

SEMIKRON

Costruzioni Elettromeccaniche Horst

UFF. TECNICO

S7-1

52012 BIDDIGNA STAZIONE (AR)

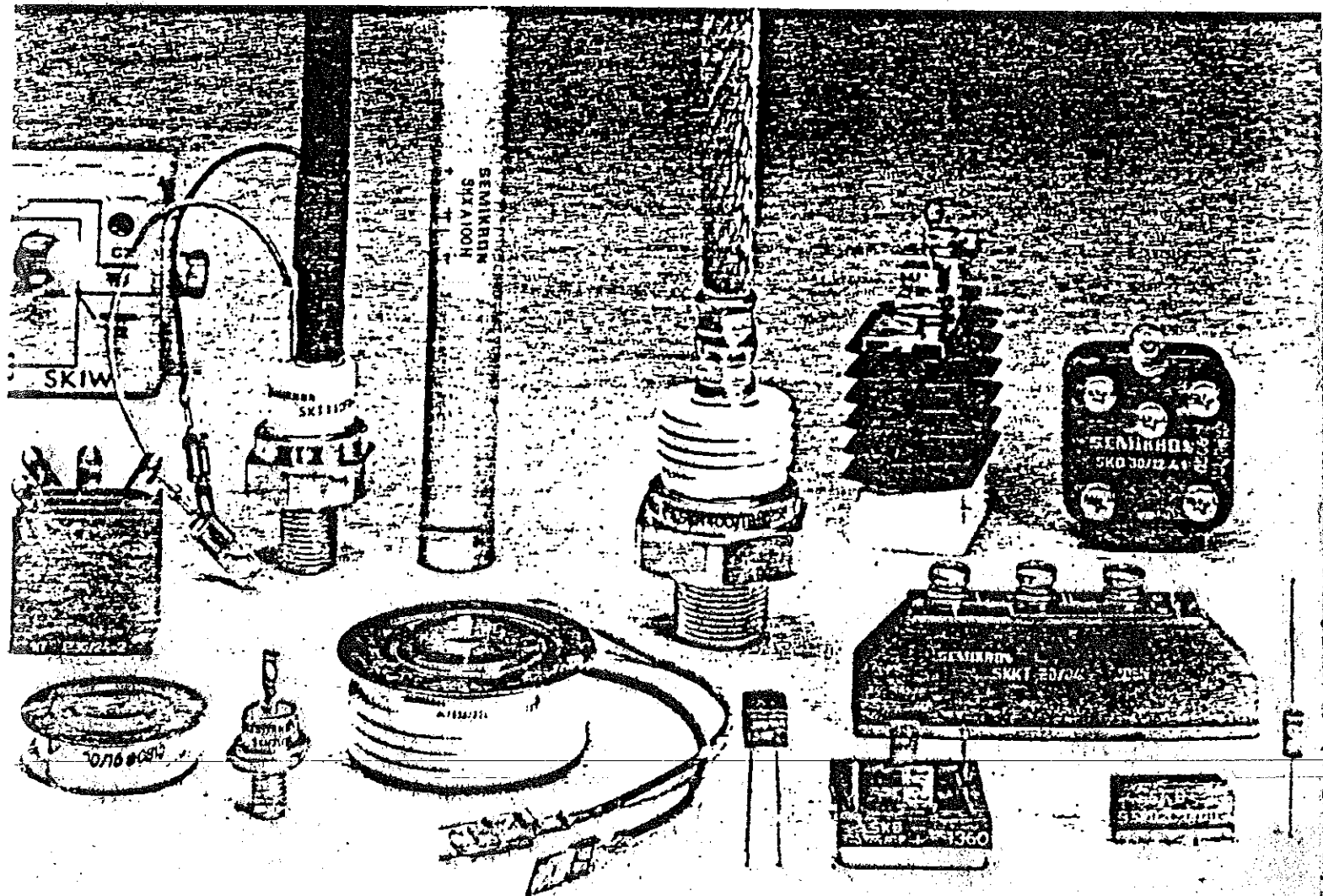
Condensed Catalogue

ONLY FOR P.V. 10

Gesamtkatalog

Catalogue condensé

1979/80



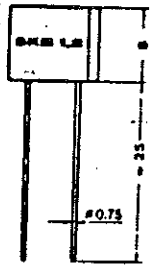
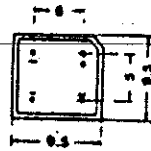
Compact silicon rectifiers
Single phase bridges

Silizium-Kompaktgleichrichter
Einphasen-Brücken

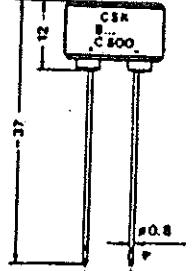
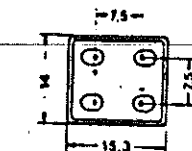
Types Typen Types	V _{RSM} V	V _{RRM} V	V _{VRMS} V	C _{max} μF	R _{min} Ω	Cooling (Kühlung) Refröidissement ¹⁾	I _b T _{amb} = 45°C A	I _{bcl} A	I _{FSM} 10 ms, T _{vj} max A	I ² t A ² s	T _{vj} max. °C	R _{thjc} °C/W	R _{thja} °C/W
SKB 1,2/01 /02 /04 /08 /12	120 200 400 800 1250	120 200 400 800 1250	40 60 125 250 500	5000 3300 1600 800 400	0,5 0,8 1,5 3 6	I	1,2	1	50	12,5	150		42
CSK B 40 C 800 B 80 C 800 B 250 C 800 B 500 C 800	120 400 800 1250	120 400 800 1250	40 125 250 500	1000 500 300 100	0,5 1,5 3 6	I	1,2	1	50	12,5	120		30
CSK B 40 C 1200 B 80 C 1200 B 250 C 1200 B 500 C 1200	120 400 800 1250	120 400 800 1250	40 125 250 500	2000 1000 500 200	0,5 1,5 3 6	I	1,5	1,2	50	12,5	120		25
SKB B 40 C 1000 L5B B 80 C 1000 L5B B 250 C 1000 L5B B 500 C 1000 L5B	120 400 800 1250	120 400 800 1250	40 125 250 500	5000 1600 800 400	0,5 1,5 3 6	{ I M	1,2 1,8	1 1,5	50	12,5	150		42
SKB B 40 C 1400 B 80 C 1400 B 250 C 1400 B 500 C 1400	120 400 800 1250	120 400 800 1250	40 125 250 500	7000 2200 1000 500	0,4 1,1 2,5 5	{ I M	1,7 2,5	1,4 2	70	24,5	150		30
SKB 2/02 L5A /04 L5A /08 L5A /12 L5A	200 400 800 1200	200 400 800 1200	60 125 250 500	3000 2200 1000 500	1 1,5 3 6	{ I M	1,7 2,5	1,4 2	50	12,5	150		30
SKB B 40 C 3200/2200 B 80 C 3200/2200 B 250 C 3200/2200 B 500 C 3200/2200	120 400 800 1250	120 400 800 1250	40 125 250 500	10000 3000 1700 800	0,25 0,8 1,8 3	{ I M	2,7 4	2,2 3,2	100	50	150		25
MSK B 80/ 70-1,5 B 250/220-1,5	400 800	400 800	80 250	- -	- -	I, M	2	-	50	12,5	150		23
SKB B 80/ 70-4 B 250/220-4 B 500/445-4	400 800 1250	400 800 1250	125 220 500		0,5 1 2	I, M	5	4	150	110	150		13
SKB 15/02 A 2 /04 A 2 /08 A 2 /12 A 2 /16 A 2	200 400 800 1200 1600	200 400 800 1200 1600	60 125 220 380 500		0,15 0,3 0,5 0,75 1	{ I M P5/100	5 11 17	4 9 14	320	500	150	1	12 4,3 2,7
SKB 25/01 /02 /04 /08 /08	100 200 400 600 800	100 200 400 600 800	35 60 125 220 300		0,1 0,15 0,3 0,5 0,7	{ I M P5/100 P1/120	3,5 10 13,5 17	3 9,5 11,5 14	320	500	150	2,0	15 4,7 3,55 2,75
SKB 30/02 A 1 /04 A 1 /08 A 1 /12 A 1 /16 A 1	200 400 800 1200 1600	200 400 800 1200 1600	60 125 220 380 500		0,15 0,3 0,5 0,75 1	{ I M P5/100 P1/120	6,5 15 21 29	6,0 13 17 24	320	500	150	0,7	8,5 3,3 2,2 1,4
SKB 50/02 A 3 /04 A 3 /08 A 3 /12 A 3 /16 A 3	200 400 800 1200 1600	200 400 800 1200 1600	60 125 220 380 500		0,1 0,2 0,3 0,4 0,5	{ I M P1/120 P1/105F	10 20 34 48	8 16 29 40	600	1800	150	0,65	5,7 2,5 1,3 0,9

1) I Freely suspended or mounted on an insulator
 M Mounted on a painted metal sheet 250 x 250 x 1 mm
 Freitragend oder auf Isolierplatte
 Auf Metallblech von mindestens 250 x 250 x 1 mm, lackiert
 Montage en l'air ou sur support isolant
 Montage sur plaque métallique peinte d'au moins 250 x 250 x 1 mm
 P... Mounted on heatsink
 P...F Mounted on heatsink with forced cooling T_{amb} = 35°C
 Auf Kühlprofil P
 Auf Kühlprofil P bei Fremdkühlung T_{amb} = 35°C

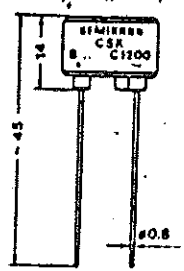
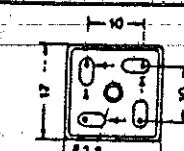
Redresseurs moulés au silicium
Ponts monophasés



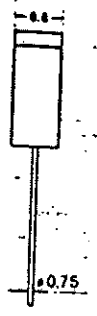
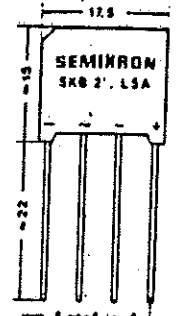
SKB 1,2
w = 3 g



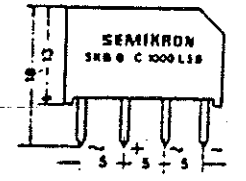
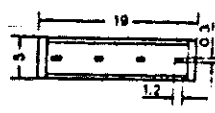
CSK B...C 800
w = 6 g



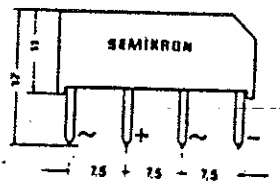
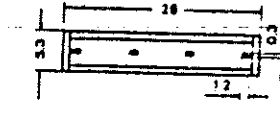
CSK B...C 1200
w = 9 g



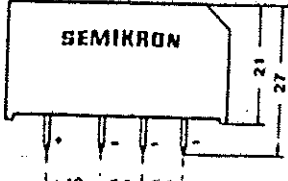
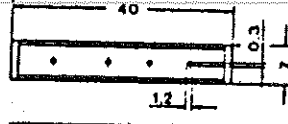
SKB 2/...L 5 A
w = 4 g



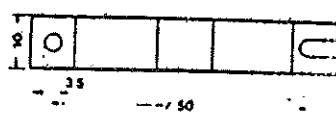
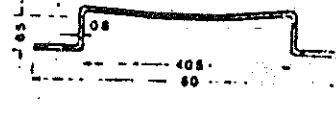
SKB B...C 1000 L5B
w = 2,5 g



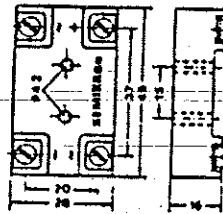
SKB B...C 1400
w = 3 g



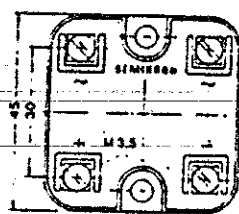
SKB B...C 3200/2200
w = 10 g



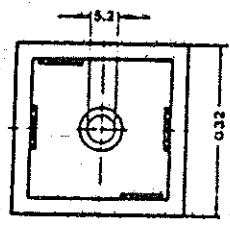
No. 31813400
Mounting clip, available on special order.
Haltebügel. Auf besondere Bestellung lieferbar.
Elmer de fixation.
Livraison sur demande.



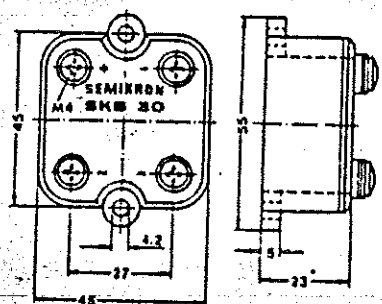
MSK B.../...-1,5
w = 35 g



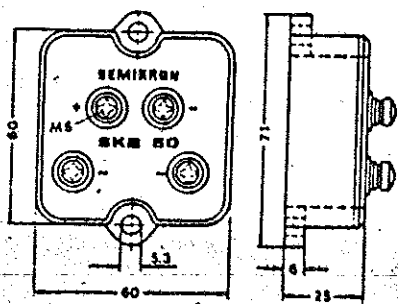
SKB B.../...-4
SKB 15/...A 2
w = 65 g



SKB 25
w = 24 g



SKB 30/...A 1
w = 125 g



SKB 60/...A 3
w = 250 g

Montage sur radiateur

Montage sur radiateur
P... avec ventilation
forcée
Temp = 35°C

Dimensions in mm
Made in mm
Dimensions en mm

SEMIKRON

Silizium -

Gleichrichterdiode

sowie Avalanche-Diode

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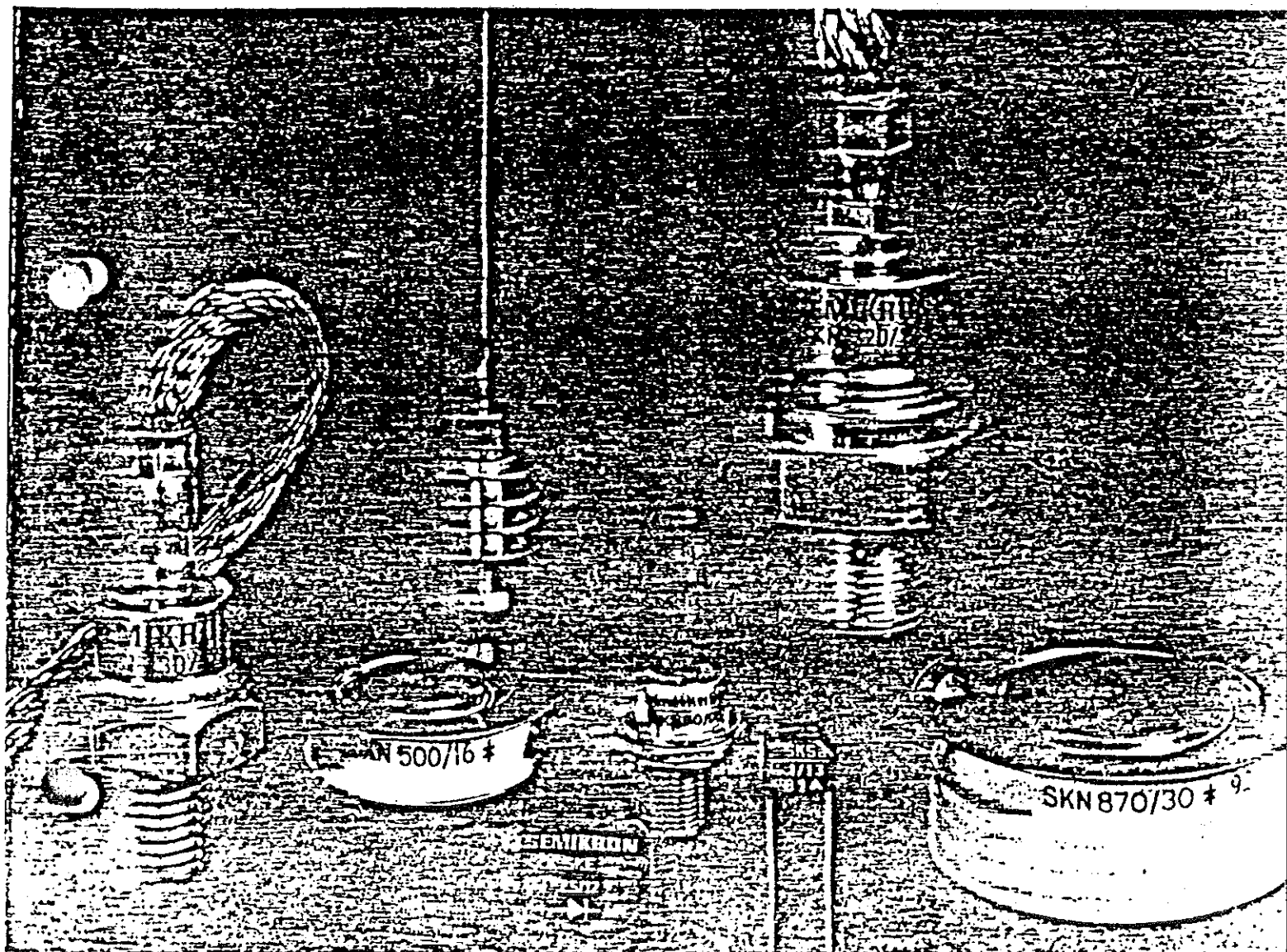
Silicon Rectifier Diodes

Including avalanche diodes

Diodes redresseuses

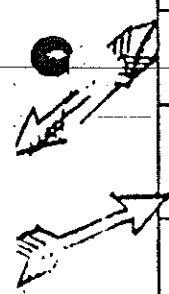
au silicium

et diodes à avalanche contrôlée



Übersichtstabelle - Abridged data - Tableau synoptique
 Gleichrichterdiodes Rectifier diodes Diodes redresseuses

Diode	V _{RRM}	I _{FRMS}	I _{FAV}	I _{FSM} (T _{vj,max})					Gehäuse Case Boîtier	
										I _d
1N4002 ... 4007 SN 113	100...1600 V	5 A	1,0 A	30 A	-	2 A	2,8 A			
SKE 1	120...1600 V	7 A	1,3 A	50 A	-	2,6 A	3,7 A			
SKS 1	120...1600 V	7 A	1,4 A	100 A	-	2,8 A	4 A			
SKE 2,5	120...1600 V	10 A	2,5 A	150 A	-	5 A	7 A			
SKN 2,5	200...1600 V	10 A	2,5 A	150 A	-	5 A	7 A			
SKN 5	200...1600 V	20 A	5,0 A	150 A	-	10 A	14,5 A			
SKN 12 SKR 12	400...1600 V	25 A	16 A	12,5 A	200 A	K 9	16 A	22,5 A		
SKN 20 SKR 20	200...1600 V	40 A	25 A	20 A	320 A	K 9 K 5 K 3	20 A 28 A 35 A	28,5 A 40 A 50 A		
SKN 26 SKR 26	200...1600 V	40 A	25 A	20 A	320 A	K 9 K 5 K 3	20 A 28 A 35 A	28,5 A 40 A 50 A		
SKN 45 SKR 45	200...1600 V	80 A	50 A	45 A	600 A	K 5 K 3 K 1,1	40 A 56 A 86 A	57 A 81 A 120 A		
SKN 70 SKR 70	200...1600 V	150 A	95 A	70 A	1000 A	K 3 K 1,1 P 1/120 K 1,1 F	66 A 112 A 156 A 174 A	96 A 159 A 225 A 246 A		
SKN 100 SKR 100	200...1600 V	200 A	125 A	100 A	1500 A	K 3 K 1,1 K 0,55 K 1,1 F	80 A 140 A 190 A 240 A	117 A 204 A 270 A 336 A		
SKN 130 SKR 130	200...1600 V	260 A	165 A	130 A	2000 A	K 1,1 K 0,55 K 1,1 F	160 A 230 A 290 A	225 A 315 A 485 A		
SKN 240 SKR 240	200...1600 V	500 A	320 A	240 A	5000 A	K 1,1 K 0,55 K 1,1 F K 0,55 F	210 A 340 A 460 A 620 A	300 A 480 A 630 A 840 A		
SKN 320 SKR 320	200...1600 V	700 A	420 A	320 A	8000 A	K 0,55 K 0,55 F K 0,1 F	390 A 760 A 840 A	570 A 1080 A 1200 A		
SKN 500	200...1600 V	-	700 A	520 A	7000 A	0,4 °C/W 45°C 0,2 °C/W 35°C	500 A 760 A	720 A 1080 A		
SKN 870	400...3000 V	-	870 A	520 A	10500 A	0,2 °C/W 45°C 0,07 °C/W 35°C	780 A 1380 A	1020 A 1950 A		



T_{amb} = 45°C

T_{case} = 100°C

T_{case} = 125°C

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Silizium -
Gleichrichterdioden

sowie Avalanche-Diode

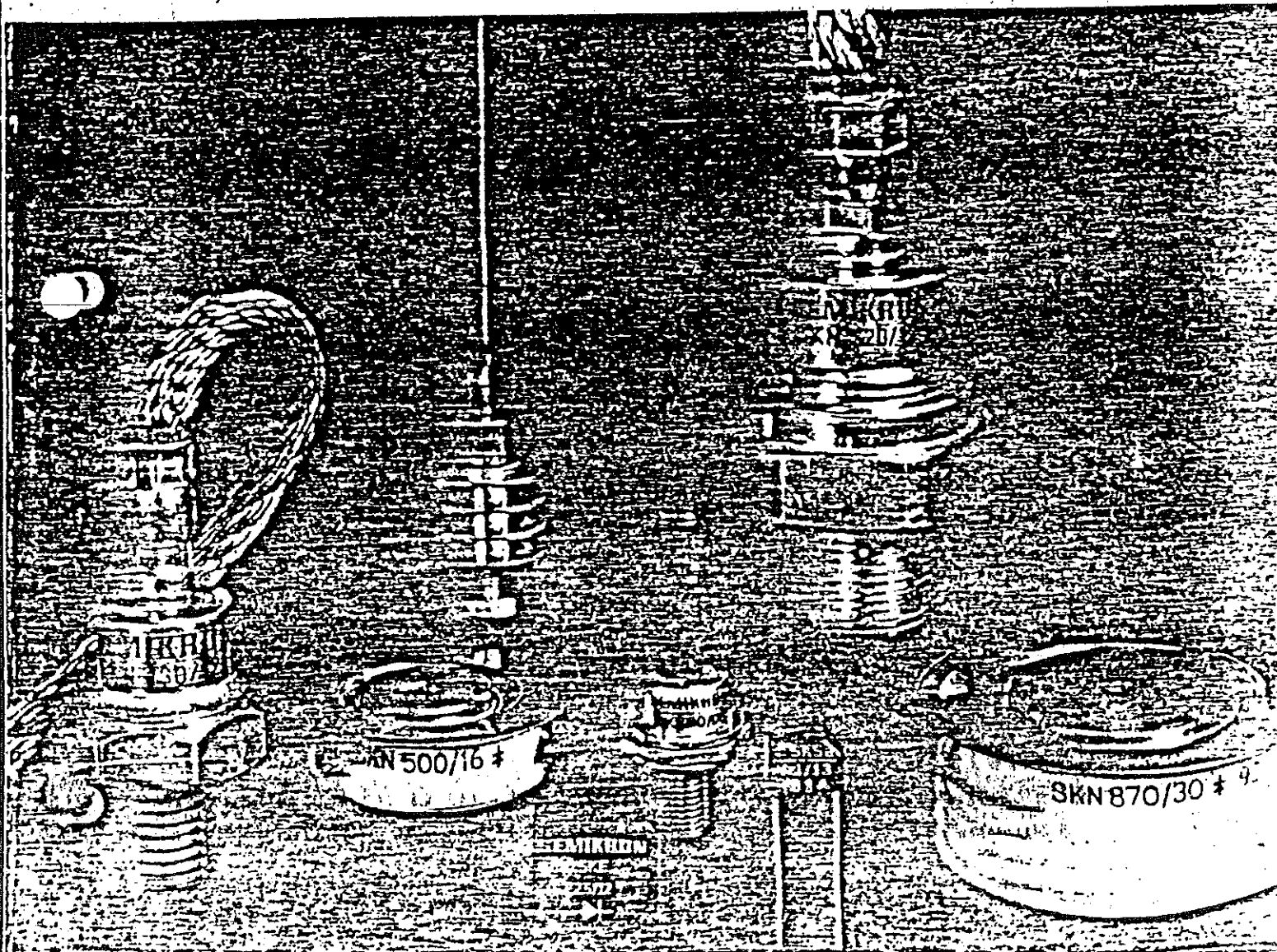
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Silicon Rectifier Diodes

Including avalanche diode

Diodes redresseuses
au silicium

et diodes à avalanche contrôlée



SKN 70/SKR 70

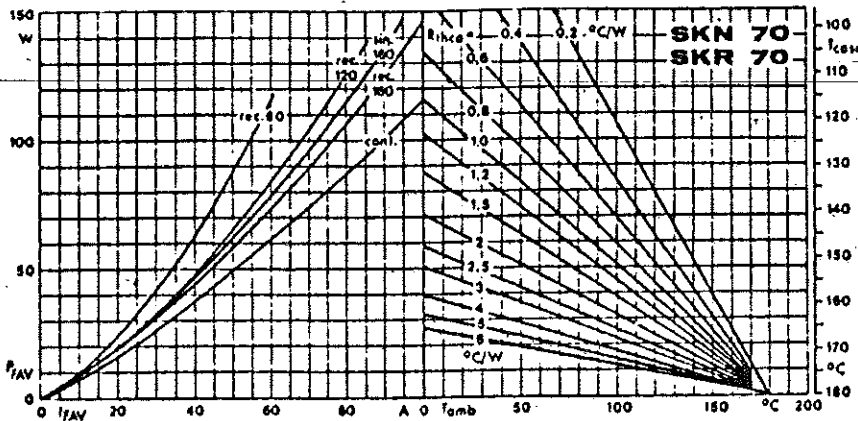
Vorläufige Daten
Preliminary Data
Caractéristiques provisoires

$I_{FRMS} = 150 A$; $I_{FAV} = 95 A$

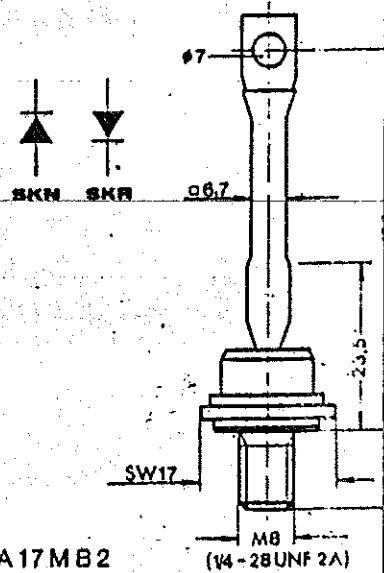
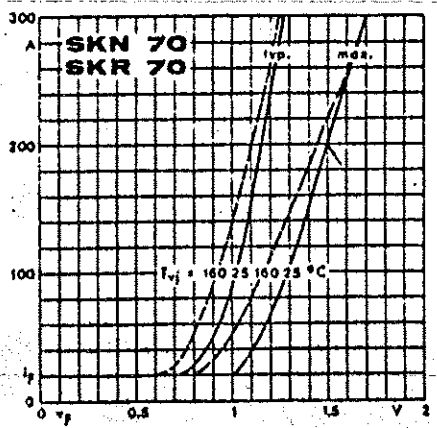
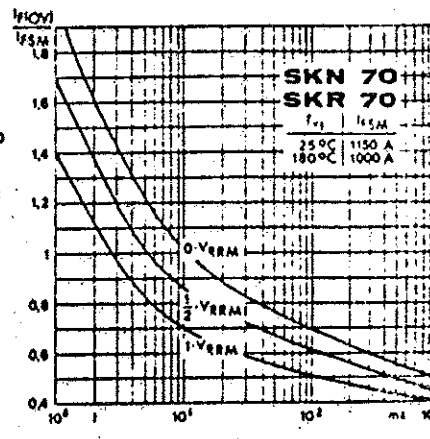
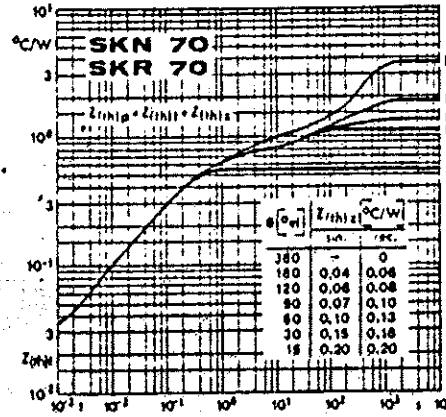
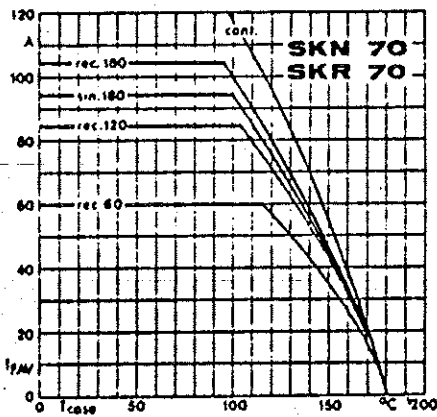
	SKN 70/02 SKR 70/02*	SKN 70/04 SKR 70/04*	SKN 70/08 SKR 70/08*	SKN 70/12 SKR 70/12*	SKN 70/14 SKR 70/14*	SKN 70/16 ¹⁾ SKR 70/16 ¹⁾
V_{RSM} V_{RRM}	200 V 200 V	400 V 400 V	800 V 800 V	1200 V 1200 V	1400 V 1400 V	1600 V 1600 V
I_{FAV}	$(T_{case} = 100\text{ °C, sin. } 180\text{ °el})$ $(T_{case} = 125\text{ °C, sin. } 180\text{ °el})$		95 A 70 A			
I_{FRMS}	150 A					
I_{FAV}	(sin. 180 °el) (rec. 120 °el)		K 3 33 A 32 A	K 1,1 56 A 53 A	P 1/120 78 A 75 A	K 1,1 F 87 A 82 A
I_{FSM}	$(T_{vj} = 25\text{ °C})$ $(T_{vj} = 180\text{ °C})$		1150 A 1000 A			
i^2t	$(T_{vj} = 25\text{ °C})$ $(T_{vj} = 180\text{ °C})$		6600 A ² s 5000 A ² s			
I_R V_F $V_{(TO)}$ r_f Q_{rr}	$(T_{vj} = 25\text{ °C})$ $(I_F = 200\text{ A})$ $(T_{vj} = 160\text{ °C})$ $(T_{vj} = 160\text{ °C})$ $(T_{vj} = 160\text{ °C}; -\frac{dI_F}{dt} = 10 \frac{A}{\mu s})$		max. 0,3 mA max. 1,5 V 0,85 V 3 mΩ typ. 70 μC			
R_{thjc} R_{thch} T_{vj} T_{sig}	typ. 0,55 °C/W typ. 0,2 °C/W -40... +180 °C -55... +180 °C					
M a w RC R_p Ex	4 Nm 5 · 9,81 m/s ² ca. 30 g 0,1 μF + 100 Ω (2 W) 80 kΩ (6 W) SKN 70/12					

¹⁾ Nur beschränkt lieferbar.
In limited production.
Livrabie en quantités limitées.





	Rthca
K3	3,0 °C/W
K1,1	1,2 °C/W
P 1/120	0,85 °C/W
K1,1 F	0,60 °C/W



SO: IEC-Publ. 191-2: A 16U, A 17 MB 2
 DIN 41 886: 103 A 2
 BS 3934: SO-32A, SO-32 B
 JEDEC: DO-5M

Fig. 11

SEMIKRON

Medium Power Silicon Rectifier Diode

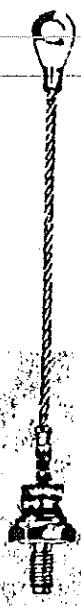
SKN 20

20 A Half-Wave Average Current (180° angle)

Semikron SKN 20 range have maximum repetitive peak reverse voltage ratings up to 1600 V and current ratings up to 20 Amps.

Hard-soldered construction provides high reliability under severe operating conditions.

- Fully diffused device
- High peak reverse voltage $PIV \approx 1600 V$
- One cycle peak surge current 270 A
- Forward and reverse polarity



	Type SKN	20/04	20/08	20/12	20/16
	Type SKR	20/04	20/08	20/12	20/16
Non-repetitive peak reverse voltage	$V_{RSM}(V)$	400	800	1200	1600
Repetitive peak reverse voltage	$V_{RRM}(V)$	400	800	1200	1600

SEMIKRON

Gesellschaft für Gleichrichterbau und Elektronik mbH.
85 Nürnberg, Wiesentalstraße 40, Germany / Telefon 0911/3.0141 / Telex 06/22155

MILANO 02-5451212
02-5451425

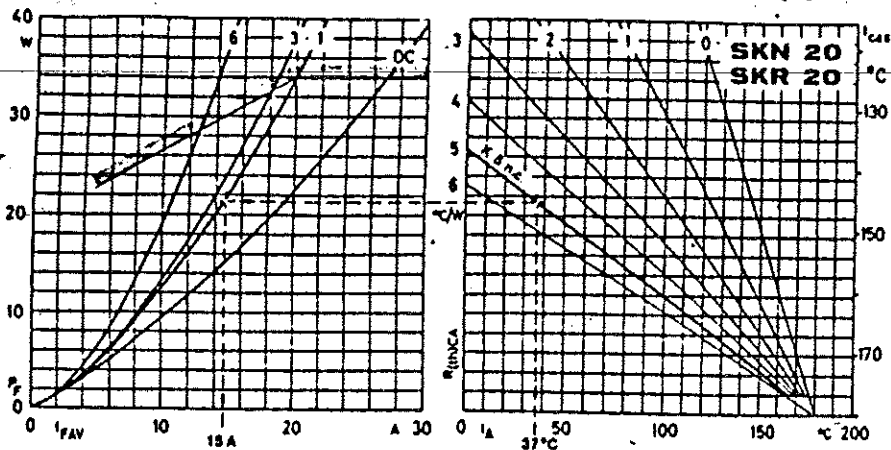
Term	Symbol	Data	Remarks
2 Max. RMS current	$J_{T(RMS)} [A]$	30	Case temperature 85°C - Conduction angle 180°
3 Mean forward current	$J_{T(AV)} [A]$	20	The maximum allowable average sine wave current in a resistive circuit. Case temperature 85°C - Conduction angle 180°
4 Recommended forward current	[A]	50% of line 3	Depending on overload conditions Under rated cooling conditions (heat sink K 5) natural cooling, 45°C ambient temp. At these values the junction temperature is about 125°C
5 Surge (non-rep.) current 60 c/s (8,3 ms) 50 c/s (10 ms)	$J_{TSM} [A]$	300 270	The maximum allowable half sine wave current. Under overload conditions, the diode may temporarily lose its blocking capability. at 180°C junction-temperature at 180°C junction-temperature
6 Max. $\beta^2 t$ rating	[A ² s]	360	for fusing
7 Forward voltage drop	[V]	—	at max. junction-temperature, see figure No. 4
8 Frequency range	[c/s]	15 ... 3000	typical range of application
9 Reverse current	[mA]	0,15	max. value at 70 % of V_{RRM} at $t_{vj} = 25^\circ C$
10 Virtual junction temperature	$t_{vj} [^\circ C]$	180	This is not necessarily the highest temperature within the device
11 Thermal resistance	$R_{(th)} [^\circ C/W]$	1,6	The temperature difference between junction and case divided by the total power dissipated in the device
12 Transient thermal resistance	$Z_{(th)} [^\circ C/W]$	—	see figure No. 2
13 Temperature range	[°C]	—50 ... +180 —50 ... +180	Operating junction temperature Storage temperature

Recommended current ratings

depending on standard heat sinks and circuit configuration.

Circuit diagram						Remarks
circuit	half-wave	centre-tap	bridge	three-phase half-wave	three-phase bridge	
K 5	10	20	20	30	30	Natural cooling Rating of circuit in Amps at $t_A = 45^\circ C$

Characteristics



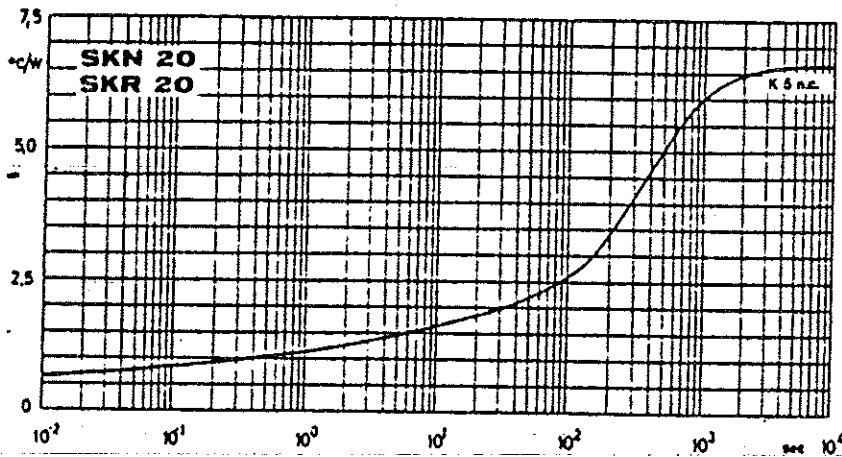
Power dissipation and case temperature as function of mean forward current (I_{FAV}), and mean forward current as function of ambient temperature (t_A) and thermal resistance ($R_{TH(IN)CA}$) of different heat sinks. The shaded line shows the power limit.

DC... direct current
 1... single phase circuit
 3... three phase circuit
 6... six phase circuit

K 5 n.c. normal cooling

Fig. 1

Example: Ambient temperature is about $37^{\circ}C$. With standard heat sink K 5 n.c. mean forward current is about 15 A by using a single phase circuit (180° angle). Recommended current line 4.



Transient thermal impedance of diode including the standard heat sinks

K 5 n.c. normal cooling

Fig. 2

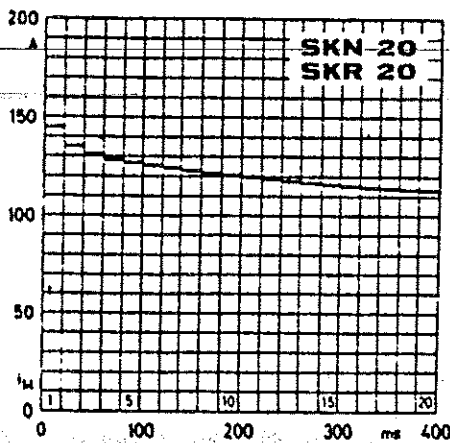


Fig. 3

1-20 cycles overload peak current rating for 180° sinusoidal pulses (50 c/s) at $125^{\circ}C$ junction temperature (recommended current). Under these conditions the diode still blocks 80% of V_{DRM} (60 c/s 1-24 cycles).

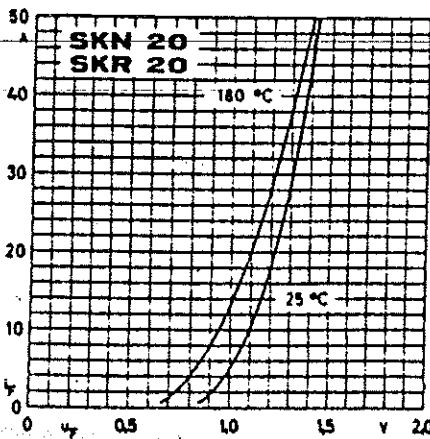


Fig. 4

Forward voltage drop at two different junction temperatures.

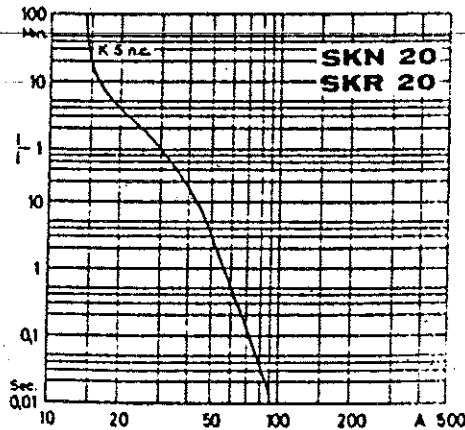
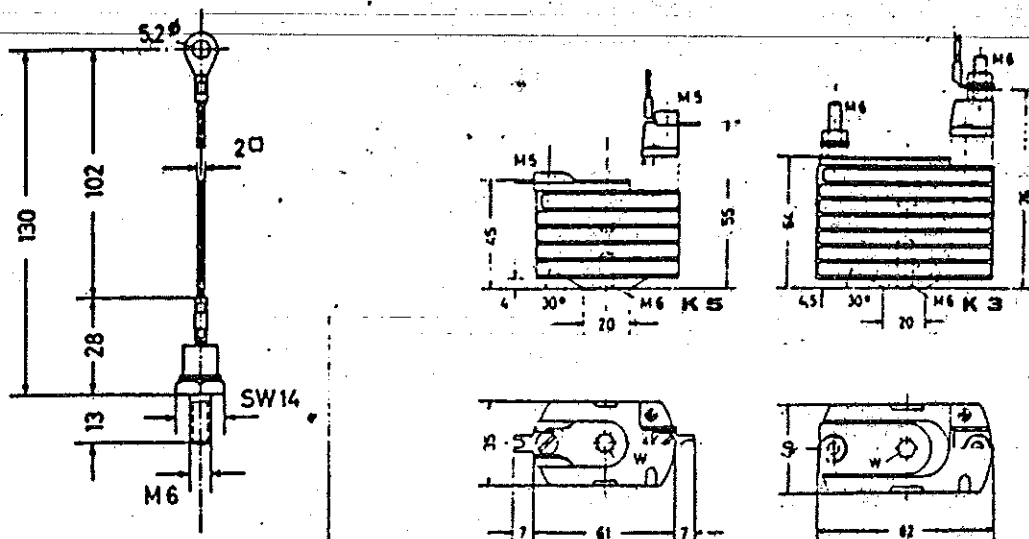


Fig. 5

Max. mean forward current characteristic at $45^{\circ}C$ ambient temperature and sinusoidal wave form (180° angle). With the given values junction temperature will reach its maximum.

Outline Drawing:



All dimensions in mm

Diode weight (without heat sink) C_ppr. 0,010 kp
 Maximum mounting torque appr. 0,2 mkp

Acceleration limit at a vibration frequency at 50 c/s appr. 10 g

Standard heat sink Type K 5 Type K 3

Heat sink weight 0,1 kp 0,2 kp

Thermal resistance of the heat sink with natural convection $R_{(th) CA}$ 5°C/W 3°C/W

Thermal resistance of the heat sink with forced air cooling, (6 m/s) $R_{(th) CA}$ / /

Protection:

Against high voltage transients

Selenium transient voltage suppressor "SEMITRANS" are recommended. See special data sheet No. A 437 E.

For damping carries storage transients

A condensor $C = 0,1 \mu F$ is recommended

For series connection

A parallel resistor of 50 k Ohm and 6 W is necessary.

The information given in this data sheet is not binding. The right is reserved to make changes in electrical and mechanical data.

SEMİKRON

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