SKM 100GD063DL

SEMITRANS® 6

Superfast NPT-IGBT Module

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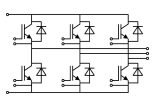
Features

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

Typical Applications

- Switched mode power supplies
- Three phase inverters for AC motor speed control
- For f_{sw} > 10 kHz



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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		600	V
I_C	T_j = 150 °C	T_c = 25 °C	130	A
		T_c = 80 °C	95	A
I_{CRM}	I_{CRM}=2xI_{Cnom}		200	A
V_{GES}			± 20	V
t_{psc}	V_{CC} = 300 V; $V_{GE} \leq$ 20 V; V_{CES} < 600 V	T_j = 125 °C	10	µs
Inverse Diode				
I_F	T_j = 150 °C	T_c = 25 °C	100	A
		T_c = 80 °C	75	A
I_{FRM}	I_{FRM}=2xI_{Fnom}		200	A
I_{FSM}	t_p = 10 ms; sin.	T_j = 150 °C	720	A
Module				
$I_{t(RMS)}$				A
T_{vj}			- 40 ... +150	°C
T_{stg}			- 40 ... +125	°C
V_{isol}	AC, 1 min.		2500	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 = 3 mA			4,5	5,5	6,5	V
I_{CES}	V_{GE} = 0 V, V_{CE} = V_{CES}	T_j = 25 °C			0,15	0,45	mA
V_{CE0}		T_j = 25 °C			1,05		V
		T_j = 125 °C			1		V
r_{CE}	V_{GE} = 15 V	T_j = 25°C			10,5		mΩ
		T_j = 125°C			14		mΩ
$V_{CE(sat)}$	I_{Cnom} = 100 A, V_{GE} = 15 V	T_j = 25°C$_{chiplev.}$			2,1	2,5	V
		T_j = 125°C$_{chiplev.}$			2,4	2,8	V
C_{ies}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz			5,6		nF
C_{oes}					0,6		nF
C_{res}					0,4		nF
Q_G	V_{GE} = 0V...15V				240		nC
$t_{d(on)}$	R_{Gon} = 10 Ω	V_{CC} = 300V			50		ns
t_r		I_{Cnom}= 100A			40		ns
E_{on}		T_j = 125 °C			4		mJ
$t_{d(off)}$	R_{Goff} = 10 Ω	V_{GE} = ± 15V			300		ns
t_f					35		ns
E_{off}					3		mJ
$R_{th(j-c)}$	per IGBT					0,27	K/W

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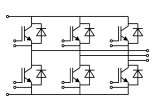

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Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 100 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		1,55	1,9	V
		T_j = 125 °$C_{chiplev.}$		1,55		V
V_{F0}		T_j = 25 °C			0,9	V
r_F		T_j = 25 °C			10	mΩ
I_{RRM}	I_{Fnom} = 100 A	T_j = 125 °C		8		A
Q_{rr}	di/dt = 1000 A/µs			44		µC
E_{rr}	V_{GE} = -15 V; V_{CC} = 600 V			1,5		mJ
$R_{th(j-c)D}$	per diode				0,6	K/W
Module						
L_{CE}					60	nH
$R_{th(c-s)}$	per module				0,05	K/W
M_s	to heat sink M5		4		5	Nm
w					175	g

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

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.

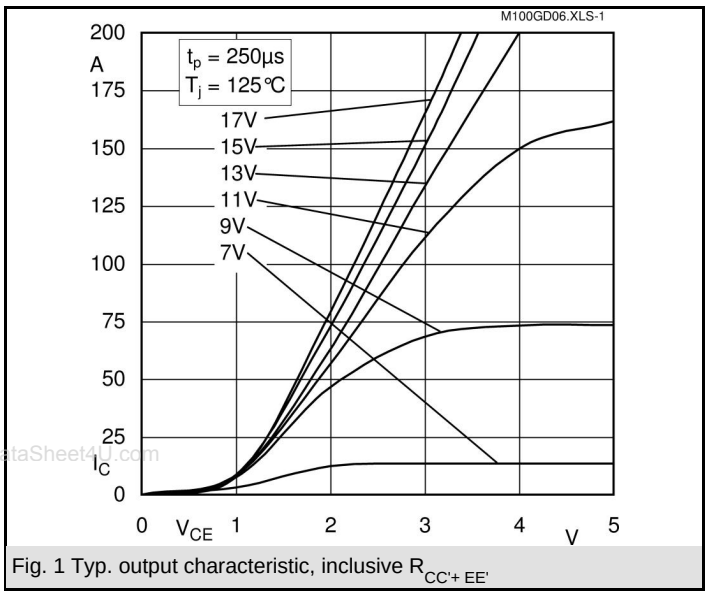

Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

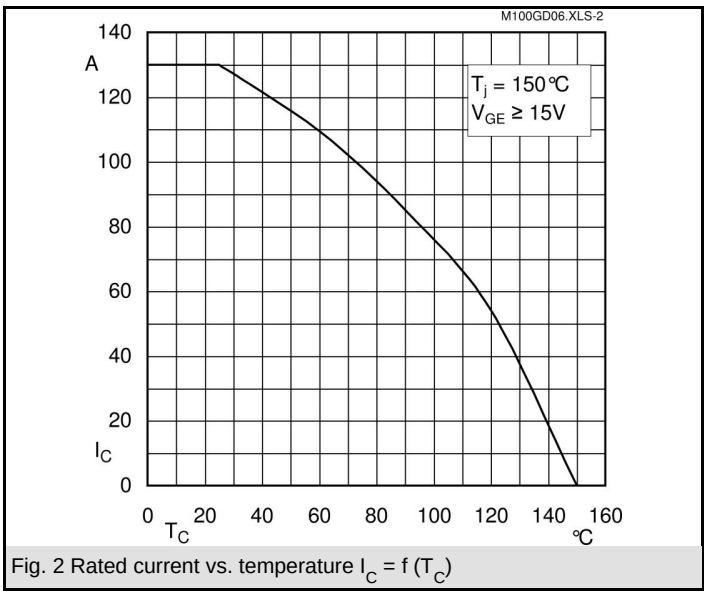

Fig. 2 Rated current vs. temperature $I_C = f(T_C)$

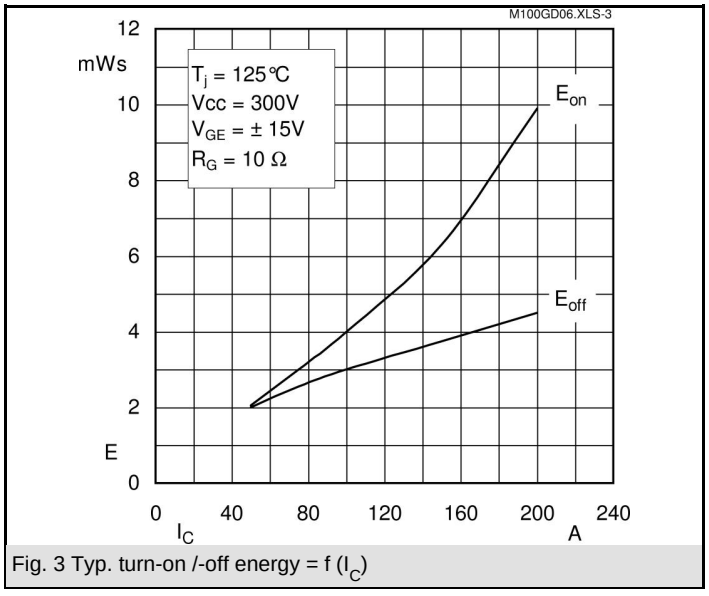

Fig. 3 Typ. turn-on /-off energy = f (I_C)

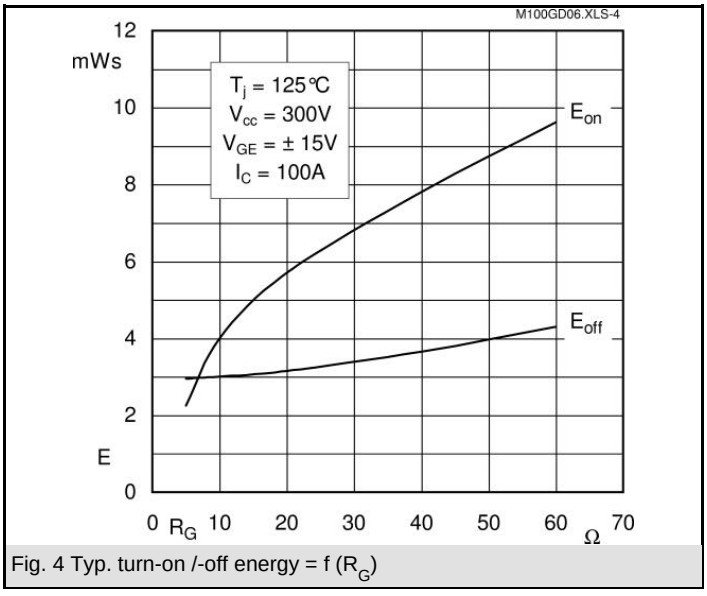

Fig. 4 Typ. turn-on /-off energy = f (R_G)

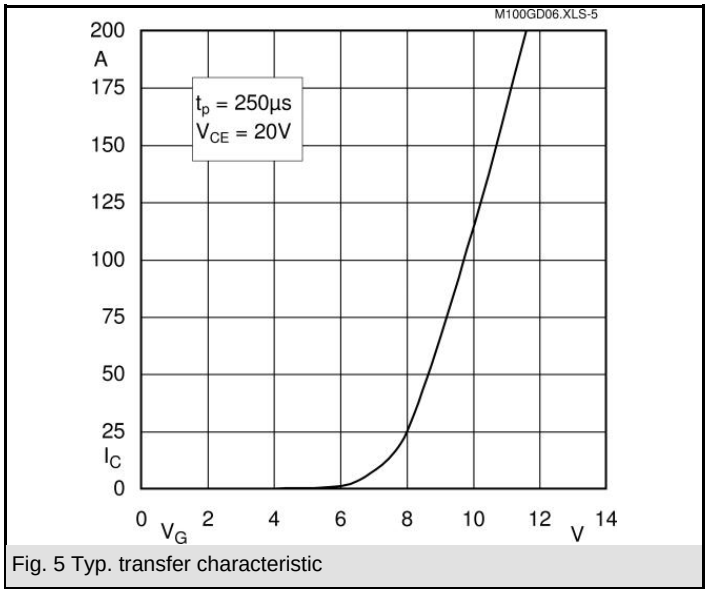

Fig. 5 Typ. transfer characteristic

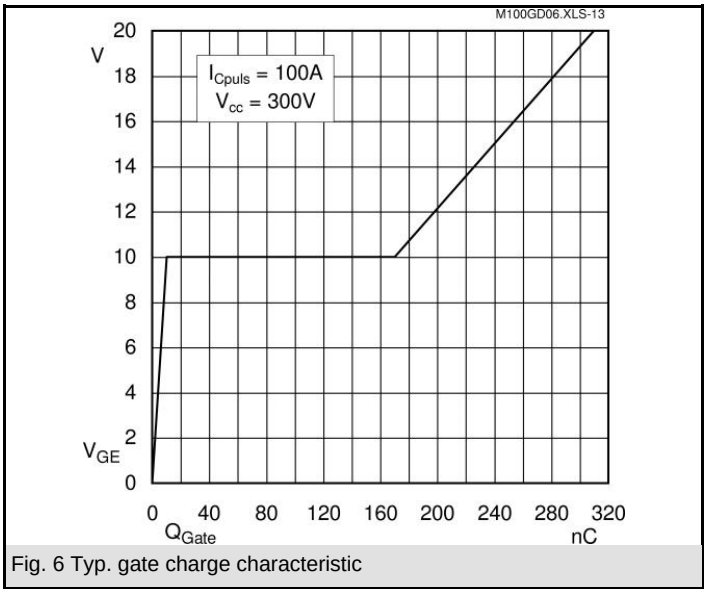

Fig. 6 Typ. gate charge characteristic

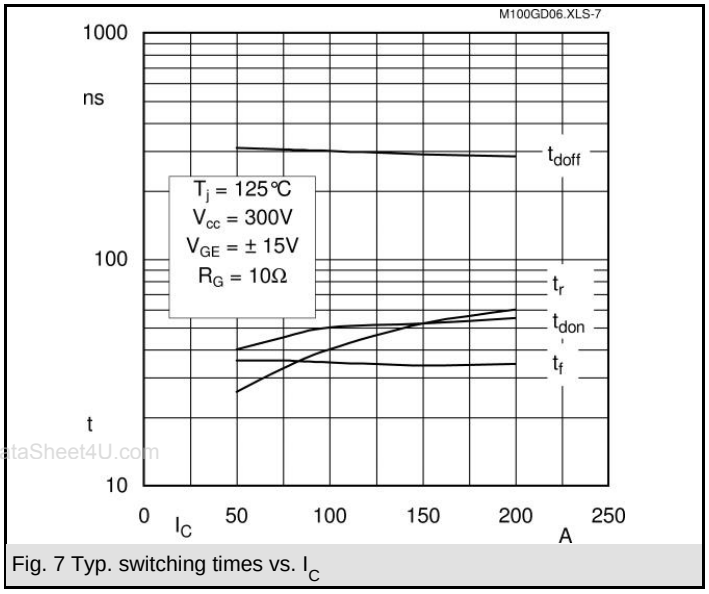

Fig. 7 Typ. switching times vs. I_C

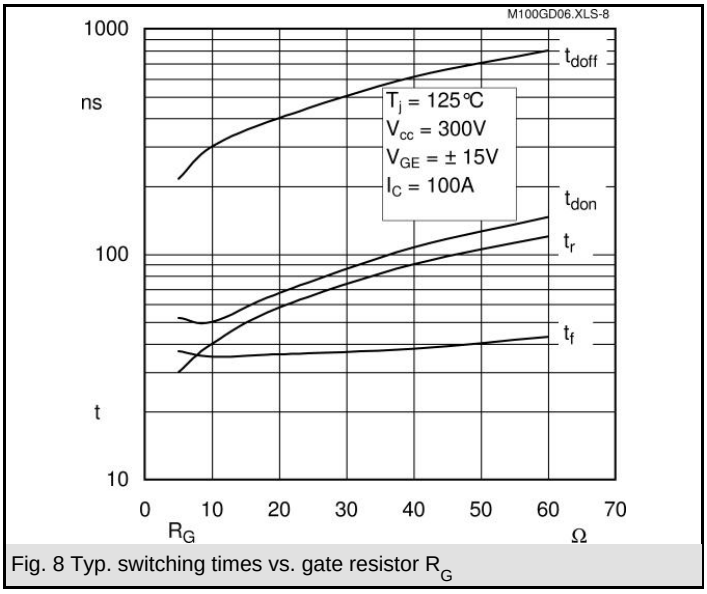

Fig. 8 Typ. switching times vs. gate resistor R_G

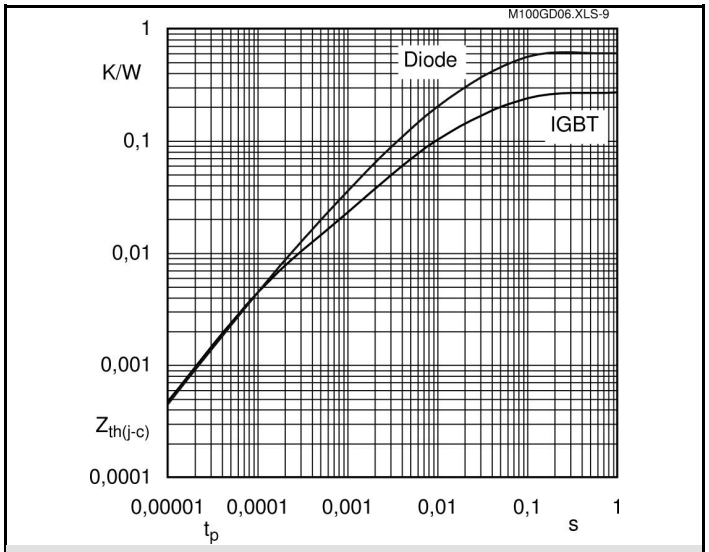

Fig. 9 Transient thermal impedance of IGBT and Diode

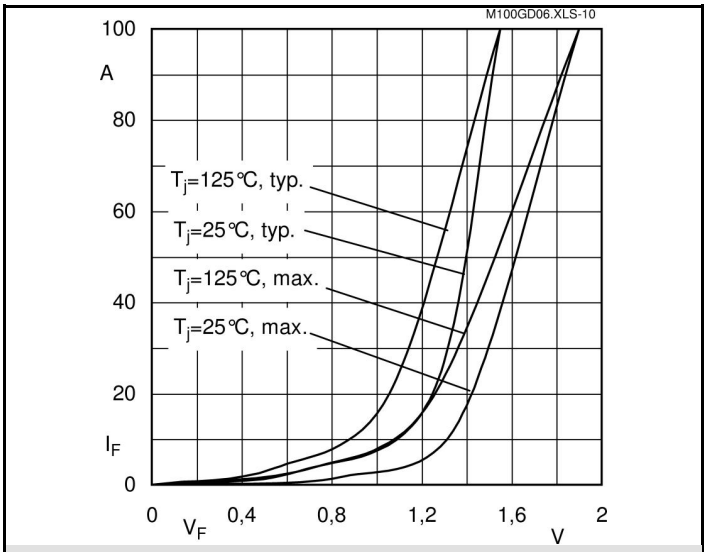

Fig. 10 CAL diode forward characteristic

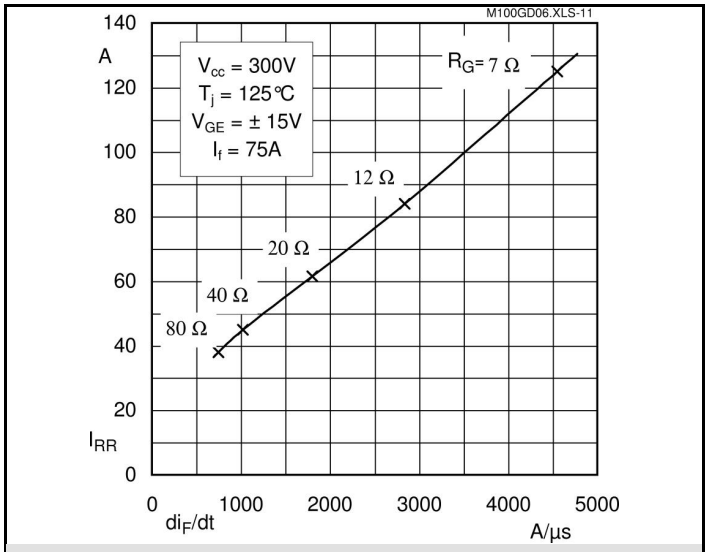

Fig. 11 Typ. CAL diode peak reverse recovery current

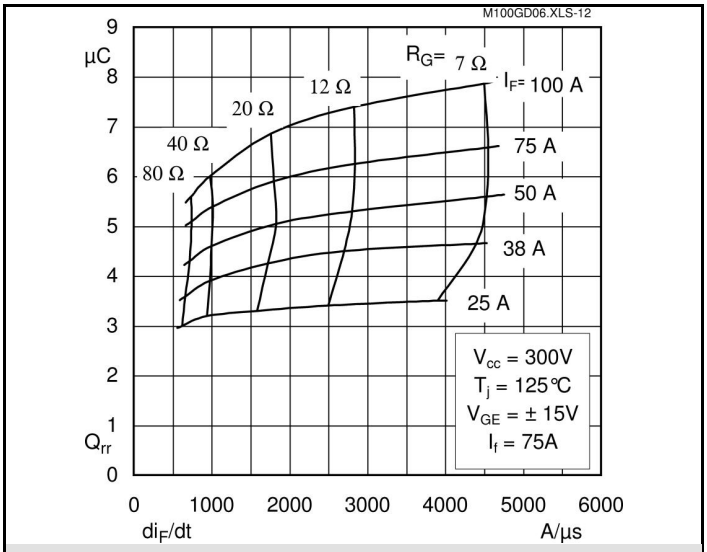

Fig. 12 Typ. CAL recovered charge

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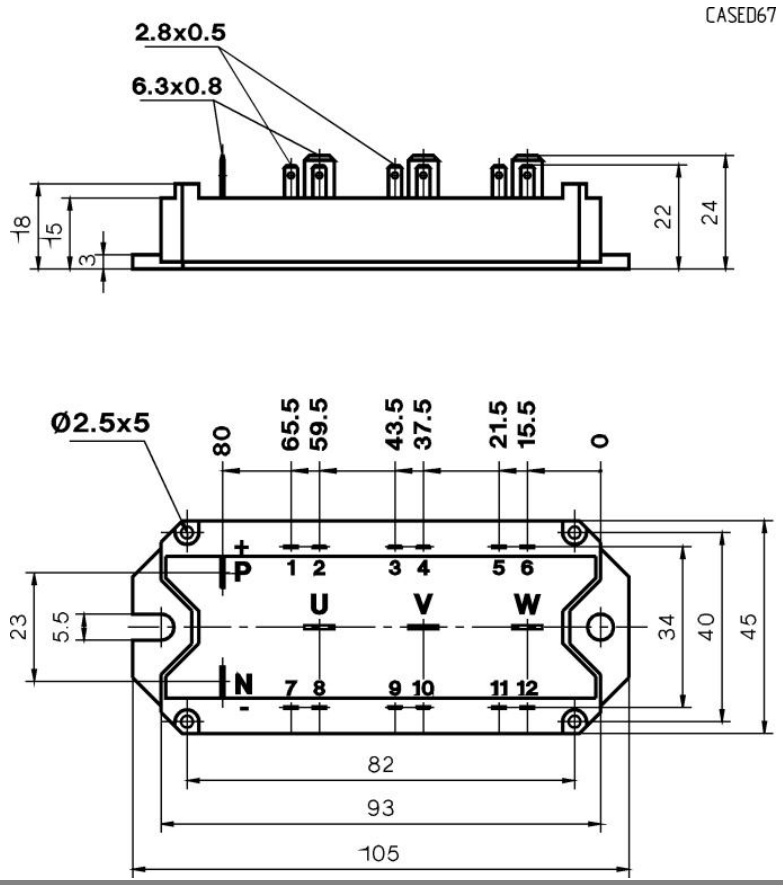
UL recognized file no E 63 532



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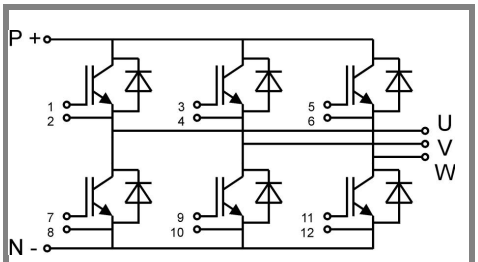

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