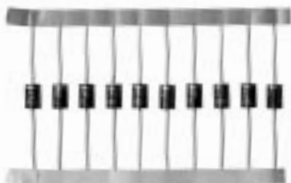


Rectifier Diodes

SK 1
SKa 1

SK 3
SKa 3



Features

- Axial lead diodes
- Taped for automatic insertion
- Available with formed leads on request
- Plastic material carries Underwriters Laboratories flammability classification 94V-0

SKa types

- Avalanche type reverse characteristics
- Minimum avalanche breakthrough voltages 1300 V and 1700 V
- Transient voltage proof within specified limits

Typical Applications

- All-purpose rectifier diodes
- For p.c.b. mounting

SKa types

- DC supply for magnets or solenoids (brakes, valves, etc.)
- Series connections for high voltage applications (dust precipitators)

V _{SRM} V _{RRM}	I _{FRMS} (maximum values for continuous operation)					
	3 A			6,7 A		
V	I _{FAV} (sin. 180; T _{amb} = 45 °C)					
	1,15 A			1,8 A		
	Types	C _{max.} μF	R _{min.} Ω	Types	C _{max.} μF	R _{min.} Ω
1000	SK 1/10	500	4	SK 3/10	2000	1
1200	SK 1/12	400	6	SK 3/12	1600	2
1400	SK 1/14	300	8	SK 3/14	1200	3
1600	SK 1/16	200	10	SK 3/16	800	4
V _(BR) min	Avalanche Types					
1300	SKa 1/13	400	6	SKa 3/13	1600	2
1700	SKa 1/17	200	10	SKa 3/17	800	4

Symbol	Conditions	SK 1 SKa 1	SK 3 SKa 3	Units
I _{FAV}	T _{ref} = 85 °C; L = 10 mm; sin. 180 T _{amb} = 45 °C; p.c.b. 50 x 50 mm	1,45 1,15	3,3 1,8	A A
I _{FSM}	T _{vj} = 25 °C; 10 ms T _{vj} = 150 °C; 10 ms	60 50	180 150	A A
i ² t	T _{vj} = 25 °C; 8,3 ... 10 ms T _{vj} = 150 °C; 8,3 ... 10 ms	18 12,5	162 112,5	A ² s A ² s
Q _{rr}	T _{vj} = 150 °C; $-\frac{di_F}{dt} = 10 \frac{A}{\mu s}$; I _F = 10 A; V _R = 100 V; typ.	10	25	μC
I _R	T _{vj} = 25 °C; V _R = V _{RRM} / V _{(BR)min} T _{vj} = 150 °C; V _R = V _{RRM} / V _{(BR)min}	4 400	4 600	μA μA
P _{RSM}	SKa-Types only T _{vj} = 150 °C; t _p = 10 μs	1	3	kW
V _F	T _{vj} = 25 °C; I _F = 10 A; max.	1,5	1,2	V
V _(TO)	T _{vj} = 150 °C	0,85	0,85	V
r _T	T _{vj} = 150 °C	75	30	mΩ
C _j	V _R = 0; f = 1 MHz; typ.	45	110	pF
R _{thjr}	L = 10 mm	40	18	°C/W
R _{thja}	p.c.b. 50 x 50 mm	85	60	°C/W
T _{vj}		- 40 ... + 150		°C
T _{stg}		- 40 ... + 150		°C
T _{solder}	max. 10 s; L ≥ 9 mm	250		°C
a		5 · 9,81		m/s ²
w	approx.	0,5	1	g

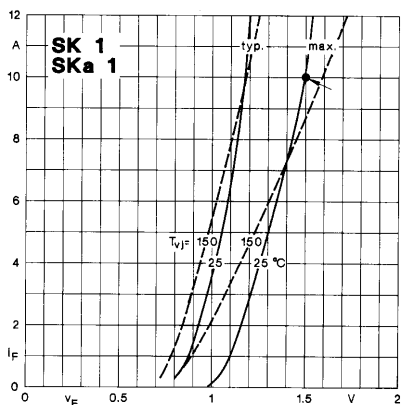


Fig. 6 a Forward characteristics

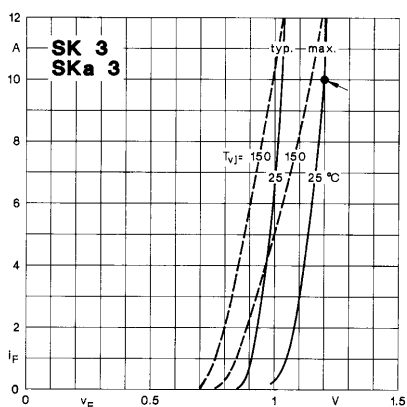


Fig. 6 b Forward characteristics

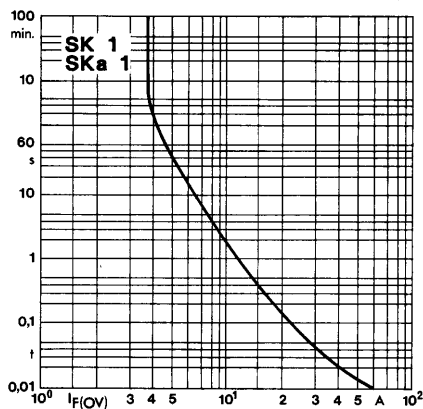


Fig. 10 a Rated overload current vs. time

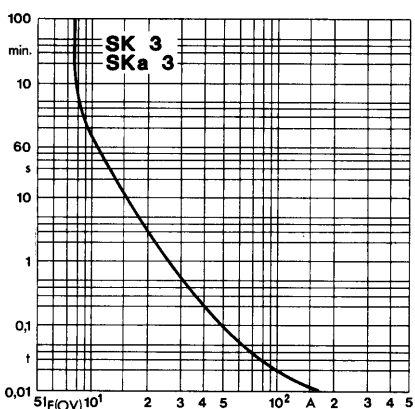


Fig. 10 b Rated overload current vs. time

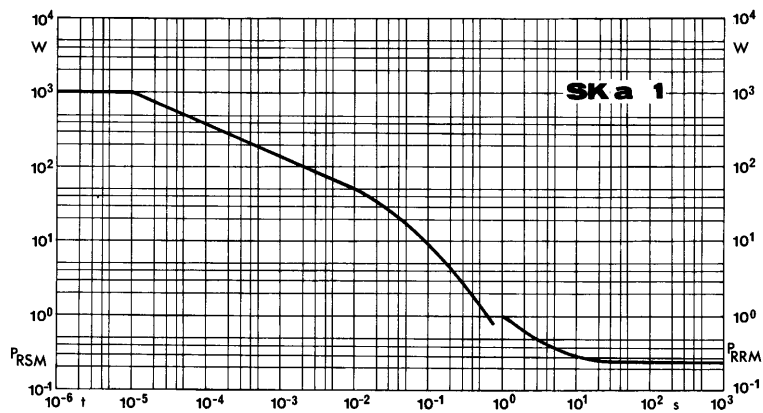


Fig. 11 a Rated reverse power dissipation vs. time

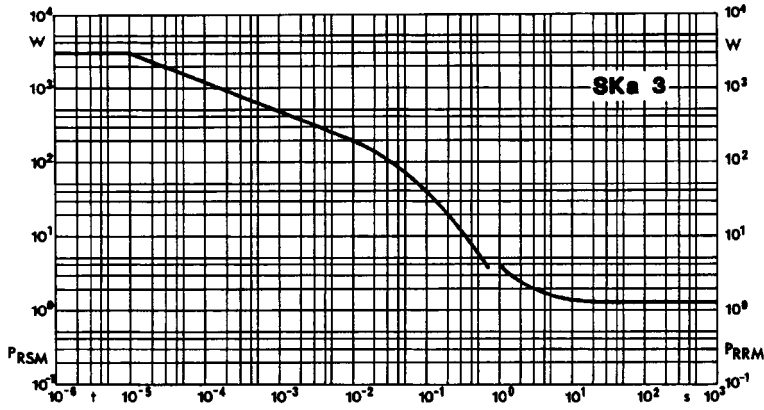


Fig. 11 b Rated reverse power dissipation vs. time

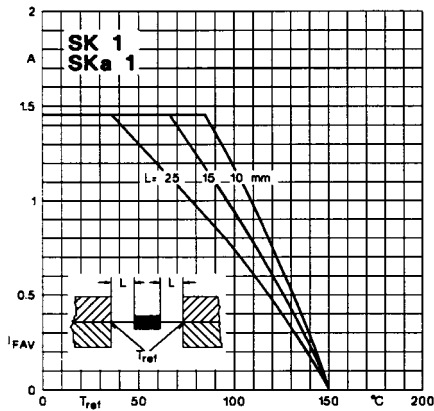


Fig. 14 a Rated forward current vs. reference temp.

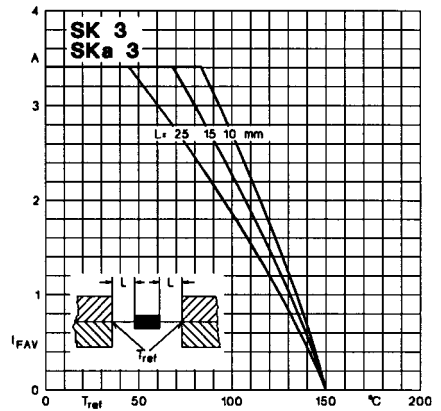


Fig. 14 b Rated forward current vs. reference temp.

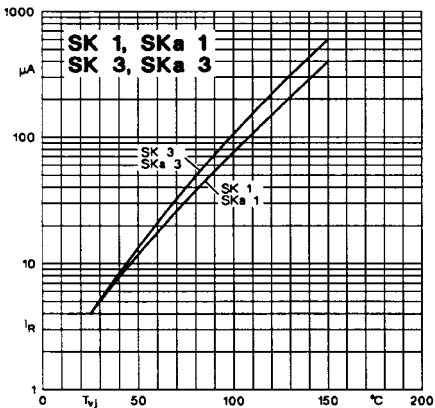


Fig. 15 Reverse current vs. virt. junction temp.

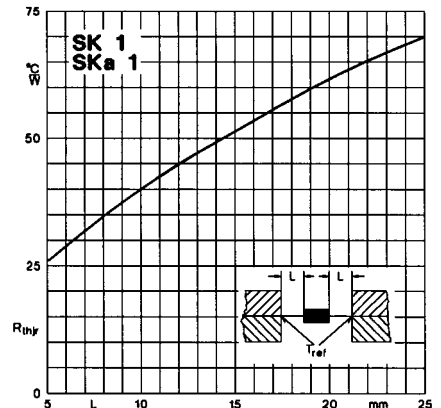


Fig. 16 a Thermal resistance vs. lead length

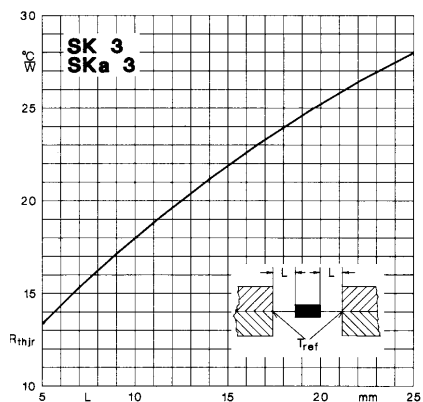
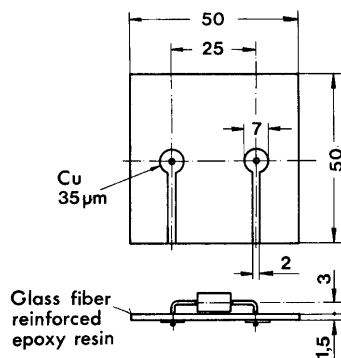


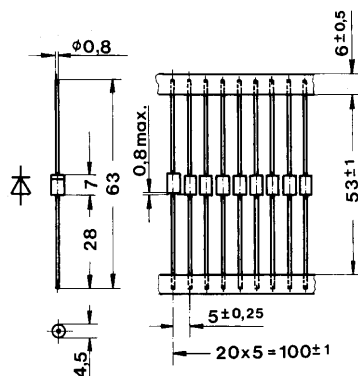
Fig. 16 b Thermal resistance vs. lead length

P.C.B. for $R_{thja} = 85\text{ °C/W}$ (SK 1)
 $R_{thja} = 60\text{ °C/W}$ (SK 3)



SK 1
SKa 1

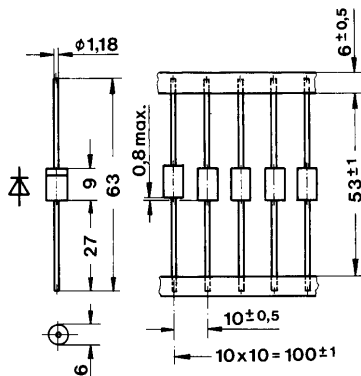
Case E 33



3500 diodes per reel

SK 3
SKa 3

Case E 34



1500 diodes per reel

Reel dimensions page B 8 – 2

Dimensions in mm

Rectifier Diodes

SKN 100 SKR 100
SKN 130 SKR 130
SKN 240 SKR 240



Features

- Reverse voltages up to 1600 V
- Hermetic metal cases with glass insulators
- Threaded studs ISO M 12, M16 x 1,5 (SKR 130 also 1/2–20 UNF or 3/8–24 UNF, SKR 240 also 3/4–16 UNF)
- **SKN**: anode to stud
SKR: cathode to stud

Typical Applications

- All-purpose mean power rectifier diodes
- Cooling via heatsinks
- Non-controllable and half-controllable rectifiers
- Free-wheeling diodes

♦ available in limited quantities
 * available with UNF threads:
 3/8–24 UNF 2 A (e.g. SKR130/02 UNF 3/8) or
 1/2–20 UNF 2 A
 (e.g. SKR 130/02 UNF),
 SKR 240/02 UNF with
 3/4–16 UNF 2 A thread

V _{VRSM} V _{VRM}	I _{FRMS} (maximum values for continuous operation)					
	200 A		260 A		500 A	
	I _{FAV} (sin. 180; T _{case} = 100 °C)					
V	125 A		165 A		320 A	
						
	SKN	SKR	SKN	SKR	SKN	SKR
200	100/02	100/02	130/02	130/02*	240/02	240/02*
400	100/04	100/04	130/04	130/04*	240/04	240/04*
800	100/08	100/08	130/08	130/08*	240/08	240/08*
1200	100/12	100/12	130/12	130/12*	240/12	240/12*
1400	100/14	100/14	130/14	130/14*	240/14	240/14*
1600	100/16	100/16	130/16	130/16*	240/16	240/16*
1800	100/18+	100/18+	130/18+	130/18+	240/18+	240/18+

Symbol	Conditions	SKN 100 SKR 100	SKN 130 SKR 130	SKN 240 SKR 240
I _{FAV}	sin. 180; T _{case} = 100 °C = 125 °C	125 A 100 A	165 A 130 A	320 A 240 A
I _{FSM}	T _{vj} = 25 °C; 10 ms T _{vj} = 180 °C; 10 ms	1 750 A 1 500 A	2 500 A 2 000 A	6 000 A 5 000 A
i ² t	T _{vj} = 25 °C 8,3... T _{vj} = 180 °C 10 ms	15 000 A ² s 11 500 A ² s	31 000 A ² s 20 000 A ² s	180 000 A ² s 125 000 A ² s
Q _{rr}	T _{vj} = 160 °C; – $\frac{di_F}{dt} = 10 \frac{A}{\mu s}$	typ. 100 µC	typ. 120 µC	typ. 200 µC
I _R	T _{vj} = 25 °C; V _R = V _{RRM} T _{vj} = 180 °C; V _R = V _{RRM}	1 mA 15 mA	1 mA 22 mA	2 mA 60 mA
V _F	T _{vj} = 25 °C; (I _F = ...); max.	1,55V (400A)	1,5V (500A)	1,4V (750A)
V _(TO)	T _{vj} = 180 °C	0,85 V	0,85 V	0,85 V
r _T	T _{vj} = 180 °C	1,8 mΩ	1,3 mΩ	0,6 mΩ
R _{thjc}		0,45 °C/W	0,35 °C/W	0,20 °C/W
R _{thch}		0,08 °C/W	0,08 °C/W	0,03 °C/W
T _{vj}		– 40 ... + 180 °C		
T _{stg}		– 55 ... + 180 °C		
M	SI units/US units	10Nm/90lb.in.	10Nm/90lb.in.	30Nm/270lb.in.
a		5 · 9,81 m/s ²	5 · 9,81 m/s ²	5 · 9,81 m/s ²
w	approx.	100 g	100 g	250 g
RC	P _R = 2 W	0,25µF + 50Ω	0,25µF + 50Ω	0,5µF + 30Ω
R _p	P _R = 20 W	50 kΩ	50 kΩ	50 kΩ
Case		E 13	E 14	E 15

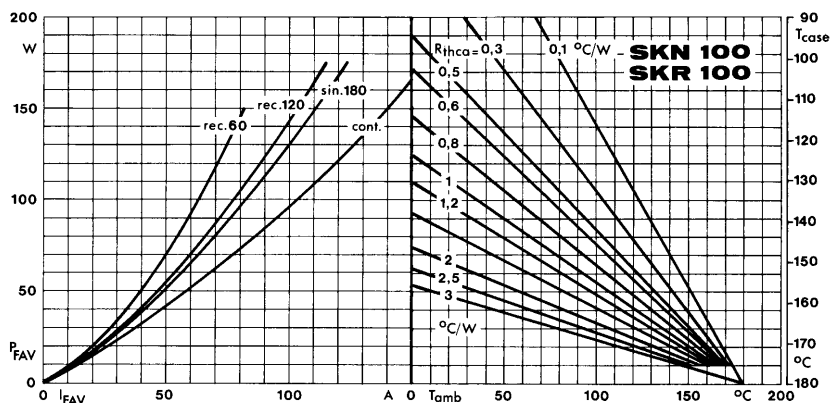


Fig. 1 a Power dissipation vs. forward current and case temperature

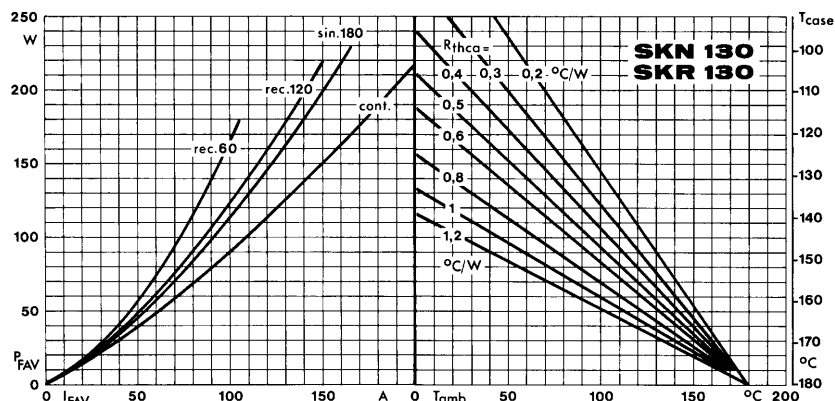


Fig. 1 b Power dissipation vs. forward current and case temperature

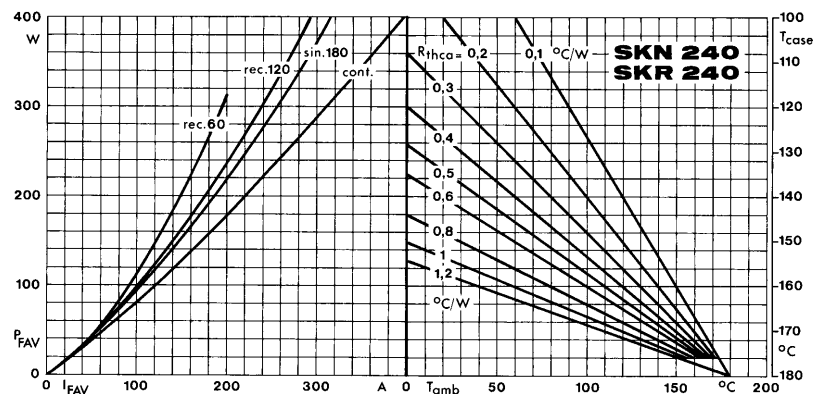


Fig. 1 c Power dissipation vs. forward current and case temperature

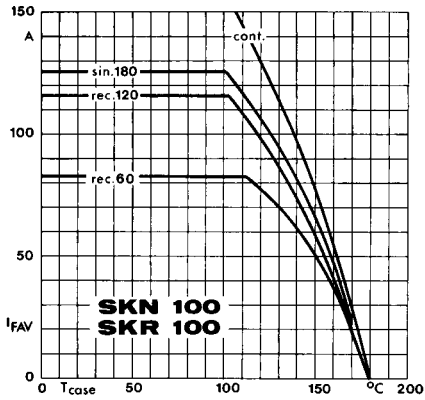


Fig. 3 a Rated forward current vs. case temperature

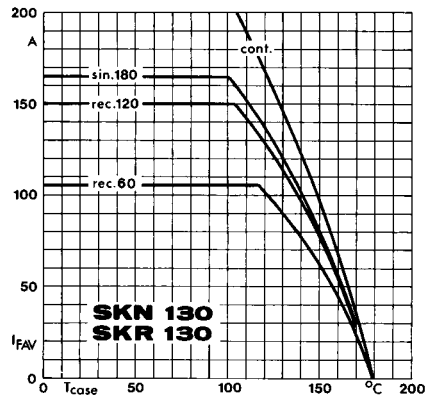


Fig. 3 b Rated forward current vs. case temperature

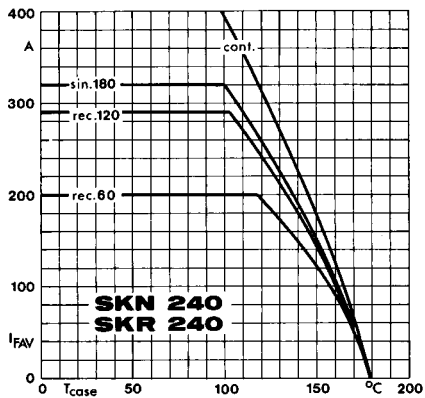


Fig. 3 c Rated forward current vs. case temperature

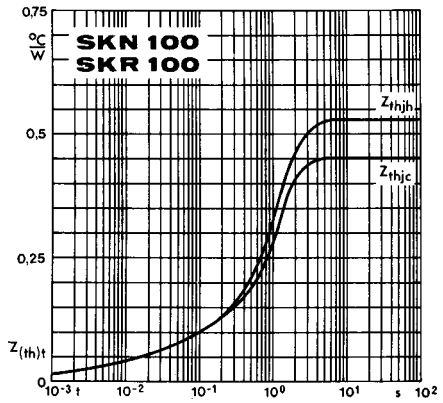


Fig. 5 a Transient thermal impedance vs. time

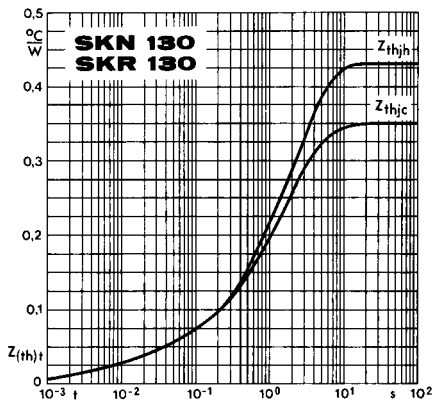


Fig. 5 b Transient thermal impedance vs. time

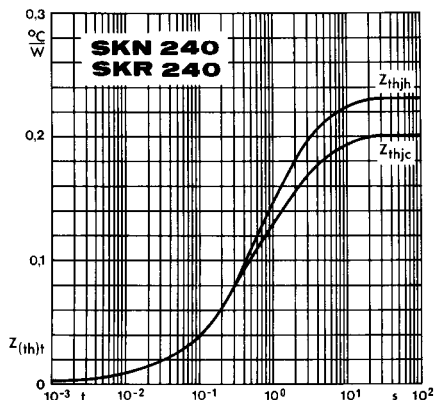


Fig. 5 c Transient thermal impedance vs. time

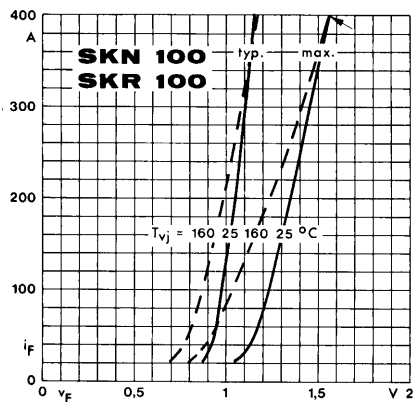


Fig. 6 a Forward characteristics

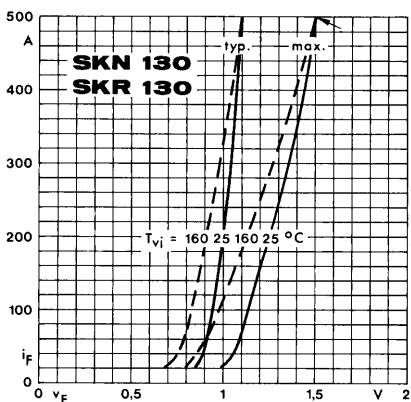


Fig. 6 b Forward characteristics

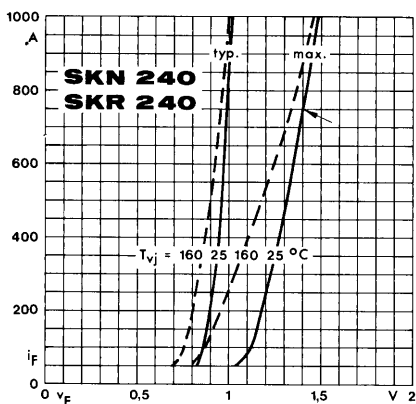


Fig. 6 c Forward characteristics

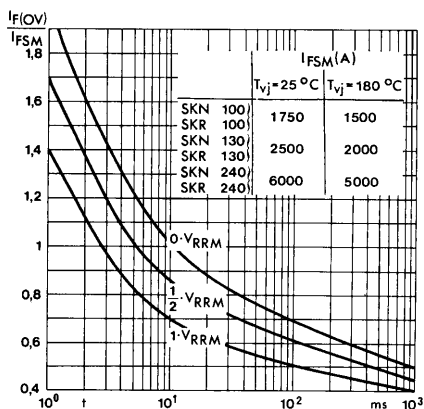


Fig. 7 Surge overload current vs. time

Fast Recovery Rectifier Diodes

SKN 135 F **SKR 135 F**
SKN 136 F **SKR 136 F**
SKN 140 F **SKR 140 F**
SKN 141 F **SKR 141 F**



Features

- Small recovered charge
- Soft recovery
- Up to 1500 V reverse voltage
- Hermetic metal cases with glass insulators
- Threaded studs M12
- **SKN**: anode to stud
- **SKR**: cathode to stud

Typical Applications

- Inverse diodes for GTO and asymmetric thyristors
- Inverters and choppers
- A. C. motor control, uninterruptible power supplies (UPS)

V	I _{FRMS} (maximum values for continuous operation) 260 A			
	I _{FAV} (sin. 180; T _{case} = 85 °C)			
	160 A		168 A	
	t _{rr} = 500 ns		t _{rr} = 800 ns	
800	SKN 135 F 08	SKR 135 F 08	–	–
	SKN 136 F 08	SKR 136 F 08	–	–
1000	SKN 135 F 10	SKR 135 F 10	–	–
	SKN 136 F 10	SKR 136 F 10	–	–
1200	SKN 135 F 12	SKR 135 F 12	SKN 140 F 12	SKR 140 F 12
	SKN 136 F 12	SKR 136 F 12	SKN 141 F 12	SKR 141 F 12
1400	–	–	SKN 140 F 14	SKR 140 F 14
	–	–	SKN 141 F 14	SKR 141 F 14
1500	–	–	SKN 140 F 15	SKR 140 F 15
	–	–	SKN 141 F 15	SKR 141 F 15

Symbol	Conditions	SKN135F SKR135F SKN136F SKR136F	SKN140F SKR140F SKN141F SKR141F	Units
I _{FAV}	sin. 180; T _{case} = 85 °C; 1000 Hz	160	168	A
	T _{case} = 100 °C; 1000 Hz	135	140	A
	sin. 180/ rec. 120	54/ 52	55/53,5	A
	T _{amb} = 45 °C; K 1,1 P 1/200 K 0,55	97/ 93	100/ 96	A
I _{FSM}	T _{vj} = 25 °C; 10 ms	2500	2500	A
	T _{vj} = 150 °C; 10 ms	2100	2100	A
	T _{vj} = 25 °C; 8,3 ... 10 ms	31000	31000	A ² s
	T _{vj} = 150 °C; 8,3 ... 10 ms	22000	22000	A ² s
Q _{rr}	T _{vj} = 150 °C	50	90	μC
	V _R = 400 V	75	135	μC
	– $\frac{di}{dt}$ = 100 $\frac{A}{\mu s}$	53	90	A
	I _F = 100 A	69	115	A
I _R	T _{vj} = 25 °C; V _R = V _{RRM}	1	1	mA
	T _{vj} = 150 °C; V _R = V _{RRM}	100	100	mA
	T _{vj} = 25 °C	max. 500	max. 800	ns
	T _{vj} = 150 °C	typ. 1	typ. 1,6	μs
V _F	T _{vj} = 25 °C; I _F = 300 A	max. 1,95	max. 1,80	V
V _(TO)	T _{vj} = 150 °C	1,1	1,1	V
r _T	T _{vj} = 150 °C	2,3	2	mΩ
R _{thjc}		0,2		°C/W
R _{thch}		0,08		°C/W
T _{vj}		– 40 ... + 150		°C
T _{stg}		– 55 ... + 150		°C
M	SI (US) units	10 (90 lb.in.)		Nm
a		5 · 9,81		m/s ²
w	approx.	100		g
Case	135 F, 140 F 136 F, 141 F	E 14 E 31		

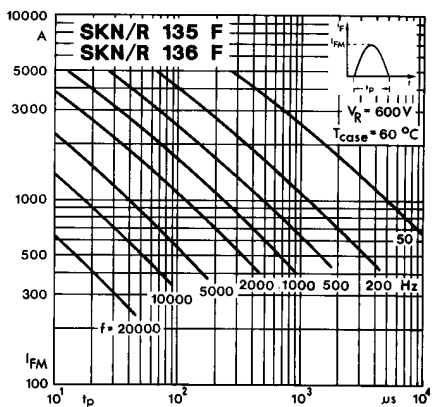


Fig. 1 a Rated sinusoidal peak forward current

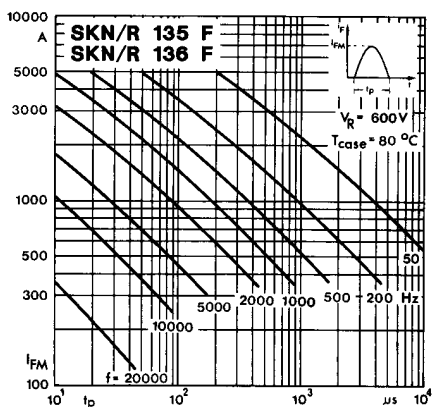


Fig. 1 b Rated sinusoidal peak forward current

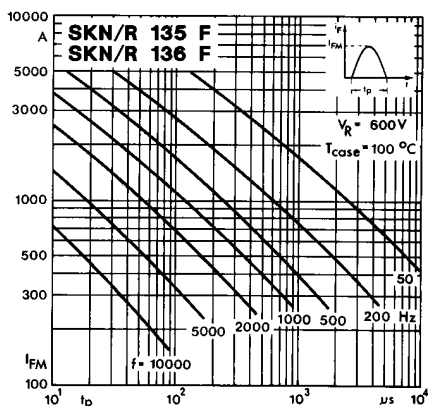


Fig. 1 c Rated sinusoidal peak forward current

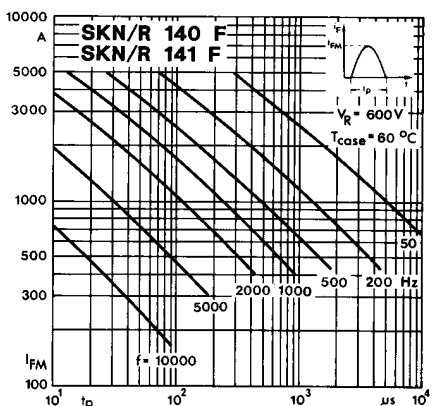


Fig. 1 d Rated sinusoidal peak forward current

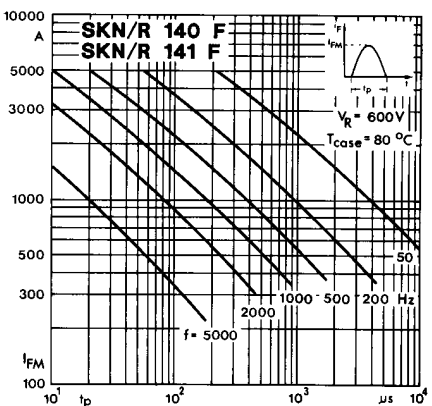


Fig. 1 e Rated sinusoidal peak forward current

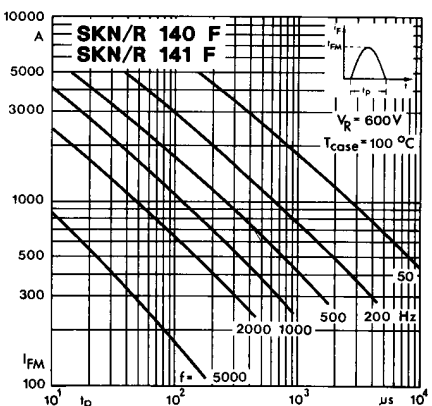


Fig. 1 f Rated sinusoidal peak forward current

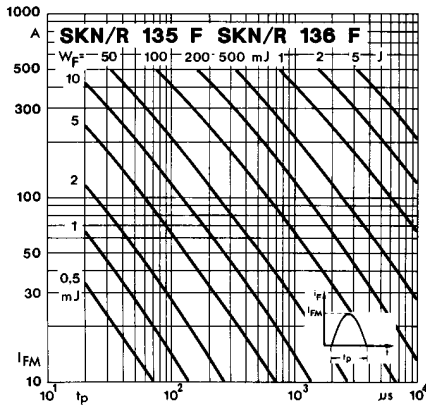


Fig. 2 a Forward energy dissipation, sinusoidal

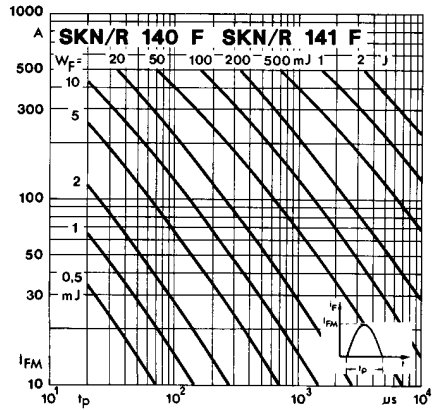


Fig. 2 b Forward energy dissipation, sinusoidal

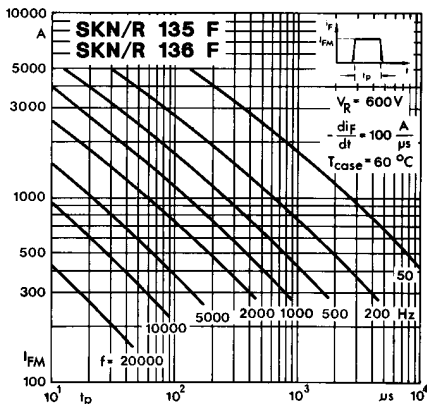


Fig. 3 a Rated rectangular peak forward current

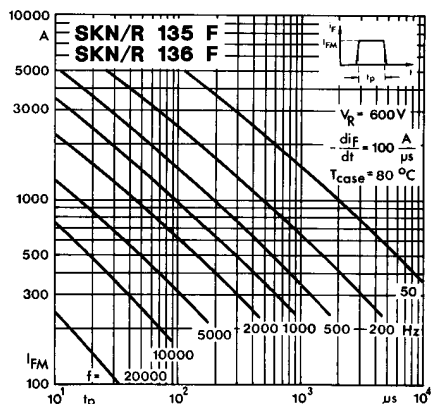


Fig. 3 b Rated rectangular peak forward current

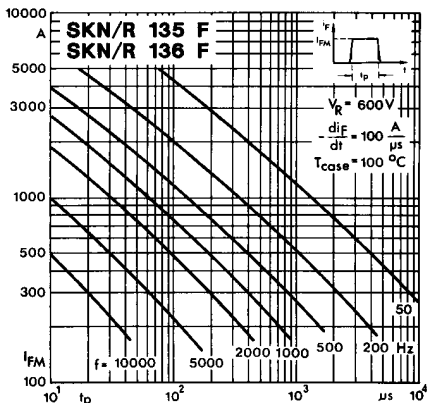


Fig. 3 c Rated rectangular peak forward current

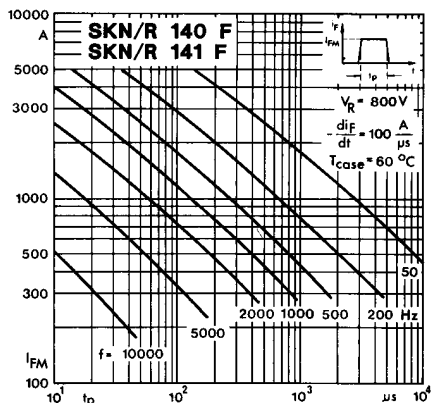


Fig. 3 d Rated rectangular peak forward current

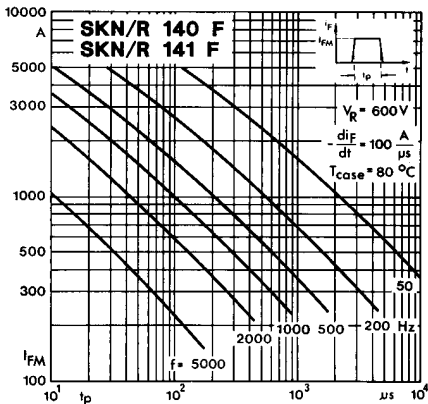


Fig. 3 e Rated rectangular peak forward current

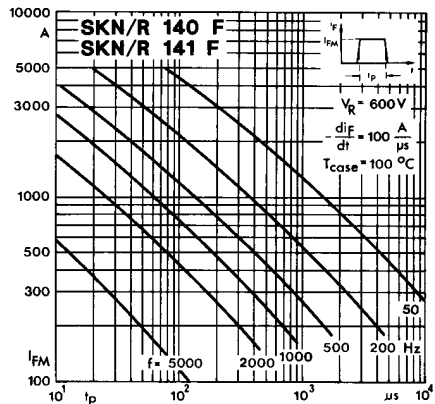


Fig. 3 f Rated rectangular peak forward current

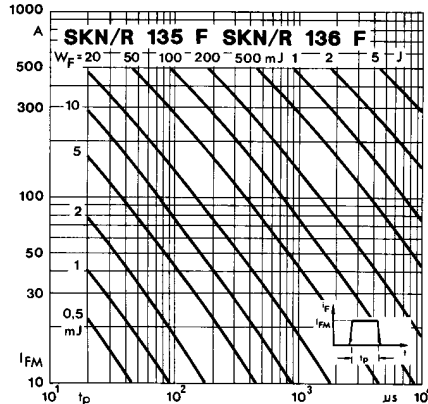


Fig. 4 a Forward energy dissipation, rectangular

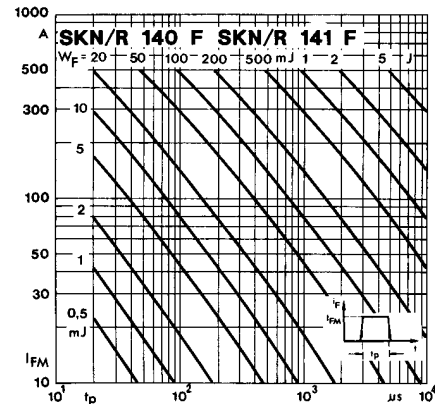


Fig. 4 b Forward energy dissipation, rectangular

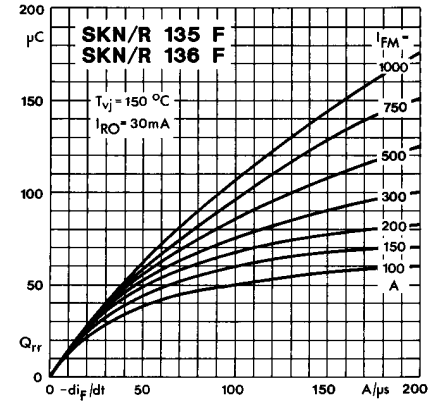


Fig. 5 a Recovered charge

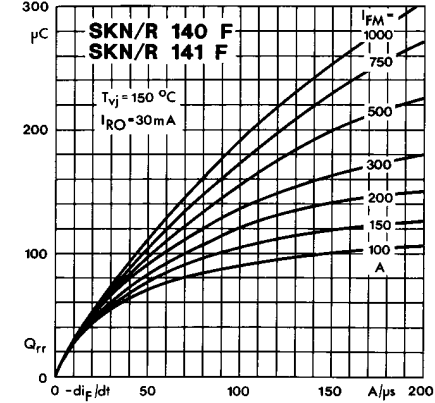


Fig. 5 b Recovered charge

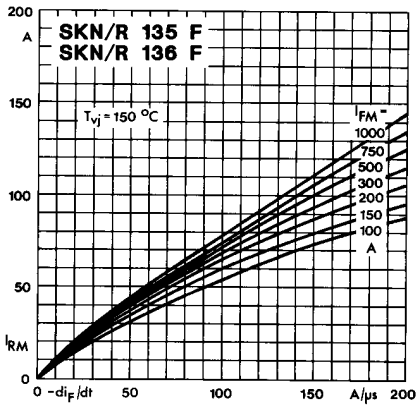


Fig. 6 a Peak reverse recovery current

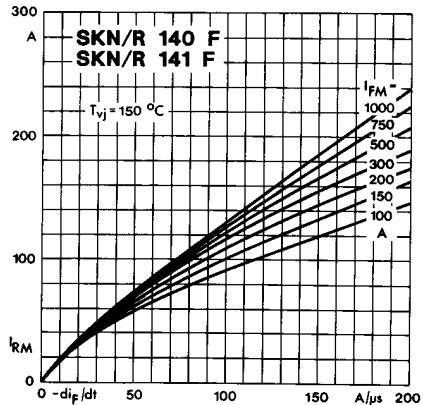


Fig. 6 b Peak reverse recovery current

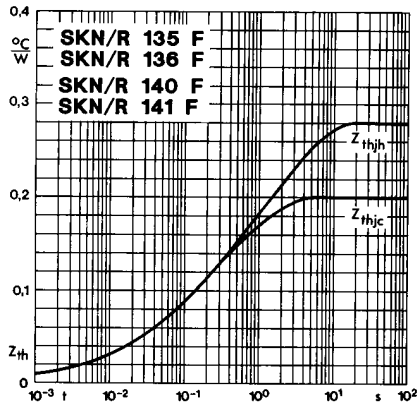


Fig. 7 Transient thermal impedance

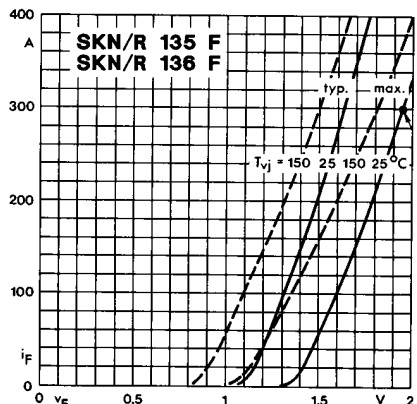


Fig. 8 a Forward characteristics

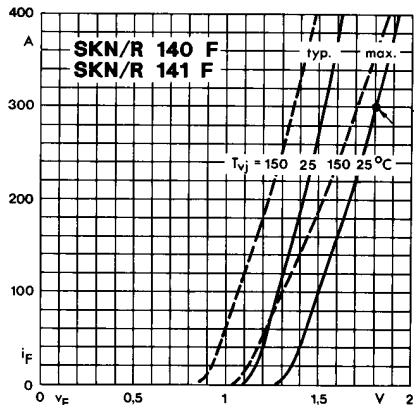


Fig. 8 b Forward characteristics

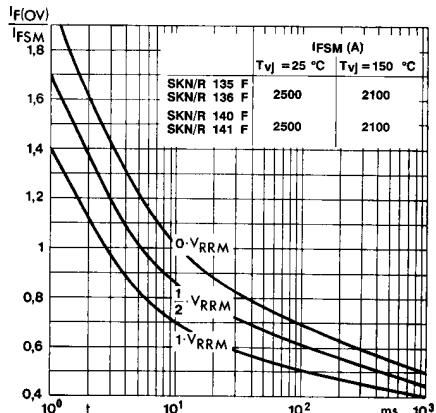
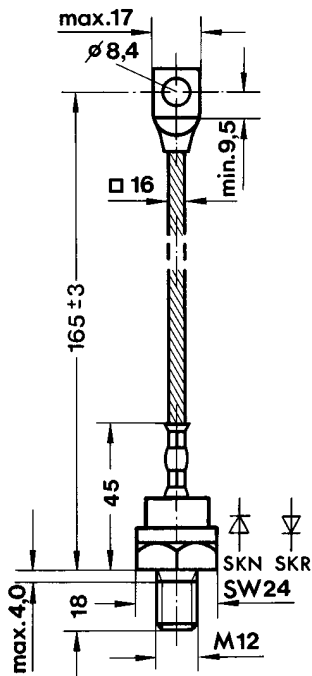


Fig. 9 Rated surge overload current

SKN 135 F
SKR 135 F
SKN 140 F
SKR 140 F

Case E 14

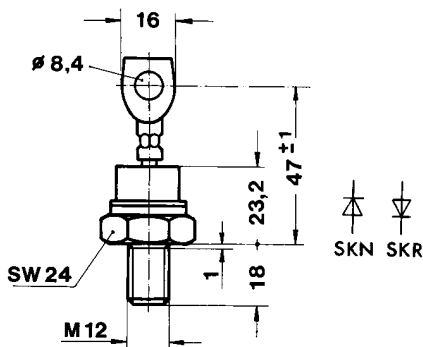
IEC: A 9 MA¹⁾
DIN 41 887: 105 B 2¹⁾
BS 3934: SO-29 B
JEDEC: DO-205 AC (DO-30)¹⁾²⁾



Dimensions in mm

SKN 136 F
SKR 136 F
SKN 141 F
SKR 141 F

Case E 31



Dimensions in mm

¹⁾ modified

²⁾ These types are also available with the original DO-205 AA (DO-8) dimensions with thread 3/8-24.

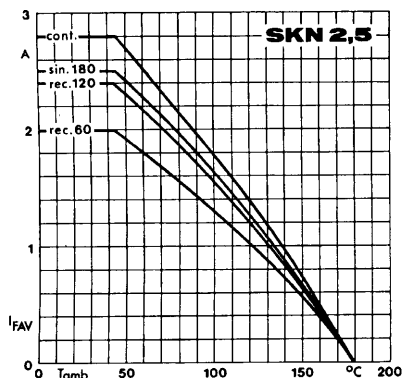


Fig. 4 a Rated forward current vs. ambient temperature

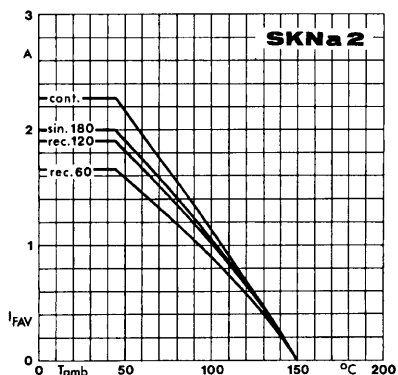


Fig. 4 b Rated forward current vs. ambient temperature

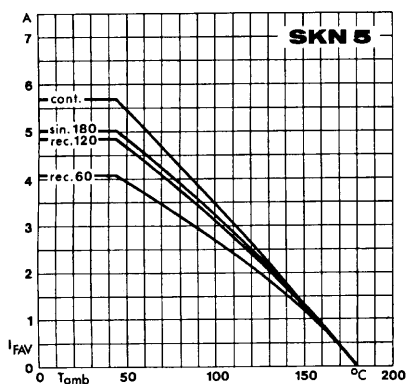


Fig. 4 c Rated forward current vs. ambient temperature

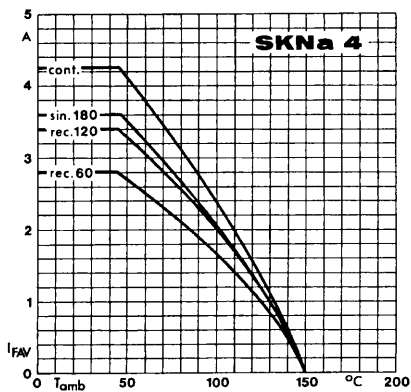


Fig. 4 d Rated forward current vs. ambient temperature

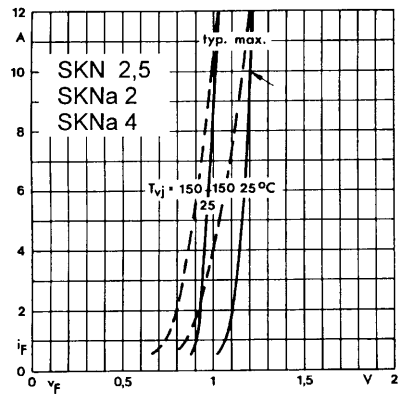


Fig. 6 a Forward characteristics

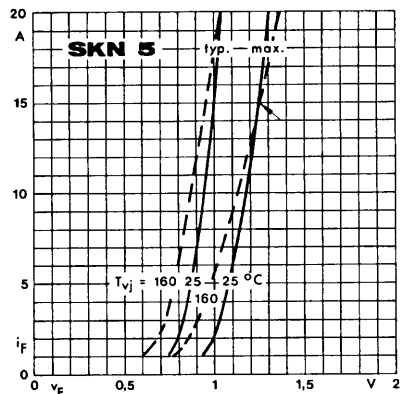


Fig. 6 b Forward characteristics

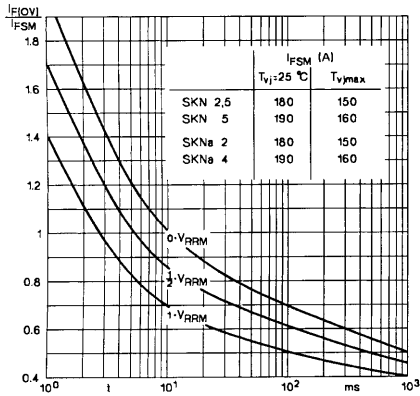


Fig. 7 Surge overload current vs. time

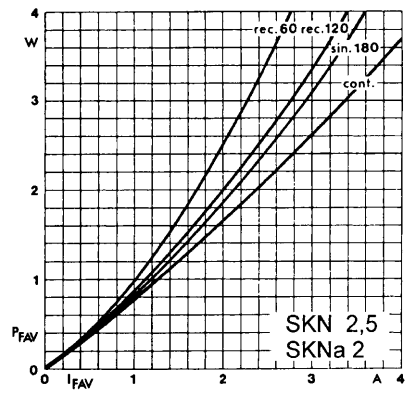


Fig. 8 a Power dissipation vs. forward current

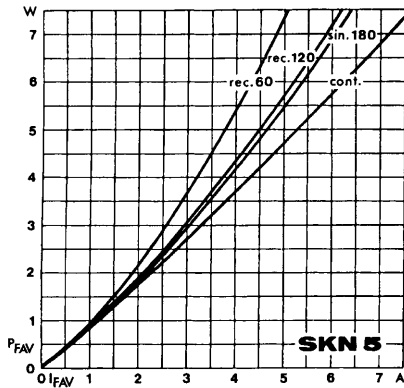


Fig. 8 b Power dissipation vs. forward current

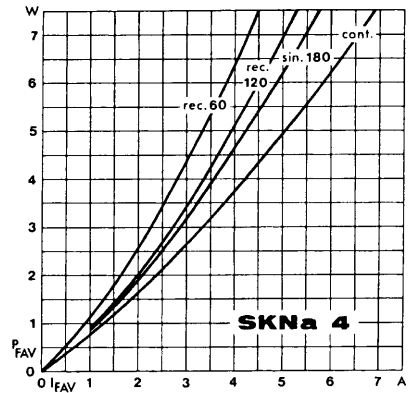


Fig. 8 c Power dissipation vs. forward current

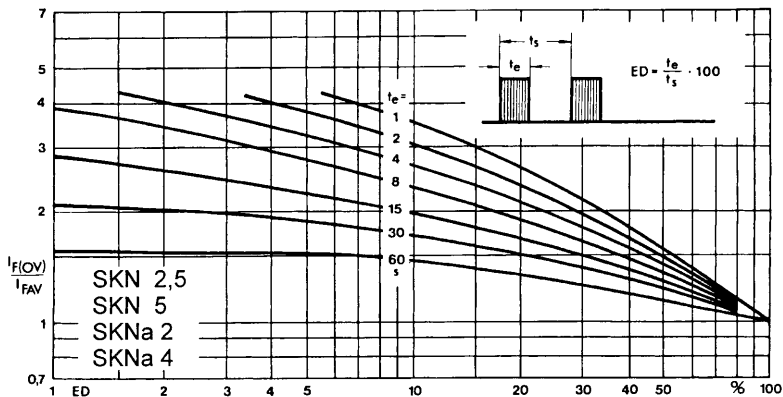


Fig. 9 Rated overload current vs. duty cycle

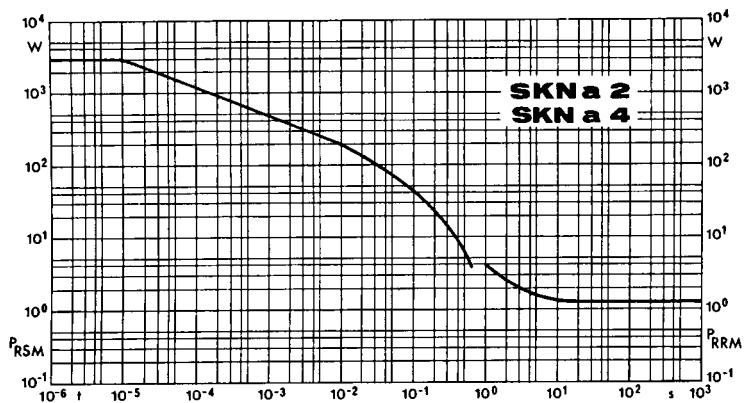
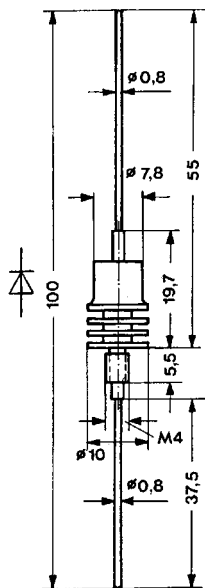


Fig. 11 Rated reverse power dissipation vs. time

SKN 2,5
SKNa 2

Case E 5

IEC: A 2*
BS 3934: SO-16*
JEDEC: DO-1*

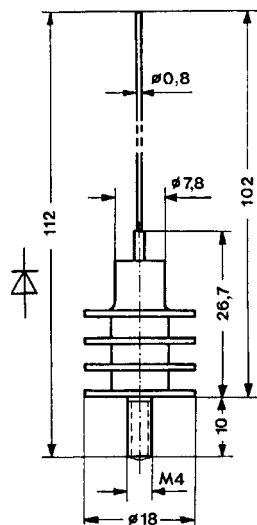


* modified

Dimensions in mm

SKN 5
SKNa 4

Case E 6



Dimensions in mm

Rectifier Diodes

SKN 20 **SKR 20**
SKNa 20 **SKR 20**
SKN 26 **SKR 26**



Features

- Reverse voltages up to 1600 V, Avalanche Types to 1700 V
- Hermetic metal cases with glass insulators
- Threaded studs ISO M6 (SKR 26 also 10 – 32 UNF)
- **SKN**: anode to stud
SKR: cathode to stud

Typical Applications

- All-purpose mean power rectifier diodes
 - Cooling via metal plates or heatsinks
 - Non-controllable and half-controllable rectifiers
 - Free-wheeling diodes
- Avalanche Types**
- DC supply for magnets or solenoids (brakes, valves, etc.)
 - Field coil supply for DC motors
 - Series connections for high voltage applications

* available with UNF thread
 10 – 32 UNF 2 A; e.g.
 SKR 26/02 UNF

V _{RRM} V _{RRM}	I _{FRMS} (maximum values for continuous operation) 40 A			
	I _{FAV} (sin. 180; T _{case} = 100 °C) 25 A			
	⚡	⚡	⚡	⚡
200	SKN 20/02	SKR 20/02	SKN 26/02	SKR 26/02*
400	SKN 20/04	SKR 20/04	SKN 26/04	SKR 26/04*
800	SKN 20/08	SKR 20/08	SKN 26/08	SKR 26/08*
1200	SKN 20/12	SKR 20/12	SKN 26/12	SKR 26/12*
1400	SKN 20/14	SKR 20/14	SKN 26/14	SKR 26/14*
1600	SKN 20/16	SKR 20/16	SKN 26/16	SKR 26/16*
Avalanche Types				
V _{(BR)min} V	I _{FAV} = 25 A (T _{case} = 73 °C)			
1300	SKNa 20/13			
1700	SKNa 20/17			

Symbol	Conditions	SKN 20 SKR 20	SKNa 20	SKN 26 SKR 26
I _{FAV}	sin. 180; T _{case} = 93 °C = 100 °C = 125 °C	– 25 A 20 A	20 A 18 A 11 A	– 25 A 20 A
I _{FSM}	T _{vj} = 25 °C; 10 ms T _{vj} = T _{vjmax} ; 10 ms	375 A 320 A		
i ² t	T _{vj} = 25 °C; 8,3 ... 10 ms T _{vj} = T _{vjmax} ; 8,3 ... 10 ms	700 A ² s 510 A ² s		
P _{RRM}	T _{vj} > 250 °C; t _p = 10 μs	–	6 kW	–
Q _{rr}	T _{vj} = 160 °C; – $\frac{dI_F}{dt} = 10 \frac{A}{\mu s}$	typ. 20 μC		
I _R	T _{vj} = 25 °C; V _R = V _{RRM} V _R = V _{(BR)min} T _{vj} = 180 °C; V _R = V _{RRM}	0,3 mA – 4 mA	– 10 μA –	0,3 mA – 4 mA
V _F	T _{vj} = 25 °C; I _F = 60 A; max.	1,55 V		
V _(TO)	T _{vj} = T _{vjmax}	0,85 V		
r _T	T _{vj} = T _{vjmax}	11 mΩ		
R _{thjc} R _{thch} T _{vjmin} T _{vjmax} T _{stg}		2 °C/W 1 °C/W – 40 °C 180 °C 150 °C 180 °C – 55 ... + 180 °C		
M a w	SI units/US units approx.	2,0 Nm/18 lb. in. 5 · 9,81 m/s ² 10 g 8 g		
RC R _p	P _R = 1 W P _R = 4 W	0,05 μF + 200 Ω 150 kΩ		
Case		E 9 E 8		

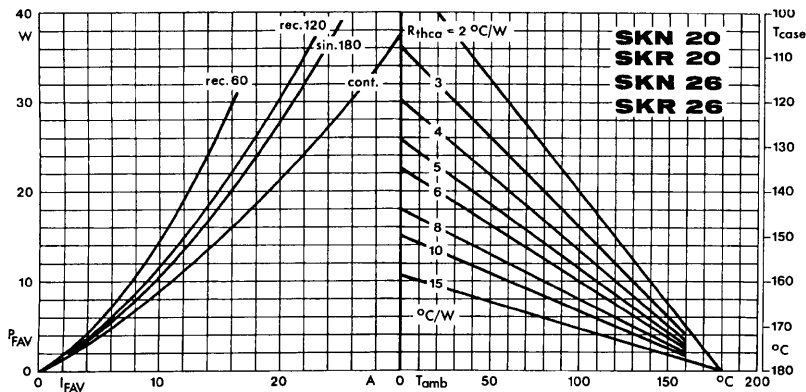


Fig. 1a Power dissipation vs. forward current and case temperature

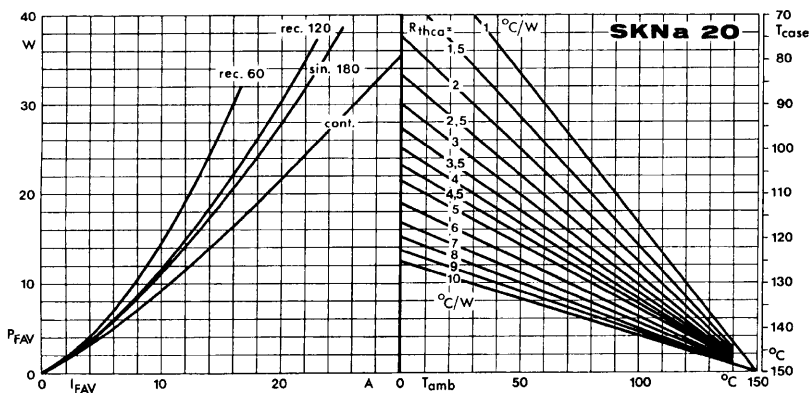


Fig. 1b Power dissipation vs. forward current and case temperature

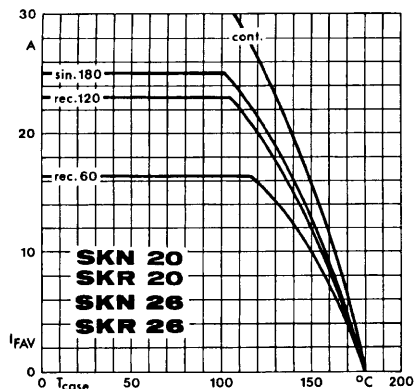


Fig. 3a Rated forward current vs. case temperature

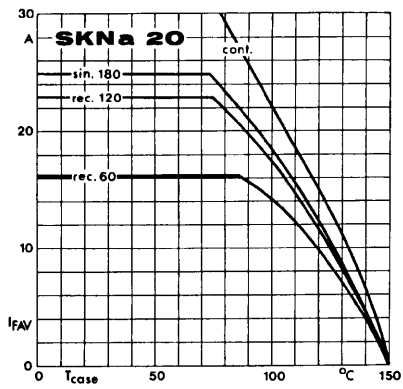


Fig. 3 b Rated forward current vs. case temperature

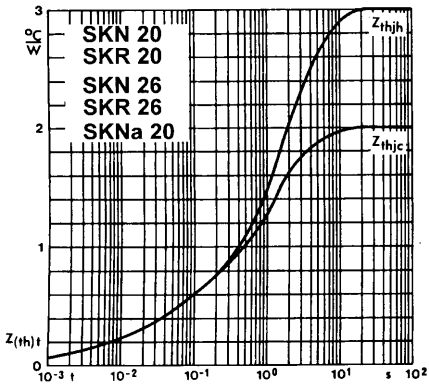


Fig. 5 Transient thermal impedance vs. time

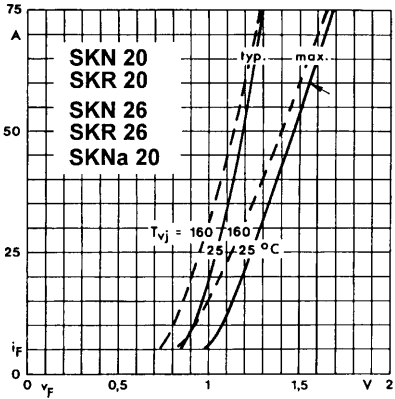


Fig. 6 Forward characteristics

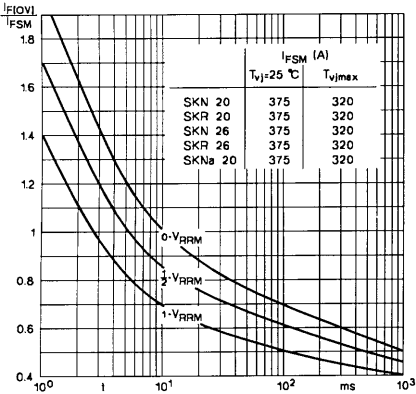


Fig. 7 Surge overload current vs. time

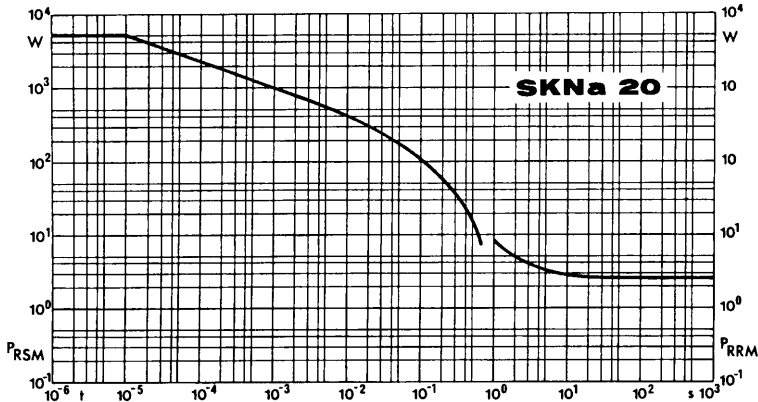


Fig. 11 Rated reverse power dissipation vs. time

Fast Recovery Rectifier Diodes

SKN 2 F 50
SKR 2 F 50



Features

- Small recovered charge
- Soft recovery
- Up to 1000 V reverse voltage
- Hermetic metal cases with glass insulators
- Threaded studs ISO M6 or 1/4-28 UNF
- **SKN**: anode to stud
- **SKR**: cathode to stud

Typical Applications

- Inverse diodes for power transistors, GTO thyristors, asymmetric thyristors
- SMPS, inverters, choppers
- For severe ambient conditions

V _{RSM} V _{RRM} V	I _{FRMS} (maximum values for continuous operation) 100 A	
	I _{FAV} (sin. 180; T _{case} = . . .) 50 A (105 °C) 50 A (95 °C)	
	t _{rr} = 200 ns	
400	SKN 2 F 50/04 SKN 2 F 50/04 UNF	SKR 2 F 50/04 SKR 2 F 50/04 UNF
600	SKN 2 F 50/06 SKN 2 F 50/06 UNF	SKR 2 F 50/06 SKR 2 F 50/06 UNF
800	SKN 2 F 50/08 SKN 2 F 50/08 UNF	SKR 2 F 50/08 SKR 2 F 50/08 UNF
1000	SKN 2 F 50/10 SKN 2 F 50/10 UNF	SKR 2 F 50/10 SKR 2 F 50/10 UNF

Symbol	Conditions	SKN 2 F 50	SKR 2 F 50	Units
I _{FAV}	sin.180; (T _{case} = . . .); f = 5000 Hz	50 (105 °C)	50 (95 °C)	A
	sin.180/rec.120; T _{amb} = 45 °C; K5	12/11	12/11	A
		K3	17/16	A
		K1,1	33/31	A
I _{FSM}	T _{vj} = 25 °C; 10 ms T _{vj} = 150 °C; 10 ms	1100 940	800 670	A A
i ² t	T _{vj} = 25 °C; 8,3 ... 10 ms T _{vj} = 150 °C; 8,3 ... 10 ms	6000 4400	3200 2200	A ² s A ² s
Q _{rr}	$\left\{ \begin{array}{l} T_{vj} = 130\text{ °C}; I_F = 100\text{ A}; \\ - dI_F = 30 \frac{\text{A}}{\mu\text{s}}; V_R = 30\text{ V} \end{array} \right.$	3		μC
I _{RM}		10		A
I _R	T _{vj} = 25 °C; V _R = V _{RRM} T _{vj} = 130 °C; V _R = V _{RRM}	0,4 50		mA mA
t _{rr}	T _{vj} = 25 °C } I _F = I _R = 1 A T _{vj} = 130 °C }	max. 200 typ. 400		ns ns
V _F	T _{vj} = 25 °C; I _F = 50 A	max. 1,8		V
V _(TO)	T _{vj} = 150 °C	1,2		V
r _T	T _{vj} = 150 °C	4		mΩ
R _{thjc}		0,5	0,65	°C/W
R _{thch}		0,25		°C/W
T _{vj}		- 40 ... + 150		°C
T _{stg}		- 55 ... + 150		°C
M	SI units	2,5		Nm
	US units	22		lb.in.
a		5 · 9,81		m/s ²
w	approx.	20		g
Case		E10		

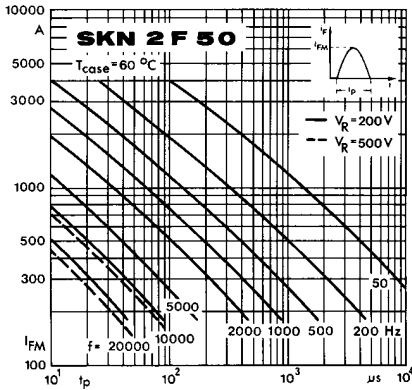


Fig. 1 a Rated sinusoidal peak forward current

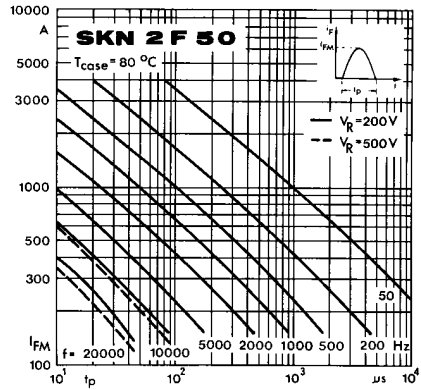


Fig. 1 b Rated sinusoidal peak forward current

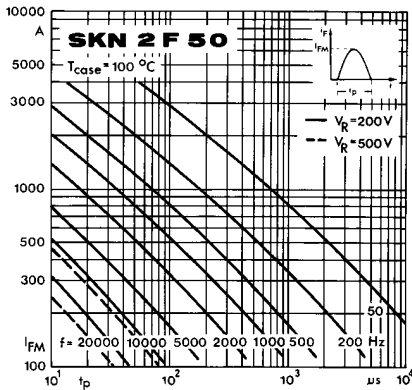


Fig. 1 c Rated sinusoidal peak forward current

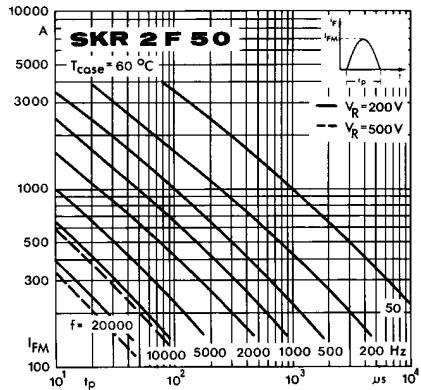


Fig. 1 d Rated sinusoidal peak forward current

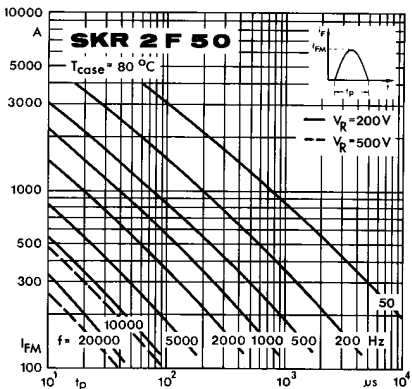


Fig. 1 e Rated sinusoidal peak forward current

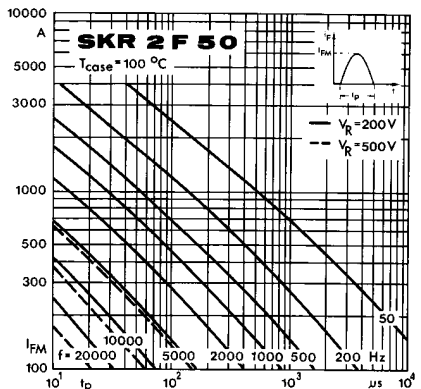


Fig. 1 f Rated sinusoidal peak forward current

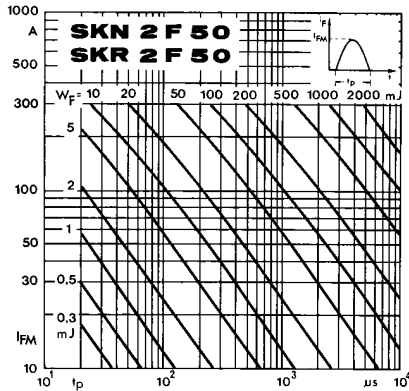


Fig. 2 Forward energy dissipation, sinusoidal

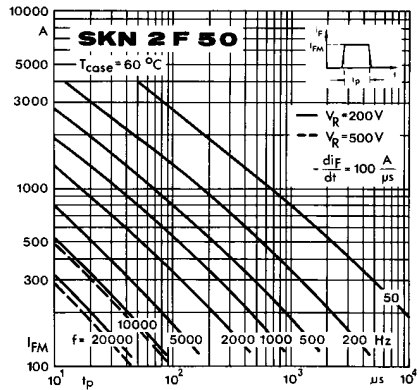


Fig. 3 a Rated rectangular peak forward current

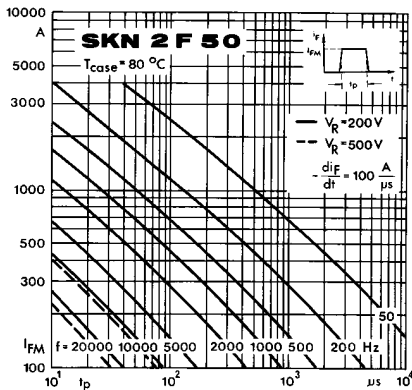


Fig. 3 b Rated rectangular peak forward current

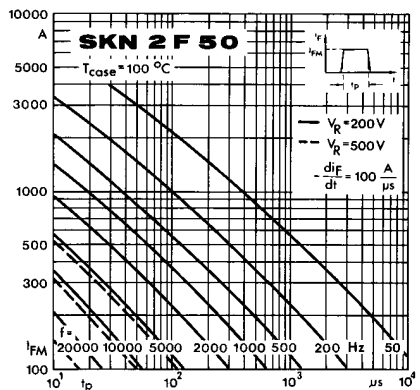


Fig. 3 c Rated rectangular peak forward current

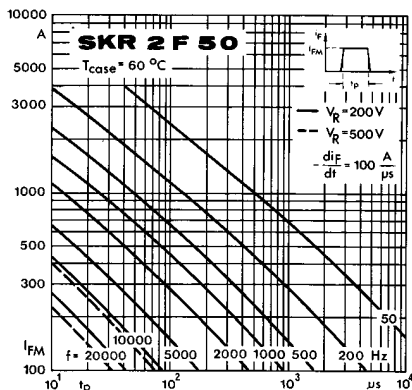


Fig. 3 d Rated rectangular peak forward current

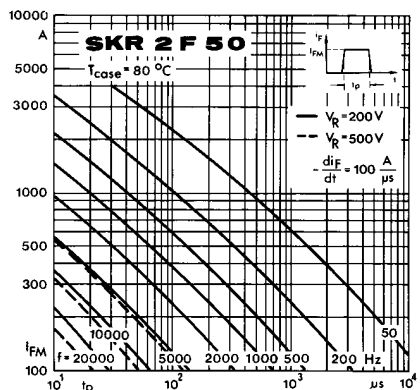


Fig. 3 e Rated rectangular peak forward current

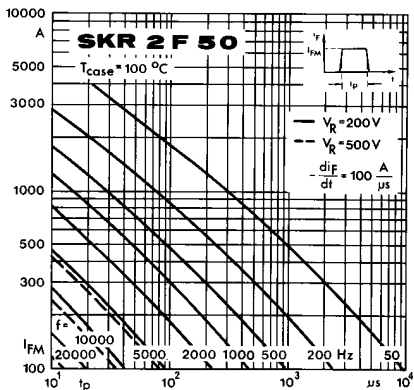


Fig. 3 f Rated rectangular peak forward current

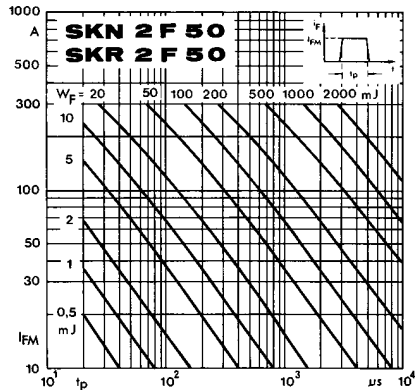


Fig. 4 Forward energy dissipation, rectangular

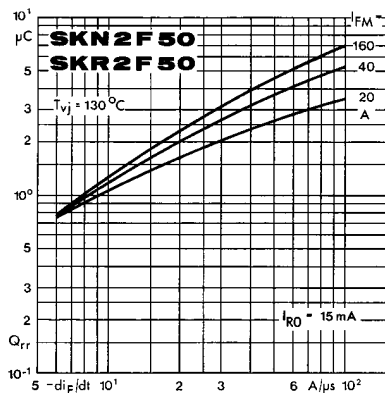


Fig. 5 Recovered charge

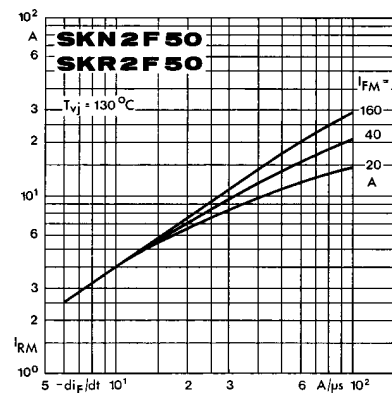


Fig. 6 Peak reverse recovery current

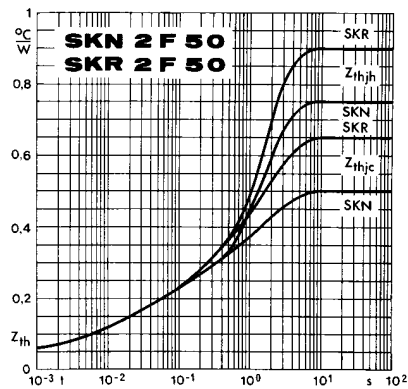


Fig. 7 Transient thermal impedance

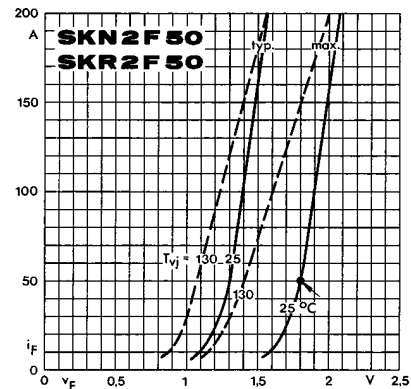


Fig. 8 Forward characteristics

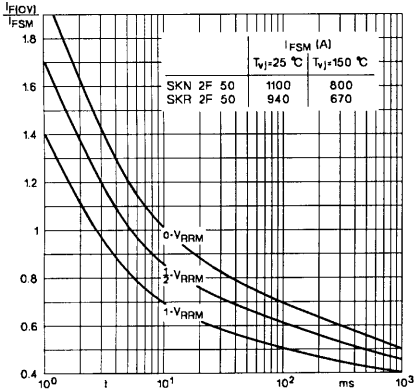
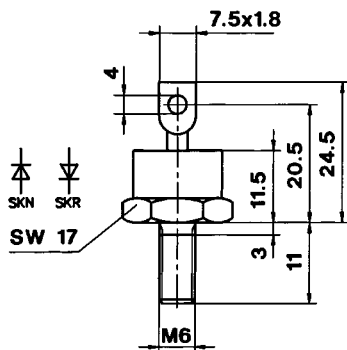


Fig. 9 Rated surge overload current

SKN 2 F 50
SKR 2 F 50

Case E 10

IEC-Publ. 191-2: A 4 M

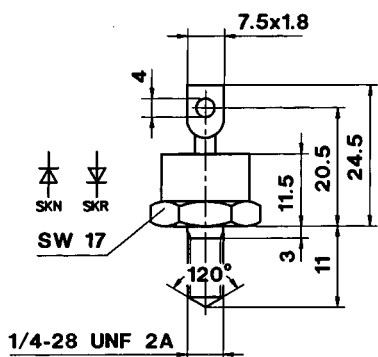


Dimensions in mm

SKN 2 F 50 ... UNF
SKR 2 F 50 ... UNF

Case E 10 UNF

IEC-Publ. 191-2: A 4 U
 JEDEC: DO-203 AB (DO-5)



Dimensions in mm

Rectifier Diodes

SKN 320 SKR 320
SKN 400



Features

- Reverse voltages up to 3000 V
- Hermetic metal cases with glass insulators; SKN 400 ceramic insulator with extra long creepage distances
- Threaded studs ISO M24 x 1,5
- **SKN**: anode to stud
- **SKR**: cathode to stud

Typical Applications

- SKN/SKR 320: all-purpose high power rectifier diodes
- SKN 400: high voltage rectifier diode, especially for traction applications
- Cooling via heatsinks
- Non-controllable and half-controllable rectifiers, free-wheeling diodes

V _{RSM} V _{RRM}	I _{FRMS} (maximum values for continuous operation) 700 A		
	I _{FAV} (sin. 180; T _{case} = 100 °C) 420 A		
			400 A
V			
200	SKN 320/02	SKR 320/02	–
400	SKN 320/04	SKR 320/04	–
800	SKN 320/08	SKR 320/08	–
1200	SKN 320/12	SKR 320/12	–
1400	SKN 320/14	SKR 320/14	–
1600	SKN 320/16	SKR 320/16	–
1800	–	–	SKN 400/18
2400	–	–	SKN 400/24
2700	–	–	SKN 400/27
3000	–	–	SKN 400/30

Symbol	Conditions	SKN 320 SKR 320	SKN 400
I _{FAV}	sin. 180; T _{case} = 87 °C = 100 °C = 125 °C	– 420 A 320 A	450 A 400 A –
I _{FSM}	T _{vj} = 25 °C; 10 ms T _{vj max.} ; 10 ms	9 000 A 8 000 A	9 000 A 7 500 A
i ² t	T _{vj} = 25 °C; 8,3 ... 10 ms T _{vj max.} ; 8,3 ... 10 ms	400 000 A ² s 300 000 A ² s	400 000 A ² s 280 000 A ² s
Q _{rr}	T _{vj} = 160 °C; – $\frac{di_F}{dt} = 10 \frac{A}{\mu s}$	typ. 300 μC	typ. 400 μC
I _R	T _{vj} = 25 °C; V _R = V _{RRM} T _{vj max.} ; V _R = V _{RRM}	3 mA 100 mA	3 mA 60 mA
V _F	T _{vj} = 25 °C; (I _F = ...); max.	1,35 V (1000 A)	1,45 V (1200 A)
V _(TO)	T _{vj max.}	0,8 V	0,9 V
r _T	T _{vj max.}	0,45 mΩ	0,5 mΩ
R _{thjc}		0,16 °C/W	0,11 °C/W
R _{thch}		0,015 °C/W	0,01 °C/W
T _{vj}		– 40 ... + 180 °C	– 40 ... + 160 °C
T _{stg}		– 55 ... + 180 °C	– 55 ... + 160 °C
M a w	SI units/US units approx.	60 Nm/530 lb. in. 5 · 9,81 m/s ² 500 g	
RC R _p	P _R = 2 W P _R = 20 W	1 μF + 20 Ω 25 kΩ	
Case		E 16	E 17

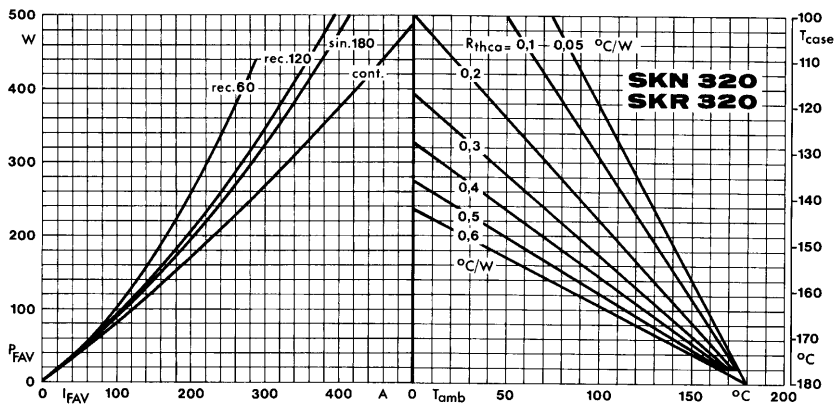


Fig. 1 a Power dissipation vs. forward current and case temperature

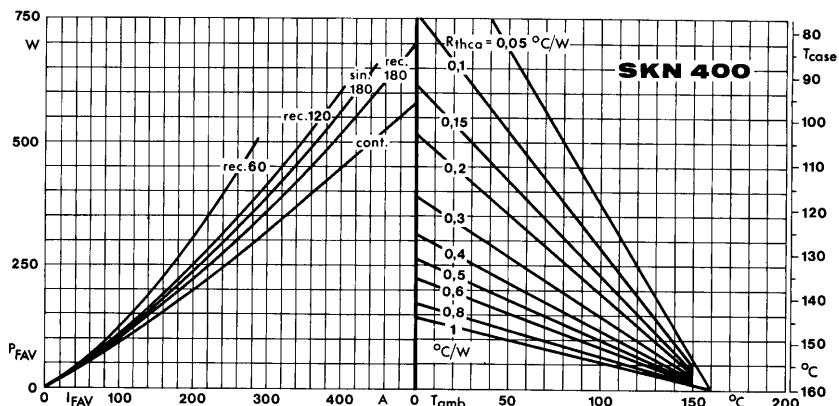


Fig. 1 b Power dissipation vs. forward current and case temperature

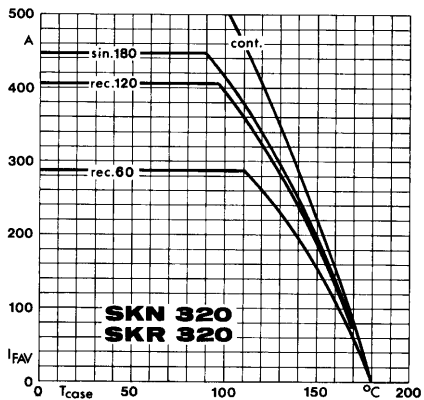


Fig. 3 a Rated forward current vs. case temperature

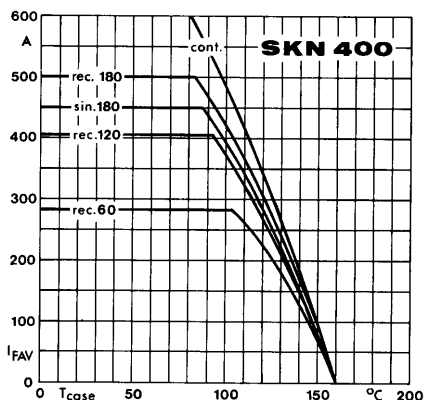


Fig. 3 b Rated forward current vs. case temperature

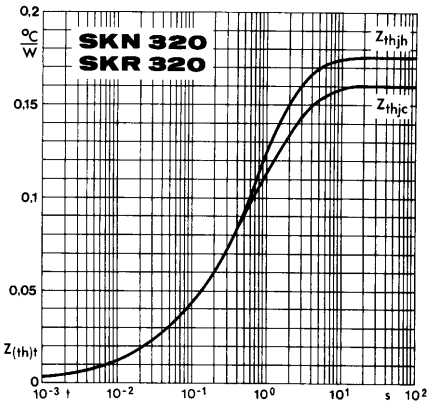


Fig. 5 a Transient thermal impedance vs. time

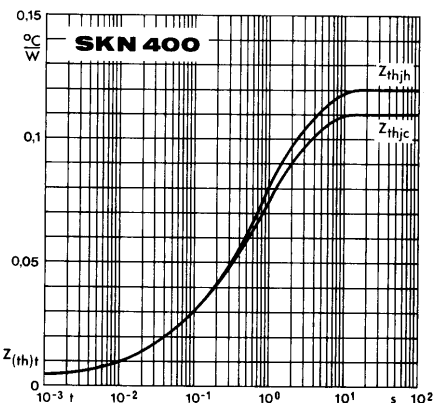


Fig. 5 b Transient thermal impedance vs. time

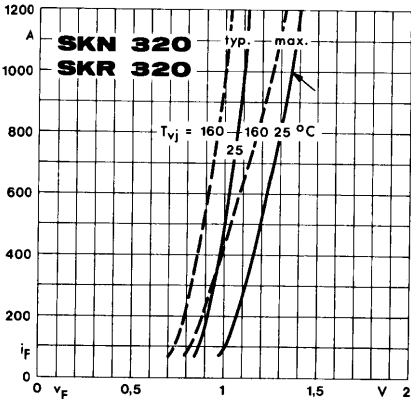


Fig. 6 a Forward characteristics

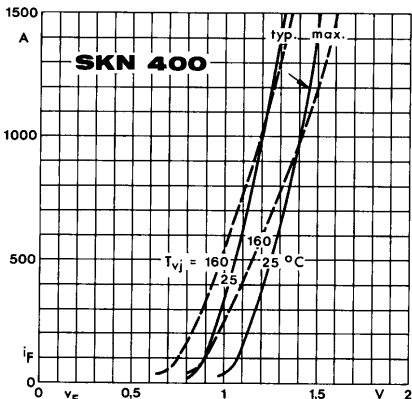


Fig. 6 b Forward characteristics

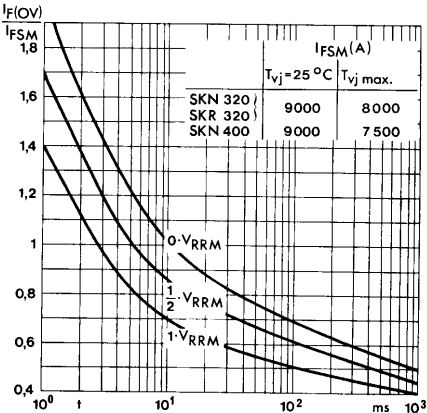


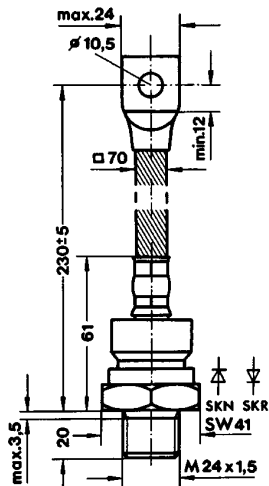
Fig. 7 Surge overload current vs. time

SKN 320
SKR 320

Case E 16

IEC: A 22 B

DIN 41 888: 107 B

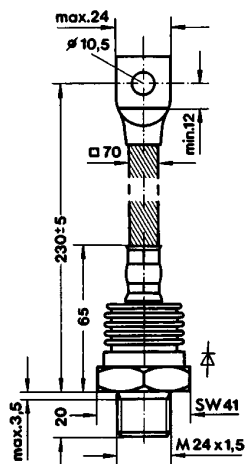


SKN 400

Case E 17

IEC: A 22 B

DIN 41 888: 107 B 2

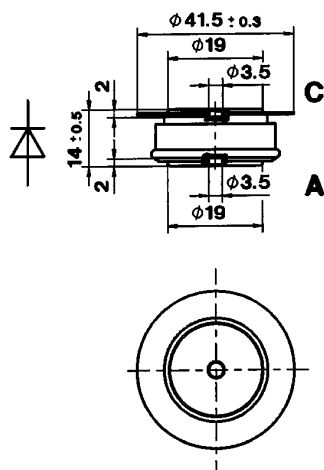


SKN 450
SKN 501

Case E 18

DIN 41 814: 151 A 2

JEDEC: DO-200 AA

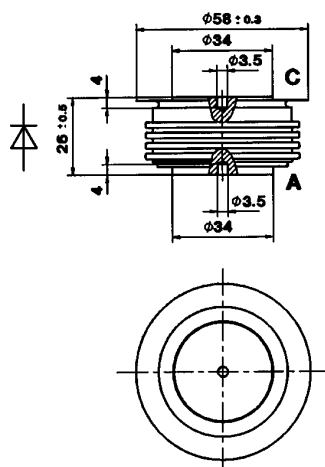


SKN 870

Case E 19

DIN 41 814: 153 C 2

JEDEC: DO-200 AB



Dimensions in mm

Fast Recovery Rectifier Diodes

SKN 2 F 17 SKN 3 F 20 **SKR 2 F 17 SKR 3 F 20**



V _{RRM} V _{RRM} V	I _{FRMS} (maximum values for continuous operation) 41 A			
	I _{FAV} (sin. 180; T _{case} = 85 °C) 26 A			
	t _{rr} = 150 ns		t _{rr} = 250 ns	
	⚡	⚡	⚡	⚡
400	SKN 2F17/04 SKN 2F17/04UNF	SKR 2F17/04 SKR 2F17/04UNF	-	-
600	SKN 2F17/06 SKN 2F17/06UNF	SKR 2F17/06 SKR 2F17/06UNF	-	-
800	SKN 2F17/08 SKN 2F17/08UNF	SKR 2F17/08 SKR 2F17/08UNF	SKN 3F20/08 SKN 3F20/08UNF	SKR 3F20/08 SKR 3F20/08UNF
1000	SKN 2F17/10 SKN 2F17/10UNF	SKR 2F17/10 SKR 2F17/10UNF	SKN 3F20/10 SKN 3F20/10UNF	SKR 3F20/10 SKR 3F20/10UNF
1200	-	-	SKN 3F20/12 SKN 3F20/12UNF	SKR 3F20/12 SKR 3F20/12UNF

Symbol	Conditions	SKN 2 F 17 SKR 2 F 17	SKN 3 F 20 SKR 3 F 20	Units
I _{FAV}	sin.180; T _{case} = 85 °C; f=5000 Hz = 104 °C = 113 °C sin.180/rec.120; T _{amb} = 5 °C; K9 K5	26 - 17	26 20 -	A A A A A
I _{FSM}	T _{vj} = 25 °C; 10 ms T _{vj} = 150 °C; 10 ms	450 380	375 310	A A
i ² _t	T _{vj} = 25 °C; 8,3 ... 10 ms T _{vj} = 150 °C; 8,3 ... 10 ms	1000 720	700 480	A ² s A ² s
Q _{rr}	T _{vj} = 130 °C; I _F = 50 A;	1,0	1,5	μC
I _{RM}	$-\frac{dI_F}{dt} = 15 \frac{A}{\mu s}$; V _R = 30 V	4,5	5	A
I _R	T _{vj} = 25 °C; V _R = V _{RRM} T _{vj} = 130 °C; V _R = V _{RRM}	max. 0,2 max. 16	max. 0,2 max. 20	mA mA
t _{rr}	T _{vj} = 25 °C T _{vj} = 130 °C } I _F = I _R = 1 A	max. 150 typ. 300	max. 250 typ. 500	ns ns
V _F	T _{vj} = 25 °C; I _F = 50 A	max. 2,15		V
V _(TO)	T _{vj} = 130 °C	1,3		V
r _T	T _{vj} = 130 °C	12		mΩ
R _{thjc}		1,2		°C/W
R _{thch}		0,5		°C/W
T _{vj}		- 40 ... + 150		°C
T _{stg}		- 55 ... + 150		°C
M	SI units US units	1,5 13		Nm lb.in.
a		5 · 9,81		m/s ²
w		7		g
Case		E7		

Features

- Small recovered charge
- Soft recovery
- Up to 1200 V reverse voltage
- Hermetic metal cases with glass insulators
- Threaded studs ISO M5 or 10-32 UNF
- **SKN**: anode to stud
- **SKR**: cathode to stud

Typical Applications

- Inverse diodes for power transistors, GTO thyristors asymmetric thyristors
- SMPS, inverters, choppers
- For severe ambient conditions

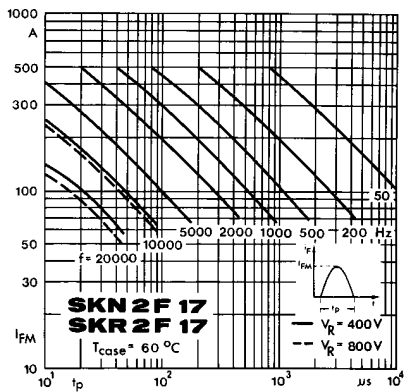


Fig. 1 a Rated sinusoidal peak forward current

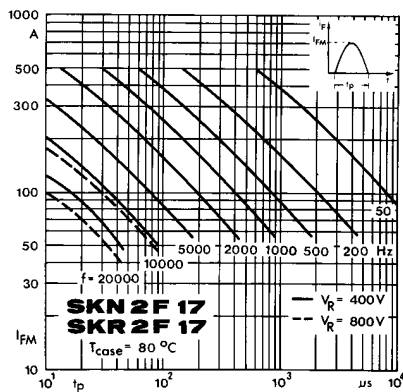


Fig. 1 b Rated sinusoidal peak forward current

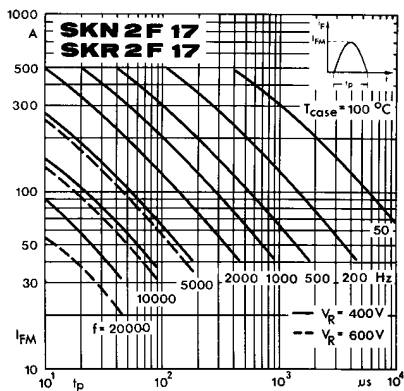


Fig. 1 c Rated sinusoidal peak forward current

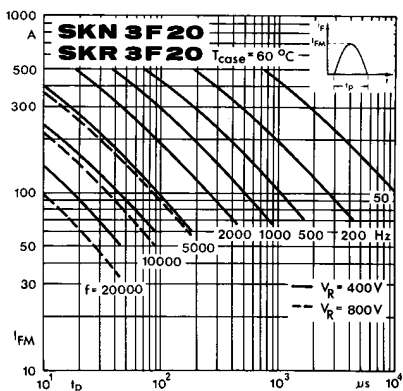


Fig. 1 d Rated sinusoidal peak forward current

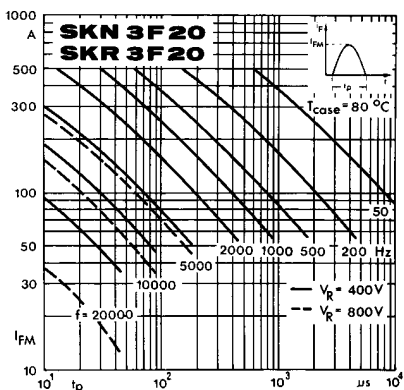


Fig. 1 e Rated sinusoidal peak forward current

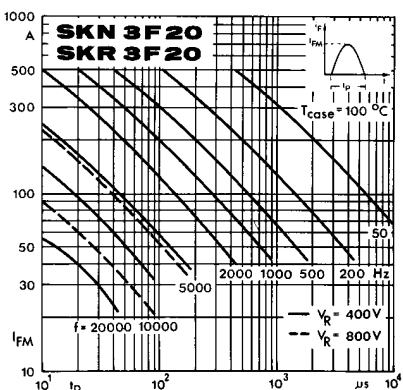


Fig. 1 f Rated sinusoidal peak forward current

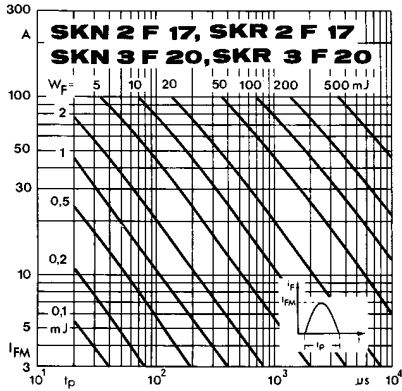


Fig. 2 Forward energy dissipation, sinusoidal

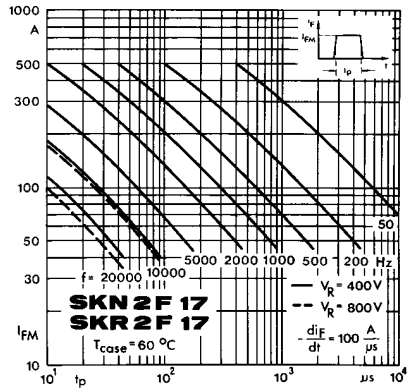


Fig. 3 a Rated rectangular peak forward current

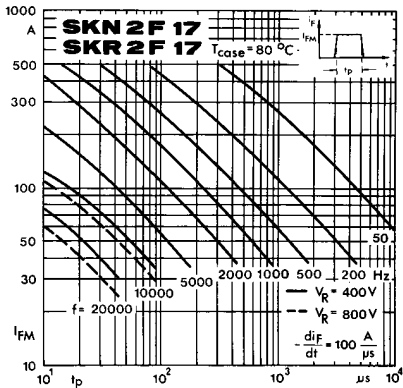


Fig. 3 b Rated rectangular peak forward current

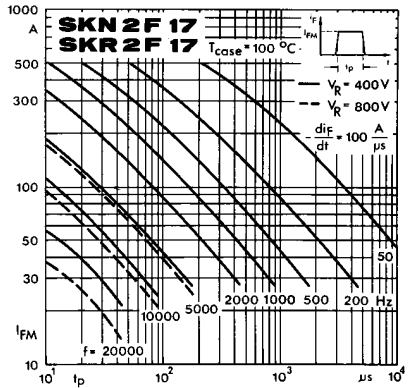


Fig. 3 c Rated rectangular peak forward current

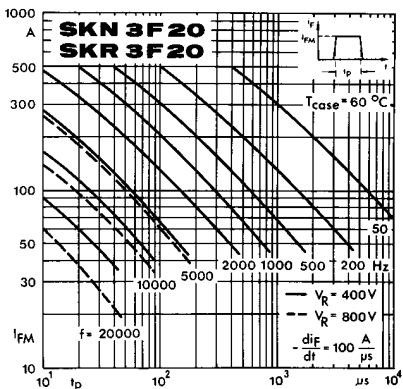


Fig. 3 d Rated rectangular peak forward current

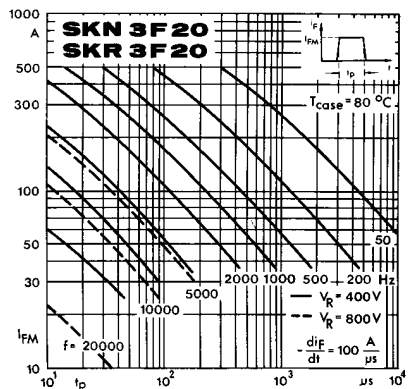


Fig. 3 e Rated rectangular peak forward current

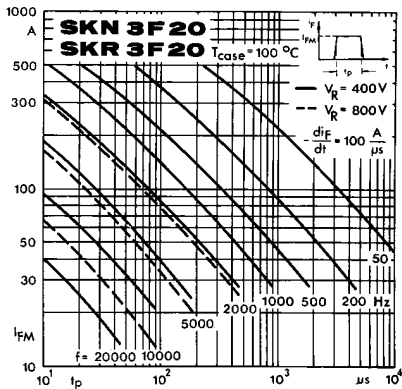


Fig. 3 f Rated rectangular peak forward current

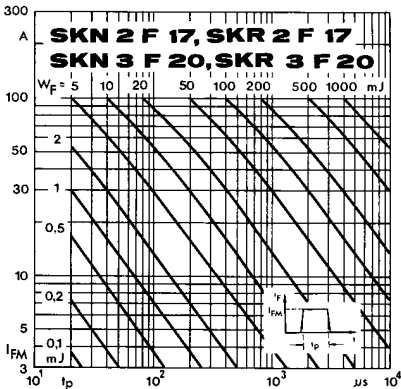


Fig. 4 Forward energy dissipation, rectangular

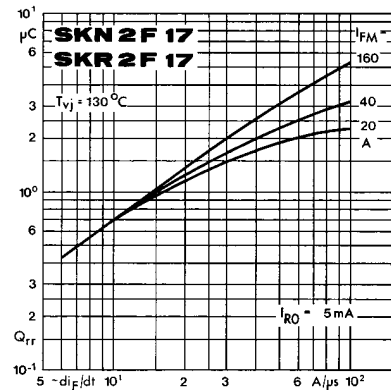


Fig. 5 a Recovered charge

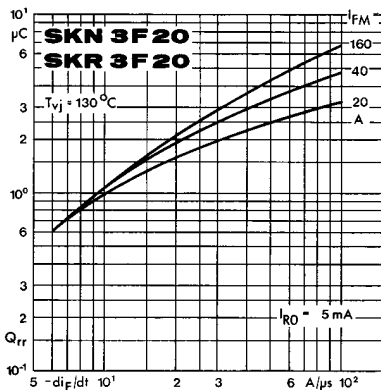


Fig. 5 b Recovered charge

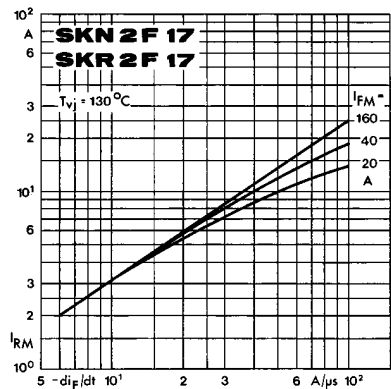


Fig. 6 a Peak reverse recovery current

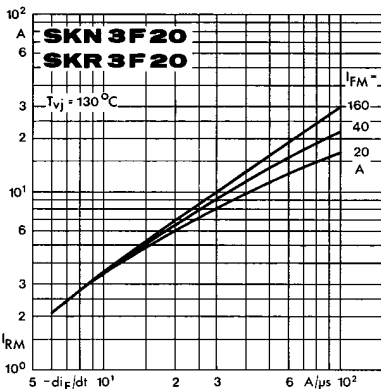


Fig. 6 b Peak reverse recovery current

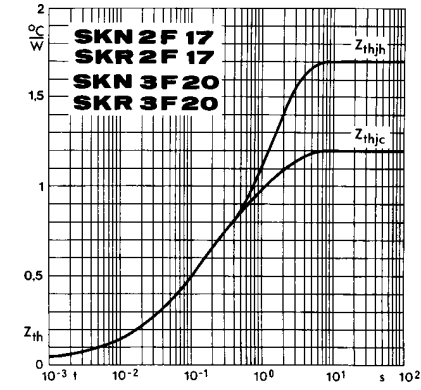


Fig. 7 Transient thermal impedance

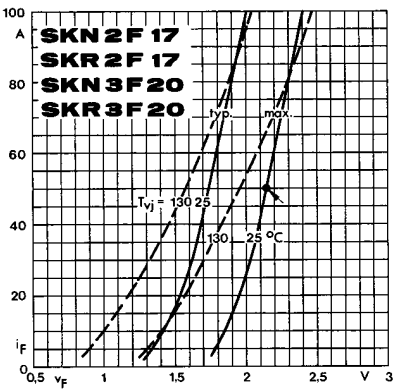


Fig. 8 Forward characteristics

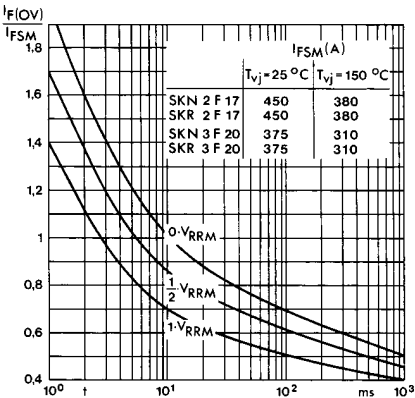


Fig 9 Rated surge overload current

SKR 3 F 20

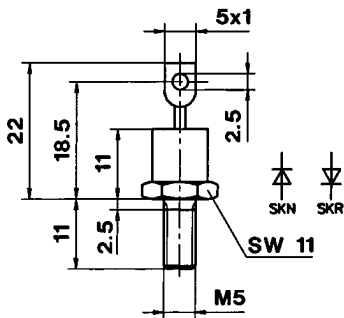
Case E 7

IEC-Publ. 191-2: A 3 M

DIN 41 885: 101 C 2

BS 3934: SO-10

JEDEC: DO-203 AA (DO-4) metric



Dimensions in mm

SKN 2 F 17 LINE

SKR 2 F 17... UNF

SKN 3 F 20... UNF

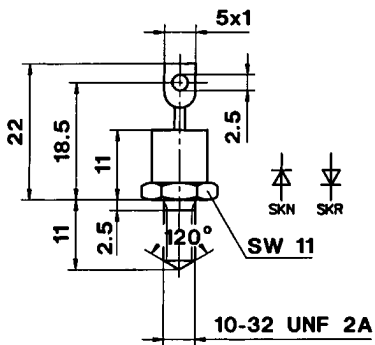
SKR 3 F 20... UNF

Case E 7 UNF

IEC-Publ. 191-2: A 3 U

BS 3934: SO-10

JEDEC: DO-203 AA (DO-4)



Dimensions in mm

Rectifier Diodes

SKN 45 SKR 45
SKN 70 SKR 70
SKN 71 SKR 71

V _{RSM} V _{RRM} V	I _{FRMS} (maximum values for continuous operation)					
	80 A			150 A		
	I _{FAV} (sin. 180; T _{case} = . . .)					
	50 A (118 °C)			95 A (100 °C)		
						
200	SKN45/02	SKR45/02	SKN70/02	SKR70/02	SKN71/02*	SKR71/02*
400	SKN45/04	SKR45/04	SKN70/04	SKR70/04	SKN71/04*	SKR71/04*
800	SKN45/08	SKR45/08	SKN70/08	SKR70/08	SKN71/08*	SKR71/08*
1200	SKN45/12	SKR45/12	SKN70/12	SKR70/12	SKN71/12*	SKR71/12*
1400	SKN45/14	SKR45/14	SKN70/14	SKR70/14	SKN71/14	SKR71/14*
1600	SKN45/16	SKR45/16	SKN70/16	SKR70/16	SKN71/16*	SKR71/16*

Symbol	Conditions	SKN 45 SKR 45	SKN 70 SKR 70	SKN 71 SKR 71
I _{FAV}	sin. 180; T _{case} = 100 °C = 118 °C = 125 °C	50 A 45 A	95 A 70 A	
I _{FSM}	T _{vj} = 25 °C; 10 ms T _{vj} = 180 °C; 10 ms	700 A 600 A	1150 A 1000 A	
i ² t	T _{vj} = 25 °C; 8,3 ... 10 ms T _{vj} = 180 °C; 8,3 ... 10 ms	2500 A ² s 1800 A ² s	6600 A ² s 5000 A ² s	
Q _{rr}	T _{vj} = 160 °C; $-\frac{di_F}{dt} = 10 \frac{A}{\mu s}$	typ. 70 μC	typ. 70 μC	
I _R	T _{vj} = 25 °C; V _R = V _{RRM} T _{vj} = 180 °C; V _R = V _{RRM}	0,6 mA 10 mA	0,6 mA 10 mA	
V _F	T _{vj} = 25 °C; (I _F = . . .); max.	1,6 V (150 A)	1,5 V (200 A)	
V _(TO)	T _{vj} = 180 °C	0,85 V	0,85 V	
r _T	T _{vj} = 180 °C	5 mΩ	3 mΩ	
R _{thjc} R _{thch} T _{vj} T _{stg}		0,85 °C/W 0,25 °C/W - 40 ... + 180 °C - 55 ... + 180 °C	0,55 °C/W 0,2 °C/W	
M a w	M 8 1/4-28 UNF 2 A } SI units/ US units approx.	4 Nm/35 lb. in. 2,5 Nm/22 lb. in. 5 · 9,81 m/s ² 30 g		
RC	(P _R = . . .)	0,1 μ + 100 Ω (1 W)	0,1 μF + 100 Ω (2 W)	
R _p	P _R = 6 W	80 kΩ	80 kΩ	
Case		E 12	E 12	E 11



Features

- Reverse voltages up to 1600 V
- Hermetic metal cases with glass insulators
- Threaded studs ISO M8 (SKN/R 71 also 1/4-28 UNF)
- **SKN**: anode to stud
SKR: cathode to stud

Typical Applications

- All-purpose mean power rectifier diodes
- Cooling via heatsinks
- Non-controllable and half-controllable rectifiers
- Free-wheeling diodes

* available with UNF thread 1/4-28 UNF 2 A; e.g. SKN 71/02 UNF

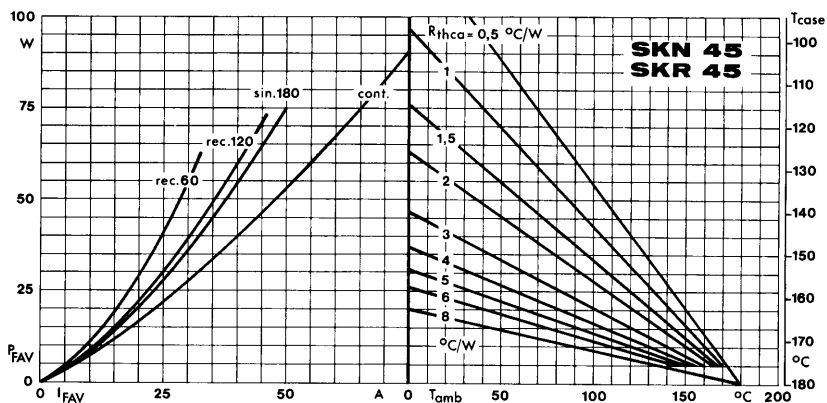


Fig. 1 a Power dissipation vs. forward current and case temperature

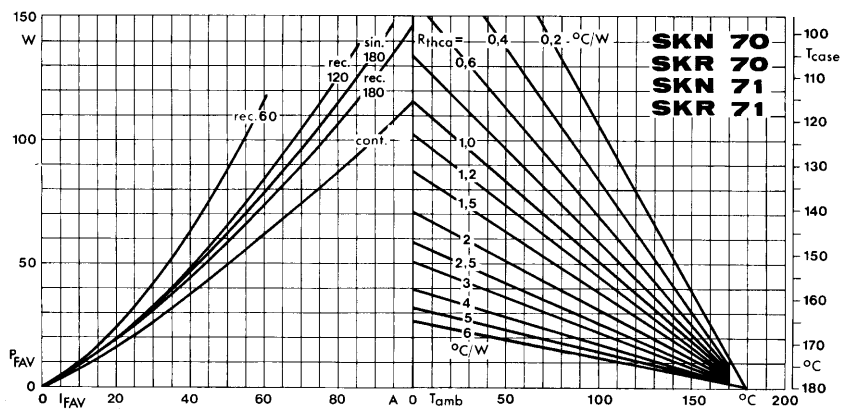


Fig. 1 b Power dissipation vs. forward current and case temperature

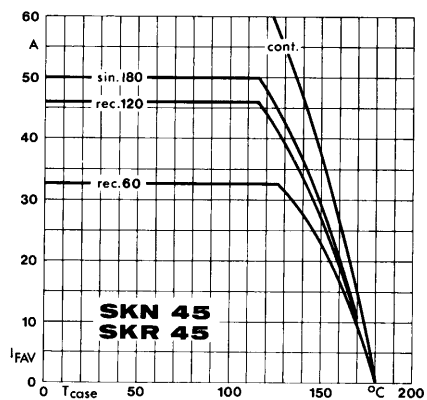


Fig. 3 a Rated forward current vs. case temperature

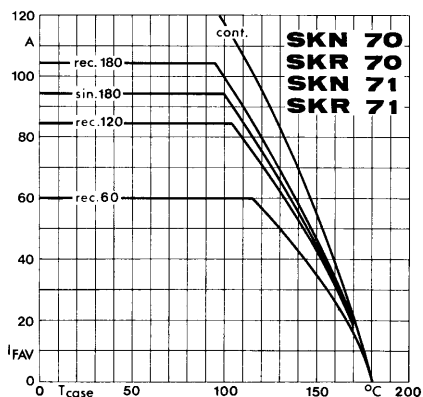


Fig. 3 b Rated forward current vs. case temperature

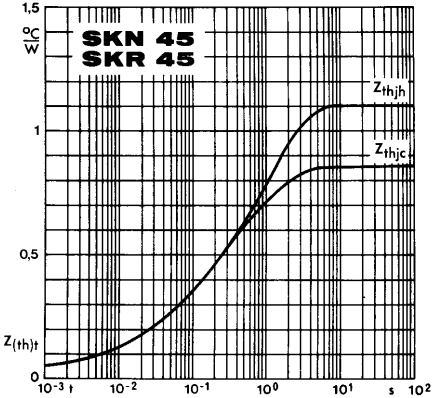


Fig. 5 a Transient thermal impedance vs. time

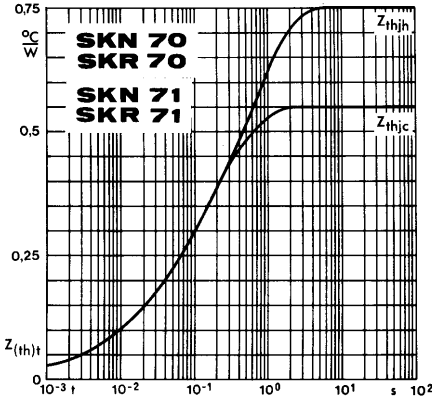


Fig. 5 b Transient thermal impedance vs. time

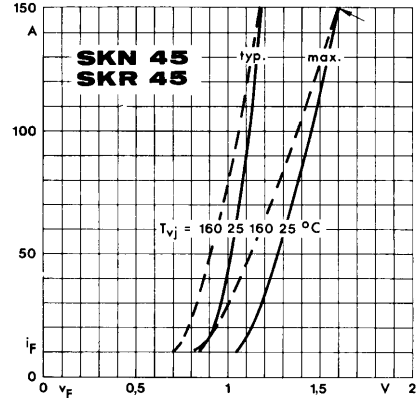


Fig. 6 a Forward characteristics

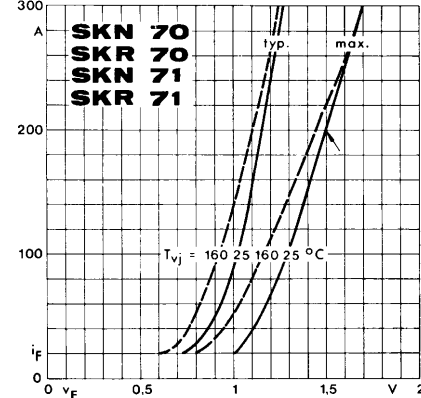


Fig. 6 b Forward characteristics

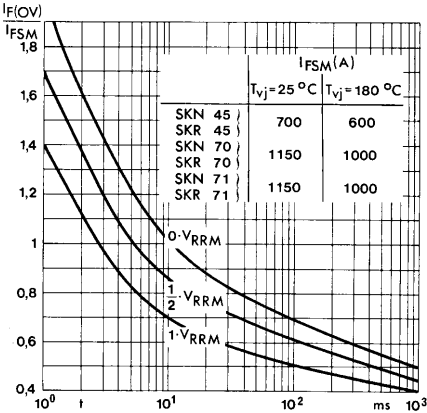
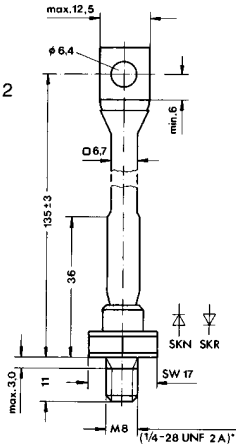


Fig. 7 Surge overload current vs. time

SKN 45, SKR 45
SKN 70, SKR 70

Case E 12

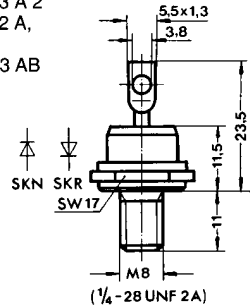
IEC: A 16 U; A 17 M B 2
DIN 41 886: 103 A 2
BS 3934: SO-32 A,
SO-32 B



SKN 71
SKR 71

Case E 11

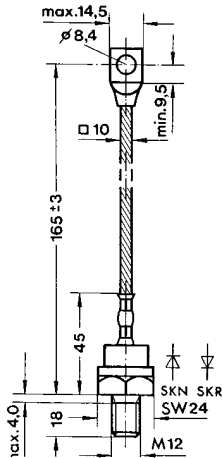
IEC: A 16 U; A 17 M B 2
DIN 41 886: 103 A 2
BS 3934: SO-32 A,
SO-32 B
JEDEC: DO-203 AB
(DO-5)



SKN 100
SKR 100

Case E 13

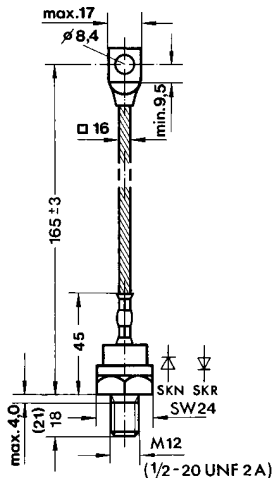
IEC: A 9 MA¹⁾
DIN 41 887: 105 B 2¹⁾
BS 3934: SO-29 B
JEDEC: DO-205 AC



SKN 130
SKR 130

Case E 14

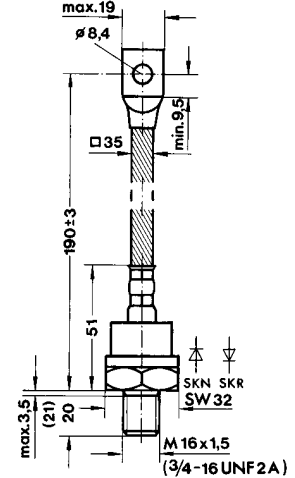
IEC: A 9 MA¹⁾
DIN 41 887: 105 B 2¹⁾
BS 3934: SO-29 B
JEDEC: DO-205 AC
(DO-30)²⁾



SKN 240
SKR 240

Case E 15

IEC: A 15 M
DIN 41 887: 106 B 2
BS 3934: SO-42
JEDEC: DO-205 AB
(DO-9)



¹⁾ modified
²⁾ available with thread 1/2-20 UNF 2 A or 3/8-28 UNF 2 A

Dimensions in mm