

SKM 800GA125D



SEMITRANS® 4

Ultrafast IGBT Modules

SKM 800GA125D

Features

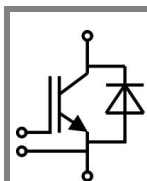
- Homogeneous Si
- NPT-IGBT
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications*

- Resonant inverters up to 100 kHz
- Inductive heating
- Electronic welders at fsw > 20 kHz

Remarks

- $I_{DC} \leq 500$ A limited by terminals
- Take care of over-voltage caused by stray inductances



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Absolute Maximum Ratings		$T_{case} = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values		Units
IGBT				
V_{CES}	$T_j = 25^\circ\text{C}$	1200		V
I_C	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	760	A
		$T_{case} = 80^\circ\text{C}$	530	A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	1200		A
V_{GES}		± 20		V
t_{psc}	$V_{CC} = 600$ V; $V_{GE} \leq 20$ V; $T_j = 125^\circ\text{C}$ $V_{CES} < 1200$ V	10		μs
Inverse Diode				
I_F	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	720	A
		$T_{case} = 80^\circ\text{C}$	500	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$	1200		A
I_{FSM}	$t_p = 10$ ms; sin.	$T_j = 150^\circ\text{C}$	5700	A
Module				
$I_{t(RMS)}$		500		A
T_{vj}		- 40 ... +150 (125)		$^\circ\text{C}$
T_{stg}		125		$^\circ\text{C}$
V_{isol}	AC, 1 min.	4000		V

Characteristics		$T_{case} = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 24$ mA	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0$ 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}		$T_j = 25^\circ\text{C}$	1,5	1,75	V
		$T_j = 125^\circ\text{C}$	1,7		V
r_{CE}	$V_{GE} = 15$ V	$T_j = 25^\circ\text{C}$	2,8	3,3	m Ω
		$T_j = 125^\circ\text{C}$	3,8	5,4	m Ω
$V_{CE(sat)}$	$I_{Cnom} = 600$ A, $V_{GE} = 15$ V	$T_j = 25^\circ\text{C}_{chiplev.}$	3,2	3,75	V
		$T_j = 125^\circ\text{C}_{chiplev.}$	4		V
C_{ies}	$V_{CE} = 25$, $V_{GE} = 0$ V	$f = 1$ MHz	37		nF
C_{oes}			5,6		nF
C_{res}			2,8		nF
R_{Gint}	$T_j = ^\circ\text{C}$	1,7		Ω	
$t_{d(on)}$	$R_{Gon} = 0,5$ Ω	$V_{CC} = 600$ V $I_C = 600$ A	88		ns
t_r					ns
E_{on}	$R_{Goff} = 0,5$ Ω	$T_j = 125^\circ\text{C}$ $V_{GE} = \pm 15$ V	48		mJ
$t_{d(off)}$					ns
t_f					ns
E_{off}			48		mJ
$R_{th(j-c)}$	per IGBT	0,03		K/W	



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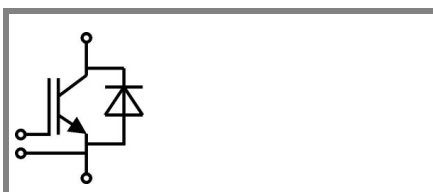
- $I_{DC} \leq 500$ A limited by terminals
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Characteristics

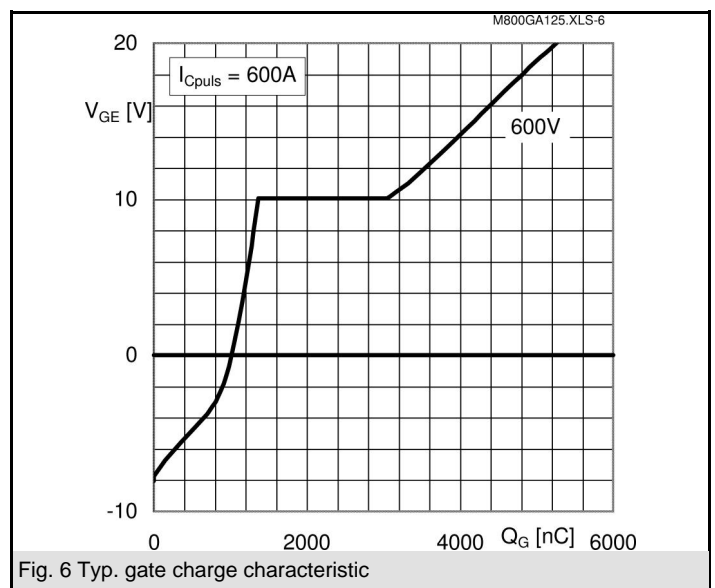
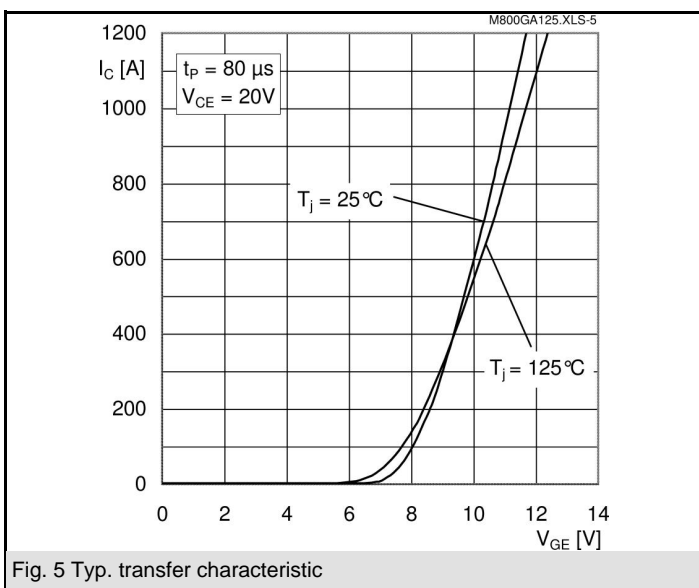
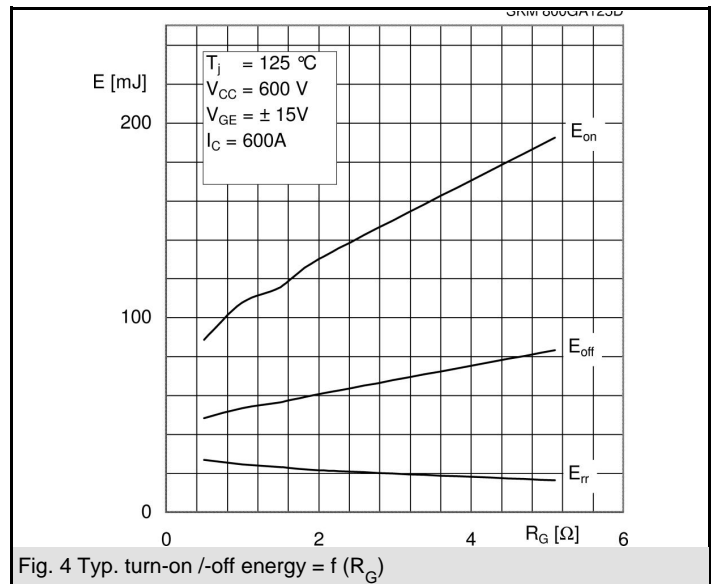
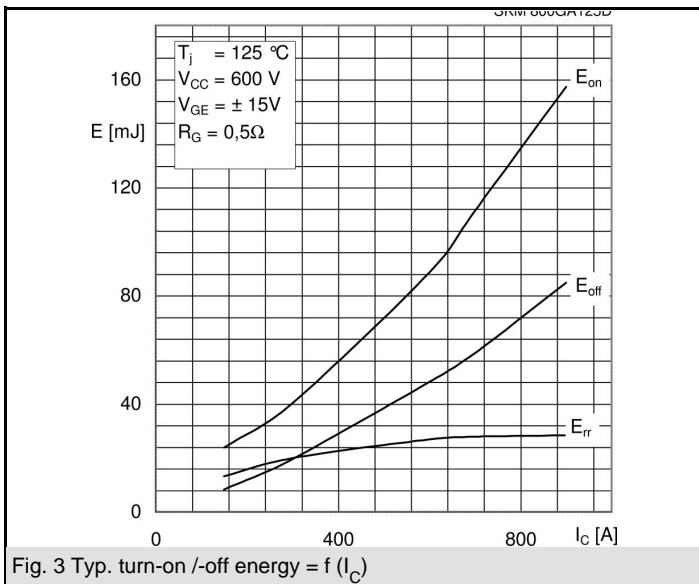
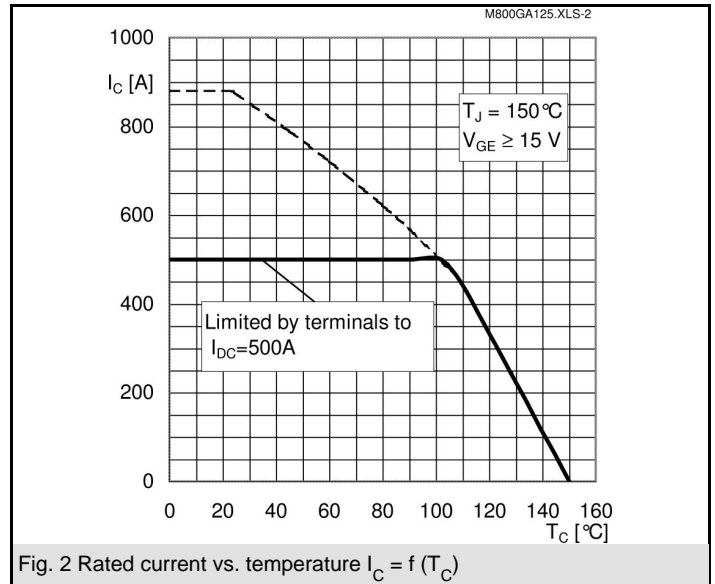
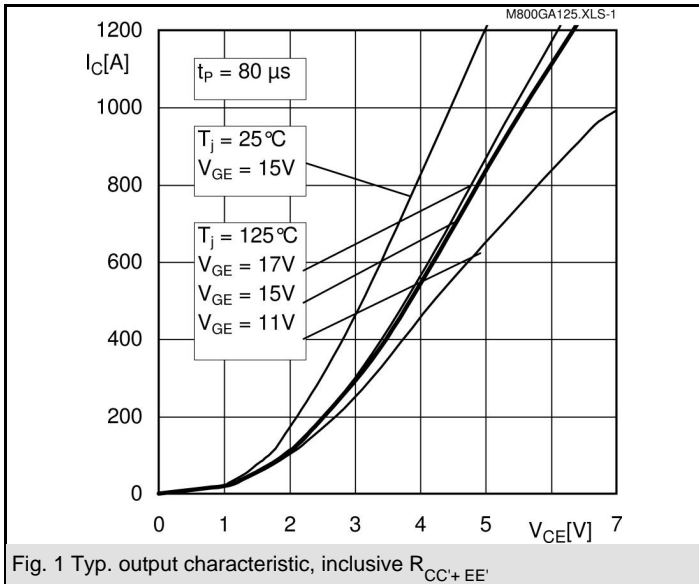
Symbol	Conditions	min.	typ.	max.	Units
$V_F = V_{EC}$	$I_{Fnom} = 600$ A; $V_{GE} = 0$ V	$T_j = 25$ °C _{chiplev.}	2,3	2,5	V
		$T_j = 125$ °C _{chiplev.}	2,1	2,3	V
V_{F0}		$T_j = 25$ °C	1,1	1,3	V
		$T_j = 125$ °C	0,9	1,05	V
r_F		$T_j = 25$ °C	2	2	mΩ
		$T_j = 125$ °C	2	2,1	mΩ
I_{RRM}	$I_F = 600$ A		370		A
Q_{rr}			83		μC
E_{rr}	$V_{GE} = 0$ V; $V_{CC} = 600$ V		28		mJ
$R_{th(j-c)D}$	per diode			0,07	K/W
Module					
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25$ °C	0,18		mΩ
		$T_{case} = 125$ °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

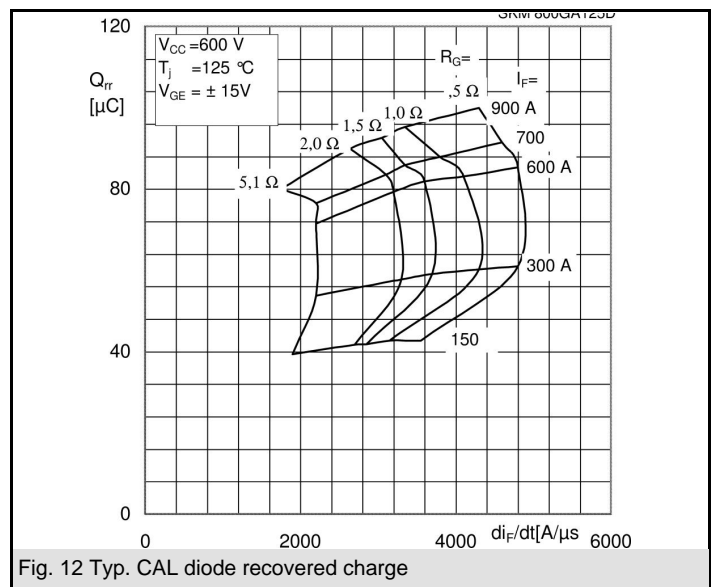
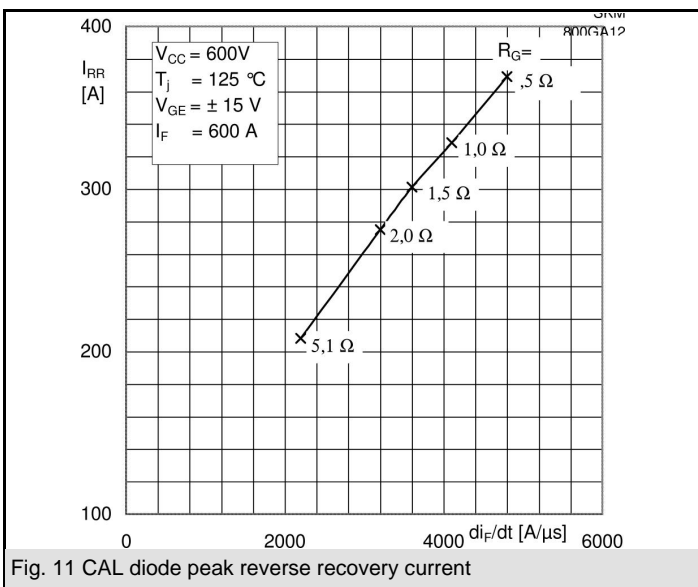
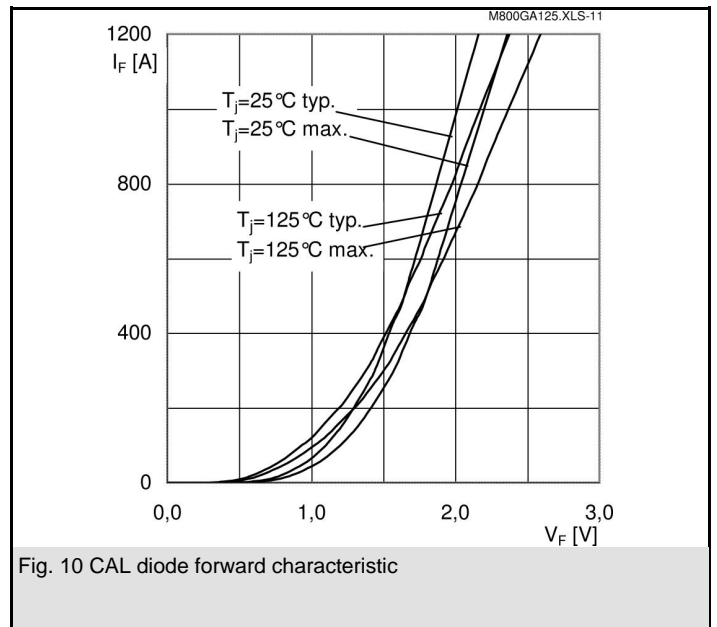
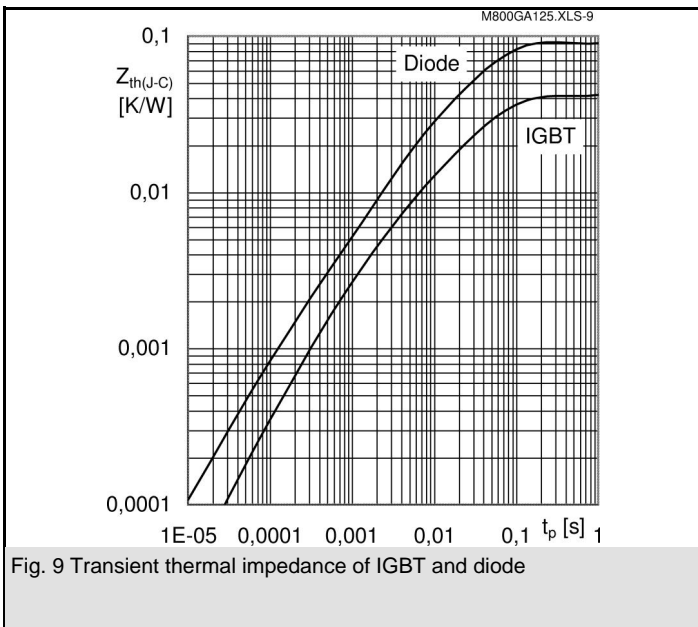
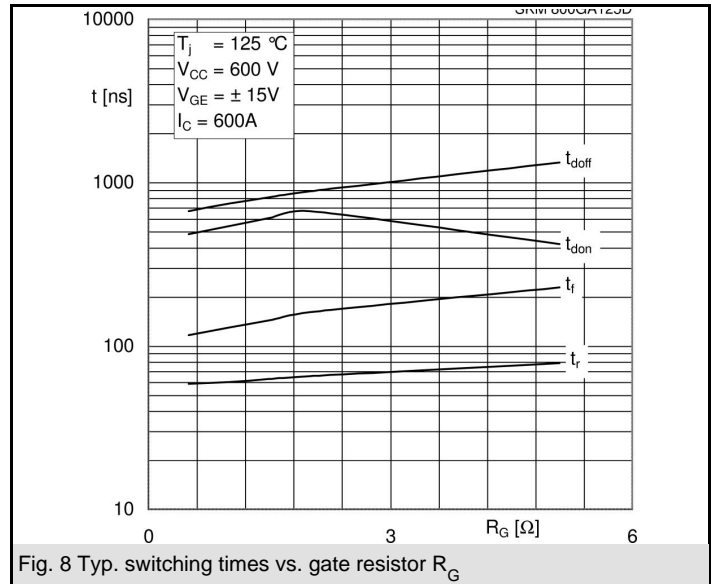
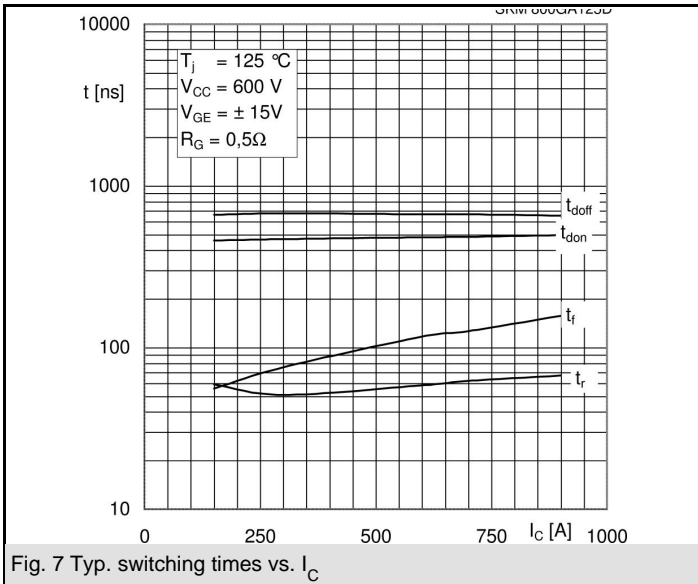
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

* 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.



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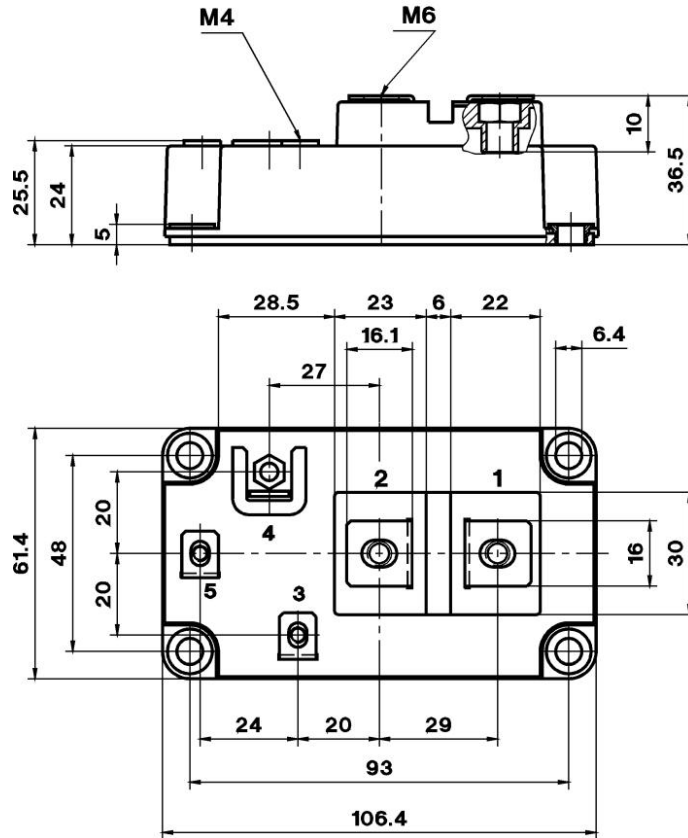


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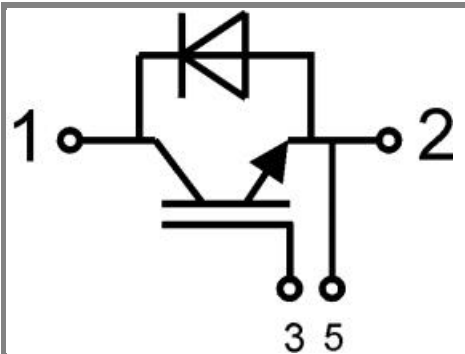
UL Recognized

CASED59

File no. E 63 532



Case D 59



Case D 59

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