



SEMITRANS® 4

Ultrafast IGBT Modules

SKM 800GA125D

Features

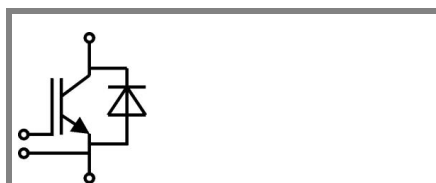
- Homogeneous Si
- NPT-IGBT
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

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°C, unless otherwise specified		
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	T _j = 150 °C	T _{case} = 25 °C	760	A
		T _{case} = 80 °C	530	A
I _{CRM}	I _{CRM} =2xI _{Cnom}		1200	A
V _{GES}			± 20	V
t _{psc}	V _{CC} = 600 V; V _{GE} ≤ 20 V; T _j = 125 °C V _{CES} < 1200 V		10	µs
Inverse Diode				
I _F	T _j = 150 °C	T _{case} = 25 °C	720	A
		T _{case} = 80 °C	500	A
I _{FRM}	I _{FRM} =2xI _{FNom}		1200	A
I _{FSM}	t _p = 10 ms; sin. T _j = 150 °C		5700	A
Module				
I _{t(RMS)}			500	A
T _{vj}			- 40 ... +150 (125)	°C
T _{stg}			125	°C
V _{isol}	AC, 1 min.		4000	V

Characteristics			T _{case} = 25°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 °C T _j = 125 °C			0,2	0,6	mA mA
V _{CE0}	T _j = 25 °C T _j = 125 °C			1,5 1,7	1,75	V V
r _{CE}	V _{GE} = 15 V T _j = 25°C T _j = 125°C			2,8 3,8	3,3 5,4	mΩ mΩ
V _{CE(sat)}	I _{Cnom} = 600 A, V _{GE} = 15 V T _j = 25°C _{chiplev.} T _j = 125°C _{chiplev.}			3,2 4	3,75	V V
C _{ies} C _{oes} C _{res}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz			37 5,6 2,8		nF nF nF
R _{Gint}	T _j = °C			1,7		Ω
t _{d(on)} t _r E _{on}	R _{Gon} = 0,5 Ω	V _{CC} = 600V I _C = 600A	88			ns ns mJ
t _{d(off)} t _f E _{off}	R _{Goff} = 0,5 Ω	T _j = 125 °C V _{GE} = ± 15V	48			ns ns mJ
R _{th(i-c)}	per IGBT		0,03			K/W

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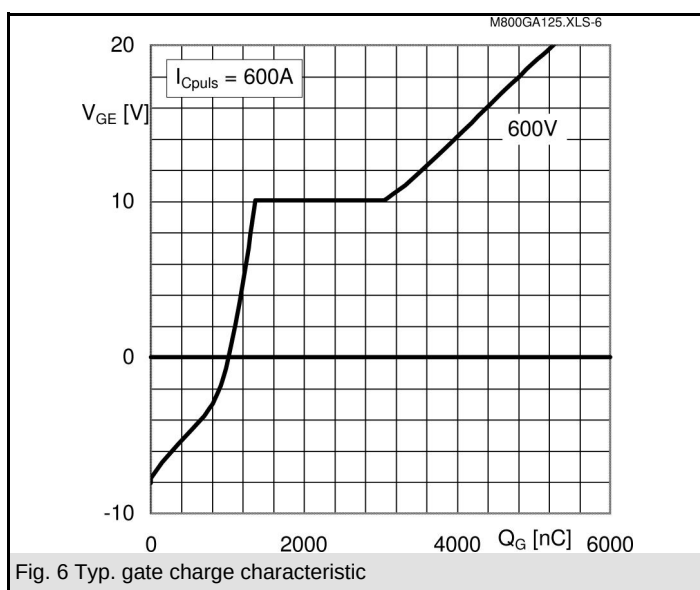
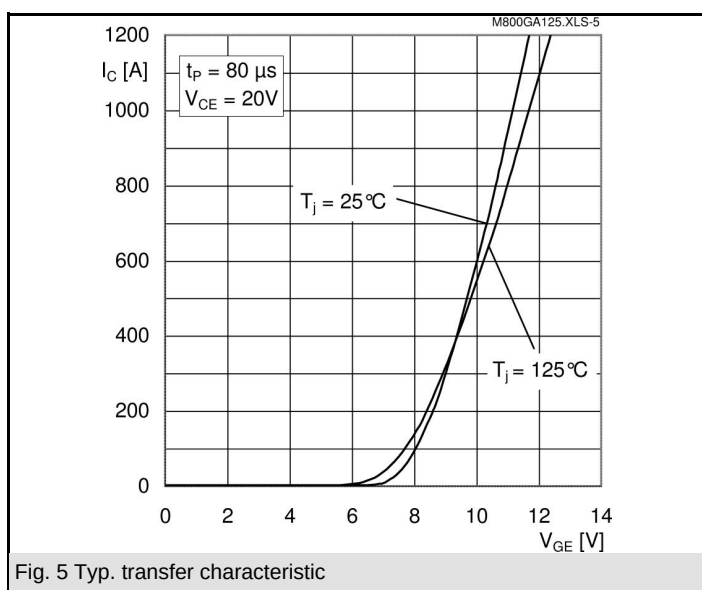
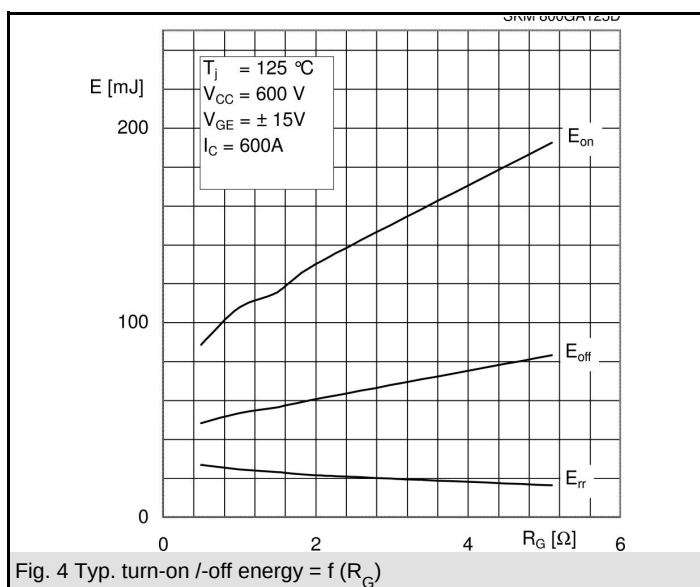
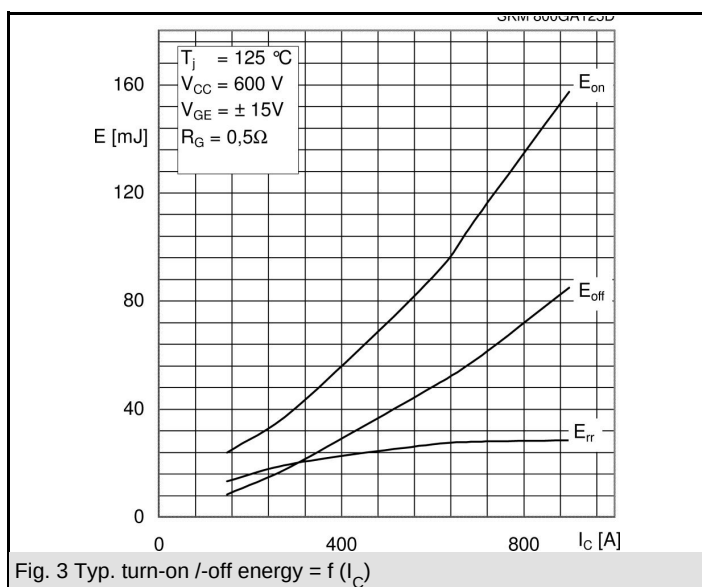
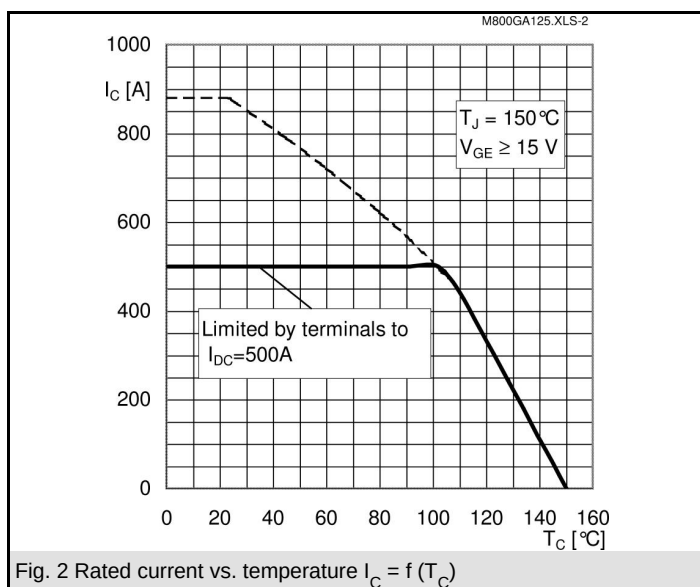
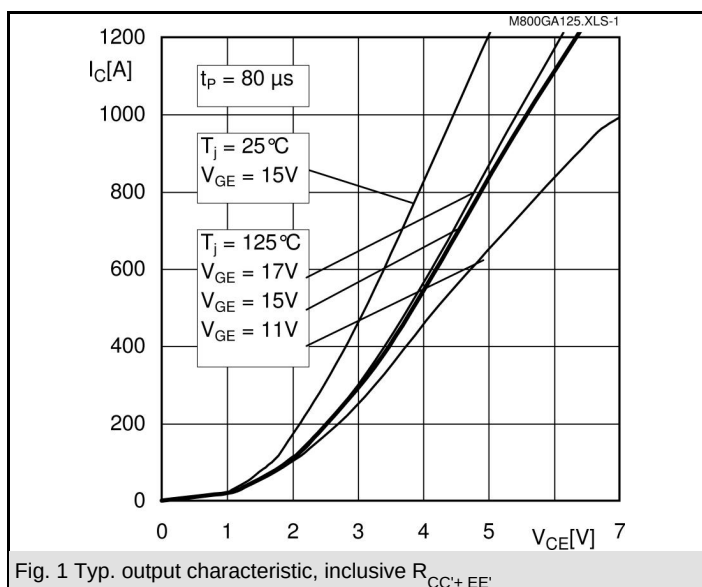
Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
$V_F = V_{EC}$	$I_{Fnom} = 600$ A; $V_{GE} = 0$ V		$T_j = 25$ °C _{chiplev.}	2,3	2,5
			$T_j = 125$ °C _{chiplev.}	2,1	2,3
V_{F0}			$T_j = 25$ °C	1,1	1,3
			$T_j = 125$ °C	0,9	1,05
r_F			$T_j = 25$ °C	2	2
			$T_j = 125$ °C	2	2,1
I_{RRM}	$I_F = 600$ 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
M_t	to terminals M6(M4)			2,5 (1,1)	5 (2)
w				330	g

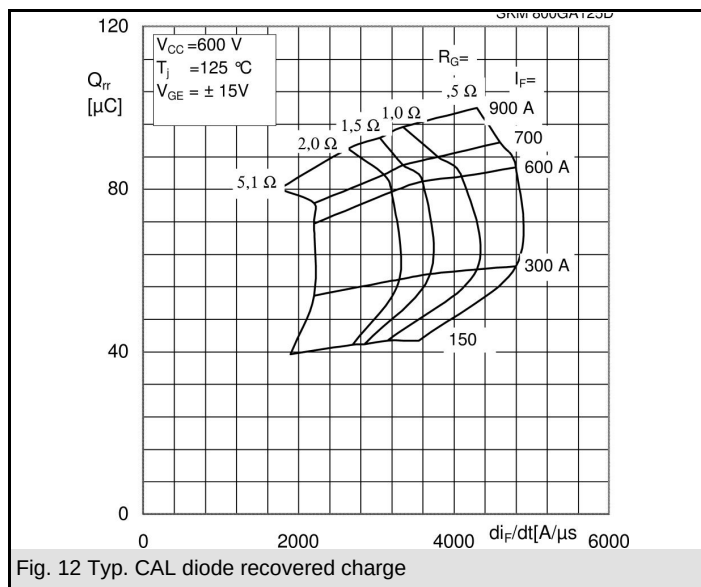
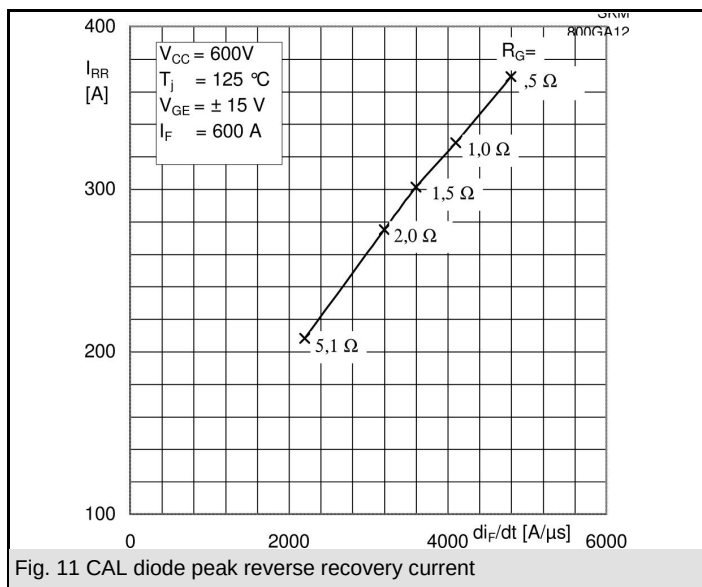
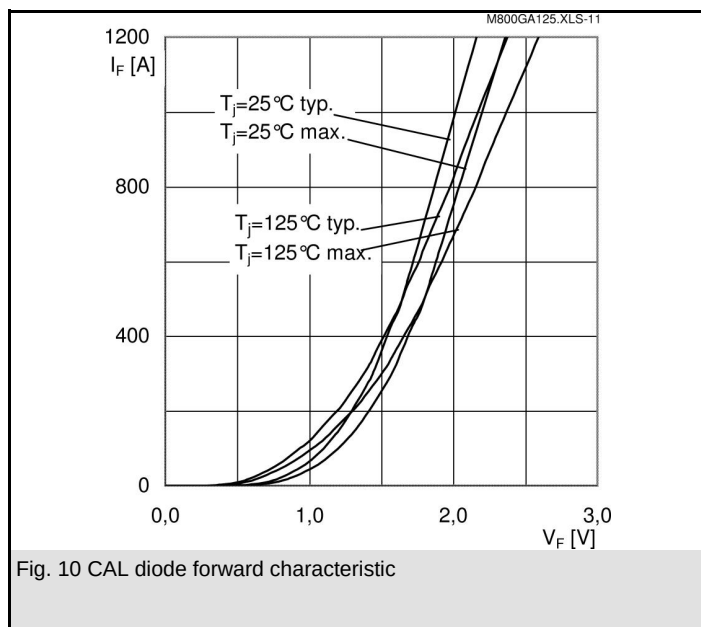
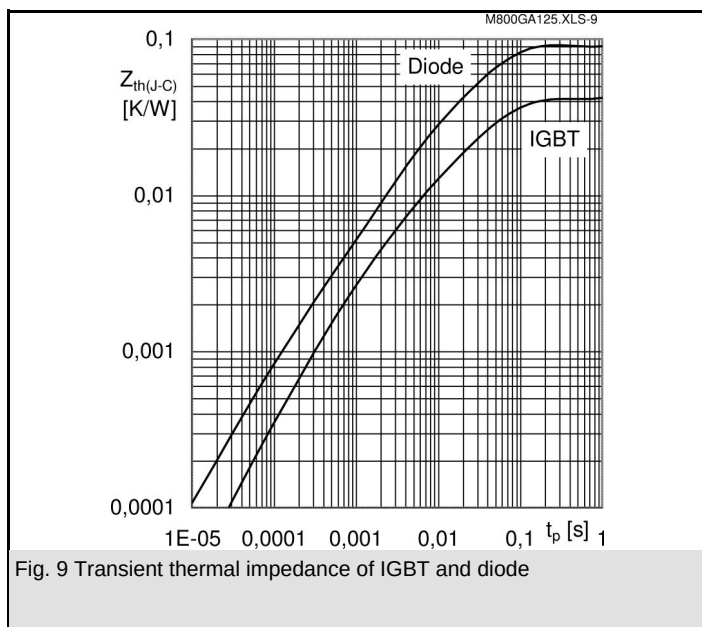
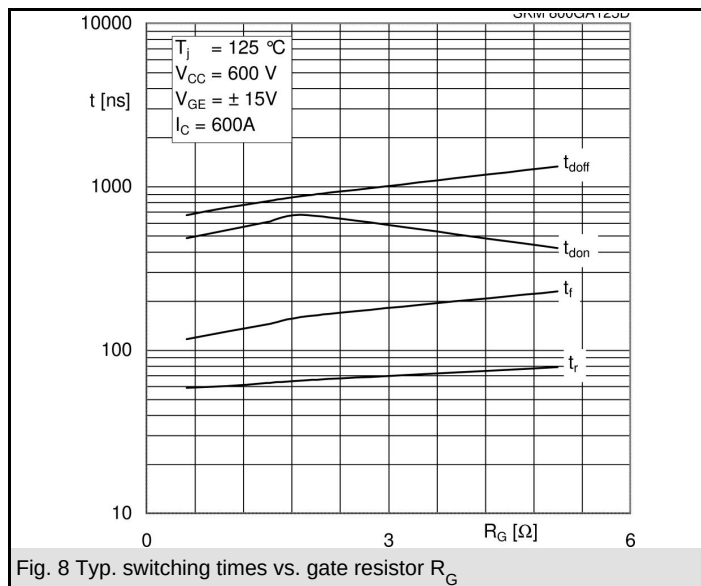
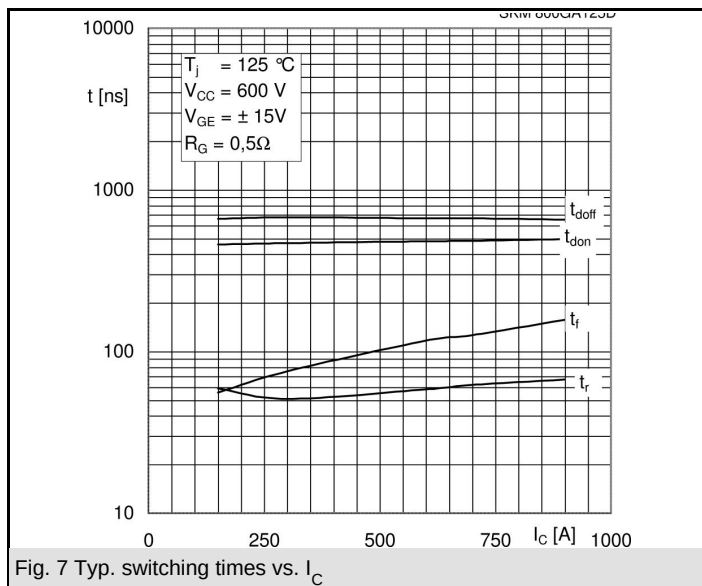
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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