

## SKKE800F17



## 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  $T_{j,\text{op}} = -40 \dots +150^\circ\text{C}$
- Product reliability results valid for  $T_j = 150^\circ\text{C}$

Absolute Maximum Ratings		Values		Unit
Symbol	Conditions			
<b>Diode</b>				
$V_{RRM}$	$T_j = 25^\circ\text{C}$		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	$\text{A}^2\text{s}$
		$T_j = 150^\circ\text{C}$	68895	$\text{A}^2\text{s}$
$T_j$			-40 ... 175	$^\circ\text{C}$
<b>Module</b>				
$T_{stg}$			-40 ... 125	$^\circ\text{C}$
$V_{\text{isol}}$	a.c.; 50 Hz; r.m.s.	1 min	4000	V
		1 s	4800	V

## Characteristics

Symbol	Conditions	min.	typ.	max.	Unit
<b>Diode</b>					
$V_F$	$I_F = 800 \text{ A}$ chiplevel	$T_j = 25^\circ\text{C}$	2.00	2.40	V
		$T_j = 150^\circ\text{C}$	2.15	2.57	V
$V_{F0}$	chiplevel	$T_j = 25^\circ\text{C}$	1.32	1.56	V
		$T_j = 150^\circ\text{C}$	1.08	1.22	V
$r_F$	chiplevel	$T_j = 25^\circ\text{C}$	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	
$Q_{rr}$		$T_j = 150^\circ\text{C}$	210	$\mu\text{C}$	
$I_{RRM}$	$I_F = 800 \text{ A}$ $\text{di/dt}_{\text{off}} = 4000 \text{ A}/\mu\text{s}$ $V_R = 1200 \text{ V}$	$T_j = 150^\circ\text{C}$	400	A	
$t_{rr}$		$T_j = 150^\circ\text{C}$	1.2	$\mu\text{s}$	
$E_{rr}$		$T_j = 150^\circ\text{C}$	140	$\text{mJ}$	
$R_{\text{th(j-c)}}$	per diode		0.058	K/W	
$R_{\text{th(c-s)}}$	per diode/module ( $\lambda_{\text{grease}} = 0.81 \text{ W}/(\text{m}^*\text{K})$ )		0.045	K/W	
$R_{\text{th(c-s)}}$	per diode/module, pre-applied phase change material		-	K/W	
<b>Module</b>					
$L_{CE}$			15	nH	
$R_{\text{CC}+\text{EE}}$	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
$a$				$5 * 9.81$	$\text{m}/\text{s}^2$
$w$			330		g



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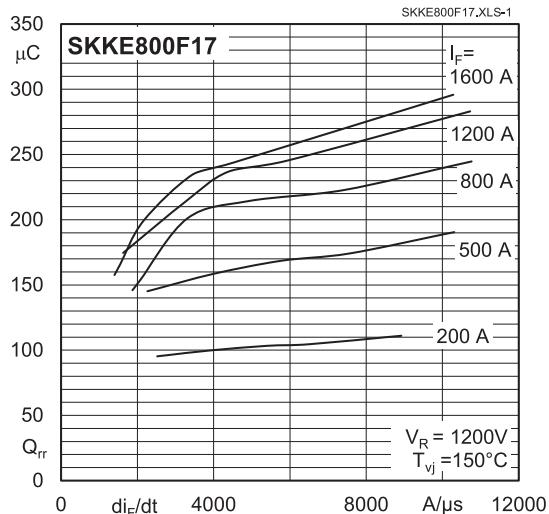


Fig. 1: Typ. recovery charge vs. current decrease

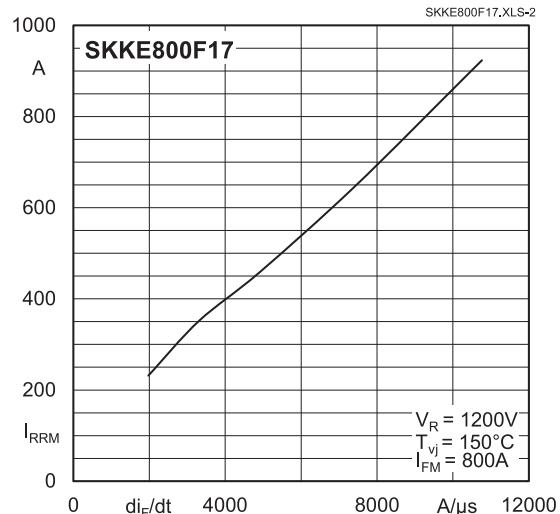


Fig. 2: Peak recovery current vs. current decrease

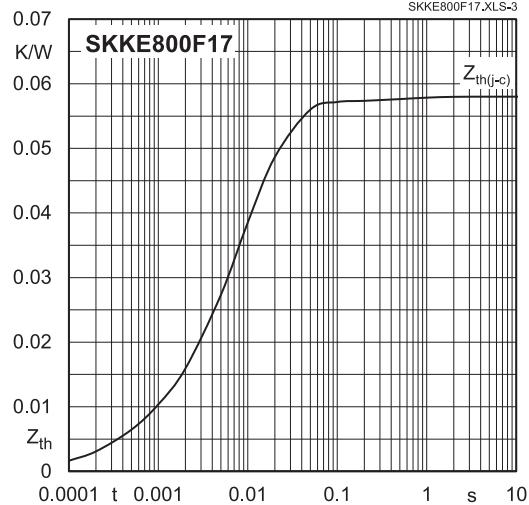


Fig. 3: Transient thermal impedance vs. time

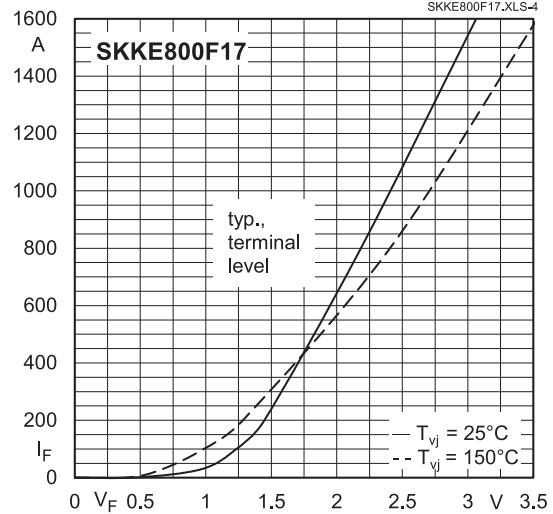


Fig. 4: Forward characteristics

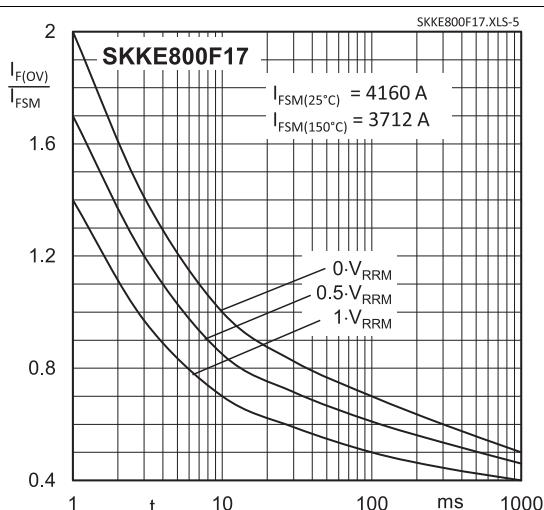


Fig. 5: Surge overload current vs. time

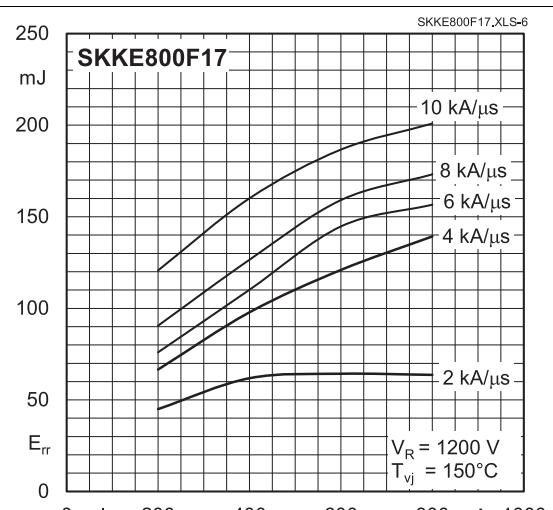
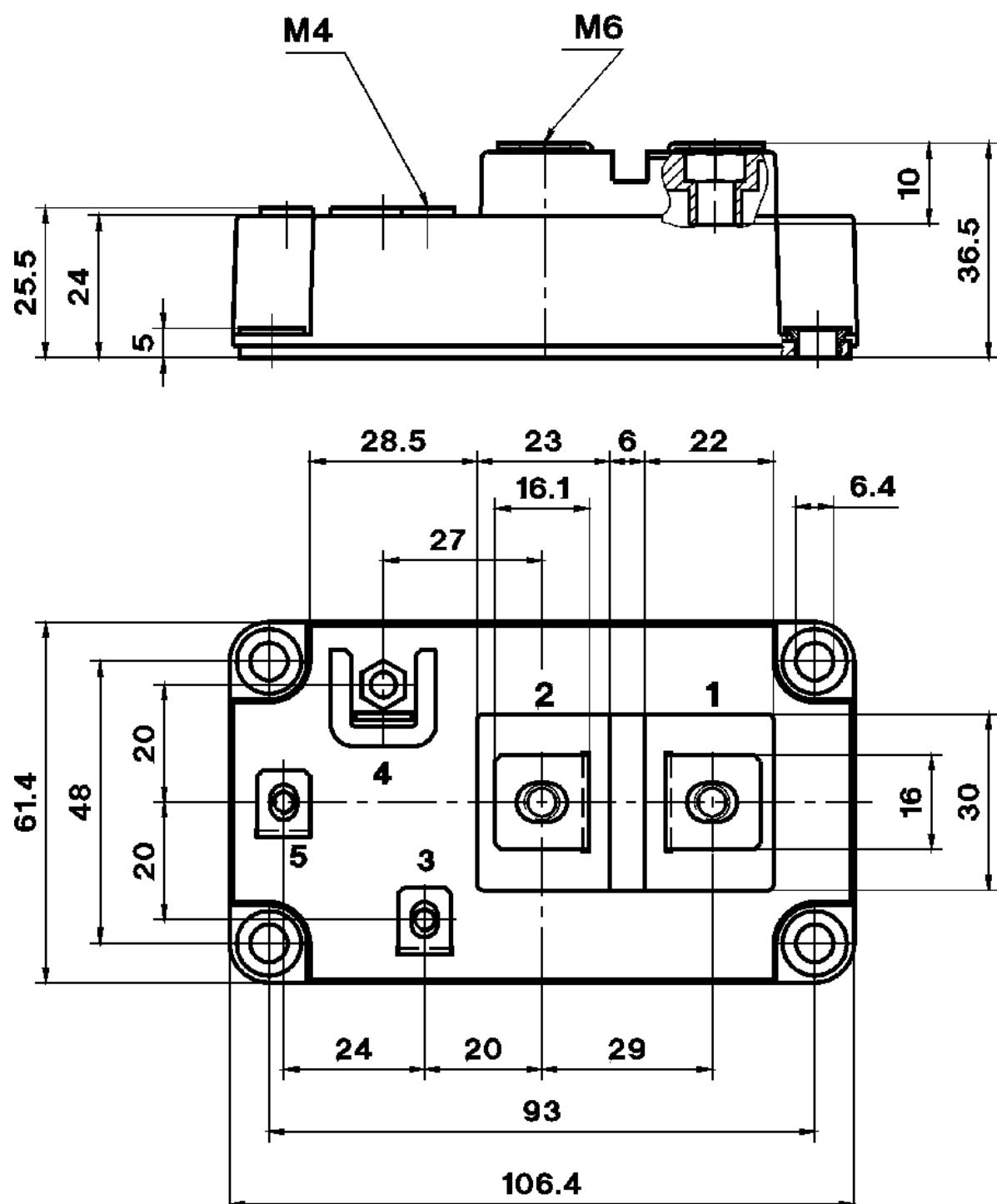


Fig. 6: Typ. turn-off energy dissipation per pulse

CASED59



SEMITRANS 4



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

## **\*IMPORTANT INFORMATION AND WARNINGS**

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