



SEMIPACK®

Fast Diode Modules

SKKE800F17

Features*

- CAL4 = Soft switching 4. Generation CAL-Diode
- Heat transfer through aluminum oxide DCB ceramic insulated metal baseplate
- Small recovery charge
- UL recognized, file no. E63532

Typical Applications

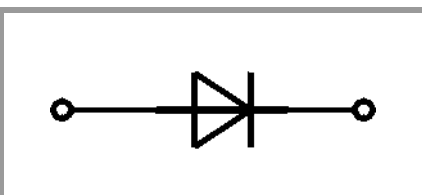
- Freewheeling diodes for IGBT
- Freewheeling diode for inductive loads
- Brake choppers
- Inverters and DC choppers
- AC motor control
- Boost choppers

Remarks

- Case temperature limited to $T_c = 125^\circ\text{C}$ max.
- Recommended $T_{j,op} = -40 \dots +150^\circ\text{C}$
- Product reliability results valid for $T_j = 150^\circ\text{C}$

Absolute Maximum Ratings				
Symbol	Conditions		Values	Unit
Diode				
V_{RRM}	$T_j = 25^\circ\text{C}$		1700	V
I_F	$T_j = 175^\circ\text{C}$	$T_c = 25^\circ\text{C}$	953	A
		$T_c = 100^\circ\text{C}$	601	A
I_{FRM}			1600	A
I_{FSM}	10 ms	$T_j = 25^\circ\text{C}$	4160	A
		$T_j = 150^\circ\text{C}$	3712	A
i^2t	10 ms	$T_j = 25^\circ\text{C}$	86528	A^2s
		$T_j = 150^\circ\text{C}$	68895	A^2s
T_j			-40 ... 175	$^\circ\text{C}$
Module				
T_{stg}			-40 ... 125	$^\circ\text{C}$
V_{isol}	a.c.; 50 Hz; r.m.s.	1 min	4000	V
		1 s	4800	V

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Diode						
V_F	$I_F = 800\text{ A}$ chipelevel	$T_j = 25^\circ\text{C}$		2.00	2.40	V
		$T_j = 150^\circ\text{C}$		2.15	2.57	V
V_{F0}	chipelevel	$T_j = 25^\circ\text{C}$		1.32	1.56	V
		$T_j = 150^\circ\text{C}$		1.08	1.22	V
r_F	chipelevel	$T_j = 25^\circ\text{C}$		0.86	1.05	$\text{m}\Omega$
		$T_j = 150^\circ\text{C}$		1.34	1.69	$\text{m}\Omega$
I_R	$V_R = V_{RRM}$	$T_j = 25^\circ\text{C}$			0.68	mA
		$T_j = 150^\circ\text{C}$			200	mA
Q_{rr}	$I_F = 800\text{ A}$ $di/dt_{off} = 4000\text{ A}/\mu\text{s}$ $V_R = 1200\text{ V}$	$T_j = 150^\circ\text{C}$		210		μC
I_{RRM}		$T_j = 150^\circ\text{C}$		400		A
t_{rr}		$T_j = 150^\circ\text{C}$		1.2		μs
E_{rr}		$T_j = 150^\circ\text{C}$		140		mJ
$R_{th(j-c)}$	per diode				0.058	K/W
$R_{th(c-s)}$	per diode/module ($\lambda_{grease}=0.81\text{ W}/(\text{m}^2\text{K})$)			0.045		K/W
$R_{th(c-s)}$	per diode/module, pre-applied phase change material			-		K/W
Module						
L_{CE}				15		nH
$R_{CC'+EE'}$	measured per switch	$T_c = 25^\circ\text{C}$		0.23		$\text{m}\Omega$
		$T_c = 125^\circ\text{C}$		0.3		$\text{m}\Omega$
M_s	to heat sink M6		3		5	Nm
M_t	to terminals M6		2.5		5	Nm
a					$5 * 9.81$	m/s^2
w				330		g



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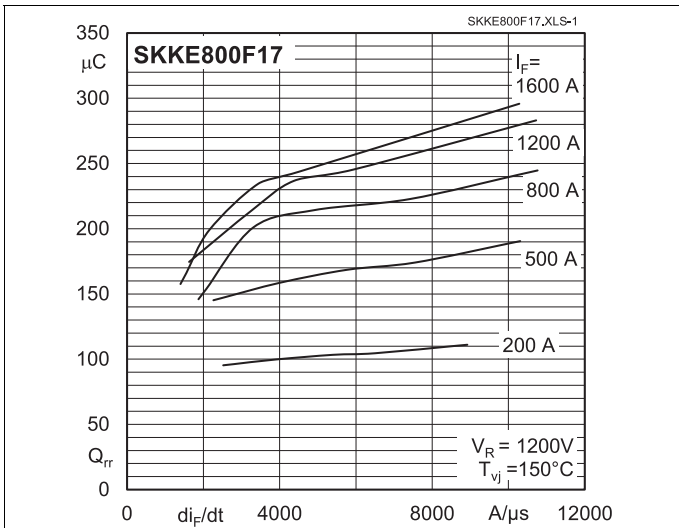


Fig. 1: Typ. recovery charge vs. current decrease

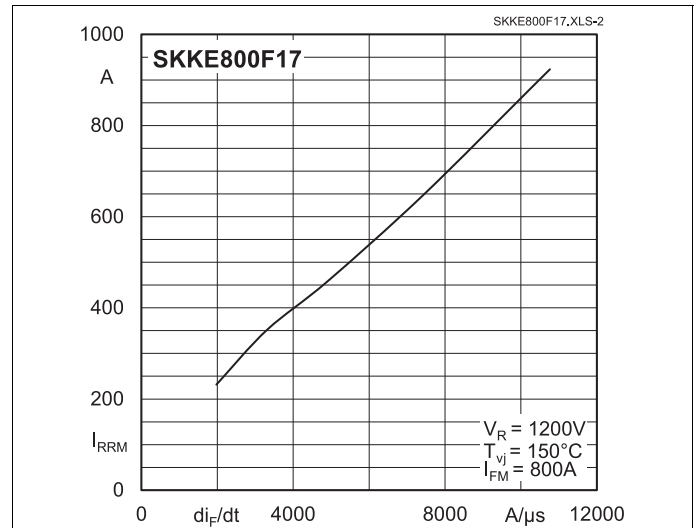


Fig. 2: Peak recovery current vs. current decrease

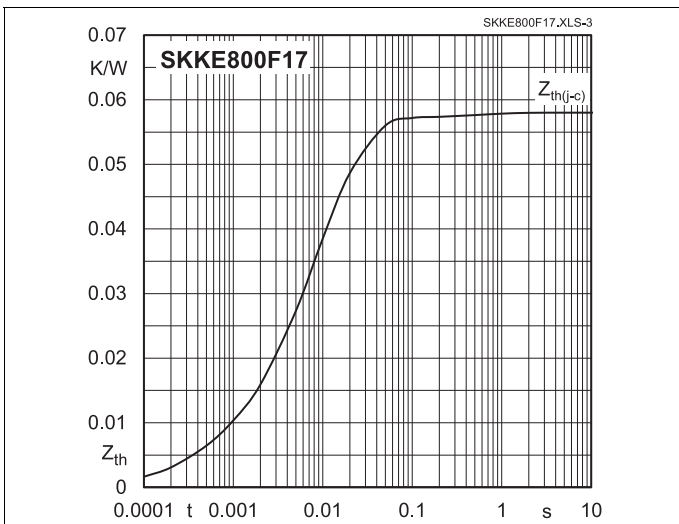


Fig. 3: Transient thermal impedance vs. time

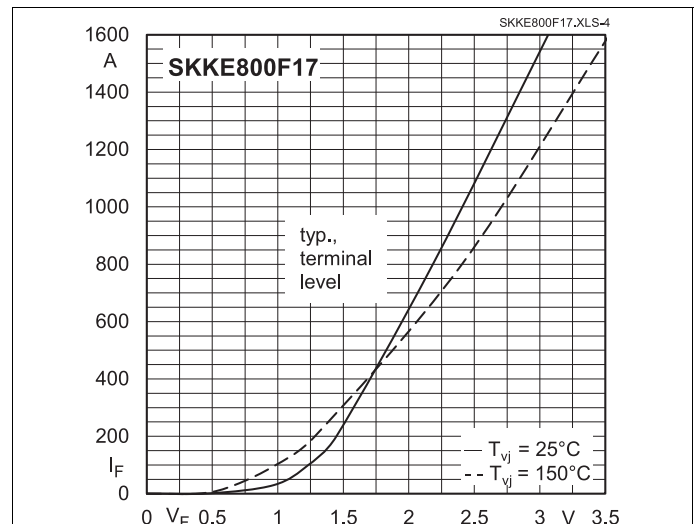


Fig. 4: Forward characteristics

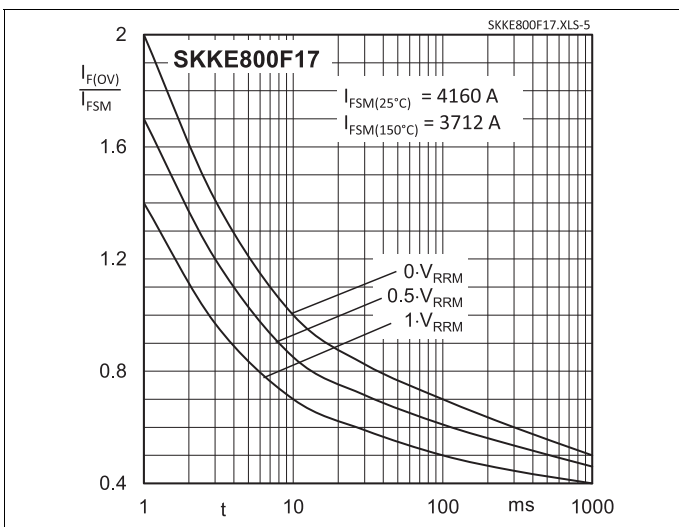


Fig. 5: Surge overload current vs. time

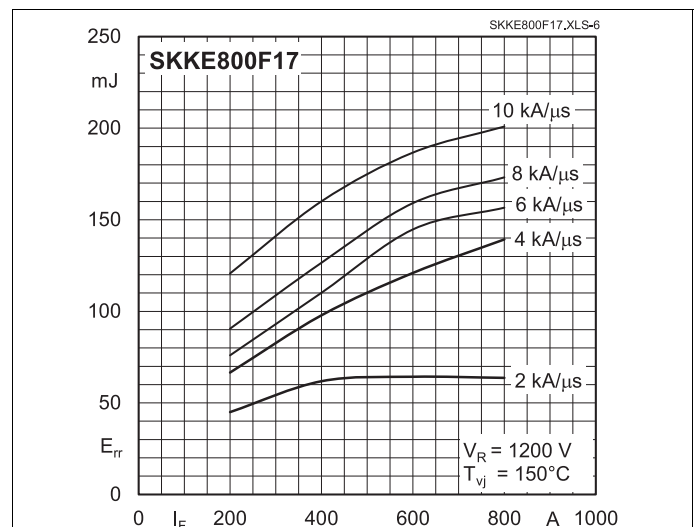
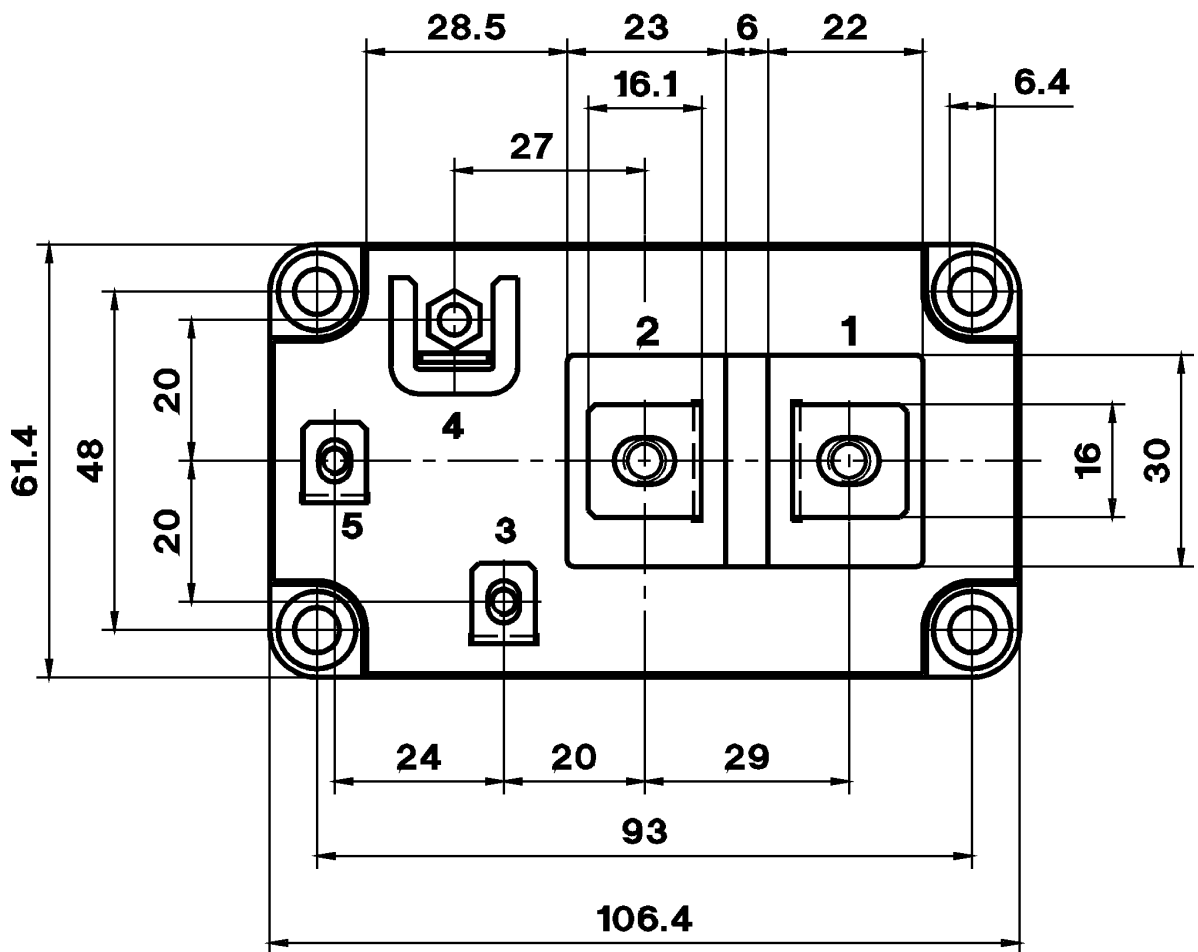
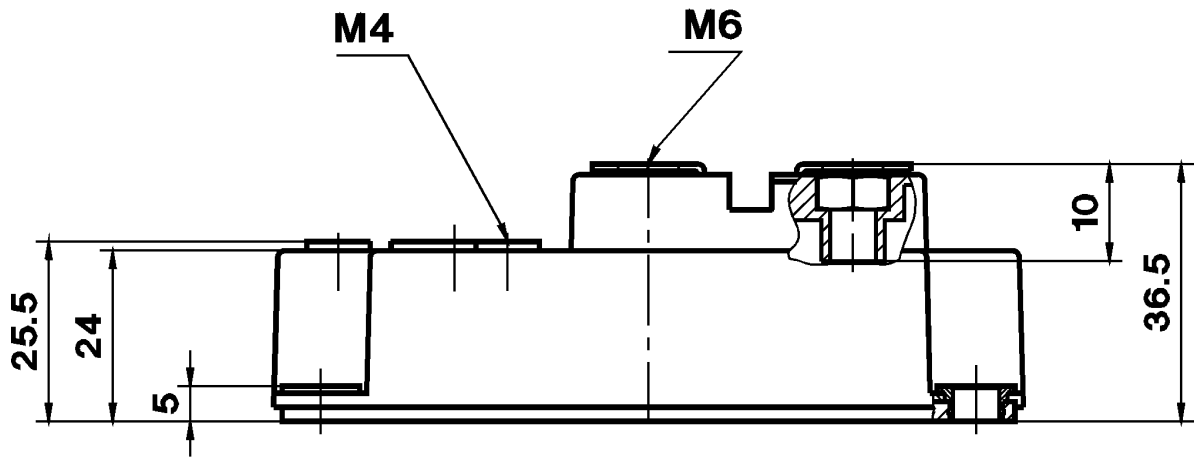
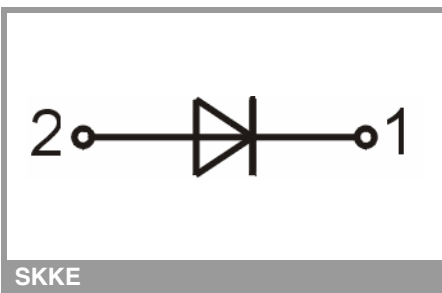


Fig. 6: Typ. turn-off energy dissipation per pulse



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This is an electrostatic discharge sensitive device (ESDS) due to international standard IEC 61340.

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