

SKM 800GA126D



SEMITRANS® 4

Trench IGBT Modules

SKM 800GA126D

Features

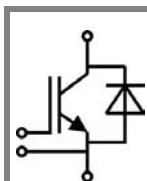
- Trench = Trenchgate technology
- V_{CEsat} with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications*

- AC inverter drives
- UPS
- Electronic welders

Remarks

- $I_{DC} \leq 500A$ limited by terminals



GA

Absolute Maximum Ratings		$T_c = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values	Units	
IGBT				
V_{CES}	$T_j = 25^\circ\text{C}$	1200	V	
I_C	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	960	A
		$T_{case} = 80^\circ\text{C}$	620	A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	1200	A	
V_{GES}		± 20	V	
t_{psc}	$V_{CC} = 600\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125^\circ\text{C}$ $V_{CES} < 1200\text{ V}$	10	μs	
Inverse Diode				
I_F	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	680	A
		$T_{case} = 125^\circ\text{C}$	470	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$	1200	A	
I_{FSM}	$t_p = 10\text{ ms}; \text{sin.}$	$T_j = 150^\circ\text{C}$	3600	A
Module				
$I_{t(RMS)}$		500	A	
T_{vj}		- 40 ... + 150	$^\circ\text{C}$	
T_{stg}		- 40 ... + 125	$^\circ\text{C}$	
V_{isol}	AC, 1 min.	4000	V	

Characteristics		$T_c = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 16\text{ mA}$	5	5,8	6,5	V
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$	$T_j = 25^\circ\text{C}$	0,2	0,6	mA
		$T_j = 125^\circ\text{C}$			mA
V_{CE0}		$T_j = 25^\circ\text{C}$	1	1,15	V
		$T_j = 125^\circ\text{C}$	0,9		V
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$	1,2	1,7	$\text{m}\Omega$
		$T_j = 125^\circ\text{C}$	1,8		$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 600\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	1,7	2,15	V
		$T_j = 125^\circ\text{C}_{chiplev.}$	2		V
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	42		nF
C_{oes}			3,3		nF
C_{res}			3,1		nF
Q_G	$V_{GE} = -8\text{ V} - +20\text{ V}$		5200		nC
R_{Gint}	$T_j = ^\circ\text{C}$		1,25		Ω
$t_{d(on)}$	$R_{Gon} = 3\ \Omega$	$V_{CC} = 600\text{ V}$ $I_C = 600\text{ A}$	220		ns
t_r			100		ns
E_{on}			65		mJ
$t_{d(off)}$	$R_{Goff} = 3\ \Omega$	$T_j = 125^\circ\text{C}$ $V_{GE} = \pm 15\text{ V}$	860		ns
t_f			135		ns
E_{off}			95		mJ
$R_{th(j-c)}$	per IGBT			0,042	K/W



SEMITRANS® 4

Trench IGBT Modules

SKM 800GA126D

Features

- Trench = Trenchgate technology
- V_{CEsat} with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications*

- AC inverter drives
- UPS
- Electronic welders

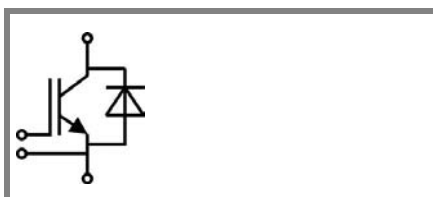
Remarks

- $I_{DC} \leq 500A$ limited by terminals

Characteristics			min.	typ.	max.	Units
Symbol	Conditions					
Inverse Diode						
$V_F = V_{EC}$	$I_{Fnom} = 600 A$; $V_{GE} = 0 V$	$T_j = 25 ^\circ C_{chiplev.}$		1,6	1,8	V
		$T_j = 125 ^\circ C_{chiplev.}$		1,6	1,8	V
V_{F0}		$T_j = 25 ^\circ C$		1	1,1	V
		$T_j = 125 ^\circ C$		0,8	0,9	V
r_F		$T_j = 25 ^\circ C$		1	1,2	mΩ
		$T_j = 125 ^\circ C$		1,3	1,5	mΩ
I_{RRM}	$I_F = 600 A$	$T_j = 125 ^\circ C$		540		A
Q_{rr}	$di/dt = 6000 A/\mu s$			125		μC
E_{rr}	$V_{GE} = -15 V$; $V_{CC} = 600 V$			59		mJ
$R_{th(j-c)D}$	per diode				0,09	K/W
Module						
L_{CE}				15	20	nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25 ^\circ C$		0,18		mΩ
		$T_{case} = 125 ^\circ C$		0,22		mΩ
$R_{th(c-s)}$	per module				0,038	K/W
M_s	to heat sink M6			3	5	Nm
M_t	to terminals M6 (M4)			2,5 (1,1)	5 (2)	Nm
w					330	g

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.



GA

SKM 800GA126D



SEMITRANS® 4

Trench IGBT Modules

SKM 800GA126D

Features

- Trench = Trenchgate technology
- V_{CEsat} with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

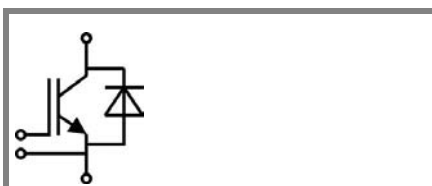
Typical Applications*

- AC inverter drives
- UPS
- Electronic welders

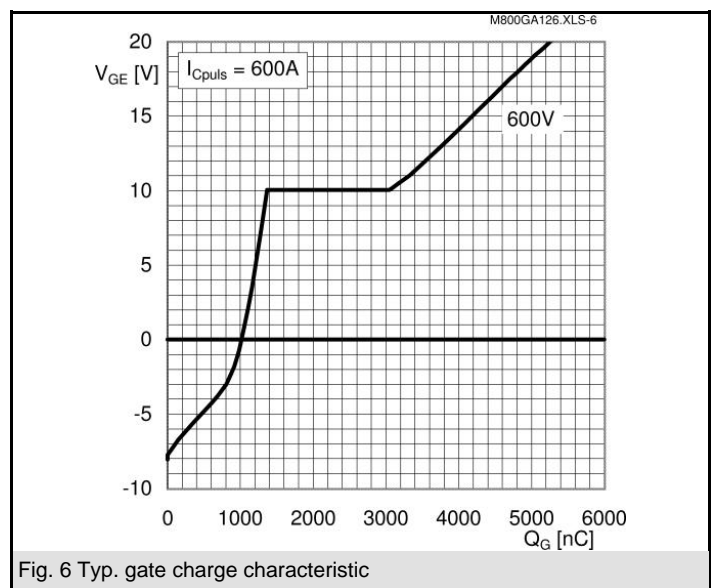
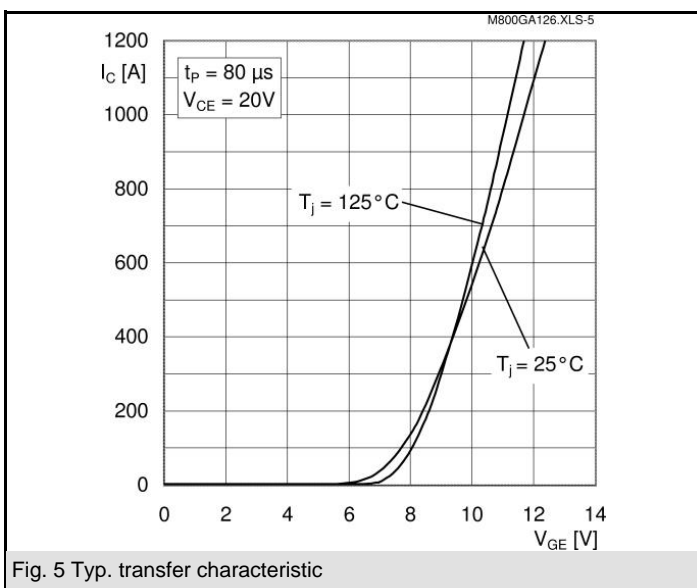
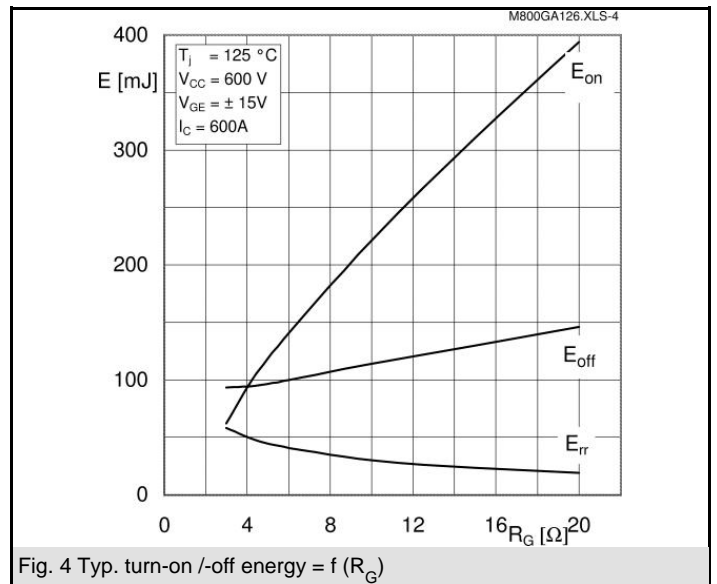
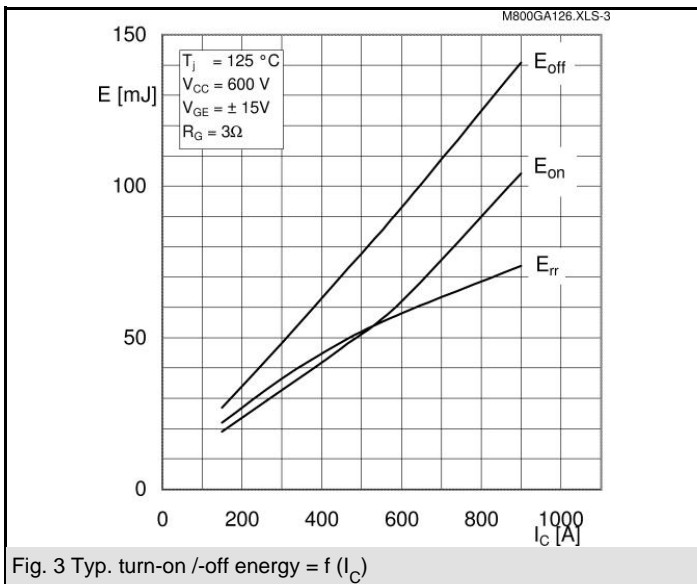
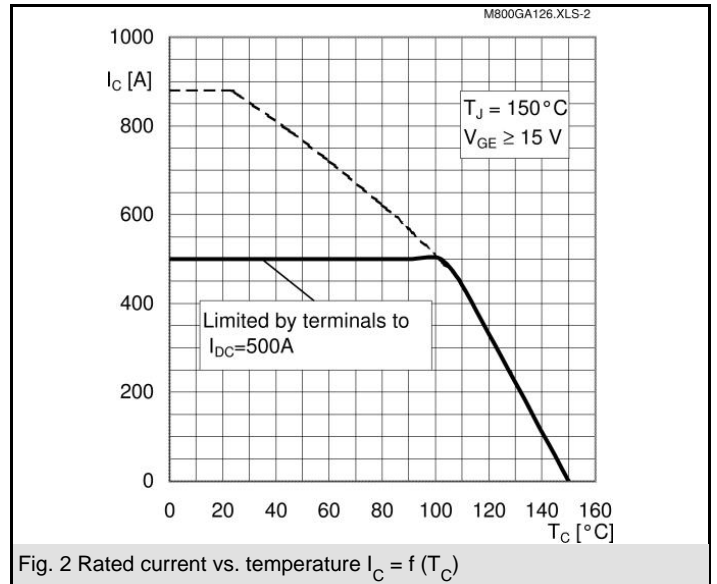
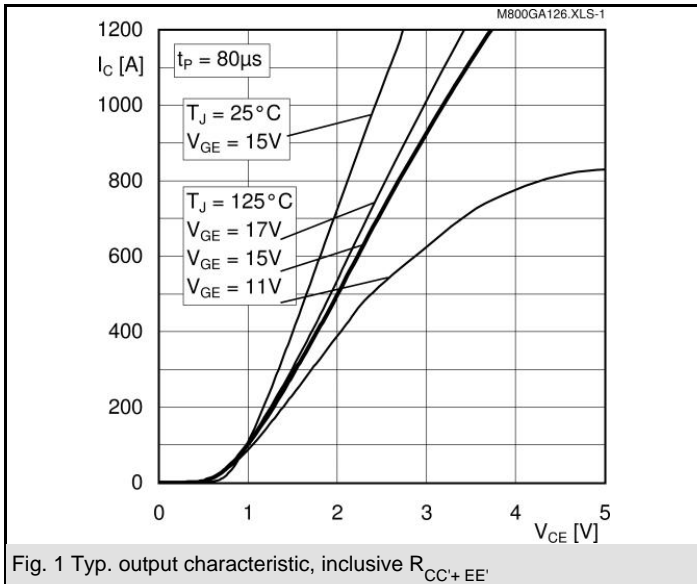
Remarks

- $I_{DC} \leq 500A$ limited by terminals

Z_{th}		Conditions	Values	Units
Symbol				
$Z_{th(j-c)I}$				
$R_{\theta j-c}$	$i = 1$		30	mk/W
$R_{\theta j-c}$	$i = 2$		9,5	mk/W
$R_{\theta j-c}$	$i = 3$		2,2	mk/W
$R_{\theta j-c}$	$i = 4$		0,3	mk/W
$\tau_{\theta j-c}$	$i = 1$		0,1043	s
$\tau_{\theta j-c}$	$i = 2$		0,009	s
$\tau_{\theta j-c}$	$i = 3$		0,0015	s
$\tau_{\theta j-c}$	$i = 4$		0,004	s
Symbol				
$Z_{th(j-c)D}$				
$R_{\theta j-c}$	$i = 1$		62	mk/W
$R_{\theta j-c}$	$i = 2$		23	mk/W
$R_{\theta j-c}$	$i = 3$		4,2	mk/W
$R_{\theta j-c}$	$i = 4$		0,8	mk/W
$\tau_{\theta j-c}$	$i = 1$		0,0566	s
$\tau_{\theta j-c}$	$i = 2$		0,0166	s
$\tau_{\theta j-c}$	$i = 3$		0,0015	s
$\tau_{\theta j-c}$	$i = 4$		0,0002	s



GA



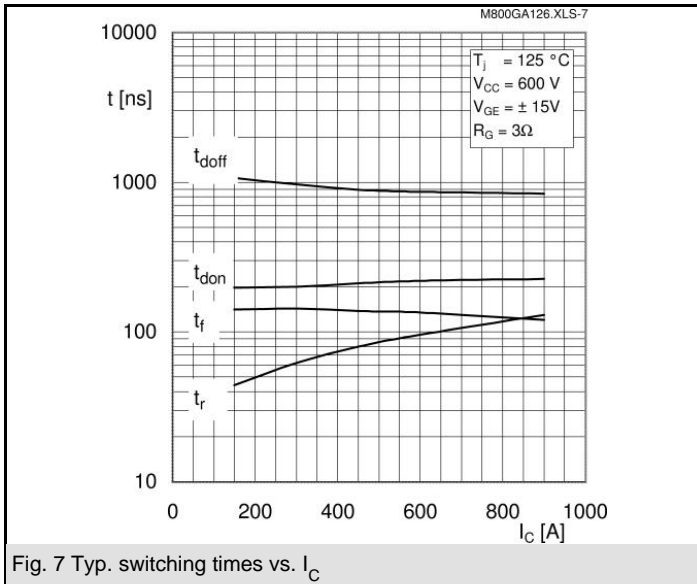


Fig. 7 Typ. switching times vs. I_C

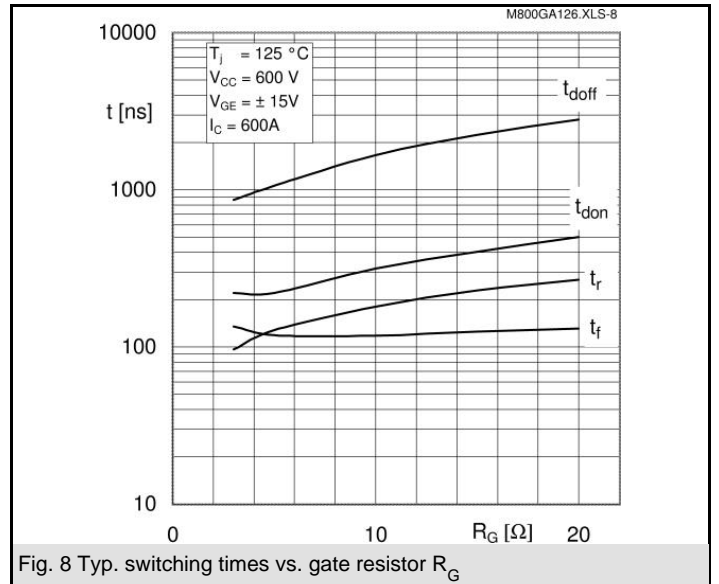


Fig. 8 Typ. switching times vs. gate resistor R_G

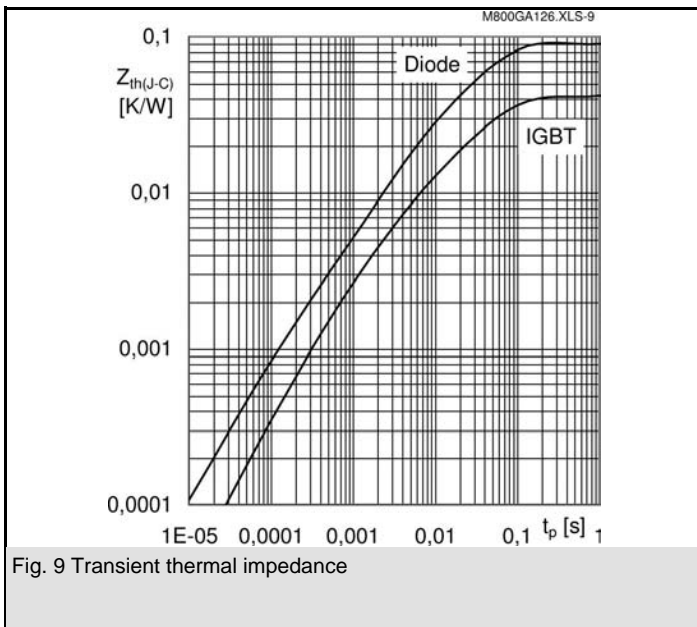


Fig. 9 Transient thermal impedance

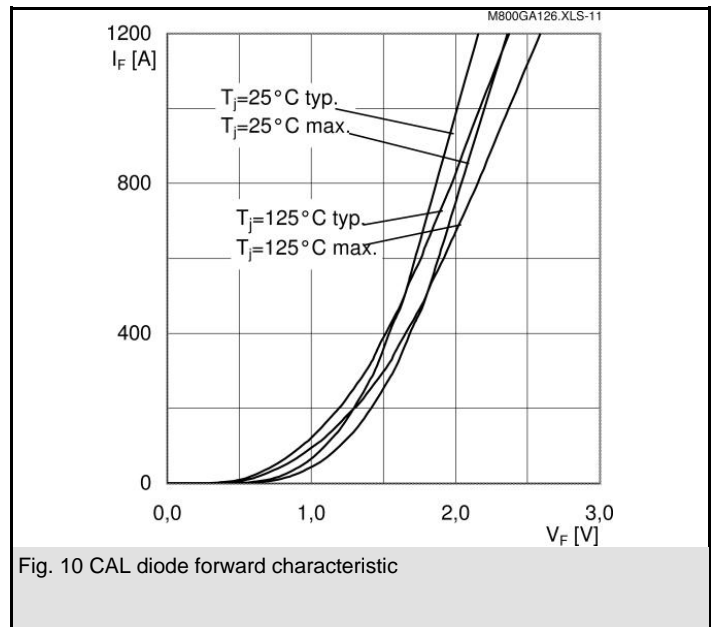


Fig. 10 CAL diode forward characteristic

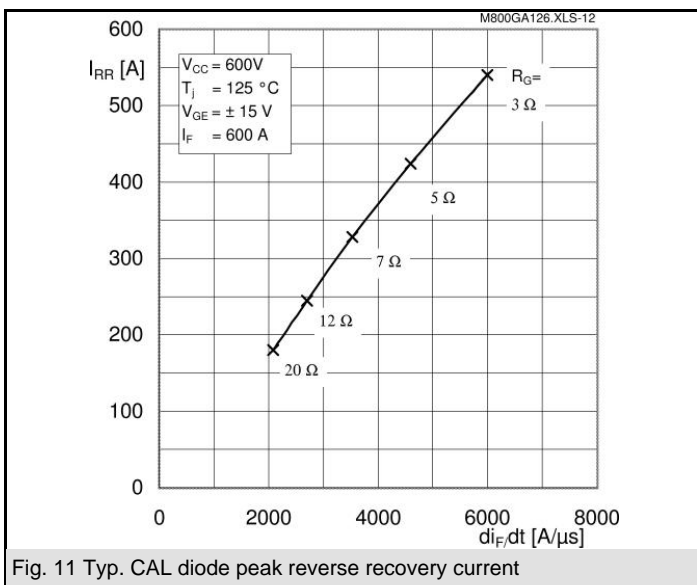


Fig. 11 Typ. CAL diode peak reverse recovery current

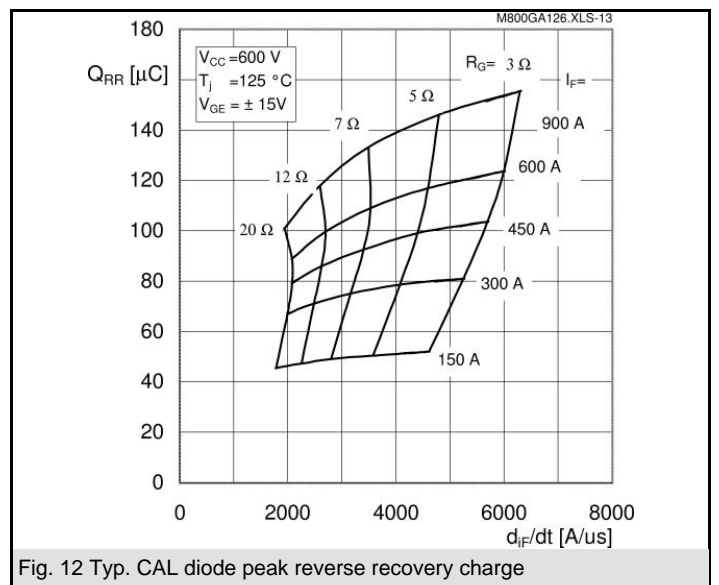


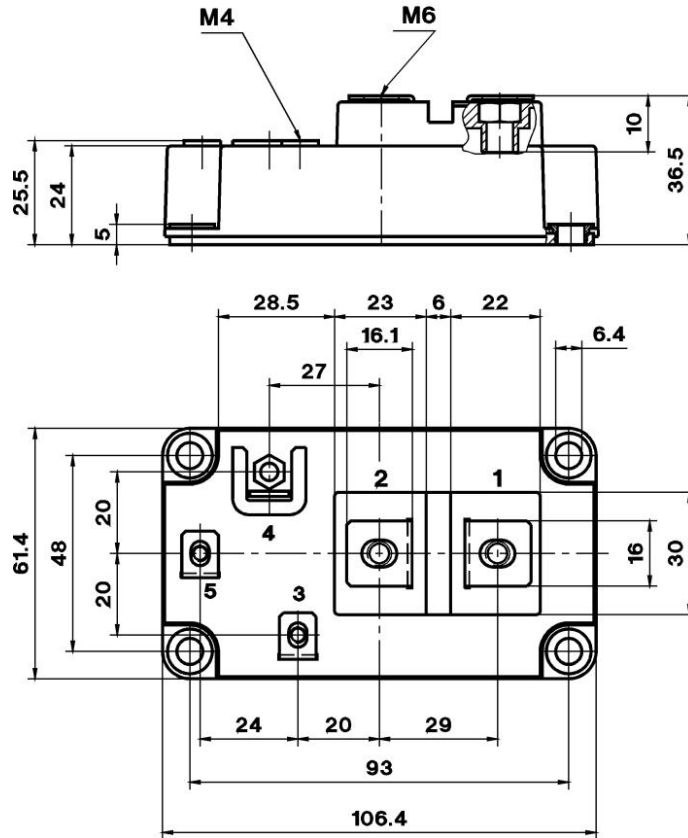
Fig. 12 Typ. CAL diode peak reverse recovery charge

SKM 800GA126D

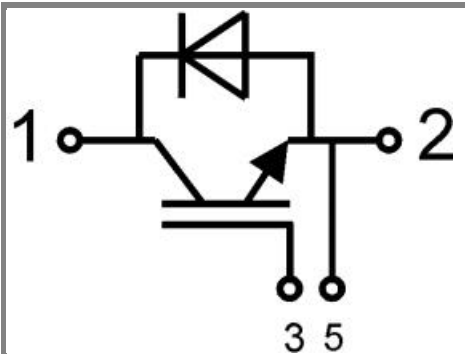
UL Recognized

CASED59

File 63 532



Case D 59



Case D59

GA