

SKM 800GA125D



SEMITRANS® 4

Ultrafast IGBT Modules

SKM 800GA125D

Features

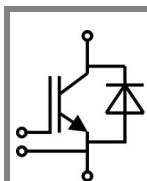
- Homogeneous Si
- NPT-IGBT
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

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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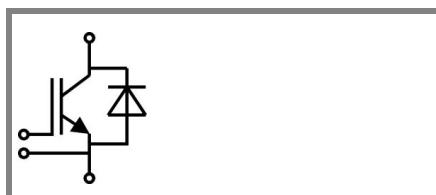
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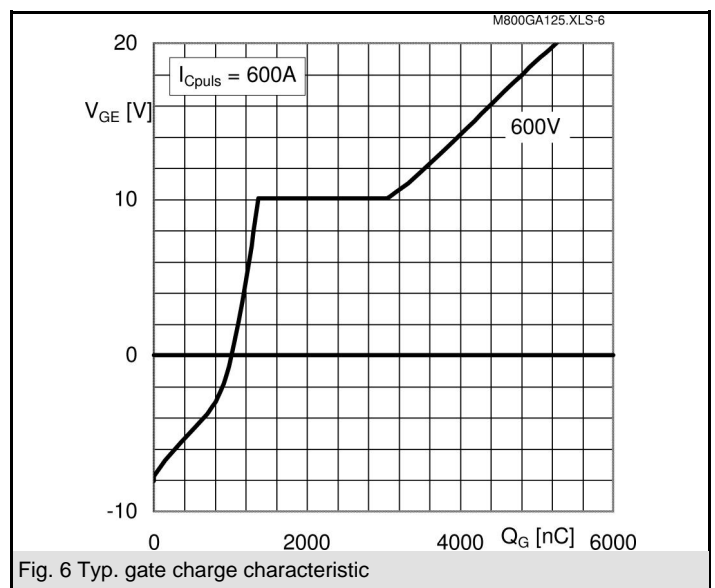
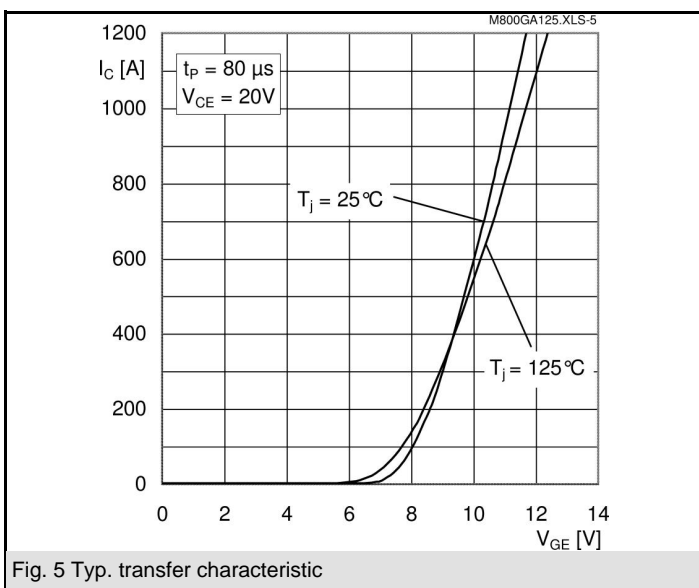
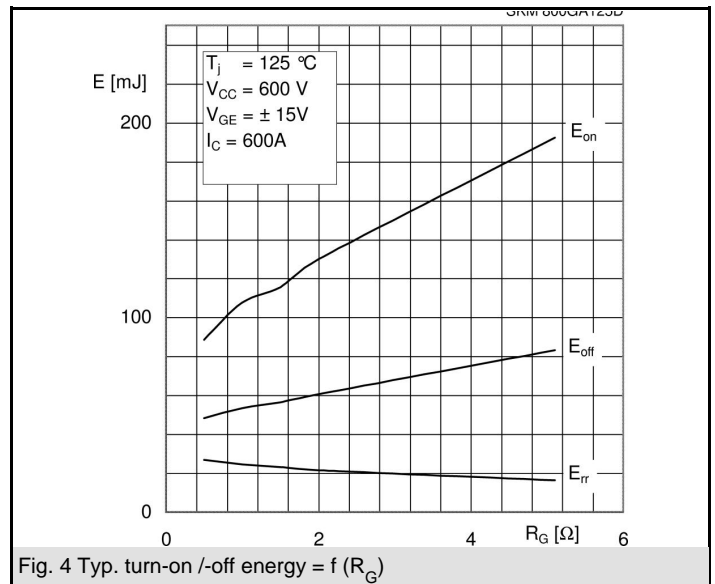
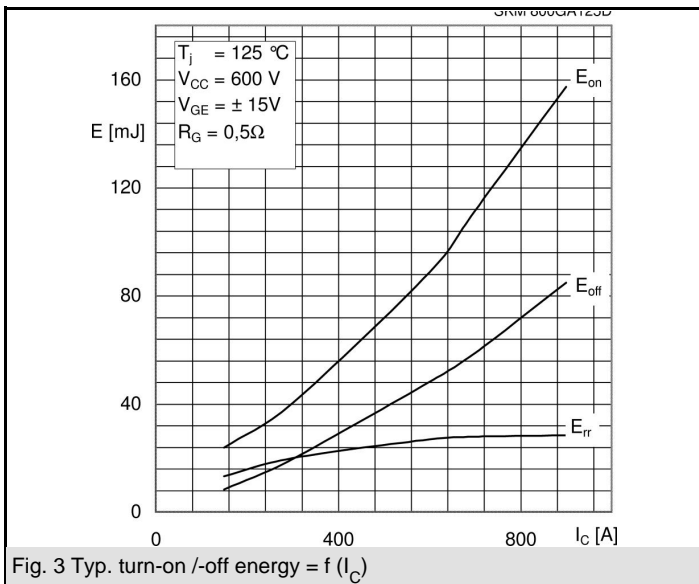
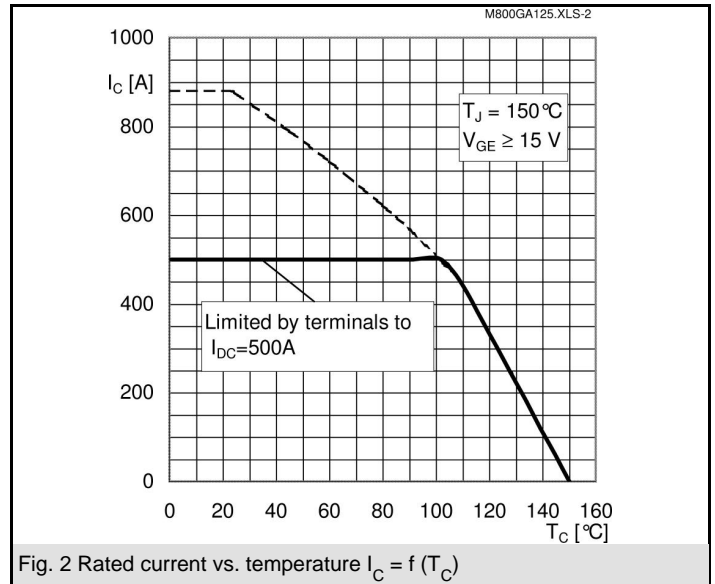
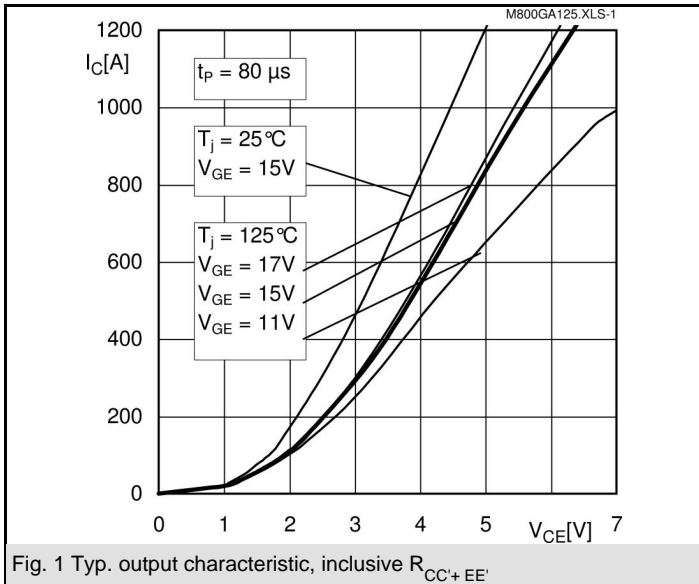


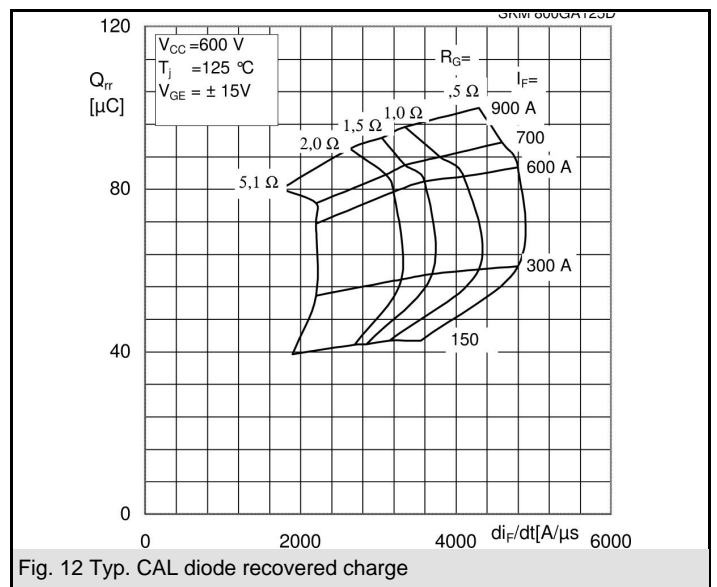
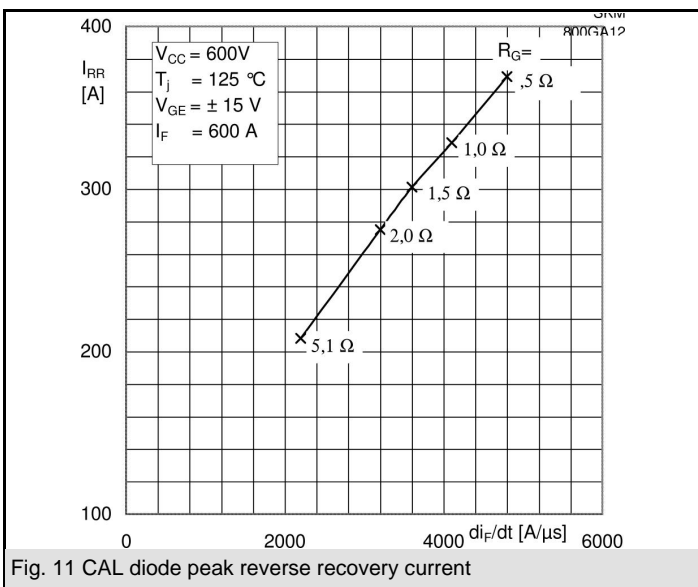
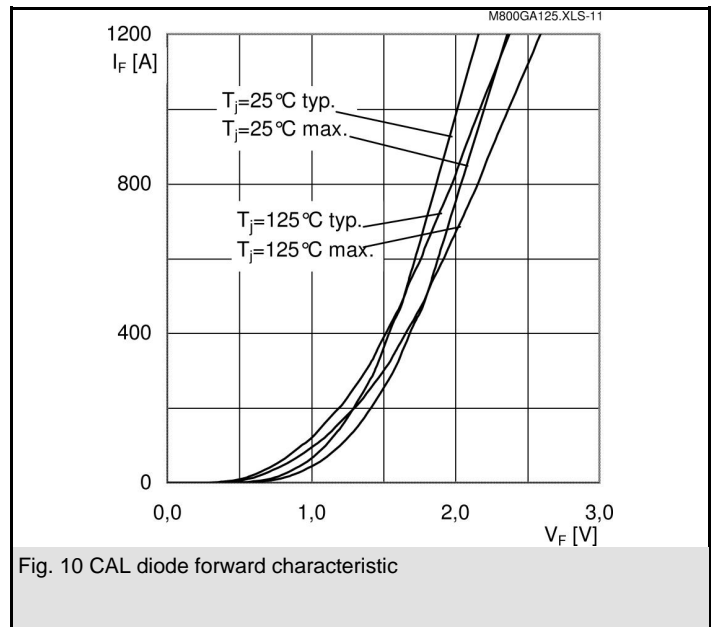
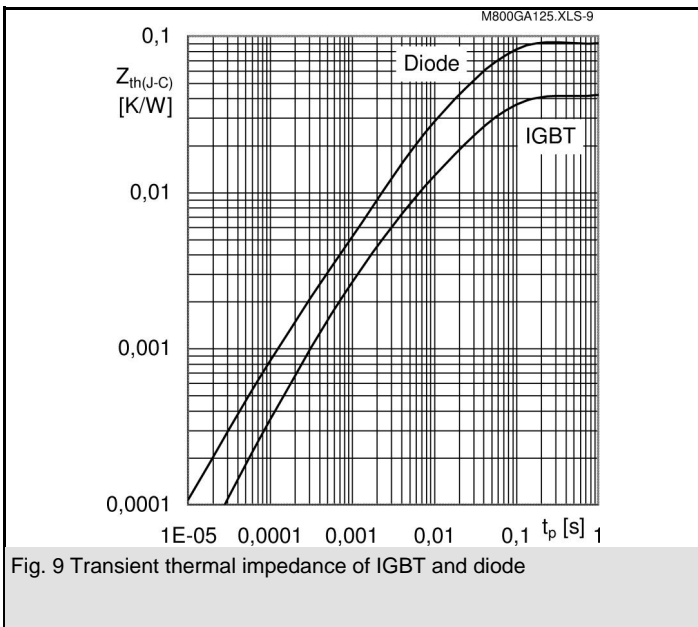
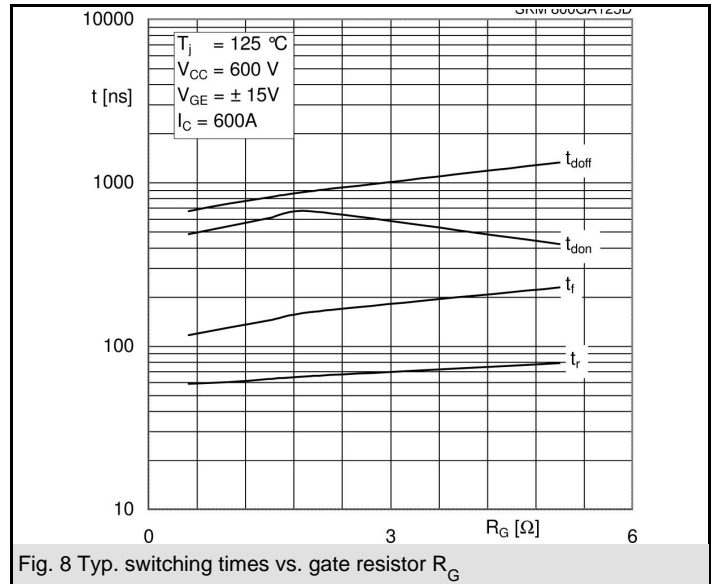
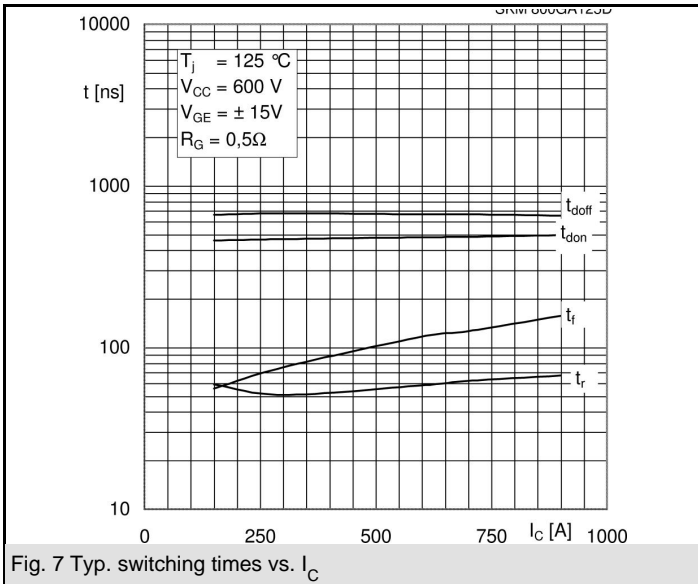
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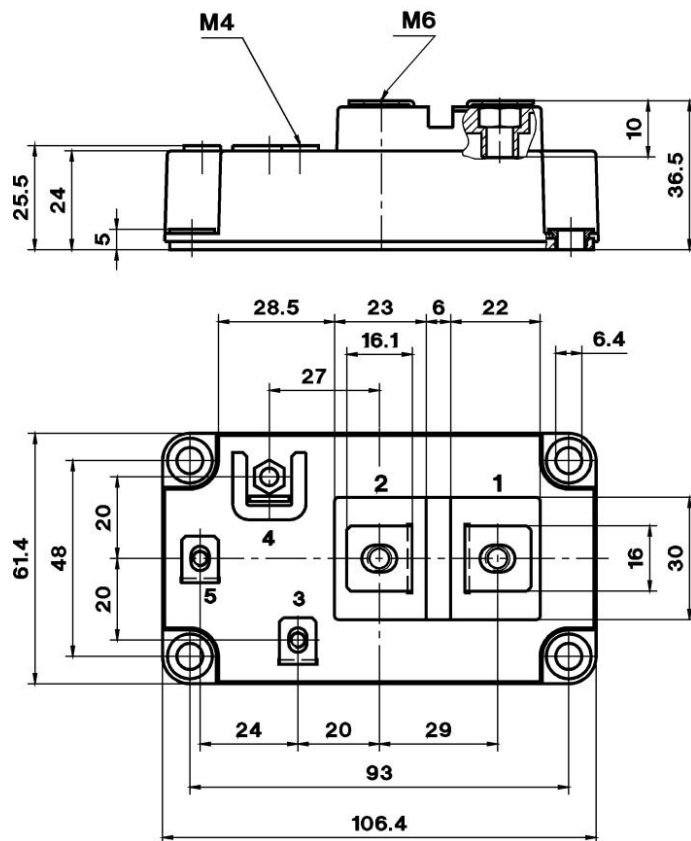
Characteristics						
Symbol	Conditions	min.	typ.	max.	Units	
$V_F = V_{EC}$	$I_{Fnom} = 600$ A; $V_{GE} = 0$ V		$T_j = 25$ °C _{chiplev.}	2,3	2,5	V
			$T_j = 125$ °C _{chiplev.}	2,1	2,3	V
V_{F0}			$T_j = 25$ °C	1,1	1,3	V
			$T_j = 125$ °C	0,9	1,05	V
r_F			$T_j = 25$ °C	2	2	mΩ
			$T_j = 125$ °C	2	2,1	mΩ
I_{RRM}	$I_F = 600$ A		$T_j = 25$ °C	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.

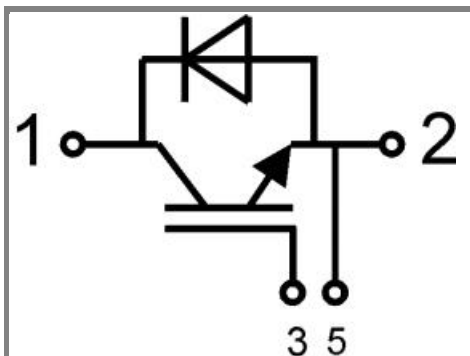
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Case D 59



Case D 59

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