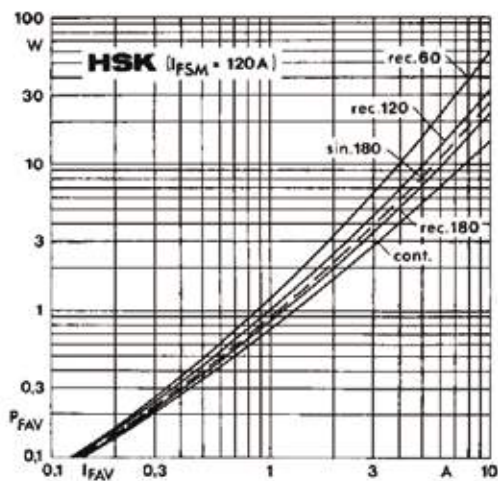


Fig. 6 b Power dissipation per chip vs. forward current

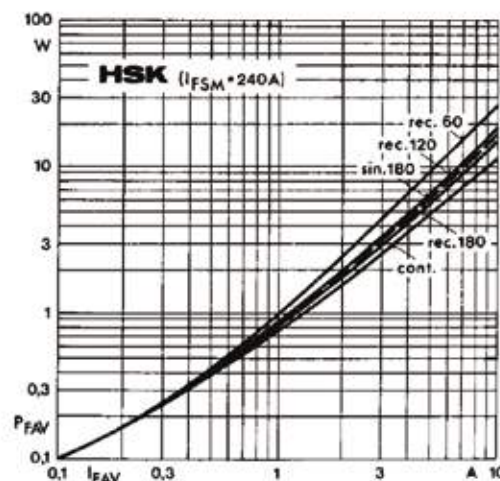


Fig. 6 c Power dissipation per chip vs. forward current

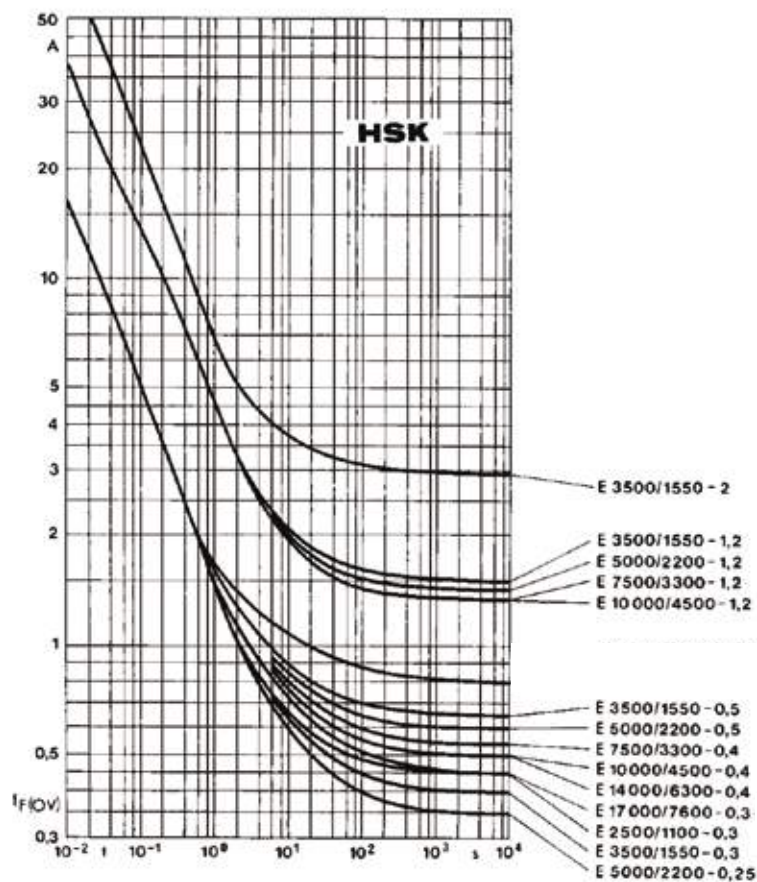


Fig. 9 Rated overload current vs. time

DIODI AD ALTA TENSIONE

HIGH VOLTAGE RECTIFIERS

> TECHNICAL DATA

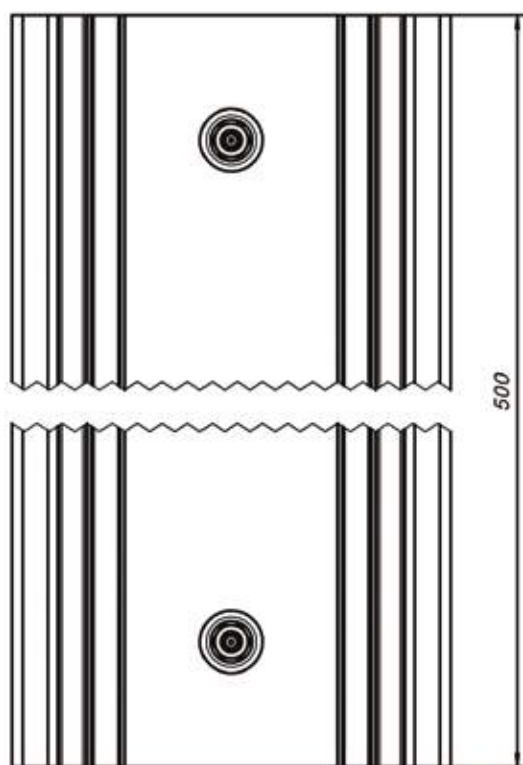
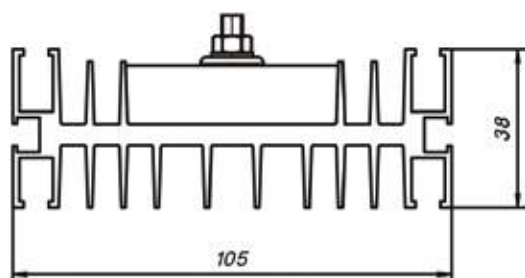
DS_OCR_08
REV.00 - 10/02/2015

Symbol	Conditions	Values	Units
> HSKE 8000/3600-30 A			
I_{Fav}	$T_{amb. 40^{\circ}C}$	30	A
I_{Fsm}	$T_{vj} 25^{\circ}C; 10ms$	2500	A
I_{Fsm}	$T_{vj} 180^{\circ}C; 10ms$	2000	A
I^2t	$T_{vj}=25^{\circ}C; 8,3... 10ms$	31000	A^2s
I^2t	$T_{vj}=180^{\circ}C; 8,3... 10ms$	20000	A^2s
V_f	$T_{vj}=25^{\circ}C; I_f=500A$	max. 13,5	V
$V_{(to)}$	$T_{vj} 180^{\circ}C$	max. 7,65	V
$Visol$	To heatsink	30000	V~
V_{rrm}		20000	V
Weight		2	Kg
Dimensions		500 x 105 x 43,50	mm



HSKE 8000/3600-30 A

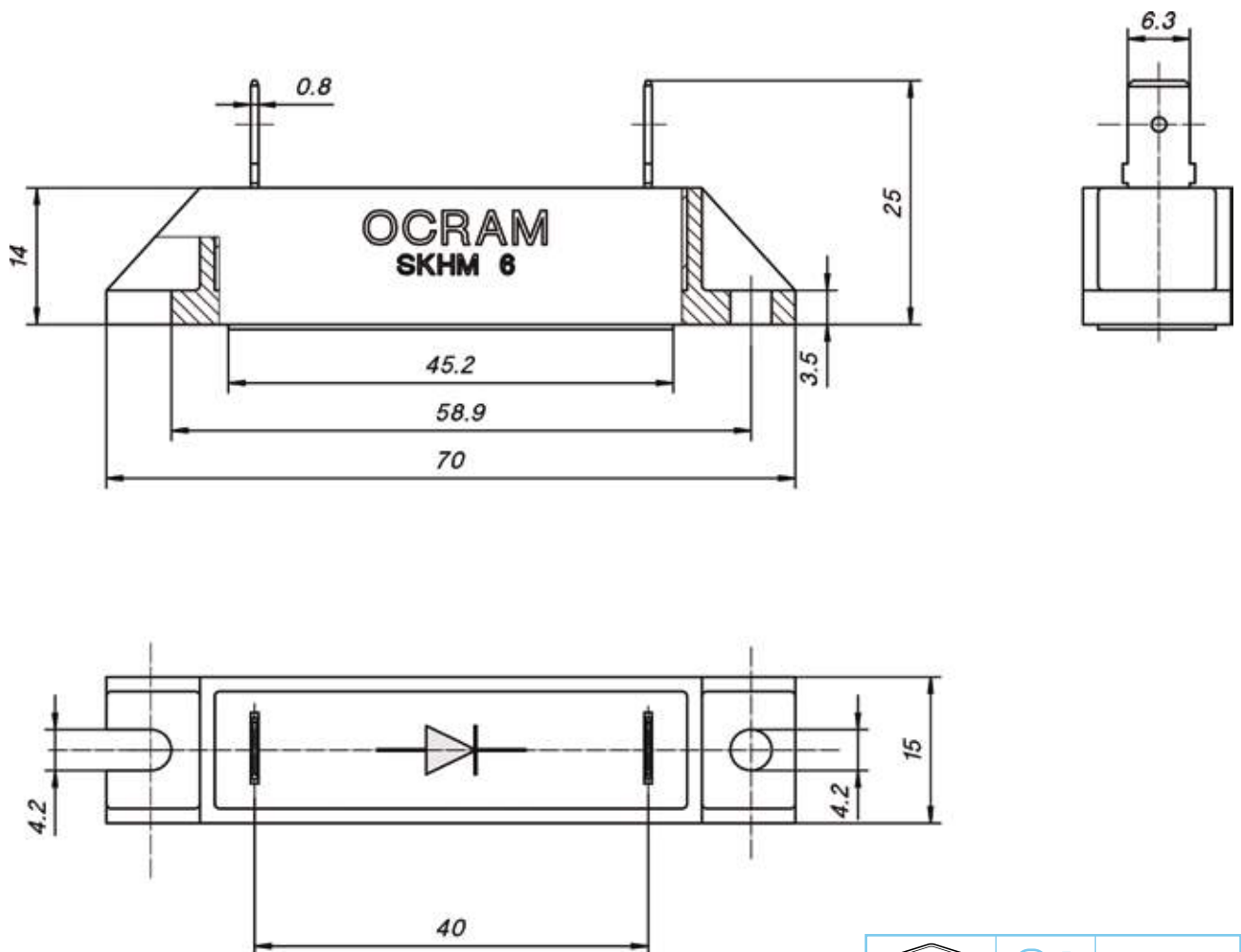
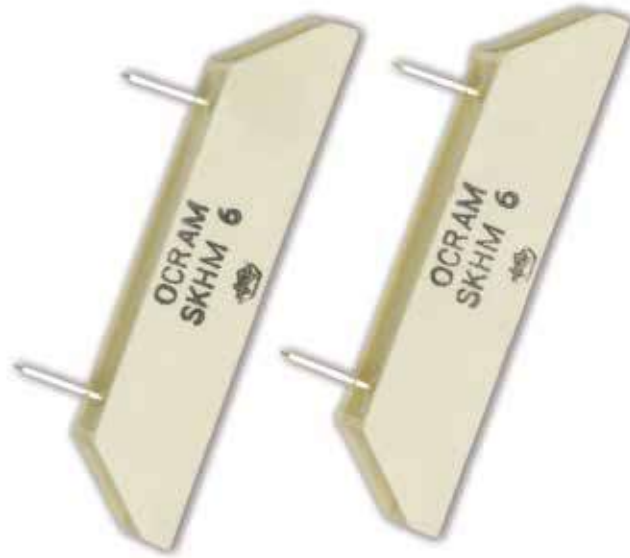
> DS_OCR_O8
REV.00 - 10/02/2015



Parameters	Conditions	Values	Units
SKHM6			
V _{rsm}		6000	V
V _{rrm}		6000	V
I _{Fav}	T _{case} = 49°C, sin. 180°C	6,4	A
I _{Fav}	T _{case} = 45°C, rec. 180°C	7	A
I _{Frms}		10	A
I _{Fsm}	T _{vj} = 25°C	60	A
I _{Fsm}	T _{vj} = 130°C	50	A
I ² _t	T _{vj} = 25°C	18	A ² s
I ² _t	T _{vj} = 130°C	12,5	A ² s
I _r	T _{vj} = 25°C	max. 2	μA
V _f	I _f = 10A	max. 8	V
V _(to)	T _{vj} = 130°C	5	V
r _f	T _{vj} = 130°C	300	mΩ
R _{thjα}		25	°C/W
R _{thjc}		1,3	°C/W
R _{thch}		0,5	°C/W
T _{vj}		da -25 a +130	°C
T _{stg}		da -25 a +150	°C
Weight		ca. 23	g
Visol		9000	V~

< SKHM6

DS_OCR_O9
REV.00 - 10/02/2015



DIODI AD ALTA TENSIONE

HIGH VOLTAGE RECTIFIERS

DS_OCR_O4
REV.00 - 22/4/2010

VRRM	V(BR)	VRWM	Types	V _F I _F = 30 A	N	R _{thjoil}
V	V	V		V		°C/W

> **High Voltage Rectifiers 80 ÷ 180 KV SKXA**

80 000	100 000	75 000	SKXA 75 000	160	54	2,6
80 000	100 000	75 000	SKXA 75 M	210	61	2,3
105 000	130 000	100 000	SKXA 100 M	225	74	2,2
160 000	200 000	150 000	SKXA 150 M	340	108	1,4
180 000	220 000	170 000	SKXA 180 M	340	108	1,4

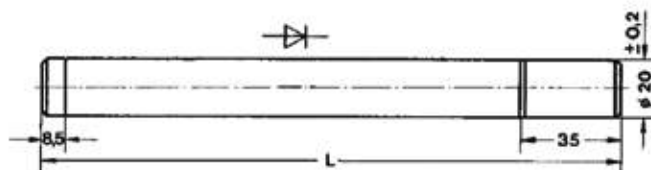
Symbol	Conditions	SKXA
I _{FAV}	T _{oil} = 75°C	0,35 A
I _{FN}	T _{amb} = 45°C	0,28 A
I _{F(OV)}	tp = 1s tp = 100 ms	2,6 A 7,5 A
I _{FSM}	T _{vj} = 25 °C; 10 ms T _{vj} = 125 °C; 10 ms	100 A 90 A
i ² t	T _{vj} = 25 °C; 8,3 ... 10 ms T _{vj} = 125 °C; 8,3 ... 10 ms	50 A ² s 40 A ² s
I _R	T _{vj} = 25 °C; V _R = VRRM	1,5 μA
T _{vj} T _{stg}		- 40...+125 °C - 40...+125 °C
Case		F3

80 ÷ 180 KV SKXA

> DS_OCR_O4
REV.00 - 22/4/2010



SKXA
Case F 3



Type	L_{-2}^{+1} mm	w g
SKXA 75000	124	105
SKXA 75 M	142	118
SKXA 100 M	170	143
SKXA 150 M	230	192
SKXA 180 M	230	192

Dimensions in mm

80 ÷ 180 KV SKXA

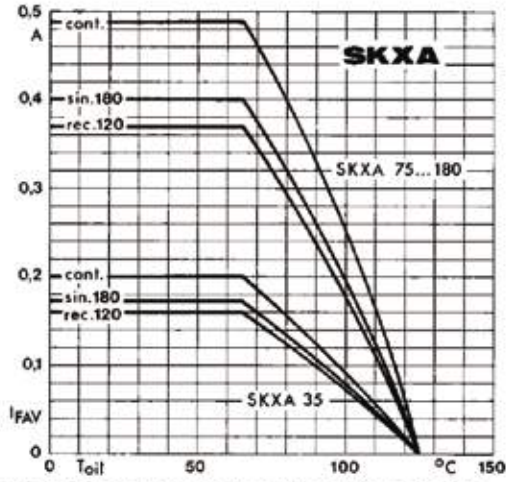


Fig. 3 Rated forward current vs. oil temperature

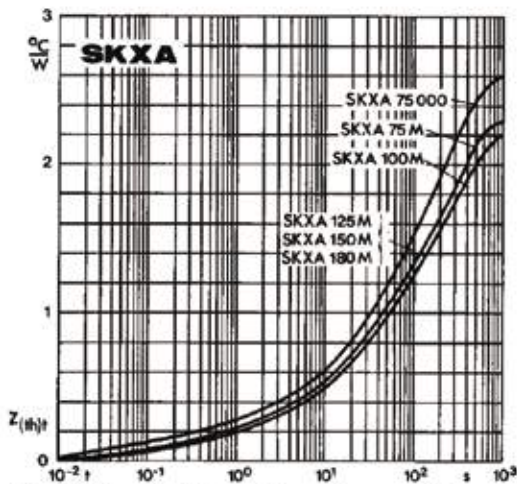


Fig. 4 b Transient thermal impedance vs. time

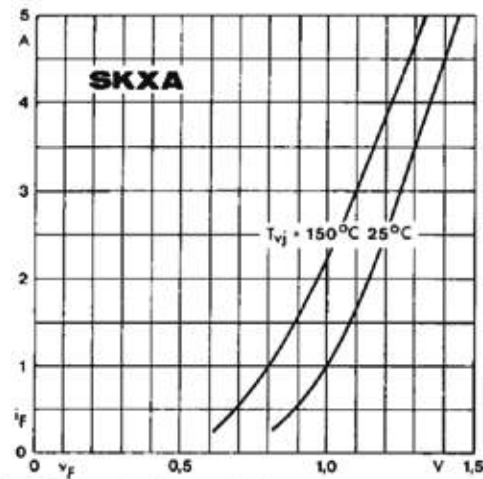


Fig. 5 Forward characteristic of a single chip

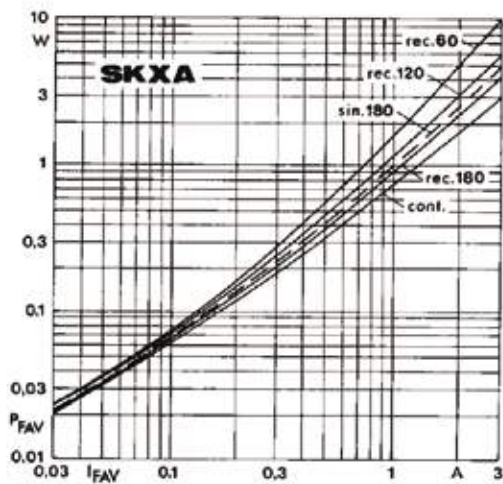


Fig. 6 Power dissipation per chip vs. forward current

80 ÷ 180 KV SKXA

DS_OCR_O4
REV.00 - 22/04/2010

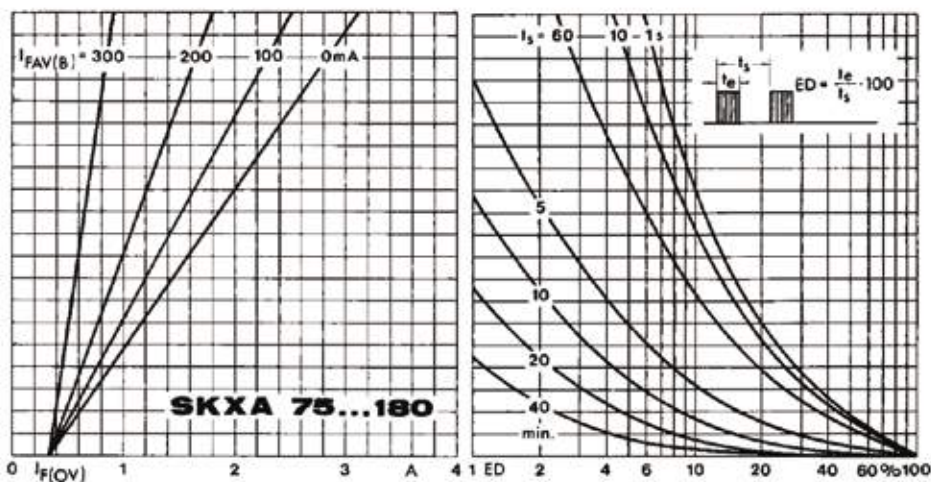


Fig. 7 Rated overload current vs. duty cycle

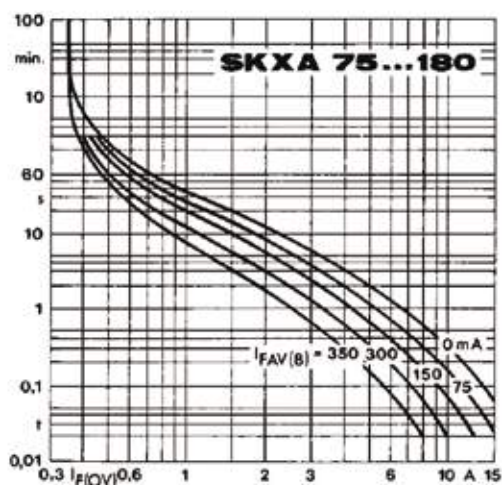


Fig. 8 Rated overload current vs. time

PONTI RADDRIZZATORI PER SISTEMI ROTANTI

ROTATING SILICON RECTIFIER ASSEMBLIES



02

Ponti raddrizzatori trifase assemblati su disco isolato per il montaggio sull'albero rotante di un generatore.
Id: 30 A ÷ 300 A.

*Rotating silicon rectifier assemblies in six-pulse bridge connection for brushless a.c. generators.
Id range: 30 A ÷ 300 A.*

**CARATTERISTICHE
TECNICHE COME
PUNTI DI FORZA**

- > Velocità di rotazione:
1500 giri/min. garantiti
- > Id da 30 A a 300 A
- > Vrrm da 800 V a 2000V
- > Bassa Vf = bassa perdita di
energia in calore
- > Ingombro ridotto

**CAMPI DI
APPLICAZIONE**

- > Eolico
- > Idroelettrico
- > Ferroviario
- > Navale
- > Attrezzature aeroportuali
- > Sub-stazioni ospedaliere
- > UPS Rotanti
- > Generatori AC Brushless
- > Recupero energia in propulsioni
hybrid/elettriche

OCRAM garantisce elevati standard qualitativi e di affidabilità: **personalizza i Rotating Rectifiers** nelle dimensioni per soddisfare qualsiasi esigenza; garantisce sempre **il massimo della sicurezza operativa dei prodotti**; assicura un accurato servizio di assistenza pre e post vendita.

PUNTI DI FORZA ED APPLICAZIONI



AC/DC

ALIMENTATORI



ENERGIA
EOLICA



TRASPORTO

**TECHNICAL SPECS
AS STRENGTHS**

- > Rotating speed: 1500 rpm
- > $I_d = 30 A \div 300 A$
- > $V_{rrm} = 800 V \div 2000 V$
- > Low V_f
- > Reduced overall dimensions

**APPLICATION
FIELDS**

- > Wind energy
- > Hydro energy
- > Rail and naval transport
- > Aeroportual equipments
- > Hospital sub-stations
- > Rotating UPS
- > AC brushless generators
- > Energy recovery in hybrid and e-mobility

OCRAM provides its customers with the highest quality standards; we can satisfy our customers' needs by **dimensionally customizing** our rotating rectifiers, guaranteeing **the most accurate operational safety standards and ensuring** a total customer care.

STRENGTHS AND APPLICATIONS



AC/DC

POWER
SUPPLIES



WIND
ENERGY



TRANSPORT
EQUIPMENT

PONTI RADDRIZZATORI PER SISTEMI ROTANTI

ROTATING SILICON RECTIFIER ASSEMBLIES

> DS_OCR_O2
REV. 00 - 18/04/2010

> **Id = 30 A Weight = 220 g**

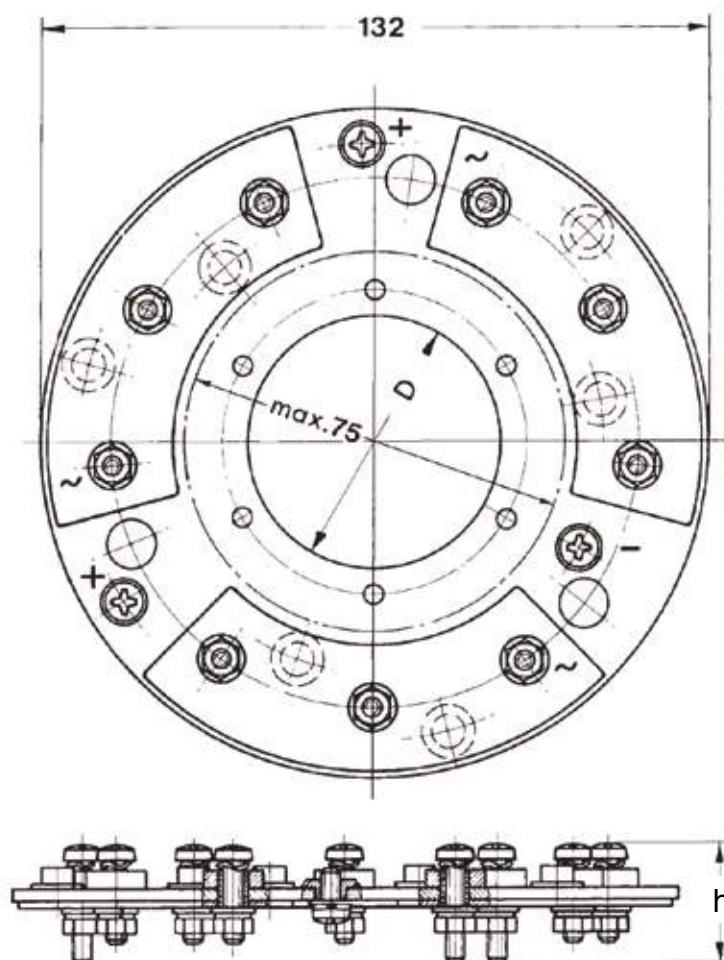
Article	Description	VR	Varistor*	ID mm (D)	Diameter Between fixing holes	Fixing holes mm	Height mm (h)
RS 132							
32742200	RS 132/12	1200 V	NO	50	60	4,2	33
30139590	RS 132/08	800 V	NO	35	42	2	33
30139595	RS 132/08	800 V	NO	55,2	62,5	2	33
32706500	RS 132/08	800 V	NO	60	71	4,2	33
30119680	RS 132V12	1200 V	YES 680V	50	60	4,2	33
30119690	RS 132V08	800 V	YES 330V	50	60	4,2	33

* Datasheet su richiesta / datasheet upon request



RS 132

> DS_OCR_O2
REV.00 - 18/04/2010



Il **diametro interno D** così come il numero, la **posizione e le dimensioni dei fori di fissaggio possono variare a seconda della richiesta dell'utente**, fino alla dimensione massima proposta nel disegno.

Altre dimensioni sono disponibili su richiesta (a seconda della quantità di ordine).
Per ulteriori informazioni, si prega di contattare l'**ufficio vendite OCRAM**.

The **internal diameter D** as well as the number, position and sizes of the fixing holes may be varied according to the demand of the user, up to the maximum dimension given in the drawing.

Other dimensions are available upon request (depending upon order quantity).
For more information, please contact your local **OCRAM sales office**.

PONTI RADDRIZZATORI PER SISTEMI ROTANTI

ROTATING SILICON RECTIFIER ASSEMBLIES

> DS_OCR_O2
REV. 00 - 18/04/2010

> **Id = 50 A Weight = 500 g**

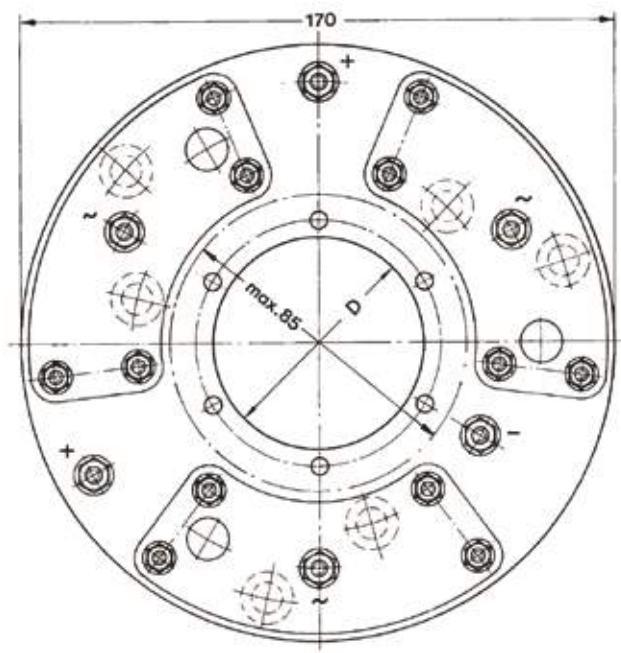
Article	Description	VR	Varistor*	ID mm (D)	Diameter Between fixing holes	Fixing holes mm	Height mm (h)
RS 170							
32738300	RS 170/12	1200 V	NO	65	75	5,3	39
30118110	RS 170/12	1200 V	NO	60	70	5,3	34
30868670	RS 170/08	800 V	NO	38	49	5,9	34
30139460	RS 170V08	800 V	YES-250V	60	70	4,8	33,5
30116870	RS 170V08	800 V	YES-250V	60	70	4,8	33,5
30118120	RS 170V12	1200 V	YES-420V	60	70	4,8	28,8
32700700	RS 170V08	800 V	YES-250V	35	40	2	28,8

* Datasheet su richiesta / datasheet upon request

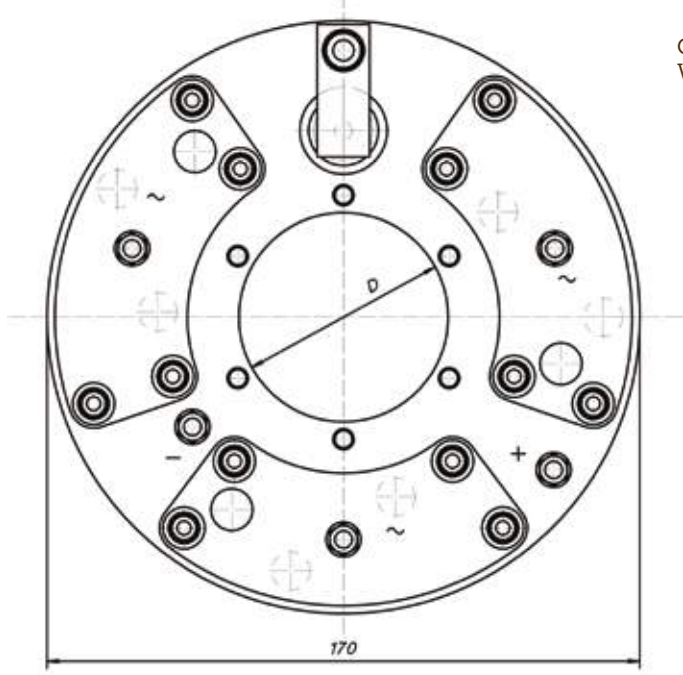
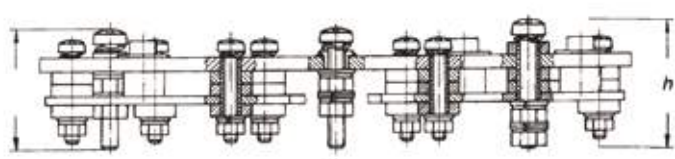


RS 170

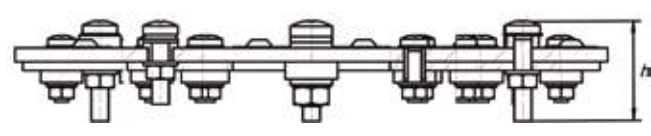
> DS_OCR_O2
REV. 00 - 18/04/2010



SENZA VARISTORE (NO)
WITHOUT VARISTOR (NO)



CON VARISTORE (YES)
WITH VARISTOR (YES)



PONTI RADDRIZZATORI PER SISTEMI ROTANTI

ROTATING SILICON RECTIFIER ASSEMBLIES

> DS_OCR_O2
REV. 00 - 18/04/2010

> **Id = 70 A Weight = 800 g**

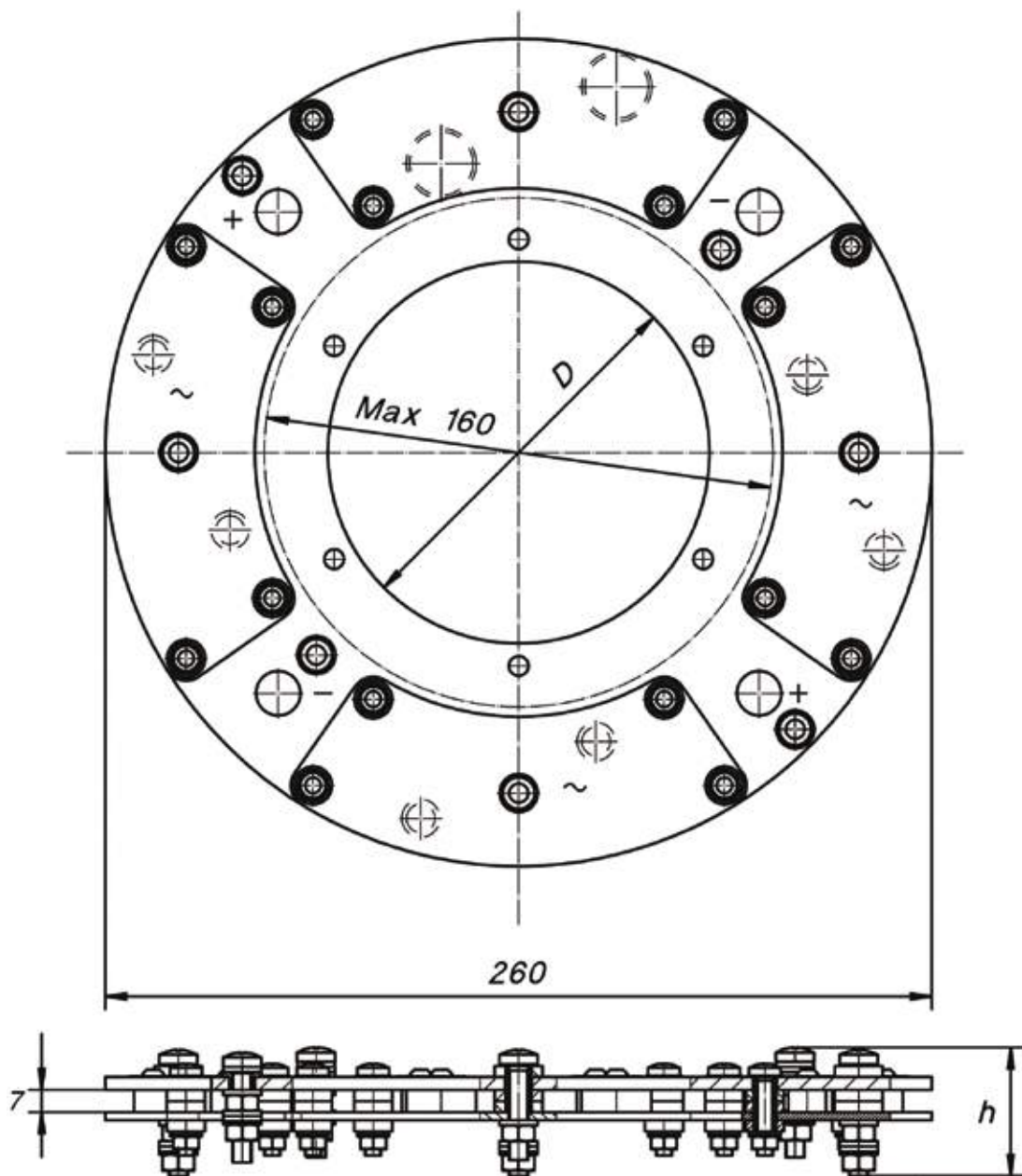
Article	Description	VR	Varistor*	ID mm (D)	Diameter Between fixing holes	Fixing holes mm	Height mm (h)
RS 260							
30139580	RS 260V08	800 V	YES-250V	120	134	5,3	39,6

* Datasheet su richiesta / datasheet upon request



RS 260

> DS_OCR_O2
REV.00 - 18/04/2010



PONTI RADDRIZZATORI PER SISTEMI ROTANTI

ROTATING SILICON RECTIFIER ASSEMBLIES

> DS_OCR_O2
REV. 00 - 18/04/2010

> **Id = 120 A Weight = 800 g**

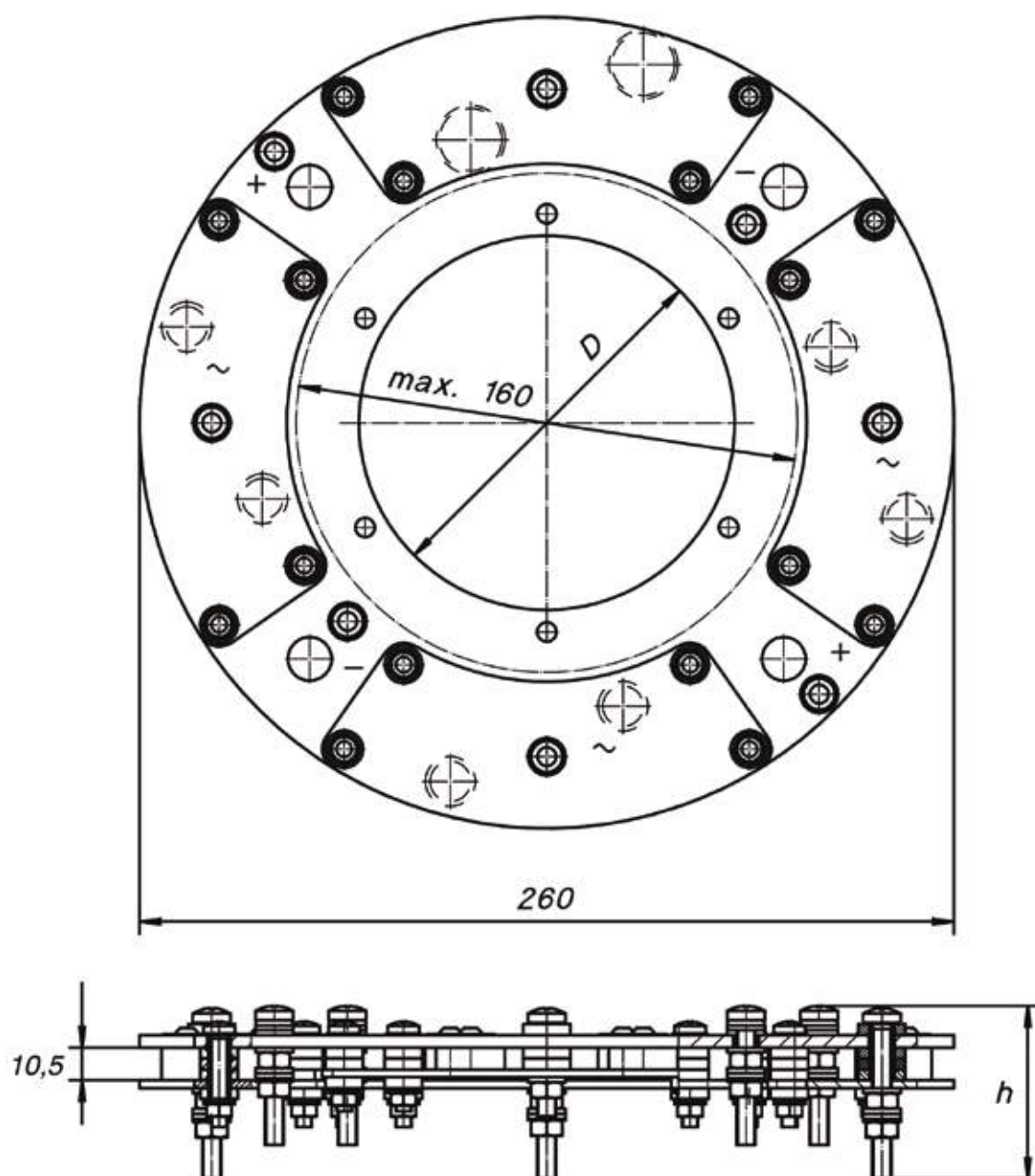
Article	Description	VR	Varistor*	ID mm (D)	Diameter Between fixing holes	Fixing holes mm	Height mm (h)
RS 261							
30118130	RS 261/12	1200 V	NO	120	134	5,3	46
32742300	RS 261/12	1200 V	NO	120	134	6,2	60
30118140	RS 261V12	1200 V	YES-2x 250V	120	134	5,3	46
30118140-03	RS 261V12	1200 V	YES-2x 250V	120	134	6,5	46
32744300	RS 261V12	1200 V	YES-2x 250V	120	134	6,2	60

* Datasheet su richiesta / datasheet upon request



RS 261

> DS_OCR_O2
REV.00 - 18/04/2010



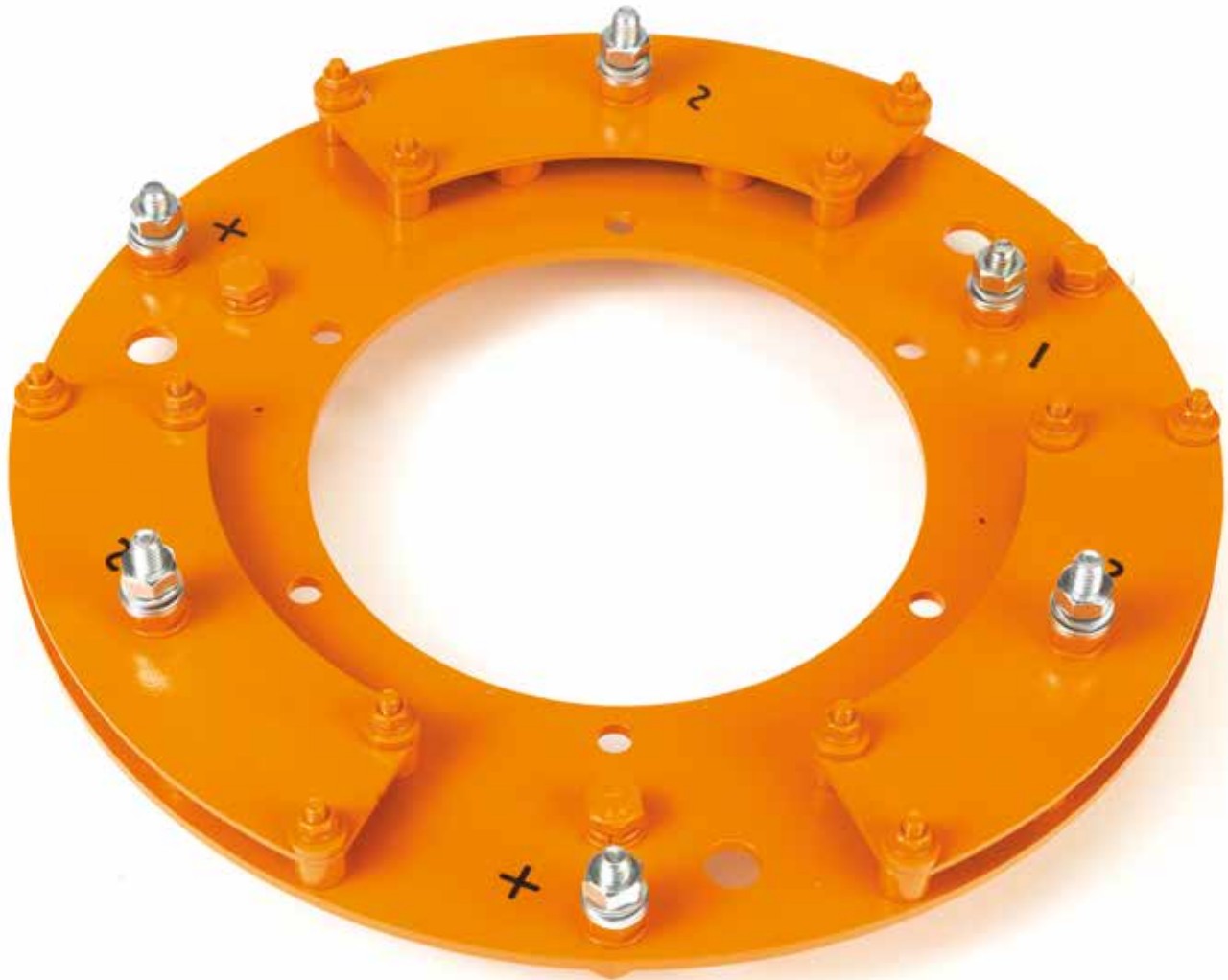
PONTI RADDRIZZATORI PER SISTEMI ROTANTI

ROTATING SILICON RECTIFIER ASSEMBLIES

> DS_OCR_O2
REV. 00 - 18/04/2010

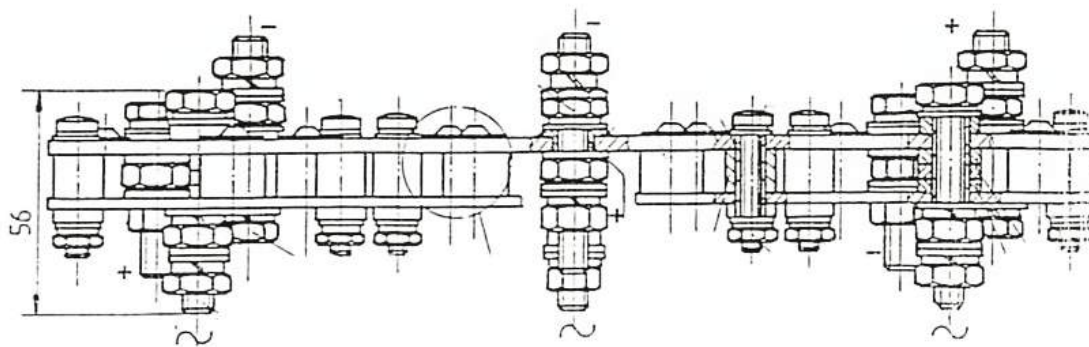
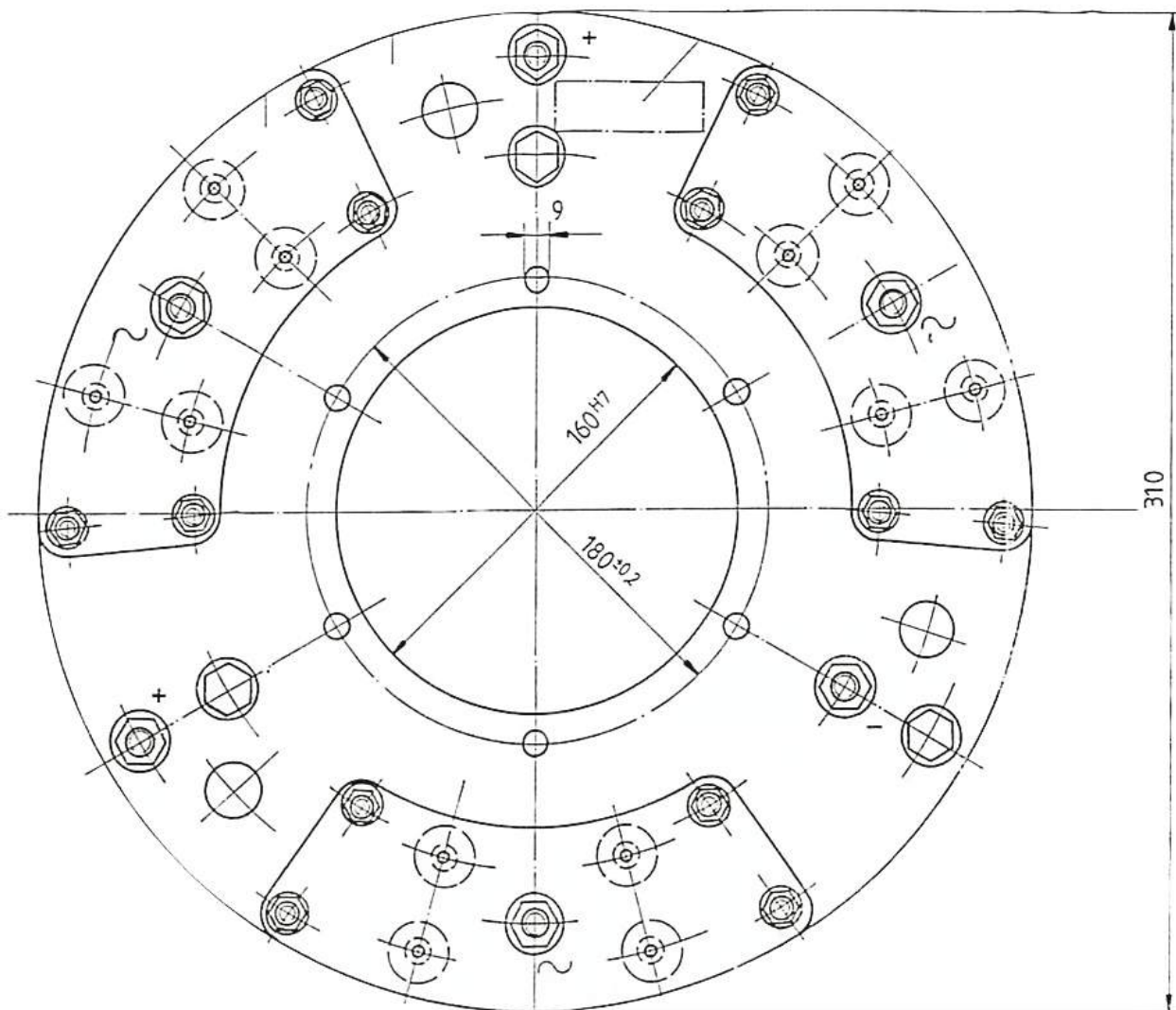
> **Id = 170 A Weight = 900 g**

Article	Description	VR	Varistor	ID mm (D)	Diameter Between fixing holes	Fixing holes mm	Height mm (h)
RS 310							
30870060	RS 310/12	1200 V	NO	160	180	9	70



RS 310

> DS_OCR_O2
REV.00 - 18/04/2010



PONTI RADDRIZZATORI PER SISTEMI ROTANTI

ROTATING SILICON RECTIFIER ASSEMBLIES

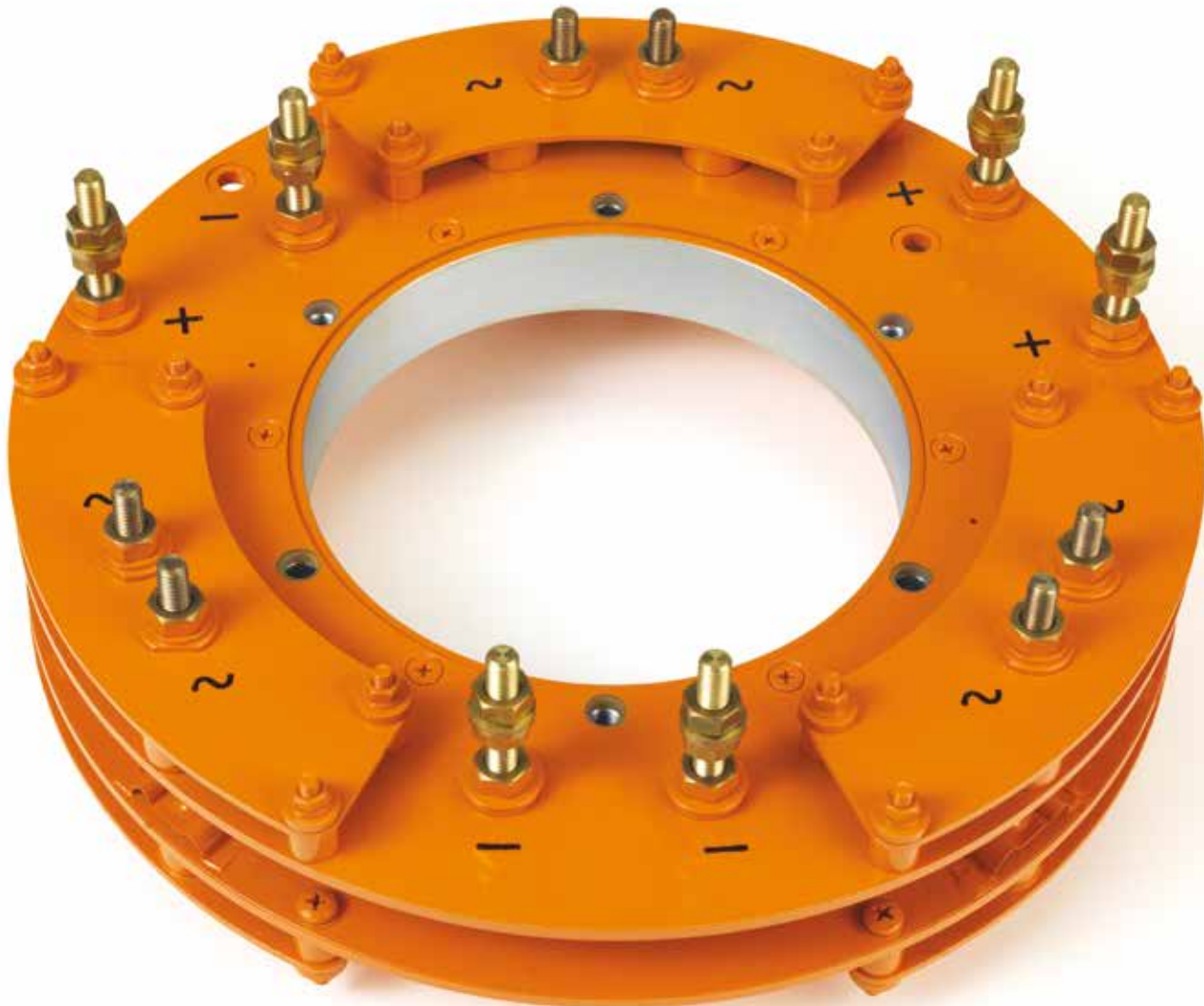
> DS_OCR_O2
REV. 00 - 18/04/2010

> **Id = 300 A Weight = 3800 g**

Article	Description	VR	Varistor	ID mm (D)	Diameter Between fixing holes	Fixing holes mm	Height mm (h)
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> **Tandem**

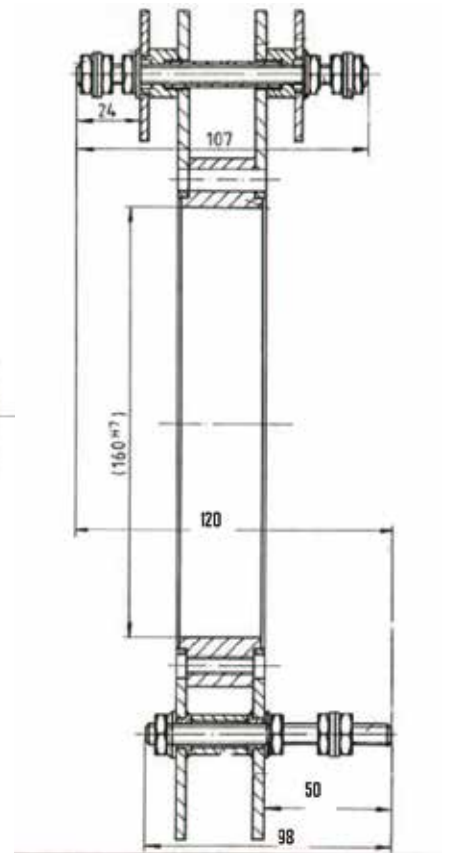
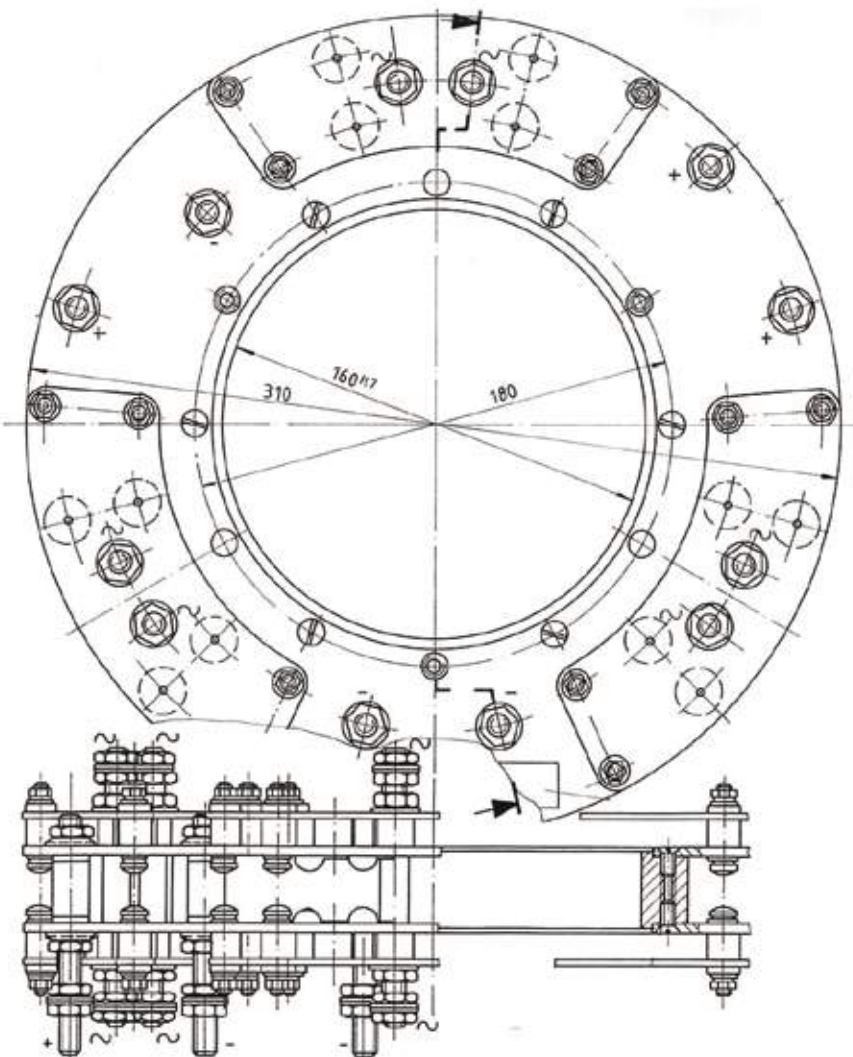
30869820-01	RS 310/12-14	1200/ 1400 V	NO	160	180	9	120
30869820 AT	RS 310/18-20	1800/ 2000 V	NO	160	180	9	120



Tandem

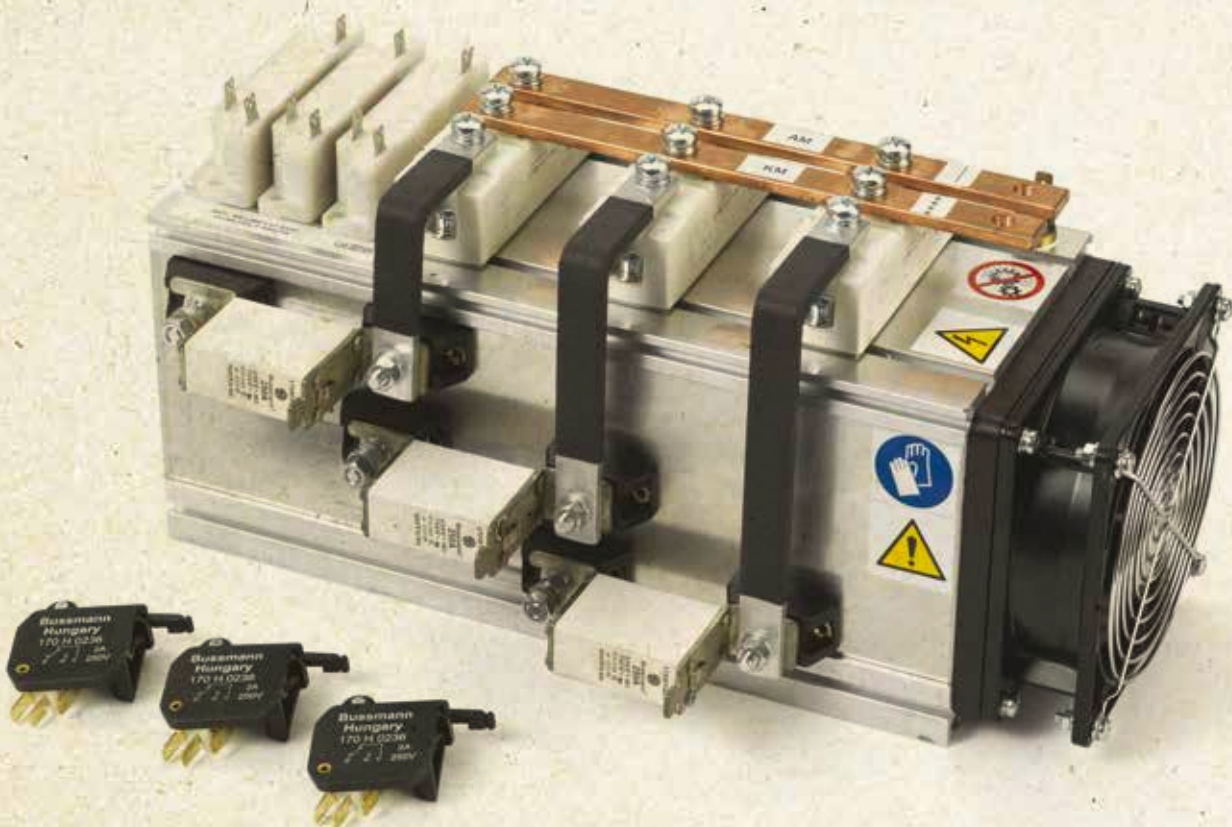
> TECHNICAL DATA

> DS_OCR_O2
REV.00 - 18/04/2010



CONVERTITORI DI CORRENTE

CONVERTER ASSEMBLIES



03

Assemblati di semiconduttori nelle varie configurazioni a ponte non controllato, semi controllato, total-controllato. Completi di circuiti RC, fusibili, varistori e termostati. Correnti fino a 6000 A.

Converter Assemblies using thyristors and diodes. Non-controllable, half controllable, fully controllable rectifier stacks complete of RC-snubber circuits, fuses, varistors and bimetal thermal trips. Currents up to 6000 A.

**CARATTERISTICHE
TECNICHE COME
PUNTI DI FORZA**

- > Tensioni fino a 10 KV
- > Correnti fino a 6000 A

**CAMPI DI
APPLICAZIONE**

- > Navale e ferroviario
- > Rifasatori
- > Azionamenti per controllo
velocità motori
- > Impianti galvanici
- > Gruppi di continuità
- > Saldatrici

OCRAM unisce qualità e robustezza costruttiva in un binomio perfetto che rende i suoi convertitori estremamente **sicuri dal punto di vista operativo**. Riesce inoltre a **personalizzare il prodotto costruendolo sulle specifiche richieste del cliente** ed a garantire sempre un affidabile servizio di assistenza pre e post vendita.

PUNTI DI FORZA ED APPLICAZIONI

AC/DC

ALIMENTATORI



CONTROLLO
MOTORI



TRASPORTO






ENERGIA
EOLICA

TECHNICAL SPECS AS STRENGTHS	<ul style="list-style-type: none"> > Reverse Voltage up to 10 KV > Output current up to 6000 A
APPLICATION FIELDS	<ul style="list-style-type: none"> > Rail/Naval Equipments > Power Factor correctors > Motor Drives > Galvanic Equipments > UPS > Welding Machines

OCRAM devices are a finest quality and safety toughness perfect match. We can customize our products to meet our customers' specific needs, guaranteeing a total customer care.

STRENGTHS AND APPLICATIONS

> >	AC/DC <small>POWER SUPPLIES</small>	 <small>MOTOR DRIVES</small>	 <small>TRANSPORT EQUIPMENT</small>	 <small>WIND ENERGY</small>
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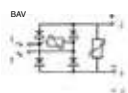
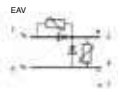
CONVERTITORI DI CORRENTE

CONVERTER ASSEMBLIES

TECHNICAL DATA

DS_OCR_O6
REV. 00 - 22/04/2010

Rectifier bridges with varistor



V_{RSM} V_{RRM}	
550 V 510 V	BAV 460 D9 EAV 510 D13

Parameter	Conditions	BAV 460 D9	EAV 510 D13	Units
I_D	$T_{amb} = 45^\circ\text{C}$ isolated	1,2	1,1	A
I_{FSM}	$T_{vj} = 25^\circ\text{C}$, 10 ms	150		A
	$T_{vj} = 150^\circ\text{C}$, 10 ms	130		A
I^2t	$T_{vj} = 25^\circ\text{C}$, 8,3... 10 ms	130		A^2s
	$T_{vj} = 150^\circ\text{C}$, 8,3... 10 ms	100		A^2s
V_F	$T_{vj} = 25^\circ\text{C}$, $I_F = 10$ A max	1,2		V
$V_{(TO)}$ r_T	$T_{vj} = T_{vjmax}$ $T_{vj} = T_{vjmax}$	0,85		V
		30		m Ω
T_{vj} T_{stg}		- 40... + 150 - 40... + 100		$^\circ\text{C}$ $^\circ\text{C}$
R_{thja} (tot)		22	44	$^\circ\text{C}/\text{W}$
V_{isol} at Pole 3	$T_{amb} = 25^\circ\text{C}$, $t = 60$ sec.	3000		Vacc



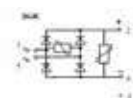
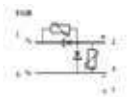
CONVERTITORI DI CORRENTE

CONVERTER ASSEMBLIES

TECHNICAL DATA

DS_OCR_06
REV. 00 – 22/04/2010

Rectifier bridges with varistor



V_{RSM} V_{RRM}	
630 V 630 V	BGR EGR

Parameter	Conditions	BGR	EGR	Units
I_D	$T_{amb} = 45^\circ\text{C}$ isolated	1,2	1,1	A
I_{FSM}	$T_{vj} = 25^\circ\text{C}$, 10 ms	150		A
	$T_{vj} = 150^\circ\text{C}$, 10 ms	130		A
I^2t	$T_{vj} = 25^\circ\text{C}$, 8,3... 10 ms	130		A^2s
	$T_{vj} = 150^\circ\text{C}$, 8,3... 10 ms	100		A^2s
V_F	$T_{vj} = 25^\circ\text{C}$, $I_F = 10$ A max	1,2		V
$V_{(TC)}$ r_T	$T_{vj} = T_{vjmax}$	0,85		V
	$T_{vj} = T_{vjmax}$	30		m Ω
T_{vj} T_{stg}		- 40... + 150		$^\circ\text{C}$
		- 40... + 100		$^\circ\text{C}$
$R_{thja} (tot)$		22	44	$^\circ\text{C}/\text{W}$
V_{isol} at Pole 3	$T_{amb} = 25^\circ\text{C}$, $t = 60$ sec.	3000		V _{ac}

Discrete rectifier diodes with non-isolated heatsinks

STACK
B2U
14 A... 2560 A
Non-controllable rectifier
stacks in two-pulse bridge
connection



Natural cooling; $T_{amb} \leq 45\text{ °C}$

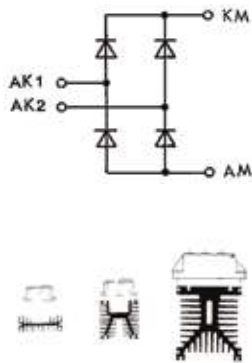
Code Designation* $V_{VRMS} / V_D - I_d$ V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B2U... / ... - 100	SKN 100	C3/120		120	234	130	12 α
-165	SKN/R 100	P1/150		150	375	250	15 α
-190	SKN/R 130	P1/200		200	375	250	15 b
-275	SKN/R 240	P1/200		200	375	250	15 b
-350	SKN/R 240	P1/400		400	375	250	15 c
-430	SKN/R 320	P1/400		400	375	250	15 c
-490	SKN/R 320	P4/400		400	475	270	19 α
-600	SKN 501	P11/415		635	500	275	21 α
-645	SKN 870	P11/415		635	500	275	21 α
-845	SKN 870	U3/515		740	560	290	25 α
-1090	SKN 1500	U3/515		740	560	290	25 α



Forced air cooling; $T_{amb} \leq 35\text{ °C}$

Code Designation* $V_{VRMS} / V_D - I_d$ V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B2U... / ... -245 F	SKN/R 100	P1/150	85	208	375	250	15 α
-310 F	SKN/R 130	P1/200	85	258	375	250	15 b
-485 F	SKN/R 240	P1/200	100	258	375	250	15 b
-545 F	SKN/R 240	P1/400	95	458	375	250	15 c
-675 F	SKN/R 320	P1/400	100	458	375	250	15 c
-885 F	SKN 501	P18/130	112	558	382	344	28 α
-1200 F	SKN 870	P18/130	112	558	382	344	28 b
-1525 F	SKN 1500	P18/130	132	558	406	344	28 b
-1865 F	SKN 2000	P18/130	132	558	406	344	28 b
-1970 F	SKN 1500	N4/250	118	790	542	400	34
-2560 F	SKN 2000	N4/250	118	790	542	400	34

Bridge rectifiers and diode modules, isolated from the heatsink



Natural cooling; $T_{amb} \leq 45\text{ °C}$

Code Designation* $V_{VRMS} / V_D - I_d$ $V / V - A$	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B2U... / ... - 14	SKB 25	P5A/100		100	106	42	1
-17	SKB 25	P1A/120		120	120	120	5 α
-21	SKB 30	P5A/100		100	106	50	1
-23	SKB 30	R4A/120		120	99	71	3
-29	SKB 30	P1A/120		120	120	120	5 α
-34	SKB 50	P1A/120		120	120	120	5 α
-40	SKB 52	P1A/120		120	120	120	5 α
-48	SKB 72	P1A/120		120	120	120	5 α
-50	SKKD 46	P3/120		120	125	174	6 α
-53	SKKD 26	P3/180		180	125	174	6 b
-63	SKKD 81	P3/120		120	125	174	6 α
-65	SKKD 100	P3/120		120	125	174	6 α
-70	SKKD 81	P3/180		180	125	174	6 b
-73	SKKD 100	P3/180		180	125	174	6 b
-90	SKKD 162	P3/180		180	125	174	6 b



Forced air cooling; $T_{amb} \leq 35\text{ °C}$

Code Designation* $V_{VRMS} / V_D - I_d$ $V / V - A$	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B2U... / ... -38 F	SKB 30	P1A/120	60	168	120	120	5 α
-47 F	SKB 50	P1A/120	56	168	120	120	5 α
-71 F	SKKD 26	P3/120	63	168	125	174	6 α
-89 F	SKKD 46	P3/120	71	168	125	174	6 α
-95 F	SKKD 46	P3/180	63	228	125	174	6 b
-129 F	SKKD 81	P3/120	75	168	125	174	6 α
-141 F	SKKD 100	P3/120	80	168	125	174	6 α
-150 F	SKKD 100	P3/180	75	228	125	174	6 b
-210 F	SKKD 162	P3/180	85	228	125	174	6 b
-240 F	SKKD 162	P3/265	80	313	125	174	6 c
-250 F	SKKD 201	P3/180	90	228	125	174	6 b
-285 F	SKKD 201	P3/265	85	313	125	174	6 c
-335 F	SKKD 260	P3/265	95	313	125	174	6 c
-385 F	SKKD 201	P16/200	63	433	249	210	8
-490 F	SKKD 260	P16/200	71	433	249	210	8

CONVERTITORI DI CORRENTE

CONVERTER ASSEMBLIES

TECHNICAL DATA

DS_OCR_O6
REV. 00 – 22/04/2010

Discrete thyristors and rectifier diodes with non-isolated heatsinks

B2 HK, B2 HKF
15 A... 1700 A
Half-controllable rectifier stacks
in two-pulse bridge connection



Natural cooling; $T_{amb} \leq 45^\circ\text{C}$

Code Designation* $V_{VRMS} / V_D - I_d$ V / V - A	Device Type		Heatsink Type / L mm	Thermal Trip $^\circ\text{C}$	Overall Dimensions			Outline Figure
					Height mm	Width mm	Depth mm	
B2HK... / ... - 73	SKT 55	SKR 70	P1.2/200		200	249	170	13 α
-90	SKT 55	SKR 70	P1/150		150	375	250	15 α
-115	SKT 100	SKR 100	P1/150		150	375	250	15 α
-132	SKT 130	SKR 130	P1/200		200	375	250	15 b
-160	SKT 160	SKR 130	P1/200		200	375	250	15 b
-195	SKT 160	SKR 240	P1/400		400	375	250	15 c
-255	SKT 250	SKR 320	P1/400		400	375	250	15 c
-300	SKT 300	SKR 320	P1/400		400	375	250	15 c
-345	SKT 250	SKR 320	P1/400		400	475	270	19 α
-415	SKT 300	SKR 320	P1/400		400	475	270	19 α
-445	SKT 600	SKR 870	P11/415		635	500	275	21 α
-490	SKT 760	SKR 870	P11/415		635	500	275	21 α
-535	SKT 600	SKR 870	U3/515		740	560	290	25 α
-590	SKT 760	SKR 870	U3/515		740	560	290	25 α
-695	SKT 1200	SKR 1500	U3/515		740	560	290	25 α



Forced air cooling; $T_{amb} \leq 35^\circ\text{C}$

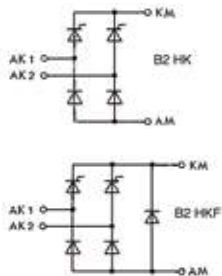
Code Designation* $V_{VRMS} / V_D - I_d$ V / V - A	Device Type		Heatsink Type / L mm	Thermal Trip $^\circ\text{C}$	Overall Dimensions			Outline Figure
					Height mm	Width mm	Depth mm	
B2HK... / ... - 210 F	SKT 100	SKR 100	P1/200 F	65	258	375	250	15 b
-245 F	SKT 130	SKR 130	P1/200 F	75	258	375	250	15 b
-295 F	SKT 160	SKR 130	P1/200 F	75	258	375	250	15 b
-480 F	SKT 250	SKR 320	P1/400 F	80	458	375	250	15 c
-595 F	SKT 300	SKR 320	P1/400 F	85	458	375	250	15 c
B2HK... / ... - 465 F	SKT 240	SKN 501	P18/130 F	80	558	382	344	28 α
-530 F	SKT 340	SKN 501	P18/130 F	80	558	382	344	28 α
-645 F	SKT 491	SKN 501	P18/130 F	90	558	382	344	28 α
-785 F	SKT 551	SKN 501	P18/130 F	90	558	382	344	28 α
-865 F	SKT 600	SKN 870	P18/130 F	90	558	406	344	28 b
-965 F	SKT 760	SKN 870	P18/130 F	90	558	406	344	28 b
-1035 F	SKT 1000	SKN 1500	P18/130 F	100	558	406	344	28 b
-1225 F	SKT 1200	SKN 1500	P18/130 F	100	558	406	344	28 b
-1245 F	SKT 760	SKN 870	N4/250 F	80	790	542	400	34
-1435 F	SKT 1000	SKN 1500	N4/250 F	90	790	542	400	34
-1700 F	SKT 1200	SKN 1500	N4/250 F	90	790	542	400	34

CONVERTITORI DI CORRENTE

CONVERTER ASSEMBLIES

DS_OCR_06
REV. 00 - 22/04/2010

Bridge rectifiers and thyristor/diode modules, isolated from the heatsink



Natural cooling; Tamb ≤ 45 °C

Code Designation* V _{VRMS} / V _D - I _d V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B2HKF.../... -15	SKCH 28	P5A/100		100	106	45	1
-16	SKCH 28	P13A/125		125	104	75	2
-23	SKCH 28	P1A/120		120	120	120	5 α
-28	SKCH 40	P1A/120		120	120	120	5 α
B2HK.../... -15	SKBH 28	P5A/100		100	106	45	1
-23	SKBH 28	P1A/120		120	120	120	5 α
-35	SKKH 26	P3/120		120	125	174	6 α
-43	SKKH 41	P3/120		120	125	174	6 α
-50	SKKH 56	P3/120		120	125	174	6 α
-60	SKKH 91	P3/120		120	125	174	6 α
-70	SKKH 91	P3/180		180	125	174	6 b
-76	SKKH 105	P3/180		180	125	174	6 b
-77	SKKH 132	P3/180		180	125	174	6 b

Forced air cooling; Tamb ≤ 35 °C

Code Designation* V _{VRMS} / V _D - I _d V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B2HKF.../... -32 F	SKB 33	P1A/120	50	168	120	120	5 α
-47 F	SKCH 40	P1A/120	63	168	120	120	5 α
B2HK.../... -57 F	SKKH 26	P3/120	63	168	125	174	6 α
-81 F	SKKH 41	P3/120	63	168	125	174	6 α
-96 F	SKKH 56	P3/120	71	168	125	174	6 α
-100 F	SKKH 56	P3/180	63	228	125	174	6 b
-109 F	SKKH 71	P3/120	75	168	125	174	6 α
-130 F	SKKH 91	P3/120	85	168	125	174	6 α
-140 F	SKKH 91	P3/180	75	228	125	174	6 b
-145 F	SKKH 105	P3/180	80	228	125	174	6 b
-157 F	SKKH 105	P3/265	75	313	125	174	6 c
-170 F	SKKH 132	P3/180	85	228	125	174	6 b
-191 F	SKKH 132	P3/265	85	313	125	174	6 c
-223 F	SKKH 162	P3/265	80	313	125	174	6 c
-250 F	SKKH 132	P16/200	63	433	249	210	8
-290 F	SKKH 162	P16/200	63	433	249	210	8
-300 F	SKKH 131	P16/200	63	433	249	210	8
-330 F	SKKH 161	P16/200	63	433	249	210	8
-450 F	SKKH 250	P16/200	75	433	249	210	8

CONVERTITORI DI CORRENTE

CONVERTER ASSEMBLIES

TECHNICAL DATA

DS_OCR_O6
REV. 00 – 22/04/2010

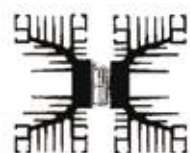
Discrete thyristors with non-isolated heatsinks

STACK

B2C

15 A... 1575 A

Fully controllable converter stacks
in twopulse bridge connection



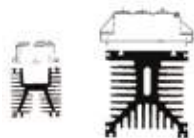
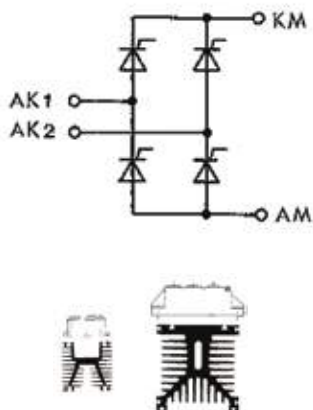
Natural cooling; Tamb ≤ 45 °C

Code Designation* V _{VRMS} / V _D - I _d V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B2C.../... -67	SKT 55	P1.2/100		215	249	170	14 α
-100	SKT 55	P1/150		315	375	250	16 α
-120	SKT 100	P1/150		315	375	250	16 α
-130	SKT 130	P1/200		415	375	250	16 b
-155	SKT 160	P1/200		415	375	250	16 b
-220	SKT 250	P1/200		415	375	250	16 b
-260	SKT 300	P1/200		415	375	250	16 b
-280	SKT 240	P11/415		635	500	275	21 α
-308	SKT 340	P11/415		635	500	275	21 α
-330	SKT 491	P11/415		635	500	275	21 α
-400	SKT 551	P11/415		635	500	275	21 α
-445	SKT 600	P11/415		635	500	275	21 α
-490	SKT 760	P11/415		635	500	275	21 α
-590	SKT 760	U3/515		740	560	290	25 α
-695	SKT 1200	U3/515		740	560	290	25 α

Forced air cooling; Tamb ≤ 35 °C

Code Designation* V _{VRMS} / V _D - I _d V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B2C.../... -150 F	SKT 55	P1/150	60	373	375	250	16 α
-200 F	SKT 100	P1/150	65	373	375	250	16 α
-235 F	SKT 130	P1/150	80	373	375	250	16 α
-285 F	SKT 160	P1/150	80	373	375	250	16 α
-395 F	SKT 250	P1/150	90	373	375	250	16 α
-475 F	SKT 300	P1/150	95	373	375	250	16 α
-465 F	SKT 240	P18/130	80	558	382	344	28 α
-530 F	SKT 340	P18/130	80	558	382	344	28 α
-645 F	SKT 491	P18/130	80	558	382	344	28 α
-780 F	SKT 551	P18/130	80	558	382	344	28 α
-865 F	SKT 600	P18/130	90	558	406	344	28 b
-965 F	SKT 760	P18/130	90	558	406	344	28 b
-1035 F	SKT 1000	P18/130	100	558	406	344	28 b
-1225 F	SKT 1200	P18/130	100	558	406	344	28 b
-1330 F	SKT 1000	N4/250	90	790	542	400	34
-1575 F	SKT 1200	N4/250	90	790	542	400	34

Bridge rectifiers and thyristor modules, isolated from the heatsink



Natural cooling; Tamb ≤ 45 °C

Code Designation* V _{VRMS} / V _D - I _d V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B2C.../... -15	SKBT 28	P5A/100		100	106	45	1
-23	SKBT 28	P1A/120		120	120	120	5 α
-24	SKKT 41	R4A/120		120	99	80	4
-28	SKKT 19	P3/120		120	125	174	6 α
-35	SKKT 26	P3/120		120	125	174	6 α
-43	SKKT 41	P3/120		120	125	174	6 α
-50	SKKT 56	P3/120		120	125	174	6 α
-57	SKKT 56	P3/180		180	125	174	6 b
-62	SKKT 71	P3/180		180	125	174	6 b
-70	SKKT 91	P3/180		180	125	174	6 b
-76	SKKT 105	P3/180		180	125	174	6 b
-77	SKKT 132	P3/180		180	125	174	6 b

Forced air cooling; Tamb ≤ 35 °C

Code Designation* V _{VRMS} / V _D - I _d V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B2C.../... -34 F	SKBT 28	P1A/120	56	168	120	120	5 α
-45 F	SKKT 19	P3/120	56	168	125	174	6 α
-60 F	SKKT 26	P3/180	60	228	125	174	6 b
-85 F	SKKT 41	P3/180	63	228	125	174	6 b
-96 F	SKKT 56	P3/120	71	168	125	174	6 α
-109 F	SKKT 71	P3/120	75	168	125	174	6 α
-140 F	SKKT 91	P3/180	75	228	125	174	6 b
-157 F	SKKT 105	P3/265	75	313	125	174	6 c
-191 F	SKKT 132	P3/265	85	313	125	174	6 c
-223 F	SKKT 162	P3/265	80	313	125	174	6 c
-250 F	SKKT 132	P16/200	63	433	249	210	8
-290 F	SKKT 162	P16/200	63	433	249	210	8
-300 F	SKKT 131	P16/200	63	433	249	210	8
-354 F	SKKT 213	P16/200	71	433	249	210	8
-387 F	SKKT 253	P16/200	71	433	249	210	8
-420 F	SKKT 210	P16/200	71	433	249	210	8
-450 F	SKKT 250	P16/200	71	433	249	210	8

CONVERTITORI DI CORRENTE

CONVERTER ASSEMBLIES

TECHNICAL DATA

DS_OCR_O6
REV. 00 – 22/04/2010

Discrete rectifier diodes with non-isolated heatsinks

STACK

B6U

15 A... 4015 A

Non controllable rectifier stack in
six-pulse bridge connection



Natural cooling; Tamb ≤ 45 °C

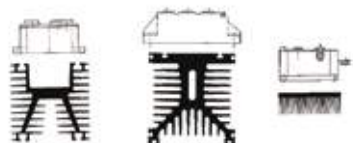
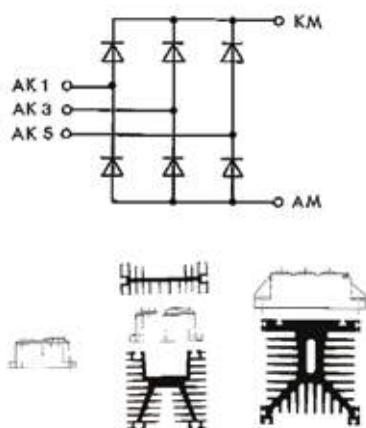
Code Designation* V _{VRMS} / V _D - I _d V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B6U.../... -145	SKN 100	C3/120		120	326	130	12 b
-235	SKN/R 100	P1/150		150	510	250	15 d
-285	SKN/R 130	P1/200		200	510	250	15 e
-410	SKN/R 240	P1/200		200	510	250	15 e
-510	SKN/R 240	P1/400		400	510	250	15 f
-630	SKN/R 320	P1/400		400	510	250	15 f
-700	SKN/R 320	P4/400		400	660	270	19 b
-855	SKN 501	P11/415		635	700	275	21 b
-950	SKN 870	P11/415		635	700	275	21 b
-1200	SKN 1500	P11/415		635	700	275	21 b
-1570	SKN 1500	U3/515		740	800	290	25 b
-1900	SKN 2000	U3/515		740	800	290	25 b



Forced air cooling; Tamb ≤ 35 °C

Code Designation* V _{VRMS} / V _D - I _d V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B6U.../... -350 F	SKN/R 100	P1/150	85	208	510	250	15 d
-440 F	SKN/R 130	P1/200	85	258	510	250	15 e
-690 F	SKN/R 240	P1/200	100	258	510	250	15 e
-780 F	SKN/R 240	P1/400	95	458	510	250	15 f
-965 F	SKN/R 320	P1/400	100	458	510	250	15 f
-1140 F	SKN 501	P17/130	118	558	426	344	29
-1600 F	SKN 870	P17/130	118	558	426	344	29
-1940 F	SKN 1500	P17/130	132	558	426	344	29
-2300 F	SKN 1500	P18/180	118	709	610	380	31
-2475 F	SKN 870	N4/250	90	790	711	378	36
-3060 F	SKN 1500	N4/250	100	790	711	378	36
-4015 F	SKN 2000	N4/250	112	790	711	378	36

Bridge rectifiers and SEMIPACK diode modules, isolated from the heatsink



Natural cooling; $T_{amb} \leq 45\text{ }^{\circ}\text{C}$

Code Designation* $V_{VRMS} / V_D - I_d$ V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip $^{\circ}\text{C}$	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B6U.../... -15	SKD 25	P5A/100		100	106	42	1
-20	SKD 25	P1A/120		120	120	120	5 α
-26	SKD 31	P5A/100		100	106	45	1
-32	SKD 31	P1A/120		120	120	120	5 α
-46	SKD 62	P1A/120		120	120	120	5 α
-54	SKD 82	P1A/120		120	120	120	5 α
-66	SKKD 46	P3/180		180	125	174	6 b
-70	SKKD 81	P3/120		120	125	174	6 α
-85	SKKD 81	P3/180		180	125	174	6 b
-91	SKKD 100	P3/180		180	125	174	6 b
-115	SKKD 162	P3/180		180	125	174	6 b

Forced air cooling; $T_{amb} \leq 35\text{ }^{\circ}\text{C}$

Code Designation* $V_{VRMS} / V_D - I_d$ V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip $^{\circ}\text{C}$	Height mm	Width mm	Depth mm	Outline Figure
-60 F	SKD 50	P1A/120	63	168	120	120	5 α
-85 F	SKD 60	P1A/120	71	168	120	120	5 α
-100 F	SKD 100	P1A/120	75	168	120	120	5 α
-120 F	SKD 100	P1A/200	63	248	120	120	5 α
-145 F	SKD 160	P1A/120	95	168	120	120	5 α
-175 F	SKKD 81	P3/180	80	228	125	174	6 b
-190 F	SKKD 100	P3/180	80	228	125	174	6 b
-214 F	SKKD 100	P3/265	75	313	125	174	6 c
-260 F	SKKD 162	P3/180	90	228	125	174	6 b
-314 F	SKKD 162	P3/265	85	313	125	174	6 c
-349 F	SKKD 201	P3/265	90	313	125	201	6 c
-425 F	SKKD 162	P16/200	63	433	249	210	8
-515 F	SKKD 201	P16/200	71	433	249	210	8
-655 F	SKKD 260	P16/200	80	433	249	210	8

CONVERTITORI DI CORRENTE

CONVERTER ASSEMBLIES

TECHNICAL DATA

DS_OCR_O6
REV. 00 - 22/04/2010

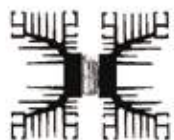
Discrete thyristors and rectifier diodes with non-isolated heatsinks

STACK

B6 HK, B6 HKF

25 A... 3420 A

Half-controllable rectifier stacks in
six-pulse bridge connection



Natural cooling; $T_{amb} \leq 45\text{ }^{\circ}\text{C}$

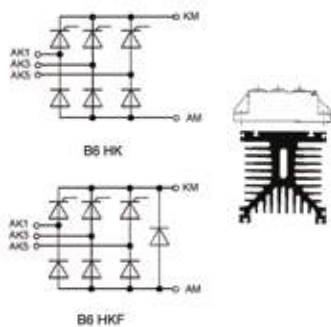
Code Designation* $V_{VRMS} / V_D - I_d$ V / V - A	Device Type		Heatsink Type / L mm	Thermal Trip $^{\circ}\text{C}$	Overall Dimensions			Outline Figure
					Height mm	Width mm	Depth mm	
B6HK.../... -95	SKT 55	SKR 70	P1.2/200		200	336	170	13 b
-125	SKT 55	SKR 70	P1/150		150	510	250	15 d
-155	SKT 100	SKR 100	P1/150		150	510	250	15 d
-175	SKT 100	SKR 100	P1/200		200	510	250	15 e
-225	SKT 160	SKR 240	P1/200		200	510	250	15 e
-275	SKT 160	SKR 240	P1/400		400	510	250	15 f
-360	SKT 250	SKR 320	P1/400		400	510	250	15 f
-435	SKT 300	SKR 320	P1/400		400	510	250	15 f
-485	SKT 250	SKR 320	P4/400		400	660	270	19 b
-600	SKT 300	SKR 320	P4/400		400	660	270	19 b
-635	SKT 600	SKN 870	P11/415		635	700	275	21 b
-700	SKT 760	SKN 1500	P11/415		635	700	275	21 b
-845	SKT 600	SKN 1500	U3/515		740	800	290	25 b
-1000	SKT 1200	SKN 1500	U3/515		740	800	290	25 b



Forced air cooling; $T_{amb} \leq 35\text{ }^{\circ}\text{C}$

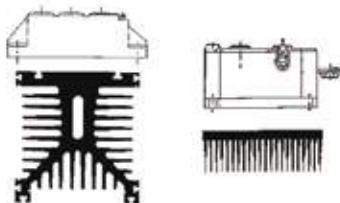
Code Designation* $V_{VRMS} / V_D - I_d$ V / V - A	Device Type		Heatsink Type / L mm	Thermal Trip $^{\circ}\text{C}$	Overall Dimensions			Outline Figure
					Height mm	Width mm	Depth mm	
B6HK... / ... - 285 F	SKT 100	SKR 100	P1/200	63	258	510	250	15 e
-340 F	SKT 130	SKR 130	P1/200	75	258	510	250	15 e
-410 F	SKT 160	SKR 130	P1/200	75	258	510	250	15 e
-665 F	SKT 250	SKR 320	P1/400	75	458	510	250	15 f
-840 F	SKT 300	SKR 320	P1/400	80	458	510	250	15 f
-980 F	SKT 551	SKN 501	P17/130	90	558	426	344	29
-1080 F	SKT 600	SKN 870	P17/130	95	558	426	344	29
-1200 F	SKT 760	SKN 870	P17/130	95	558	426	344	29
-1260 F	SKT 1000	SKN 1500	P17/130	100	558	426	344	29
-1500 F	SKT 1200	SKN 1500	P17/130	100	558	426	344	29
-1600 F	SKT 1000	SKN 1500	P17/180	95	709	610	380	31
-1890 F	SKT 1200	SKN 1500	P17/180	95	709	610	380	31
-2185 F	SKT 1000	SKN 1500	N4/250	80	790	711	400	36
-2580 F	SKT 1200	SKN 1500	N4/250	80	790	711	400	36
-3420 F	SKT 1800	SKN 2000	N4/250	90	790	711	400	36

Thyristor/diode modules, isolated from the heatsink



Natural cooling; Tamb ≤ 45 °C

Code Designation* V _{VRMS} / V _D - I _d V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B6HK.../... -25	SKKH 26	R4A/120		120	99	80	3
-43	SKKH 26	P3/120		120	125	174	6 a
-47	SKKH 26	P3/180		180	125	174	6 b
-52	SKKH 41	P3/120		120	125	174	6 a
-60	SKKH 56	P3/120		120	125	174	6 a
-68	SKKH 56	P3/180		180	125	174	6 b
-75	SKKH 91	P3/120		120	125	174	6 a
-85	SKKH 91	P3/180		180	125	174	6 b
-88	SKKH 105	P3/180		180	125	174	6 b
-100	SKKH 132	P3/180		180	125	174	6 b



Forced air cooling; Tamb ≤ 35 °C

Code Designation* V _{VRMS} / V _D - I _d V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B6HK.../... -77 F	SKKH 26	P3/180	63	228	125	174	6 b
-102 F	SKKH 41	P3/120	75	168	125	174	6 a
-119 F	SKKH 56	P3/120	75	168	125	174	6 a
-130 F	SKKH 56	P3/180	71	228	125	174	6 b
-158 F	SKKH 91	P3/120	85	168	125	174	6 a
-175 F	SKKH 91	P3/180	80	228	125	174	6 b
-201 F	SKKH 105	P3/265	80	313	125	174	6 c
-229 F	SKKH 132	P3/265	90	313	125	174	6 c
-266 F	SKKH 162	P3/265	85	313	125	174	6 c
-280 F	SKKH 131	P3/265	90	313	125	174	6 c
-300 F	SKKH 161	P3/265	90	313	125	201	6 c
-320 F	SKKH 132	P16/200	71	433	249	210	8
-360 F	SKKH 162	P16/200	75	433	249	210	8
-380 F	SKKH 131	P16/200	71	433	249	210	8
-415 F	SKKH 161	P16/200	71	433	249	210	8
-585 F	SKKH 250	P16/200	75	433	249	210	8

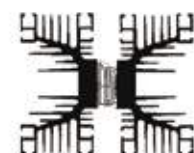
Discrete thyristors with non-isolated heatsinks

STACK

B6C

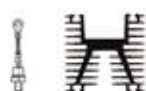
21 A... 3440 A

Fully controllable converter stacks
in sixpulse bridge connection



Natural cooling; Tamb ≤ 45 °C

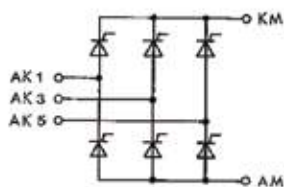
Code Designation* V _{VRMS} / V _D - I _d V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B6C.../... -95	SKT 55	P1.2/100		215	336	170	14 b
-130	SKT 55	P1/120		255	510	250	16 c
-175	SKT 100	P1/150		315	510	250	16 d
-225	SKT 160	P1/150		315	510	250	16 d
-320	SKT 250	P1/200		415	510	250	16 e
-380	SKT 300	P1/200		415	510	250	16 e
-395	SKT 240	P11/415		635	700	275	21 b
-440	SKT 340	P11/415		635	700	275	21 b
-470	SKT 491	P11/415		635	700	275	21 b
-570	SKT 551	P11/415		635	700	275	21 b
-635	SKT 600	P11/415		635	700	275	21 b
-700	SKT 760	P11/415		635	700	275	21 b
-845	SKT 760	U3/515		740	800	290	25 b
-1000	SKT 1200	U3/515		740	800	290	25 b



Forced air cooling; Tamb ≤ 35 °C

Code Designation* V _{VRMS} / V _D - I _d V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Height mm	Width mm	Depth mm	Outline Figure
-280 F	SKT 100	P1/150	63	373	510	250	16 d
-325 F	SKT 130	P1/150	75	373	510	250	16 d
-395 F	SKT 160	P1/150	75	373	510	250	16 d
-550 F	SKT 250	P1/150	85	373	510	250	16 d
-680 F	SKT 300	P1/150	95	373	510	250	16 d
-740 F	SKT 300	P1/200	90	473	510	250	16 e
-800 F	SKT 491	P17/130	90	558	426	344	29
-980 F	SKT 551	P17/130	90	558	426	344	29
-1080 F	SKT 600	P17/130	95	558	426	344	29
-1200 F	SKT 760	P17/130	95	558	426	344	29
-1260 F	SKT 1000	P17/130	100	558	426	344	29
-1500 F	SKT 1200	P17/130	100	558	426	344	29
-1600 F	SKT 1000	P18/180	95	709	610	380	31
-1890 F	SKT 1200	P18/180	95	709	610	380	31
-2185 F	SKT 1000	N4/250	80	790	711	400	36
-2580 F	SKT 1200	N4/250	80	790	711	400	36
-3440 F	SKT 1800	N4/250	90	790	711	400	36

Bridge rectifiers and SEMIPACK thyristor modules, isolated from the heatsink



Natural cooling; $T_{amb} \leq 45^\circ\text{C}$

Code Designation* $V_{VRMS} / V_D - I_d$ V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip $^\circ\text{C}$	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B6C.../... -21	SKKT 19	R4A/120		120	99	80	4
-25	SKKT 26	R4A/120		120	99	80	4
-35	SKKT 19	P3/120		120	125	174	6 α
-43	SKKT 26	P3/120		120	125	174	6 α
-52	SKKT 41	P3/120		120	125	174	6 α
-60	SKKT 41	P3/180		180	125	174	6 b
-68	SKKT 56	P3/180		180	125	174	6 b
-75	SKKT 91	P3/120		120	125	174	6 α
-85	SKKT 91	P3/180		180	125	174	6 b
-100	SKKT 132	P3/180		180	125	174	6 b

Forced air cooling; $T_{amb} \leq 35^\circ\text{C}$

Code Designation* $V_{VRMS} / V_D - I_d$ V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip $^\circ\text{C}$	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
B6C.../... -65 F	SKDT 60	P1A/120	63	168	120	120	5 α
-77 F	SKKT 26	P3/180	63	228	125	174	6 b
-102 F	SKKT 41	P3/120	75	168	125	174	6 α
-110 F	SKKT 41	P3/180	63	228	125	174	6 b
-119 F	SKKT 56	P1A/120	75	168	120	120	5 α
-134 F	SKKT 71	P3/120	85	168	125	174	6 α
-158 F	SKKT 91	P1A/120	85	168	120	120	5 α
-175 F	SKKT 91	P3/180	80	228	125	174	6 b
-180 F	SKKT 105	P3/180	85	228	125	174	6 b
-201 F	SKKT 105	P3/265	80	313	125	174	6 c
-229 F	SKKT 132	P3/265	90	313	125	174	6 c
-266 F	SKKT 162	P3/265	85	313	125	174	6 c
-280 F	SKKT 131	P3/265	90	313	125	201	6 c
-320 F	SKKT 132	P16/200	71	433	249	210	8
-360 F	SKKT 162	P16/200	75	433	249	210	8
-380 F	SKKT 131	P16/200	71	433	249	210	8
-415 F	SKKT 161	P16/200	71	433	249	210	8
-550 F	SKKT 210	P16/200	75	433	249	210	8
-585 F	SKKT 250	P16/200	75	433	249	210	8

CONVERTITORI DI CORRENTE

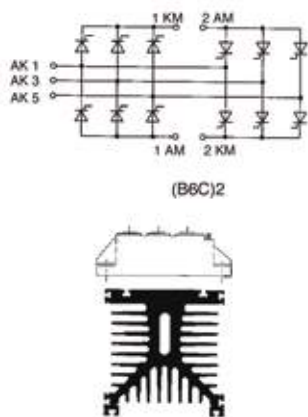
CONVERTER ASSEMBLIES

TECHNICAL DATA

DS_OCR_O6
REV. 00 - 22/04/2010

Thyristor modules, isolated from the heatsinks

STACK
(B6C) 2..., (B6C) 2L...
38 A... 608 A
Two inverse parallel
six-pulse bridge
connections for four
quadrant converters



Natural cooling; Tamb ≤ 45 °C

Code Designation* V _{VRMS} / V _D - I _d V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
(B6C)2.../... -38	SKKT 19	P3/180		180	125	174	6 b
-47	SKKT 26	P3/180		180	125	174	6 b
-60	SKKT 41	P3/180		180	125	174	6 b
-68	SKKT 56	P3/180		180	125	174	6 b
-75	SKKT 71	P3/180		180	125	174	6 b
-85	SKKT 91	P3/180		180	125	174	6 b
-88	SKKT 105	P3/180		180	125	174	6 b

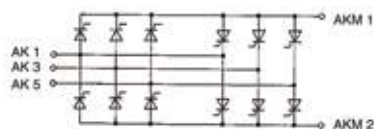
Bridges not connected together

Forced air cooling; Tamb ≤ 35 °C

Code Designation* V _{VRMS} / V _D - I _d V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Height mm	Width mm	Depth mm	Outline Figure
-77 F	SKKT 26	P3/180	63	228	125	174	6 b
-110 F	SKKT 41	P3/180	63	228	125	174	6 b
-130 F	SKKT 56	P3/180	71	228	125	174	6 b
-150 F	SKKT 71	P3/180	80	228	125	174	6 b
-180 F	SKKT 91	P3/180	80	228	125	174	6 b
-210 F	SKKT 71	P16/200	50	433	249	210	10
-260 F	SKKT 91	P16/200	56	433	249	210	10
-352 F	SKKT 132	P16/300	63	570	265	210	11
-395 F	SKKT 162	P16/300	63	570	265	210	11
-468 F	SKKT 213	P16/300	75	570	265	210	11
-515 F	SKKT 253	P16/300	75	570	265	210	11
-656 F	SKKT 210	P16/300	75	570	265	210	11
-608 F	SKKT 250	P16/300	75	570	265	210	11

Bridges not connected together

Thyristor modules, isolated from the heatsink



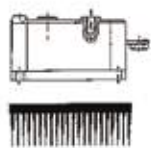
(B6C)2I ...



Natural cooling; Tamb ≤ 45 °C

Code Designation* V _{VRMS} / V _D - I _d V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
(B6C)2I.../... -38	SKKT 19	P3/180		180	125	174	6 b
-47	SKKT 26	P3/180		180	125	174	6 b
-60	SKKT 41	P3/180		180	125	174	6 b
-68	SKKT 56	P3/180		180	125	174	6 b
-75	SKKT 71	P3/180		180	125	174	6 b
-85	SKKT 91	P3/180		180	125	174	6 b
-88	SKKT 105	P3/180		180	125	174	6 b

Bridges connected in antiparallel



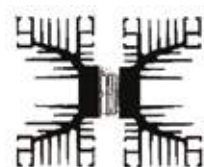
Forced air cooling; Tamb ≤ 35 °C

Code Designation* V _{VRMS} / V _D - I _d V / V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Height mm	Width mm	Depth mm	Outline Figure
-77 F	SKKT 26	P3/180	63	228	125	174	6 b
-110 F	SKKT 41	P3/180	63	228	125	174	6 b
-130 F	SKKT 56	P3/180	71	228	125	174	6 b
-150 F	SKKT 71	P3/180	80	228	125	174	6 b
-180 F	SKKT 91	P3/180	80	228	125	174	6 b
-210 F	SKKT 71	P16/200	50	433	249	210	10
-260 F	SKKT 91	P16/200	56	433	249	210	10
-352 F	SKKT 132	P16/300	63	570	265	210	11
-395 F	SKKT 162	P16/300	63	570	265	210	11
-468 F	SKKT 213	P16/300	75	570	265	210	11
-515 F	SKKT 253	P16/300	75	570	265	210	11
-656 F	SKKT 210	P16/300	75	570	265	210	11
-608 F	SKKT 250	P16/300	75	570	265	210	11

Bridges connected in antiparallel

Discrete thyristors with non-isolated heatsinks

STACK
W 1 C
27 A... 1260 A
Single phase a.c. controller stacks



Natural cooling; Tamb ≤ 45 °C

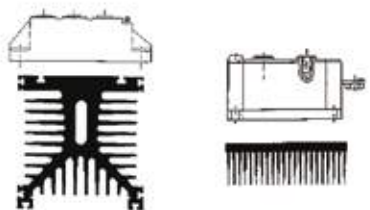
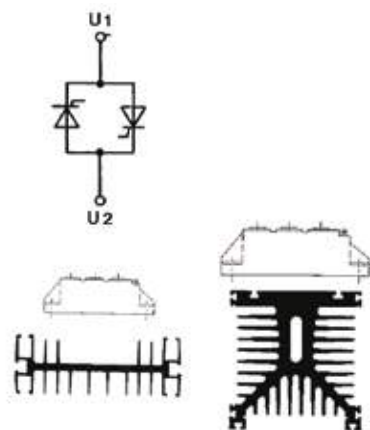
Code Designation* V _{VRMS} / V _D · I _d V/V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
W1C... -110	SKT 55	P1/120		120	375	210	17 α
-135	SKT 100	P1/120		120	375	210	17 α
-145	SKT 130	P1/120		120	375	210	17 α
-175	SKT 160	P1/120		120	375	210	17 α
-205	SKT 160	P1/200		200	375	210	17 c
-230	SKT 250	P1/150		150	375	210	17 b
-256	SKT 250	P1/200		200	375	210	17 c
-310	SKT 300	P1/200		200	375	210	17 c
-312	SKT 240	P11/415		415	176	280	23
-344	SKT 340	P11/415		415	176	280	23
-370	SKT 491	P11/415		415	176	280	23
-445	SKT 551	P11/415		415	176	280	23
-495	SKT 600	P11/415		415	176	280	23
-550	SKT 760	P11/415		415	176	280	23
-595	SKT 600	U3/515		515	220	295	24
-628	SKT 760	U3/515		515	220	295	24
-780	SKT 1200	U3/515		515	220	295	24



Forced air cooling; Tamb ≤ 35 °C

Code Designation* V _{VRMS} / V _D · I _d V/V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Height mm	Width mm	Depth mm	Outline Figure
-226 F	SKT 100	P1/120	63	178	375	230	17 α
-264 F	SKT 130	P1/120	80	178	375	230	17 α
-319 F	SKT 160	P1/120	80	178	375	230	17 α
-490 F	SKT 250	P1/150	85	208	375	230	17 b
-600 F	SKT 300	P1/150	90	208	375	230	17 b
-665 F	SKT 300	P1/200	85	208	375	230	17 c
-990 F	SKT 760	P19/190	95	315	215	320	37
-1260 F	SKT 1200	P19/190	100	315	215	320	37

Thyristor modules, isolated from the heatsink



Natural cooling; Tamb ≤ 45 °C

Code Designation* V _{VRMS} / I _{RMS} V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
W1C...-27	SKKT 19	R4A/120		120	99	80	4
-33	SKKT 26	R4A/120		120	99	80	4
-41	SKKT 41	R4A/120		120	99	80	4
-47	SKKT 56	R4A/120		120	99	80	4
-52	SKKT 71	R4A/120		120	99	80	4
-57	SKKT 91	R4A/120		120	99	80	4
-65	SKKT 41	P3/120		120	125	174	6 α
-75	SKKT 56	P3/120		120	125	174	6 α
-85	SKKT 71	P3/120		120	125	174	6 α
-100	SKKT 91	P3/120		120	125	174	6 α
-105	SKKT 105	P3/120		120	125	174	6 α
-110	SKKT 91	P3/180		120	125	174	6 b
-118	SKKT 105	P3/180		120	125	174	6 b

Forced air cooling; Tamb ≤ 35 °C

Code Designation* V _{VRMS} / I _{RMS} V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
W 1 C...-55 F	SKKT 19	P3/120	50	168	125	174	6 α
-72 F	SKKT 26	P3/120	50	168	125	174	6 α
-107 F	SKKT 41	P3/120	56	168	125	174	6 α
-127 F	SKKT 56	P3/120	56	168	125	174	6 α
-150 F	SKKT 71	P3/120	63	168	125	174	6 α
-184 F	SKKT 91	P3/120	63	168	125	174	6 α
-192 F	SKKT 105	P3/120	63	168	125	174	6 α
-200 F	SKKT 105	P3/180	63	228	125	174	6 b
-240 F	SKKT 132	P3/180	71	228	125	174	6 b
-265 F	SKKT 162	P3/180	71	228	125	174	6 b
-279 F	SKKT 131	P3/180	80	228	125	201	6 b
-322 F	SKKT 213	P3/180	85	228	125	201	6 b
-355 F	SKKT 253	P3/180	85	228	125	201	6 b
-383 F	SKKT 210	P3/180	85	228	125	201	6 b
-410 F	SKKT 250	P3/180	80	228	125	201	6 b
-429 F	SKKT 213	P16/200	63	433	249	210	9
-472 F	SKKT 253	P16/200	63	433	249	210	9
-526 F	SKKT 210	P16/200	63	433	249	210	9
-566 F	SKKT 250	P16/200	63	433	249	210	9

CONVERTITORI DI CORRENTE

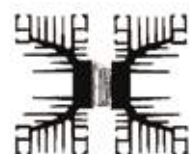
CONVERTER ASSEMBLIES

TECHNICAL DATA

DS_OCR_O6
REV. 00 – 22/04/2010

Discrete thyristors with non-isolated heatsinks

STACK
W3C2
3 x 21 A... 3 x 1760 A
Three-phase a.c. controller stacks
with two control elements for
multicycle control ¹⁾



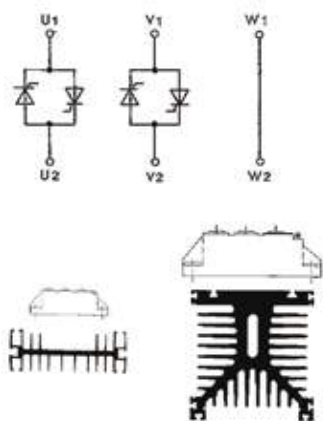
Natural cooling; Tamb ≤ 45 °C

Code Designation* V _{VRMS} / I _{RMS} V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
W3C2... -105	SKT 55	P1/120		255	375	210	18 α
-135	SKT 100	P1/150		315	375	210	18 b
-145	SKT 130	P1/150		315	375	210	18 b
-175	SKT 160	P1/150		315	375	210	18 b
-190	SKT 160	P1/200		415	375	210	18 c
-230	SKT 250	P1/200		415	375	210	18 c
-275	SKT 300	P1/200		415	375	210	18 c
-312	SKT 240	P11/415		495	500	325	22 α
-344	SKT 340	P11/415		495	500	325	22 α
-370	SKT 491	P11/415		495	500	325	22 α
-445	SKT 551	P11/415		495	500	325	22 α
-495	SKT 600	P11/415		495	500	325	22 α
-550	SKT 760	P11/415		495	500	325	22 α
-595	SKT 600	U3/515		690	560	290	26 α
-628	SKT 760	U3/515		690	560	290	26 α
-780	SKT 1200	U3/515		690	560	290	26 α

Forced air cooling; Tamb ≤ 35 °C

Code Designation* V _{VRMS} / I _{RMS} V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
W3C2... -166 F	SKT 55	P1/150	56	373	375	210	18 b
-226 F	SKT 100	P1/150	63	373	375	210	18 b
-264 F	SKT 130	P1/150	80	373	375	210	18 b
-319 F	SKT 160	P1/150	80	373	375	210	18 b
-438 F	SKT 250	P1/150	90	373	375	210	18 b
-531 F	SKT 300	P1/150	95	373	375	210	18 b
-590 F	SKT 340	P18/130	80	563	358	342	27 α
-715 F	SKT 491	P18/130	90	563	358	342	27 α
-880 F	SKT 551	P18/130	90	563	358	342	27 α
-960 F	SKT 600	P18/130	90	563	382	342	27 b
-1080 F	SKT 760	P18/130	90	563	382	342	27 b
-1150 F	SKT 1000	P18/130	100	563	382	342	27 b
-1370 F	SKT 1200	P18/130	100	563	382	342	27 b
-1490 F	SKT 1000	N4/250	90	790	422	488	33
-1760 F	SKT 1200	N4/250	90	790	422	488	33

Thyristor modules, isolated from the heatsink

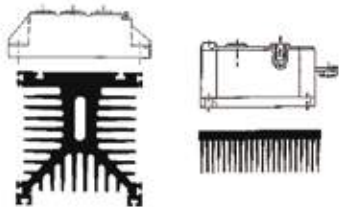


Natural cooling; Tamb ≤ 45 °C

Code Designation* V _{VRMS} / V _{IRMS} ²⁾ V/V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
W3C2... -21	SKKT 19	R4A/120		120	99	80	4
-25	SKKT 26	R4A/120		120	99	80	4
-29	SKKT 41	R4A/120		120	99	80	4
-42	SKKT 26	P3/180		180	125	174	6 b
-47	SKKT 41	P3/120		120	125	174	6 α
-55	SKKT 41	P3/180		180	125	174	6 b
-65	SKKT 56	P3/180		180	125	174	6 b
-70	SKKT 71	P3/180		180	125	174	6 b
80	SKKT 91	P3/180		180	125	174	6 b
-86	SKKT 105	P3/180		180	125	174	6 b

1) i.e. for heating control. With phase control, this circuit configuration would cause a strong imbalance of currents in the three phases.

2) RMS current per phase.



Forced air cooling; Tamb ≤ 35 °C

Code Designation* V _{VRMS} / V _{IRMS} ²⁾ V/V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Height mm	Width mm	Depth mm	Outline Figure
-67 F	SKKT 26	P3/180	60	228	125	174	6 b
-91 F	SKKT 41	P3/120	63	168	125	174	6 α
-107 F	SKKT 56	P3/120	71	168	125	174	6 α
-122 F	SKKT 71	P3/120	75	168	125	174	6 α
-155 F	SKKT 91	P3/180	75	228	125	174	6 b
-163 F	SKKT 105	P3/180	80	228	125	174	6 b
-190 F	SKKT 132	P3/180	90	228	125	174	6 b
-210 F	SKKT 162	P3/180	90	228	125	174	6 b
-275 F	SKKT 132	P16/200	71	433	249	210	9
-305 F	SKKT 162	P16/200	71	433	249	210	9
-333 F	SKKT 131	P16/200	63	433	249	210	9
-393 F	SKKT 213	P16/200	71	433	249	210	9
-433 F	SKKT 253	P16/200	71	433	249	210	9
-478 F	SKKT 210	P16/200	75	433	249	210	9
-513 F	SKKT 250	P16/200	75	433	249	210	9

CONVERTITORI DI CORRENTE

CONVERTER ASSEMBLIES

TECHNICAL DATA

DS_OCR_O6
REV. 00 – 22/04/2010

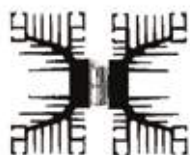
Discrete thyristors with non-isolated heatsinks

STACK

W3C

3 x 16 A... 3 x 2695 A

Three-phase a.c. controller stacks



Natural cooling; Tamb ≤ 45 °C

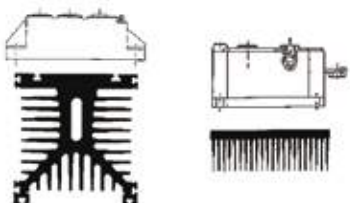
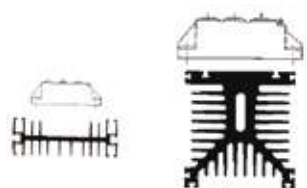
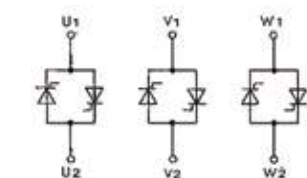
Code Designation* V _{VRMS} / V _{IRMS} V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
W3C... -105	SKT 55	P1/120		255	510	210	18 d
-135	SKT 100	P1/150		315	510	210	18 e
-175	SKT 160	P1/150		315	510	210	18 e
-190	SKT 160	P1/200		415	510	210	18 f
-230	SKT 250	P1/200		415	510	210	18 f
-275	SKT 300	P1/200		415	510	210	18 f
-312	SKT 240	P11/415		495	700	325	22 b
-344	SKT 340	P11/415		495	700	325	22 b
-370	SKT 491	P11/415		495	700	325	22 b
-445	SKT 551	P11/415		495	700	325	22 b
-495	SKT 600	P11/415		495	700	325	22 b
-550	SKT 760	P11/415		495	700	325	22 b
-595	SKT 600	U3/515		690	800	280	26 b
-628	SKT 760	U3/515		690	800	280	26 b
-780	SKT 1200	U3/515		690	800	280	26 b

Forced air cooling; Tamb ≤ 35 °C

Code Designation* V _{VRMS} / V _{IRMS} V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Height mm	Width mm	Depth mm	Outline Figure
-226 F	SKT 100	P1/150	63	373	510	210	18 e
-264 F	SKT 130	P1/150	80	373	510	210	18 e
-319 F	SKT 160	P1/150	80	373	510	210	18 e
-438 F	SKT 250	P1/150	90	373	510	210	18 e
-531 F	SKT 300	P1/150	95	373	510	210	18 e
-570 F	SKT 300	P1/200	90	473	510	210	18 f
-640 F	SKY 491	P17/130	90	563	376	342	30
-785 F	SKY 551	P17/130	90	563	376	342	30
-850 F	SKY 600	P17/130	95	563	376	342	30
-950 F	SKY 760	P17/130	95	563	376	342	30
-1000 F	SKY 1000	P17/130	100	563	376	342	30
-1130 F	SKY 1200	P17/130	100	563	376	342	30
-1275 F	SKT 1000	P18/180	95	719	532	360	32
-1510 F	SKT 1200	P18/180	95	719	532	360	32
-1770 F	SKT 1000	N4/250	85	790	591	488	35
-2090 F	SKT 1200	N4/250	85	790	591	488	35
-2695 F	SKT 1800	N4/250	90	790	591	488	35



Thyristor modules, isolated from the heatsink



Natural cooling; Tamb ≤ 45 °C

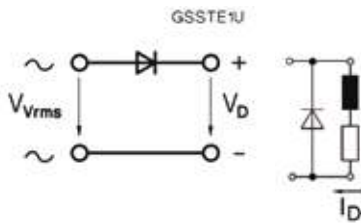
Code Designation* V _{VRMS} / I _{IRMS} V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
W3C... -16	SKKT 19	R4A/120		120	99	80	4
	SKKT 26	R4A/120		120	99	80	4
-27	SKKT 19	P3/120		120	125	174	6 a
-37	SKKT 26	P3/180		180	125	174	6 b
-45	SKKT 41	P3/180		180	125	174	6 b
-52	SKKT 56	P3/180		180	125	174	6 b
-56	SKKT 71	P3/180		180	125	174	6 b
-65	SKKT 91	P3/180		180	125	174	6 b
-70	SKKT 105	P3/180		180	125	174	6 b
-75	SKKT 132	P3/180		180	125	174	6 b

Forced air cooling; Tamb ≤ 35 °C

Code Designation* V _{VRMS} / I _{IRMS} V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
W3C... -46 F	SKKT 19	P3/120	63	168	125	174	6 a
-59 F	SKKT 26	P3/120	63	168	125	174	6 a
-85 F	SKKT 41	P3/180	71	228	125	174	6 b
-100 F	SKKT 56	P3/180	63	228	125	174	6 b
-106 F	SKKT 71	P3/120	85	168	125	174	6 a
-124 F	SKKT 91	P3/120	85	168	125	174	6 a
-140 F	SKKT 105	P3/180	85	228	125	174	6 b
-163 F	SKKT 132	P3/180	95	228	125	174	6 b
-185 F	SKKT 162	P3/180	90	228	125	174	6 b
-205 F	SKKT 162	P3/265	90	313	125	201	6 c
-251 F	SKKT 213	P3/265	95	313	125	201	6 c
-277 F	SKKT 253	P3/265	95	313	125	201	6 c
-312 F	SKKT 162	P16/200	71	433	249	210	9
-365 F	SKKT 213	P16/200	75	433	249	210	9
-402 F	SKKT 253	P16/200	75	433	249	210	9
-440 F	SKKT 210	P16/200	80	433	249	210	9
-471 F	SKKT 250	P16/200	80	433	249	210	9

Discrete rectifier diodes with non-isolated heatsinks

STACK
E1U
52 A ... 790 A
Free wheeling diodes
Blocking diodes

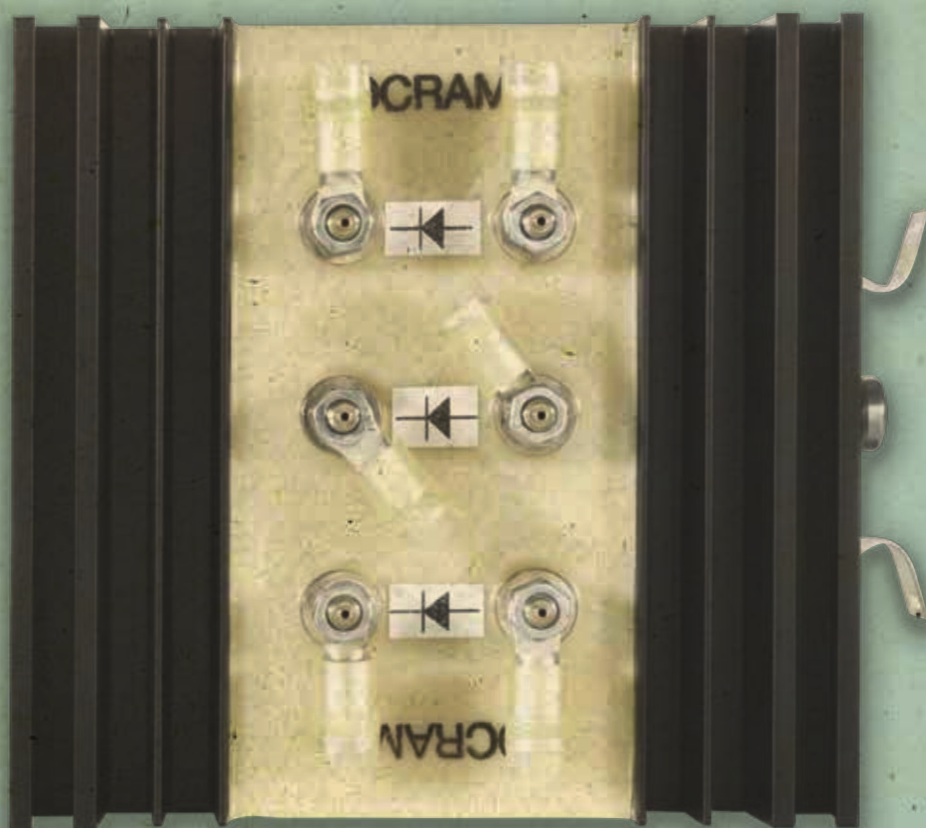


Natural cooling; Tamb ≤ 45 °C

Code Designation* V _{VRMS} / V _D - I _{VRMS} V/V - A	Device Type	Heatsink Type / L mm	Thermal Trip °C	Overall Dimensions			Outline Figure
				Height mm	Width mm	Depth mm	
E1U.../... -52 -75	SKN 100	C3/120		120	40	130	12
	SKN 70	P1/60		60	120	210	17 α
-110	SKN 100	P1/120		120	120	210	17 α
-135	SKN 130	P1/150		150	120	210	17 b
-195	SKN 240	P1/150		150	120	210	17 b
-250	SKN 320	P1/200		200	120	210	17 c
-335	SKN 320	P4/200		200	170	270	20 α
-520	SKN 1500	P11/200		200	176	275	21 α
-790	SKN 2000	U3/250		250	220	295	24

**DIODI
DI STRINGA**

**STRING
DIODES**



04

**Diodi di blocco per stringhe degli
impianti fotovoltaici.**

String diodes for photovoltaic panels.

**CARATTERISTICHE
TECNICHE COME
PUNTI DI FORZA**

- > Personalizzabile nelle dimensioni
- > Personalizzabile nei valori di corrente
- > Ingombro ridotto rispetto alle prestazioni
- > Possibilità di montaggio su guida DIN
- > Vf molto bassa (1 V)
- > Id 20 A continuativi per singolo diodo

**CAMPI DI
APPLICAZIONE**

- > Sistemi fotovoltaici

OCRAM si distingue per questi plus di prima qualità: la capacità di **personalizzare ogni strumento modellandolo sulle esigenze del cliente anche per pezzi singoli**; l'assoluta **sicurezza in fase operativa** che garantisce l'incolumità da qualsiasi danno; **la puntualità nelle consegne** (zero delay policy) e una accurata assistenza al cliente pre e post vendita.

PUNTI DI FORZA ED APPLICAZIONI



PANNELLI
FOTOVOLTAICI

TECHNICAL SPECS AS STRENGTHS	<ul style="list-style-type: none"> > Customized dimensions > Customized Id values > Reduced overall dimensions > DIN rail clip available > Low Vf (1 V) > 20 A maximum continuous current for single diode
APPLICATION FIELDS	<ul style="list-style-type: none"> > Solar Systems

OCRAM provides its customers with the highest quality standards.

We can satisfy our customers' needs by **dimensionally customizing our devices, guaranteeing the most accurate operational safety standards**, in pursuing a **zero delay policy** and ensuring a total customer care.

STRENGTHS AND APPLICATIONS



SOLAR
ENERGY

DIODI DI STRINGA

STRING DIODES

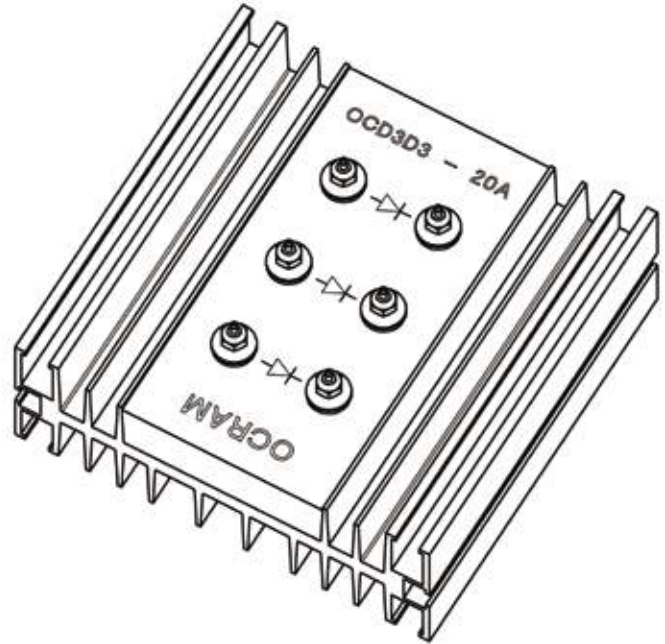
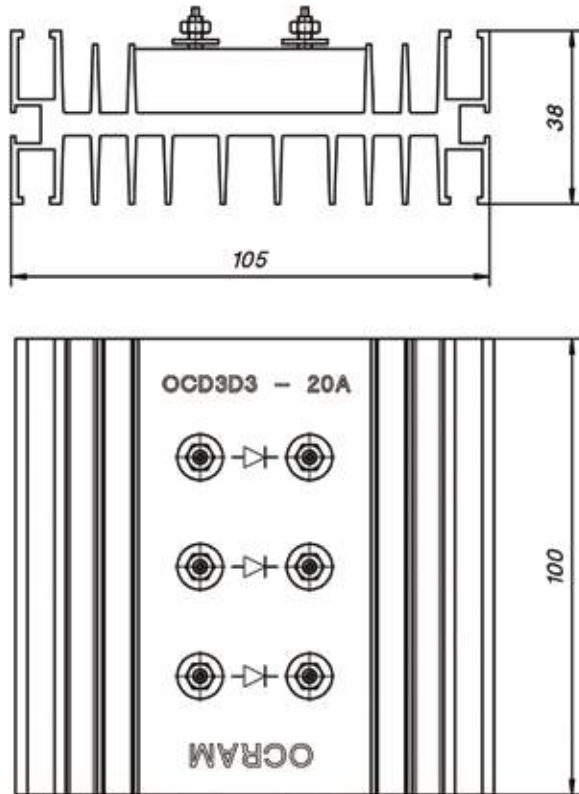
TECHNICAL DATA

DS_OCR_07
REV. 00 - 18/05/2011

Symbol	Parameters	Conditions	Values	Units
OCD3D3-20A				
VL	Maximum voltage string	T 150°C	1000	V
Vrrm	Repetitive peak reverse voltage (IEC60364-7-712)	Tj 175°C	2000	V
Vf	Forward voltage	If = 20A	1	V
Iavg	Maximum continuous current for single diode	Tamb. 40°C	20	A
Ifsm	Surge forward current	Tvj=25°C; 10ms	375	A
I ² t	I ² t value	Tvj=25°C; 10ms	700	A ² S
Tj (max)	Junction temperature		180	°C
Tcase (max)	Heatsink temperature		100	°C
Rth j-c	Thermal resistance junction to case		3	°C/W
Ird	Direct reverse current		max. 4	mA
Qrr	Recovered charge	Tvj=10°C; Vrd=Vrrm	20	uC
Tvj	Virtual junction temperature	Tvj=160°C; -df/dt=10A/μs	α -40 α + 180	°C
Visol	Insulation test voltage (r.m.s)		6000	V
	Size (L x W x H)		100x105x45	mm
	Weight		240	gr

OCD3D3-20A

DS_OCR_O7
REV.00 - 18/05/2011



TRIPLO DIODO DI STRINGA PER PANNELLI FOTOVOLTAICI

Questo modulo è stato progettato per agevolare progettisti ed installatori di impianti fotovoltaici **nel montaggio del diodo di blocco** sulle stringhe dei pannelli fotovoltaici.

Il modulo comprende tre diodi di stringa singoli inglobati su radiatore anodizzato offrendo la massima flessibilità di configurazione. **Tale modulo è stato progettato per la protezione di tre stringhe fotovoltaiche indipendenti** ed è l'ideale per essere impiegato in applicazioni con inverter multistringa.

Il modulo può essere utilizzato in configurazione con tre diodi in parallelo, quindi come unico diodo di stringa **in grado di portare una corrente continuativa di 60A a 40° C con soli 54W di potenza dissipata.**

Inoltre può essere utilizzato con i tre diodi in serie per applicazioni in alta tensione a **3KV 20A.**

TRIPLE STRING DIODE FOR PHOTOVOLTAIC PANELS

*This module is designed to assist designers and installers of photovoltaic systems **in the assembly of block diodes on strings of photovoltaic panels.***

*The module includes three single-string diodes incorporated into an anodised heatsink, offering maximum configuration flexibility. **This module is designed for the protection of three independent photovoltaic strings,** and is suitable for use in applications with a multi-string inverter.*

*The module can be used in a configuration with the three diodes in parallel - i.e. as a single-string diode **with the capacity to carry a continuous current of 60A at 40° C with just 54W of dissipated power.***

*In addition, it can be used with the three diodes in series for high-voltage applications at **3KV 20A.***

DIODI DI STRINGA

STRING DIODES

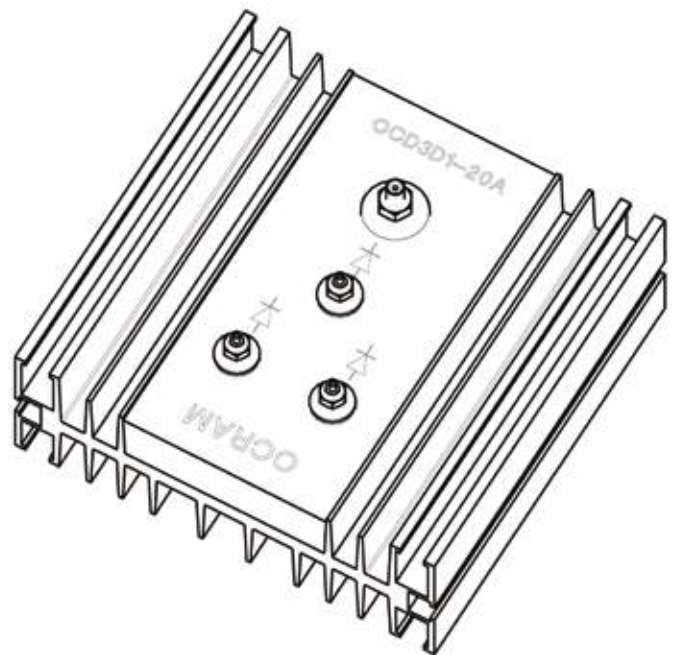
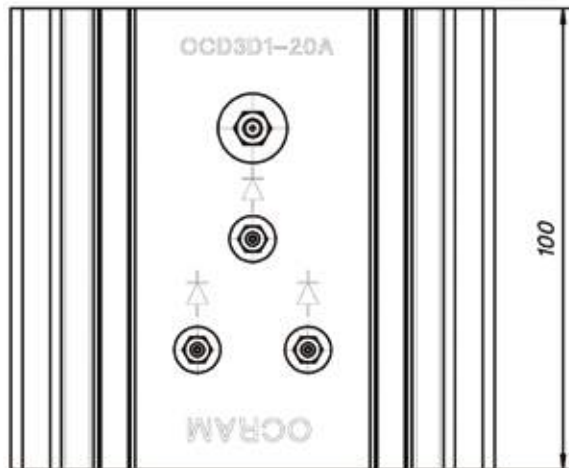
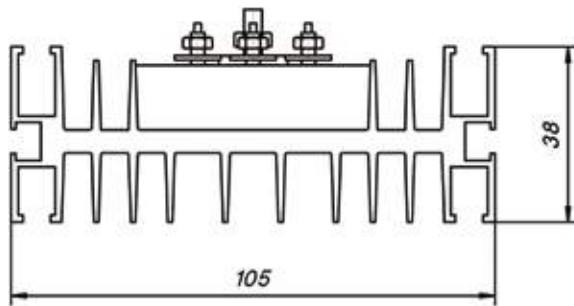
TECHNICAL DATA

DS_OCR_07
REV. 00 - 18/05/2011

Symbol	Parameters	Conditions	Values	Units
OCD3D1-20A				
VL	Maximum voltage string	T 150°C	1000	V
Vrrm	Repetitive peak reverse voltage (IEC60364-7-712)	Tj 175°C	2000	V
Vf	Forward voltage	If = 20A	1	V
Iavg	Maximum continuous current for single diode	Tamb. 40°C	20	A
Ifsm	Surge forward current	Tvj=25°C; 10ms	375	A
I ² t	I ² t value	Tvj=25°C; 10ms	700	A ² S
Tj (max)	Junction temperature		180	°C
Tcase (max)	Heatsink temperature		100	°C
Rth j-c	Thermal resistance junction to case		3	°C/W
Ird	Direct reverse current		max. 4	mA
Qrr	Recovered charge	Tvj=10°C; Vrd=Vrrm	20	uC
Tvj	Virtual junction temperature	Tvj=160°C; -df/dt=10A/μs	α -40 α + 180	°C
Visol	Insulation test voltage (r.m.s)		6000	V
	Size (L x W x H)		100x105x45	mm
	Weight		240	gr

OCD3D1-20A

DS_OCR_O7
REV.00 - 18/05/2011



TRIPLO DIODO DI STRINGA PER PANNELLI FOTOVOLTAICI

Questo modulo è stato progettato per agevolare progettisti ed installatori di impianti fotovoltaici nel montaggio del diodo di blocco sulle stringhe dei pannelli fotovoltaici.

Il modulo comprende tre diodi di stringa singoli inglobati su radiatore anodizzato offrendo la massima flessibilità di configurazione.

Tale modulo è stato progettato per la protezione di tre stringhe fotovoltaiche con uscita a catodo comune, ideale per applicazioni in inverter monostringa.

TRIPLE STRING DIODE FOR PHOTOVOLTAIC PANELS

This module is designed to assist designers and installers of photovoltaic systems in the assembly of block diodes on strings of photovoltaic panels.

The module includes three single-string diodes incorporated into an anodised heatsink.

This module is designed for the protection of three photovoltaic strings with a shared cathode outlet, and is suitable for applications with a mono-string inverter.

RC

SNUBBERS



05

Gli OCRC 440/440-2 sono soppressori (resistenza + condensatore) economici adatti ad applicazioni per carichi di corrente fino a 500 A RMS.

OCRC 440/440-2 are economic RC snubber networks for up to 500 A RMS load current applications.

**CARATTERISTICHE
TECNICHE COME
PUNTI DI FORZA**

- > Basso costo
- > Funzionamento fino a 440 V
- > Dimensioni compatte
- > Modulo incapsulato
- > Facilità di montaggio

Gli **OCRC 440/440-2** sono **soppressori** (resistenza + condensatore) economici adatti ad applicazioni per **carichi di corrente fino a 500 A RMS**.

Questi moduli **sono principalmente indicati per limitare i picchi di tensione che possono danneggiare gli SCR**.

Inoltre favoriscono l'innesco degli SCR utilizzati per bassi livelli di carichi induttivi.

PUNTI DI FORZA ED APPLICAZIONI



AC/DC

ALIMENTATORI



CONTROLLO
MOTORI



TRASPORTO



ENERGIA
EOLICA

**TECHNICAL SPECS
AS STRENGTHS**

- > Low cost
- > 440 V operation
- > Compact dimensions
- > Encapsulated module
- > Easy mounting

OCRC 440/440-2 are economic RC snubber networks for up to 500 A RMS load current applications.

The modules are **primarily designed to limit the rate of rise of voltage spikes which may exceed the Dv/Dt rating of SCR's.**

Besides protection the module will also assist in latching SCR's used for low level inductive load currents.

STRENGTHS AND APPLICATIONS



AC/DC

POWER
SUPPLIES



MOTOR
DRIVES



TRANSPORT
EQUIPMENT



WIND
ENERGY

RC

SNUBBERS

DS_OCR_10
REV. 00 - 10/02/2015

Operating Voltages	Operating Frequency	Weight	Temperature Range	Mounting	Connections
OCRC 440					
440V RMS ± 10%	50/60 Hz	100 gr.	-40°C to +50°C	Clamps	300 mm wires



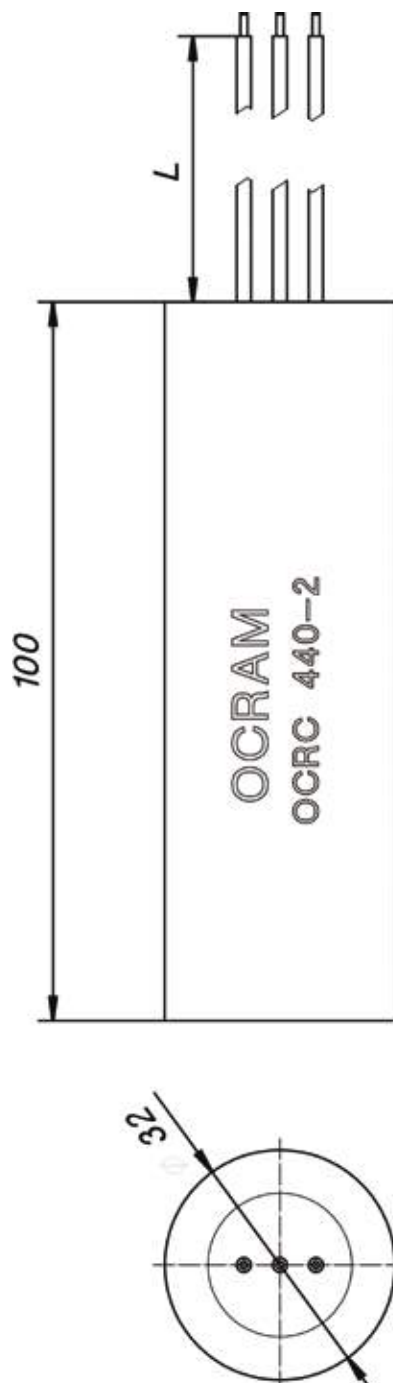
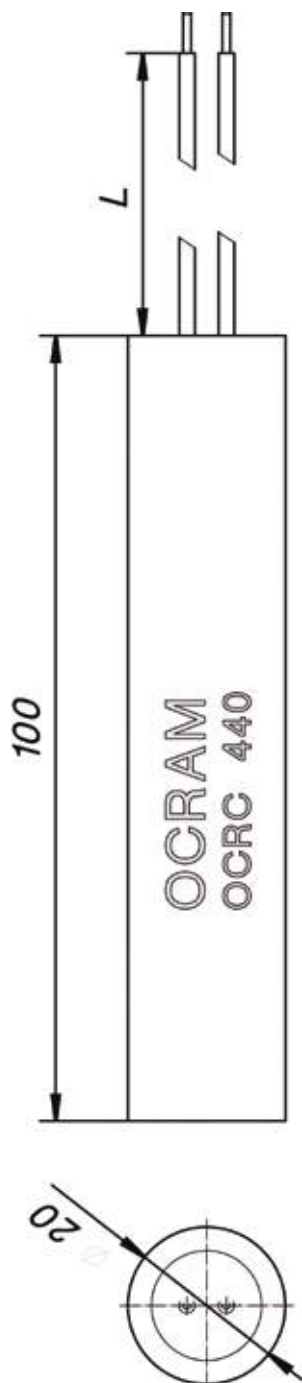
OCRC 440 Unit with single RC Network



OCRC 440-2 Unit with Double RC Network

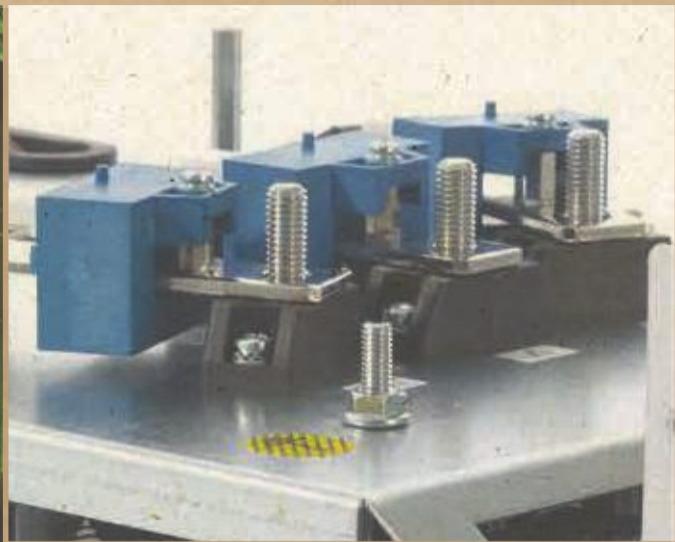
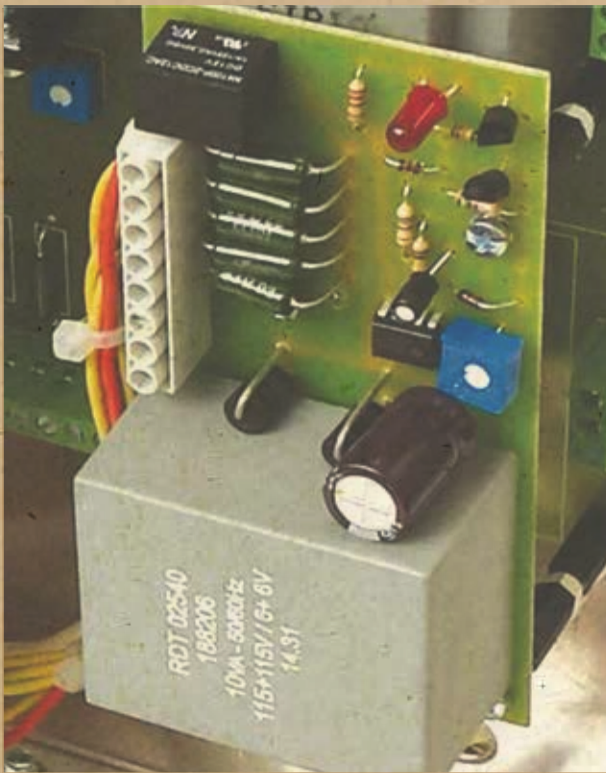
OCRC 440 / 440-2

DS_OCR_10
REV.00 - 10/02/2015



SERVIZI

CUSTOM MADE PRODUCTS



06

Prodotti realizzati su specifiche del cliente.

Custom devices based on customers' own specifications.

SERVIZI

Un team di professionisti al vostro servizio

Ocram è composta da un team di professionisti e personale altamente qualificato che quotidianamente svolge un'importante attività in tema di sviluppo e innovazione su tutta la linea produttiva.

L'importante know-how sviluppato negli anni, dall'assemblaggio, test e collaudo, alla manutenzione e riparazione, ci permette oggi di offrire una serie di servizi che si affiancano al nostro core business.

Tra questi la personalizzazione di prodotto assume notevole importanza proprio in un'ottica di soddisfazione del cliente.

I nostri servizi:

- > **Produzione inverter e alimentatori di potenza;**
- > **Assemblaggio Inverter e Convertitori;**
- > **Precollaudo e Collaudo Inverter e Convertitori;**
- > **Driver per stacks trifase;**
- > **Produzione diodi per applicazioni custom;**
- > **Manutenzioni e riparazioni anche su assemblati non di nostra produzione.**

Outsourcing

In mercati sempre più complessi, si rende necessario per le aziende disporre di strutture organizzative flessibili, deverticalizzate e disponibili ad instaurare accordi di collaborazione con operatori esterni.

In tale prospettiva Ocram si pone come valido partner mettendo a disposizione la propria professionalità e competenza maturate nel campo dell'elettronica di potenza offrendo assemblaggio, collaudo, assistenza e personalizzazione di prodotti di terze parti.

Attualmente collaboriamo con importanti realtà nello sviluppo di impianti per il settore eolico.

SERVICES

A team of professionals at your service.

Ocram is formed by a team of highly qualified professionals and staff who work hard to develop the entire production line and to introduce cutting-edge innovations.

The significant know-how developed over the years, on everything from assembling and testing to maintenance and repair, today allows us to offer customers a series of services that run alongside our core business. Among these, product customisation is particularly important with regard to customer satisfaction.

Our Services:

- > Inverter and power supplies production;*
- > Inverter and Converter Assembly;*
- > Inverter and Converter Pre-testing and Testing;*
- > Drivers for TriPhase Stacks;*
- > Photovoltaic diode string production for custom applications;*
- > Maintenance and repairs, even for assemblies produced by other companies.*

Outsourcing

In increasingly complex markets, companies need to have flexible business structures that enable them to establish partnership agreements with external operators.

Ocram presents itself as an ideal business partner due to its professionalism and experience in the power electronics field, offering assembly, testing, assistance and customisation of third party products.

We currently collaborate with leading companies on the development of systems for the wind energy sector.



Certificato di Garanzia Mondiale

Tutti i prodotti realizzati da Ocram, sono coperti da una garanzia di

5 ANNI

dal momento della consegna al cliente.

La garanzia è attiva a condizione che il cliente verifichi l'integrità del prodotto non appena aperto l'imballo ed effettui relativa contestazione entro 30 giorni dal ricevimento. Qualora ci fossero segni visibili di danneggiamento **NON INSTALLARE IL PRODOTTO** e contattare Ocram.

Al verificarsi di un difetto di funzionamento, Ocram fornirà il servizio di riparazione del prodotto difettoso o la sostituzione dello stesso in maniera gratuita.

Limitazioni alla garanzia

La garanzia **NON È APPLICABILE** nei seguenti casi:

- difetti attribuibili a noncuranza, incidente o uso improprio del prodotto; danno risultante da atti impropri o dimenticanze, comprese azioni illegali o negligenza;
- danni causati dalla sostituzione di parti interne al prodotto in autonomia e non da parte dei tecnici Ocram;
- difetti derivanti dalla sostituzione di parti con altre non fornite direttamente da Ocram;
- qualunque altro tipo di modifica al prodotto - riparazioni sommarie non eseguite dal personale Ocram o approvate da Ocram;
- difetti presunti, che non siano diretto risultato di difetti di produzione o non interessano la qualità o la funzionalità del prodotto.

Per ulteriori informazioni e per richiedere assistenza, scrivere una mail a info@ocramitaly.it, contattare il numero +39 0444 946448 oppure inviare un fax al numero +39 0444 298900.





Worldwide Warranty Statement

All the products manufactured by OCRAM are covered for

5 YEARS

Since when the products are delivered to the customer. It is a customer duty to verify the product's integrity when unpacking.

Complaints are accepted within 30 days upon receiving the goods. If there are clear signs of usage or damage DON'T PLUG it in, but contact Ocram.

In case a fault occurred, Ocram will provide its service to fix the defected item, or to replace it for free.

Limited coverage

The warranty IS NOT APPLICABLE in the following cases:

- defects that are attributable to carelessness handling, accident or improper usage;
- damage occurring as a result of any improper act or omission, including illegal actions or negligence;
- damage occurring as a result of the self replacement of parts and without Ocram approval;
- defects arising from the replacement of parts with other ones which are not provided by Ocram;
- any other modification to any repair not performed by Ocram technicians or approved by Ocram;
- alleged defects, not directly linked to the manufacturing process or which do not affect quality and functionality of the products.

For further information or to request assistance, mail to info@ocramitaly.it, call the number +39 0444 946448 or send a fax to the number +39 0444 298900.





Mod. SM 1.4

CSI SpA
Sede Legale
20030 Senago - MI - I
Cascina Traversagna 21

Direzione, Ufficio e Laboratori
20021 Bollate - MI - I
Viale Lombardia 20
Tel. +39 02 383301
Fax +39 02 3503940
www.csi-spa.com



CSI
CERT



UNI EN ISO 9001
UNI EN ISO 9004
UNI EN ISO 14001
UNI EN ISO 14004
UNI EN ISO 19011
UNI EN ISO 19011
Sede e Uffici principali
di Milano, Bologna, Padova, Roma, Torino, Venezia
Sede legale di Via, 488 anno 1401
Mandat (Mandatnummer, Registrierungsnummer)

Certificato n°: Certificate n.:	SQ062430/A	Settore EA: EA Sector:	19
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Si certifica che il sistema di gestione per la qualità di / we hereby certify that the quality management system operated by

OCRAM Srl

Sede legale / Registered office

Via Rovigo, 1 - 36031 Dueville (VI) - Italia

Unità operativa di / Place of business

OCRAM Srl

Via Rovigo, 1 - 36031 Dueville (VI) - Italia

È conforme alla norma: Is compliance with the standard:	UNI EN ISO 9001:2008
--	-----------------------------

Per i seguenti servizi / processi / prodotti - Concerning the following services / processes / products

Progettazione e fabbricazione di dispositivi a semiconduttore.

Design and manufacturing of semiconductor devices.

Il presente certificato è soggetto al rispetto del regolamento di CSICERT per la certificazione dei sistemi di gestione per la qualità delle organizzazioni. Riferirsi al manuale qualità per i dettagli delle eventuali esclusioni dei requisiti della UNI EN ISO 9001:2008. Per informazioni puntuali e aggiornate circa eventuali variazioni intervenute nello stato di validità della certificazione di cui al presente certificato, si prega di contattare CSI S.p.A.

This certificate is subject to the compliance with CSICERT regulation for the organization of quality management systems certification. Refer to the quality manual for details on UNI EN ISO 9001:2008 requirements exclusions. For updated information related to validity status of the certification within this certificate, please refer to contact CSI spa.

17/11/2009	13/11/2012	21/01/2015	12/11/2015
Rilascio Issued	Rinnovo Renewal	Aggiornamento Update	Scadenza Expiry



Ing. R. Gatti
Amm. Delegato/Managing Director



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PARTNERS

Abbiamo partners affidabili con comprovata esperienza nel settore dell'elettronica di potenza.

Le collaborazioni in atto creano sinergie che ci permettono di offrire **prodotti e servizi di alta qualità.**

ALCUNI DEI NOSTRI CLIENTI:

***We have reliable partners** with proven experience in the power electronic sector.*

*Our current partnerships create synergies that allow us to offer **High quality products** and services to our customers.*

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CONTATTI

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