



**POWER ELECTRONICS**

— SINCE 1999 —



**POWER ELECTRONICS**

**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**

## 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

## > TECHNICAL DATA

DS\_OCR\_O3  
REV.00 – 22/04/2010

V <sub>RRM</sub>	V <sub>(BR)</sub>	V <sub>VRMS</sub>	Types	I <sub>FAV</sub> T <sub>amb</sub> = 45°C A	I <sub>FAV</sub> T <sub>oil</sub> = 45°C A	I <sub>FN</sub> T <sub>amb</sub> = 45°C A	V <sub>F</sub> I <sub>F</sub> = 1A V	N	R <sub>thjα</sub> °C/W
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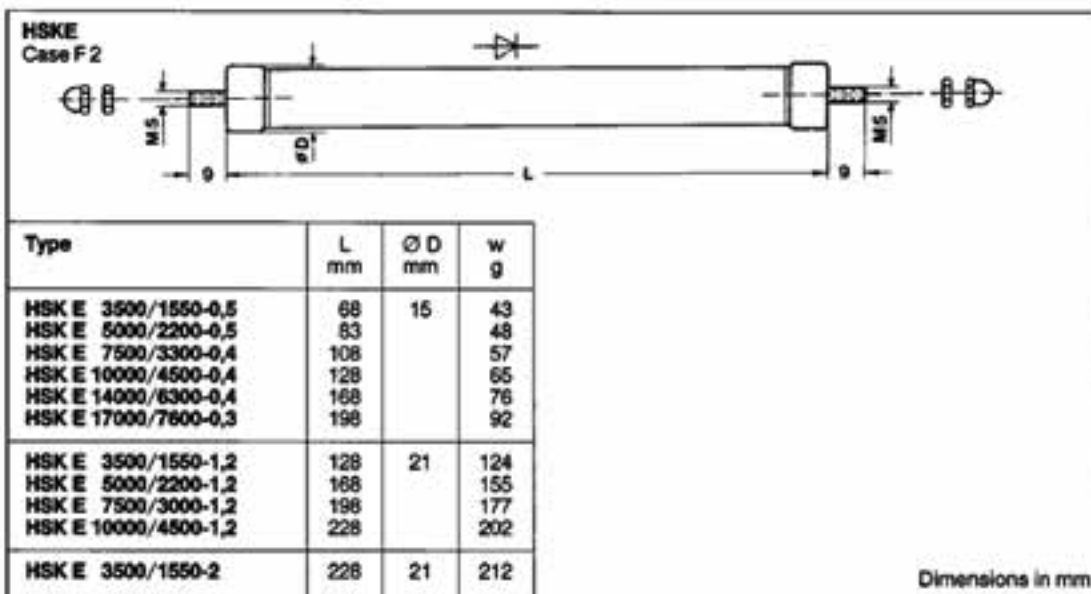
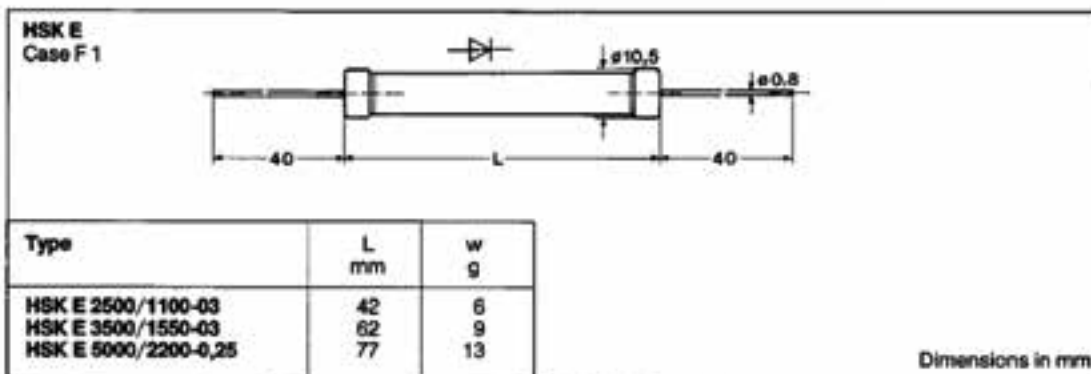
### > High Voltage Rectifiers < 50 KV HSK E

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 <sub>F(OV)</sub>	tp = 1 s tp = 100 ms	1 A 2,5 A	2 A 5 A	4 A 10 A
I <sub>FSM</sub>	T <sub>vj</sub> = 25 °C T <sub>vj</sub> = 150 °C	60 A 50 A	140 A 120 A	270 A 240 A
i <sup>2</sup> t	T <sub>vj</sub> = 25 °C T <sub>vj</sub> = 150 °C	18 A <sup>2</sup> s 12,5 A <sup>2</sup> s	100 A <sup>2</sup> s 72 A <sup>2</sup> s	365 A <sup>2</sup> s 290 A <sup>2</sup> s
I <sub>R</sub>	T <sub>vj</sub> = 25 °C: V <sub>R</sub> = V <sub>RRM</sub> T <sub>vj</sub> = 25 °C: tp = 10 μs	5 μA 0,5 A	5 μA 1 A	5 μA 2 A
I <sub>RSM</sub>	T <sub>vj</sub> = 150 °C: tp = 10 μs	0,5 A	0,8 A	1,6 A
T <sub>vj</sub> T <sub>stg</sub>		- 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

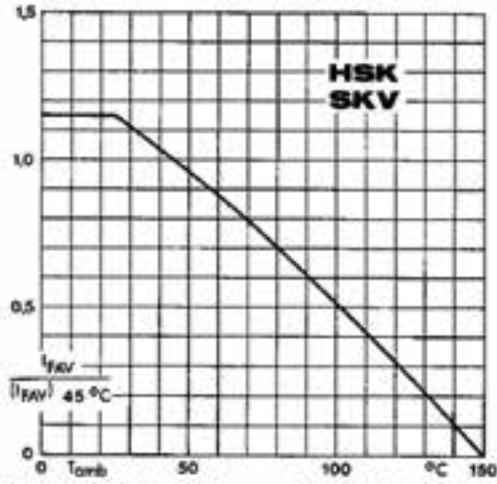


Fig. 1 Rated forward current vs. ambient temperature

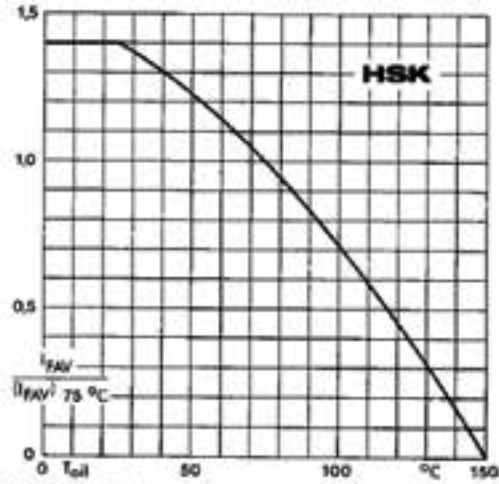


Fig. 2 Rated forward current vs. oil temperature

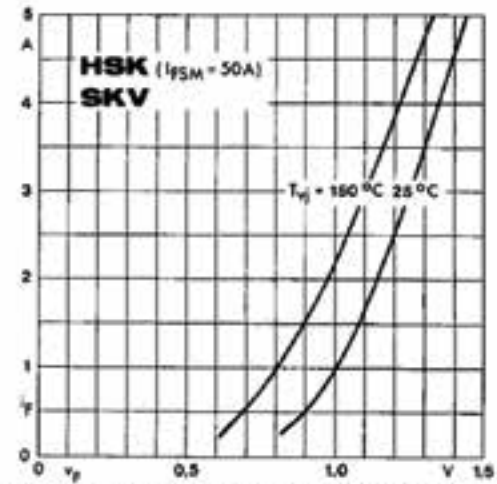


Fig. 5 a Forward characteristic of a single chip

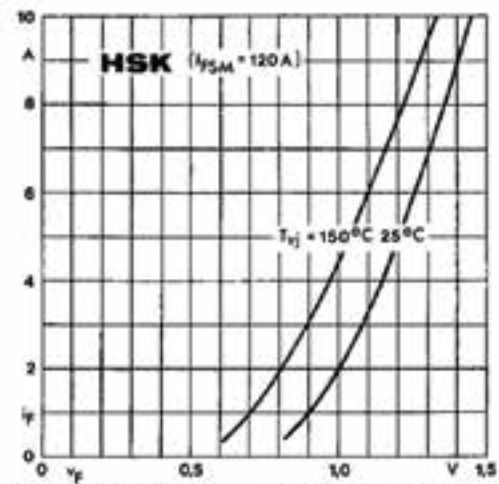


Fig. 5 b Forward characteristic of a single chip

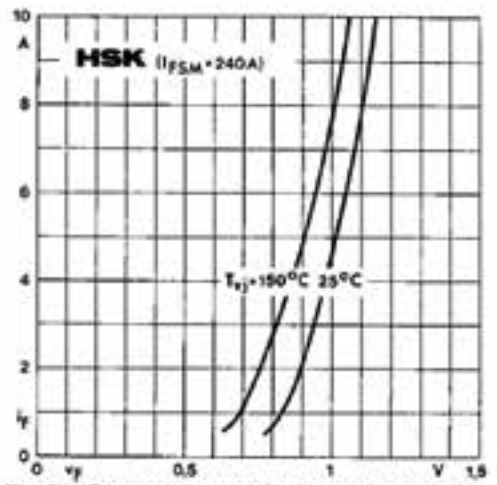


Fig. 5 c Forward characteristic of a single chip

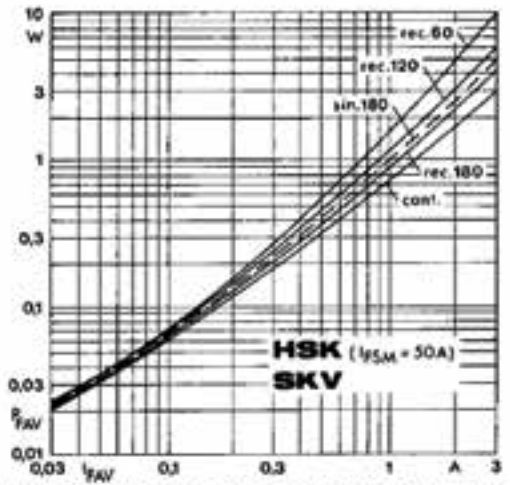


Fig. 6 a Power dissipation per chip vs. forward current



# < 50 kV HSK E

DS\_OCR\_O3  
REV.00 - 22/04/2010

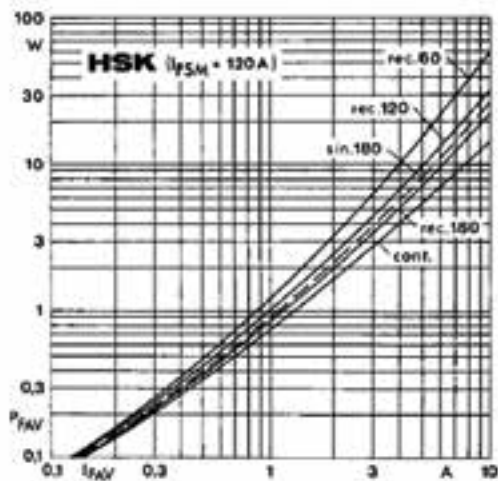


Fig. 6 b Power dissipation per chip vs. forward current

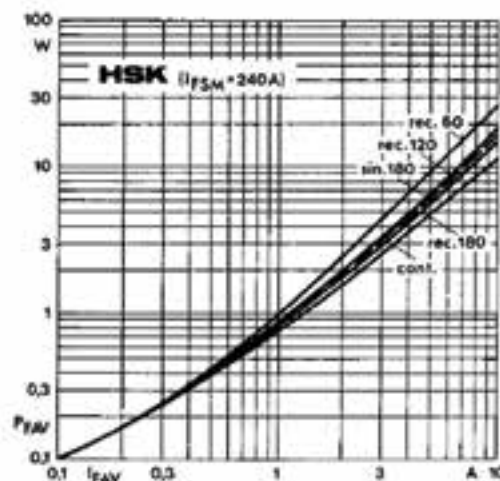


Fig. 6 c Power dissipation per chip vs. forward current

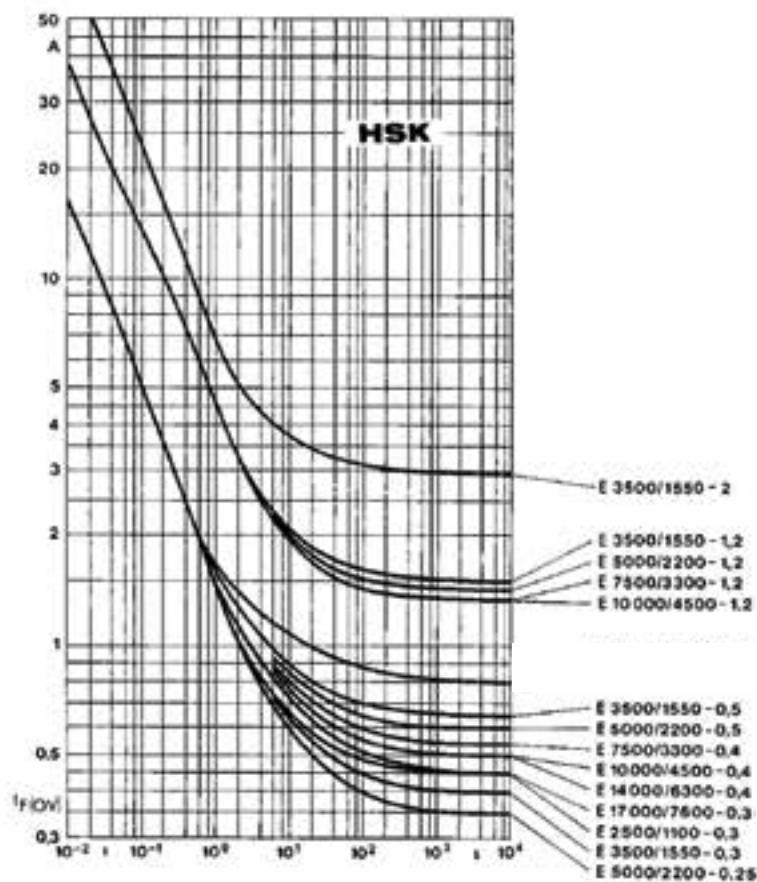


Fig. 9 Rated overload current vs. time

# DIODI AD ALTA TENSIONE

## HIGH VOLTAGE RECTIFIERS

### > TECHNICAL DATA

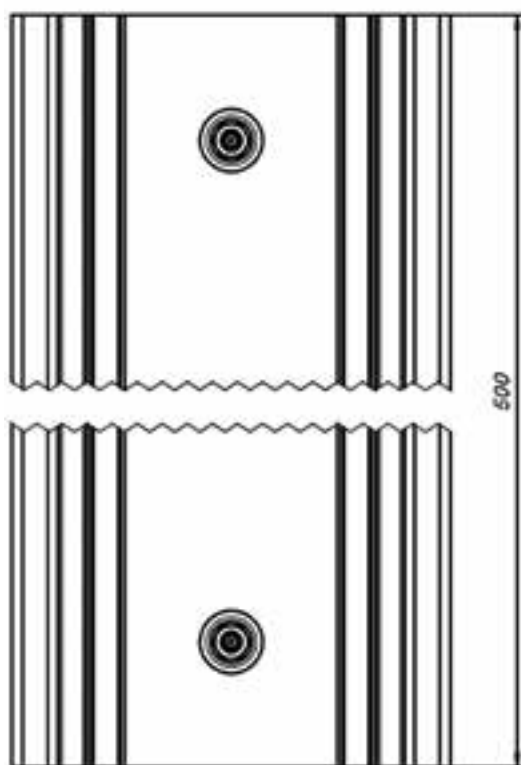
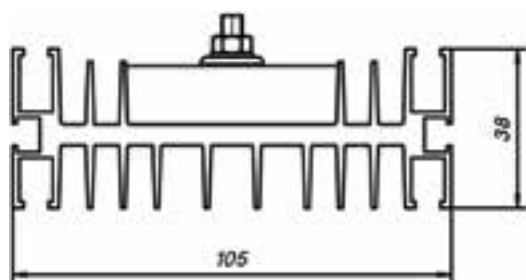
DS\_OCR\_08  
REV.00 - 10/02/2015

Symbol	Conditions	Values	Units
<b>&gt; HSKE 8000/3600-30 A</b>			
$I_{Fav}$	$T_{amb. 40^{\circ}C}$	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
$Visol$	$T_o$ 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\_08  
REV.00 - 10/02/2015

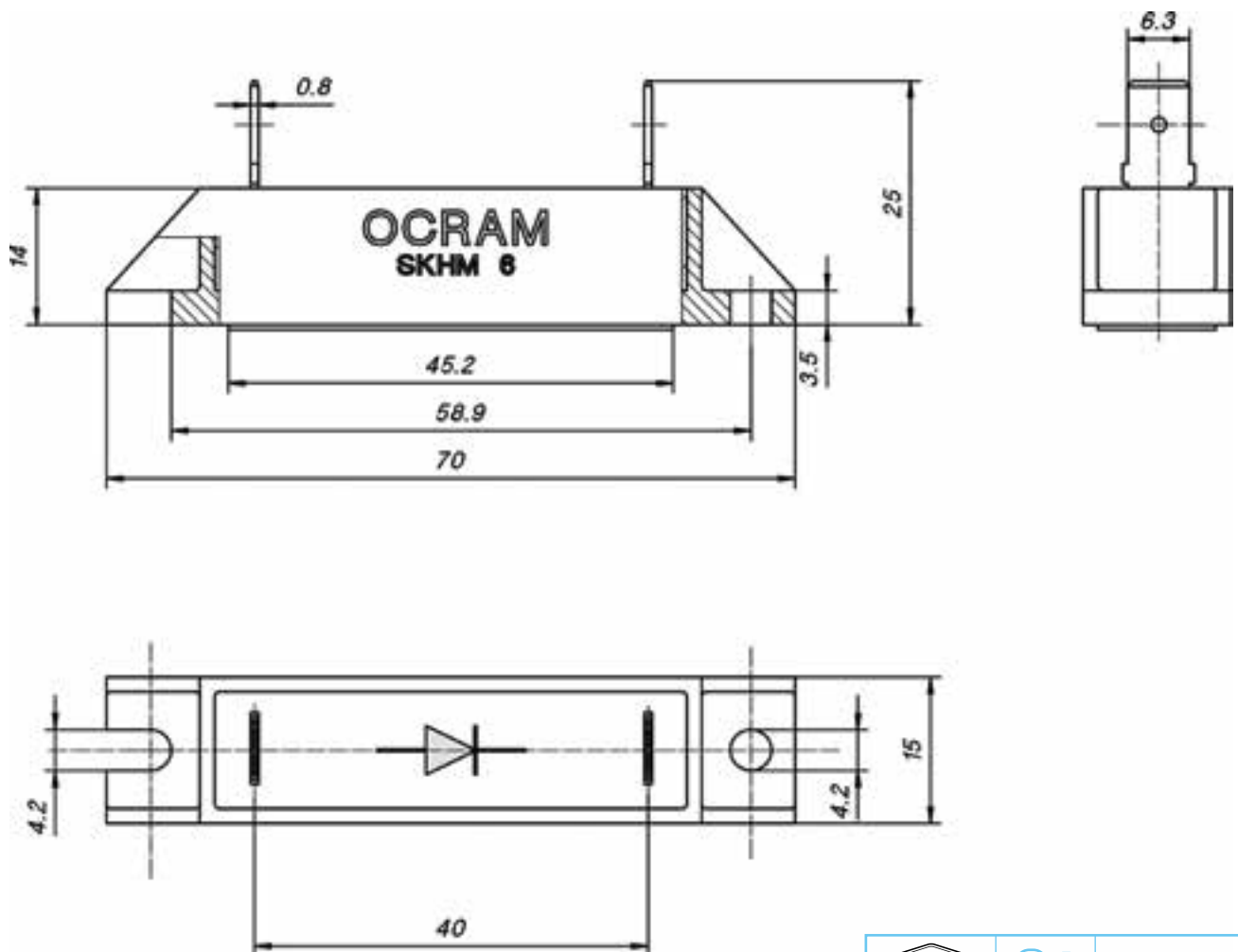
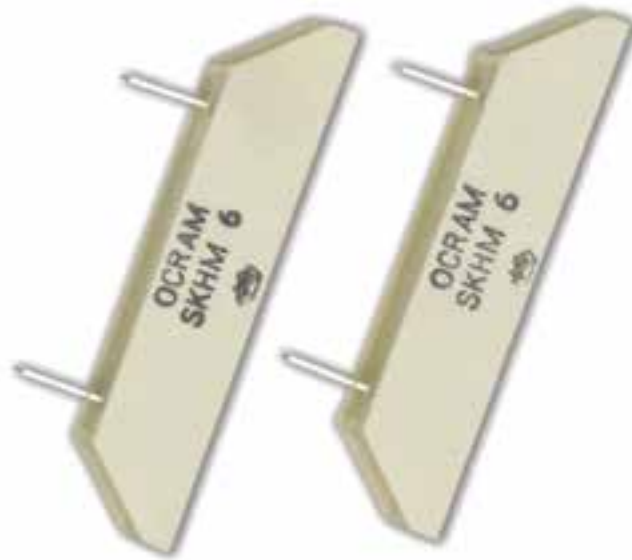


Parameters	Conditions	Values	Units
<b>SKHM6</b>			
V <sub>rsm</sub>		6000	V
V <sub>rrm</sub>		6000	V
I <sub>Fav</sub>	T <sub>case</sub> = 49°C, sin. 180°C	6,4	A
I <sub>Fav</sub>	T <sub>case</sub> = 45°C, rec. 180°C	7	A
I <sub>Frms</sub>		10	A
I <sub>Fsm</sub>	T <sub>vj</sub> = 25°C	60	A
I <sub>Fsm</sub>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



# < SKHM6

DS\_OCR\_09  
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 <sub>F</sub> I <sub>F</sub> = 30 A	N	R <sub>thjoil</sub>
V	V	V		V		°C/W

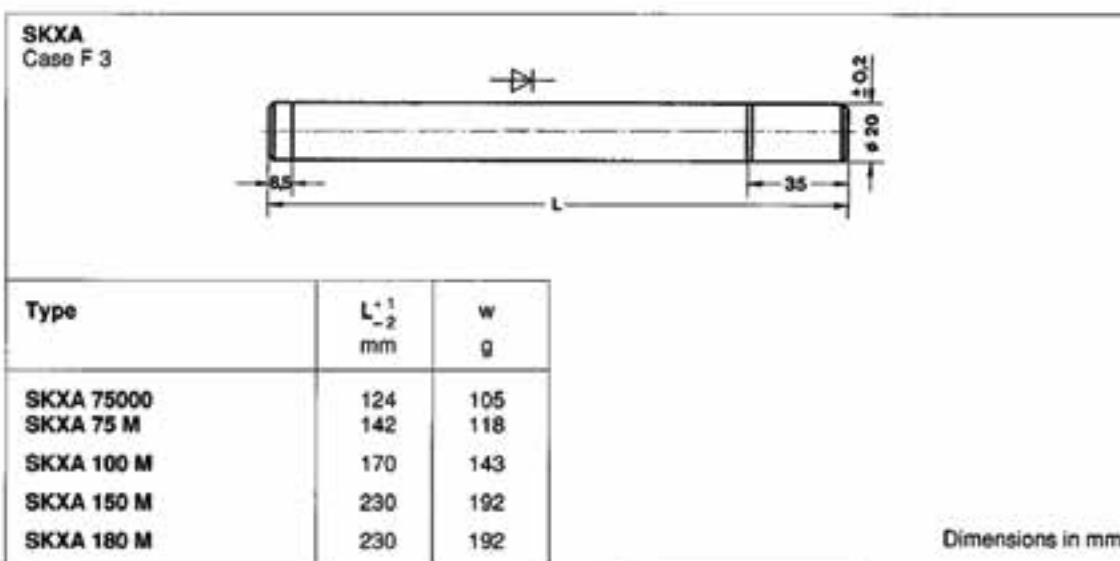
> **High Voltage Rectifiers 80 ÷ 180 KV SKXA**

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 <sub>FAV</sub>	T <sub>oil</sub> = 75°C	0,35 A
I <sub>FN</sub>	T <sub>amb</sub> = 45°C	0,28 A
I <sub>F(OV)</sub>	tp = 1s tp = 100 ms	2,6 A 7,5 A
I <sub>FSM</sub>	T <sub>vj</sub> = 25 °C; 10 ms T <sub>vj</sub> = 125 °C; 10 ms	100 A 90 A
i <sup>2</sup> t	T <sub>vj</sub> = 25 °C; 8,3 ... 10 ms T <sub>vj</sub> = 125 °C; 8,3 ... 10 ms	50 A <sup>2</sup> s 40 A <sup>2</sup> s
I <sub>R</sub>	T <sub>vj</sub> = 25 °C; V <sub>R</sub> = VRRM	1,5 μA
T <sub>vj</sub> T <sub>stg</sub>		- 40...+125 °C - 40...+125 °C
Case		F3

# 80 ÷ 180 KV SKXA

DS\_OCR\_O4  
REV.00 - 22/4/2010



# 80 ÷ 180 KV SKXA

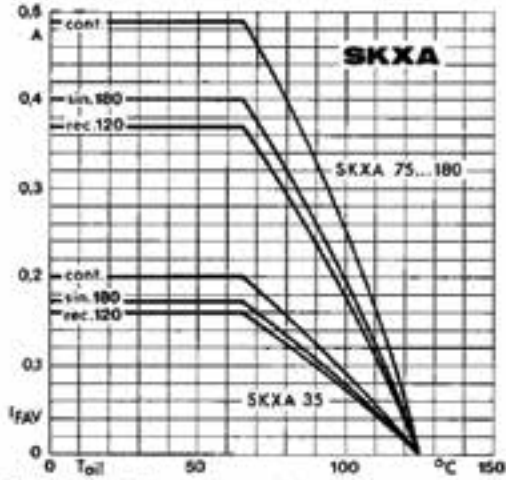


Fig. 3 Rated forward current vs. oil temperature

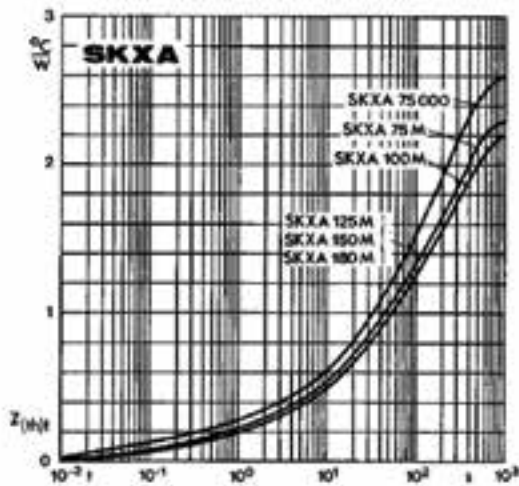


Fig. 4 b Transient thermal impedance vs. time

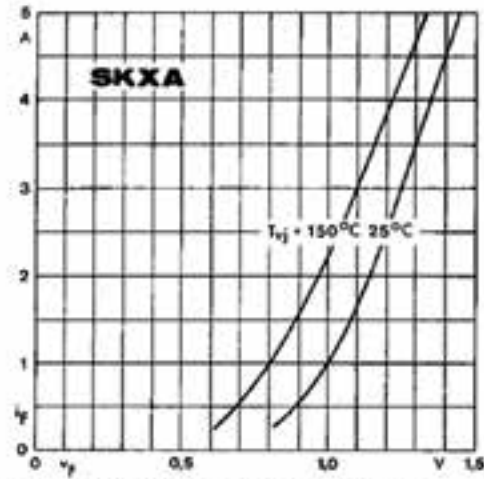


Fig. 5 Forward characteristic of a single chip

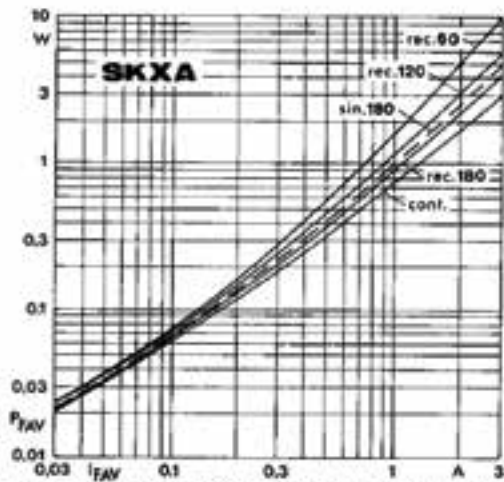


Fig. 6 Power dissipation per chip vs. forward current



# 80 ÷ 180 KV SKXA

DS\_OCR\_O4  
REV.00 - 22/04/2010

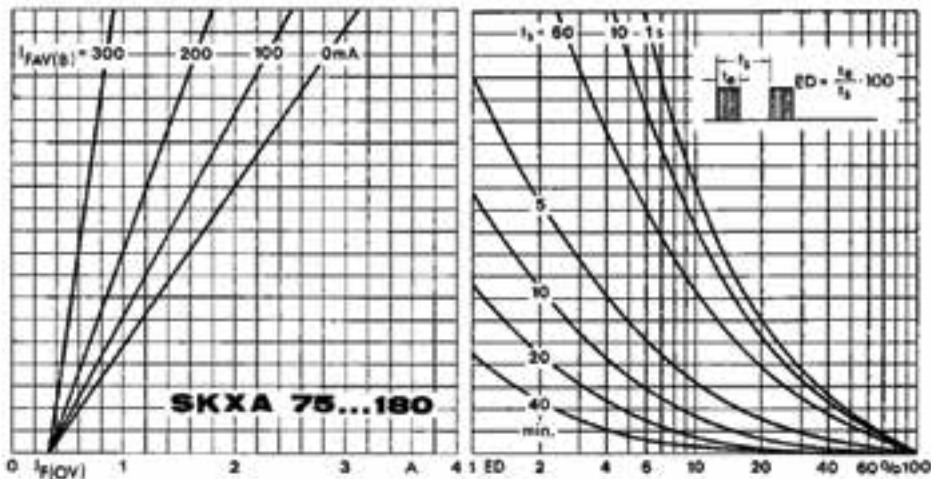


Fig. 7 Rated overload current vs. duty cycle

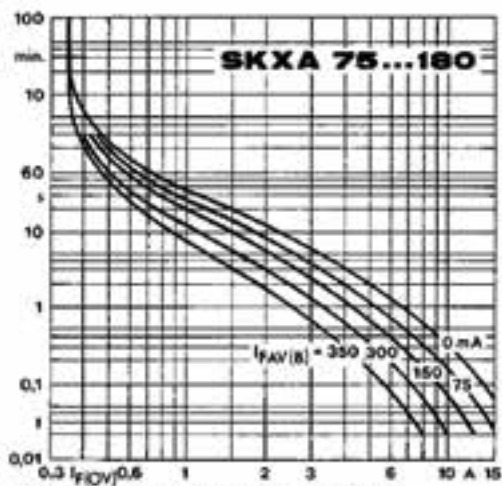


Fig. 8 Rated overload current vs. time