SKM 100GD063DL

SEMITRANS® 6

Superfast NPT-IGBT Module

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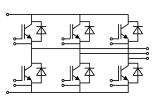
Features

- 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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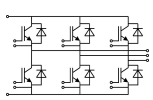

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Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 100 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		1,55	1,9	V
		T_j = 125 °$C_{chiplev.}$		1,55		V
V_{F0}		T_j = 25 °C			0,9	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.

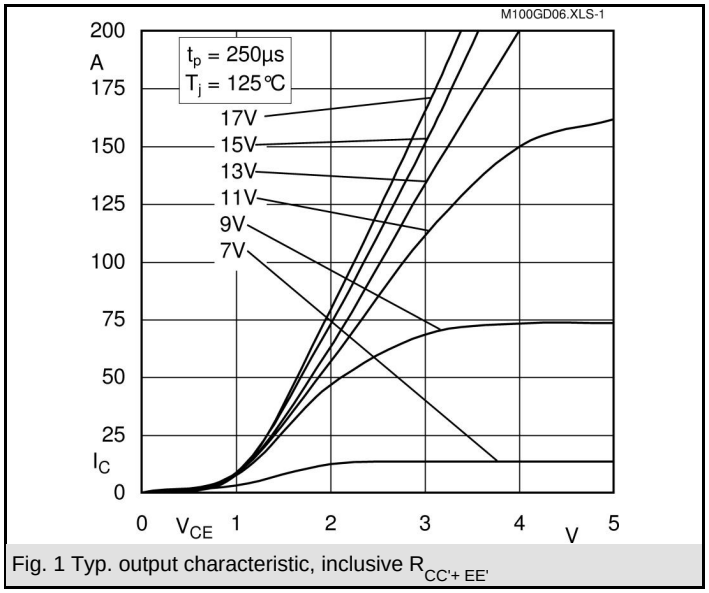


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

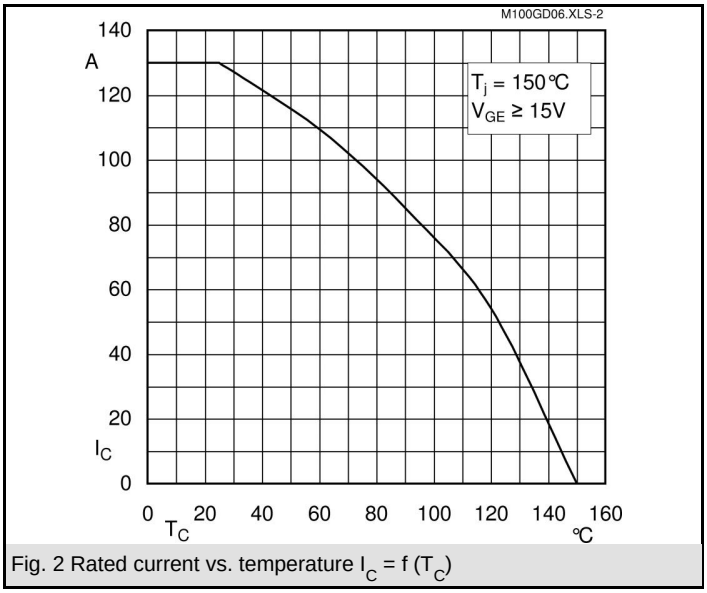


Fig. 2 Rated current vs. temperature $I_C = f(T_C)$

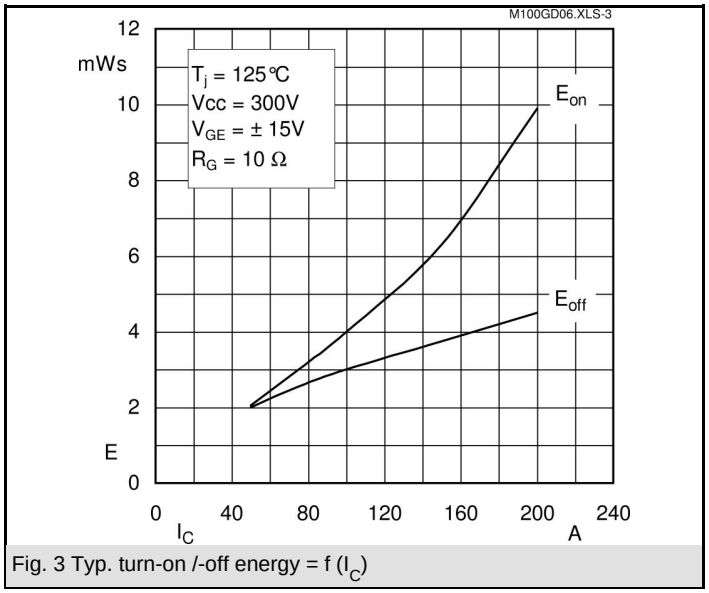


Fig. 3 Typ. turn-on /-off energy = f (I_C)

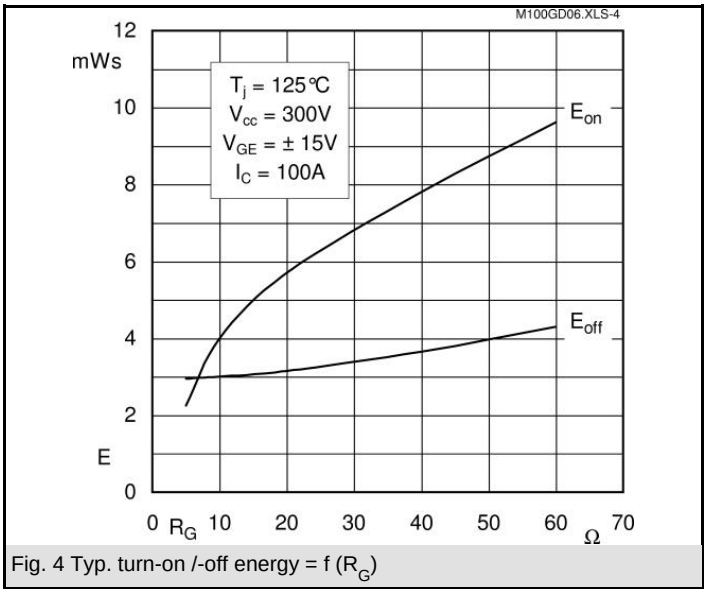


Fig. 4 Typ. turn-on /-off energy = f (R_G)

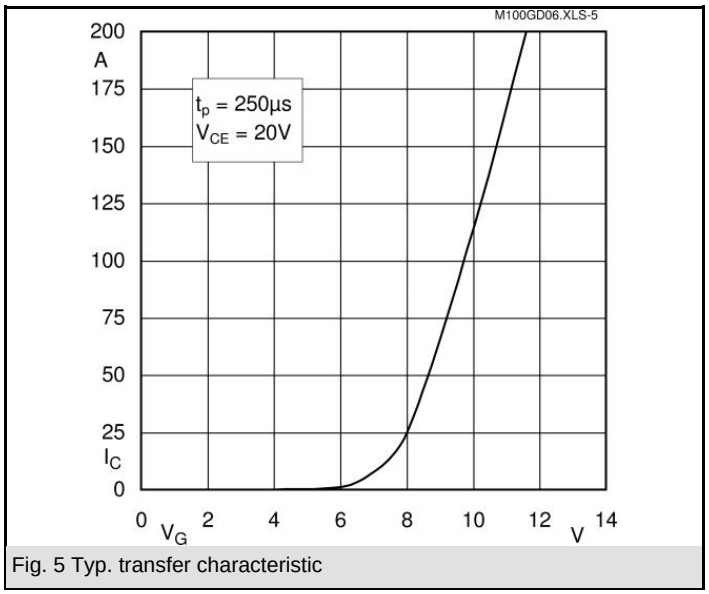


Fig. 5 Typ. transfer characteristic

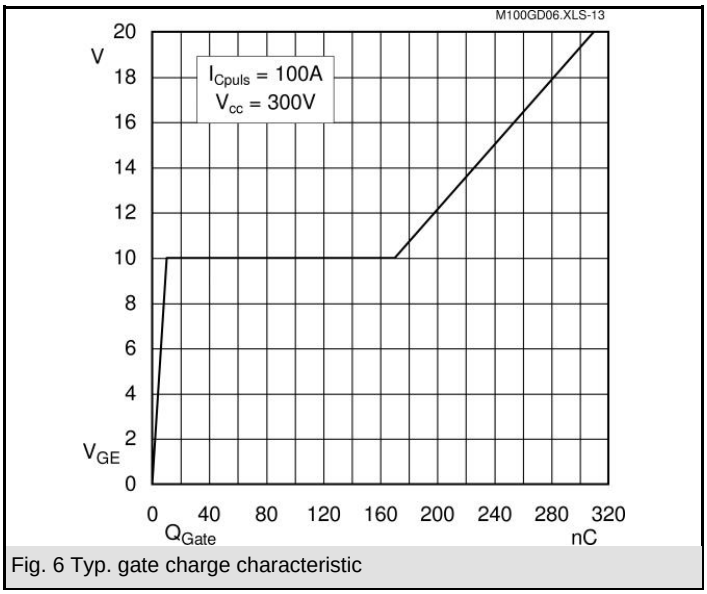


Fig. 6 Typ. gate charge characteristic

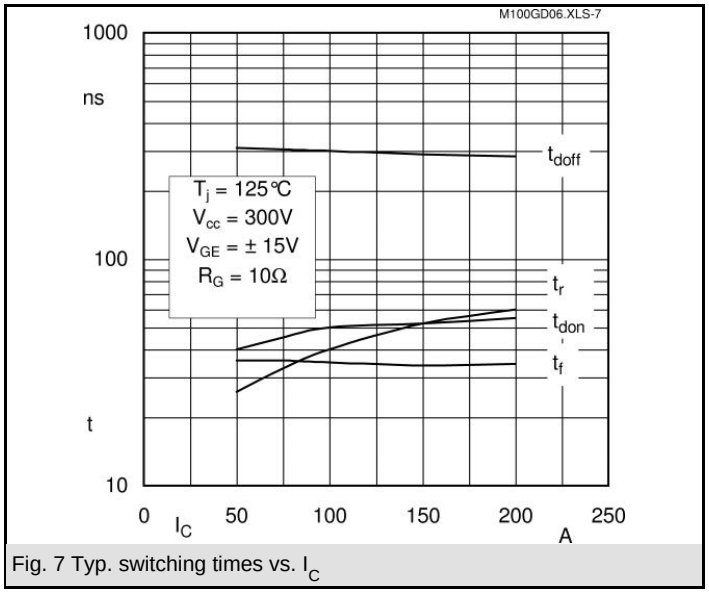


Fig. 7 Typ. switching times vs. I_C

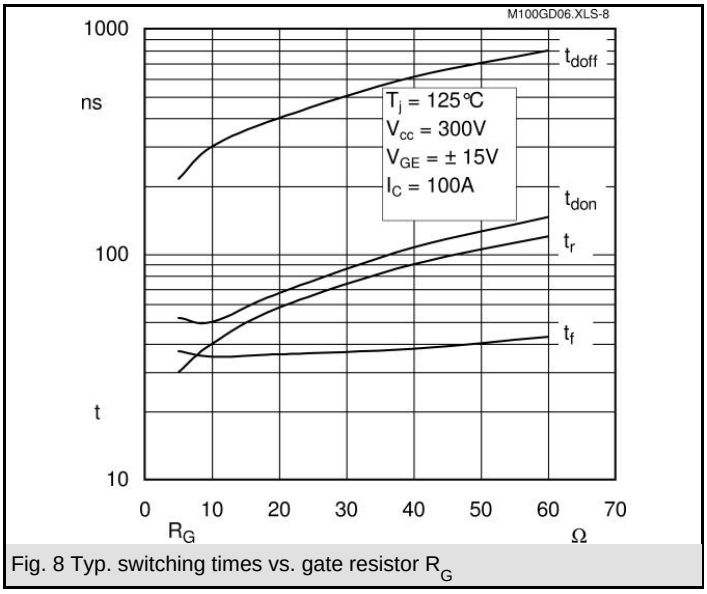


Fig. 8 Typ. switching times vs. gate resistor R_G

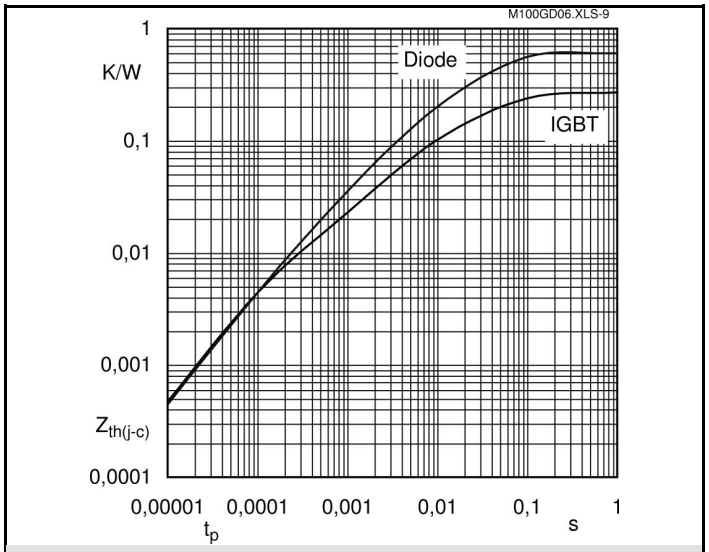


Fig. 9 Transient thermal impedance of IGBT and Diode

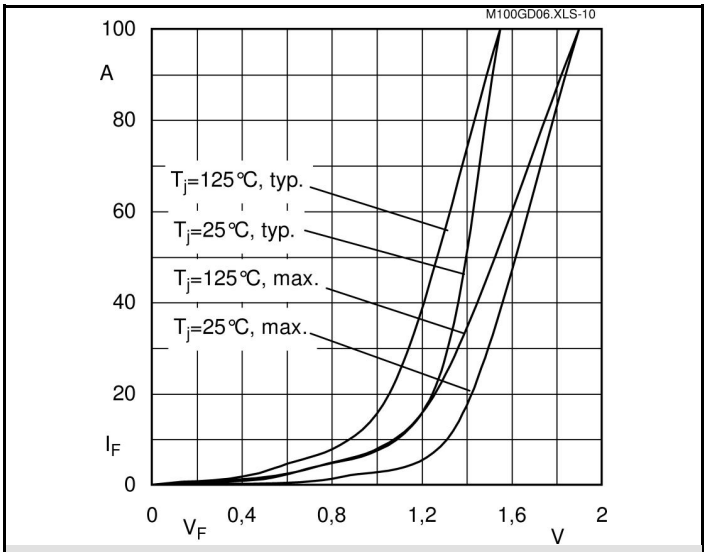


Fig. 10 CAL diode forward characteristic

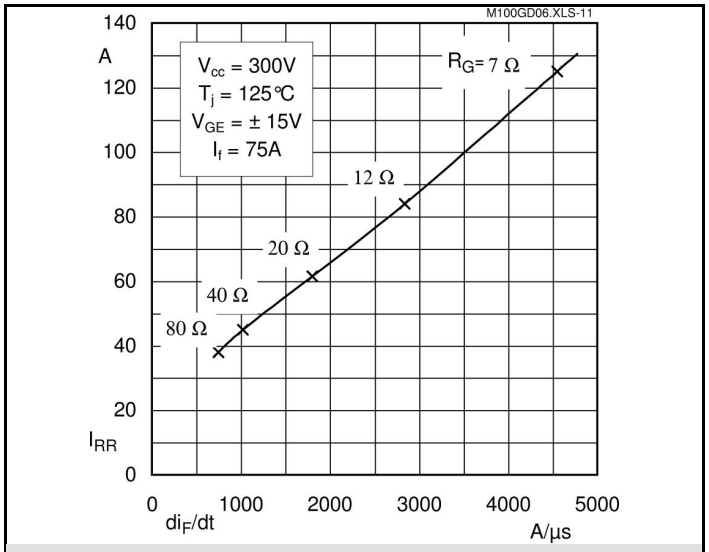


Fig. 11 Typ. CAL diode peak reverse recovery current

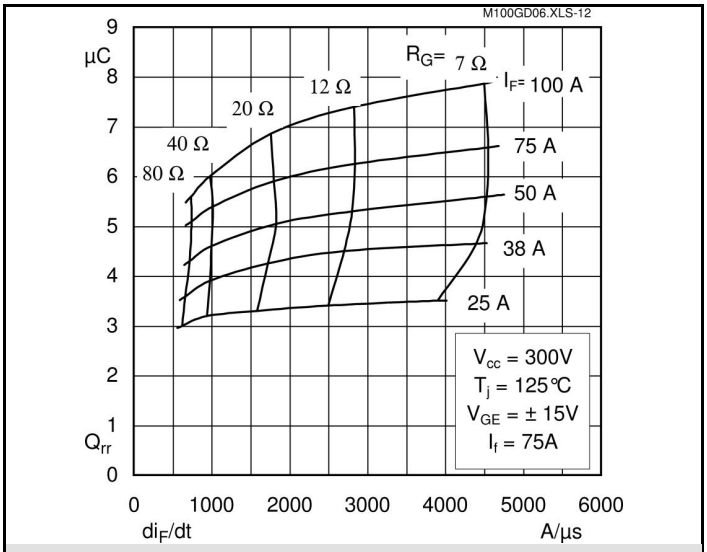
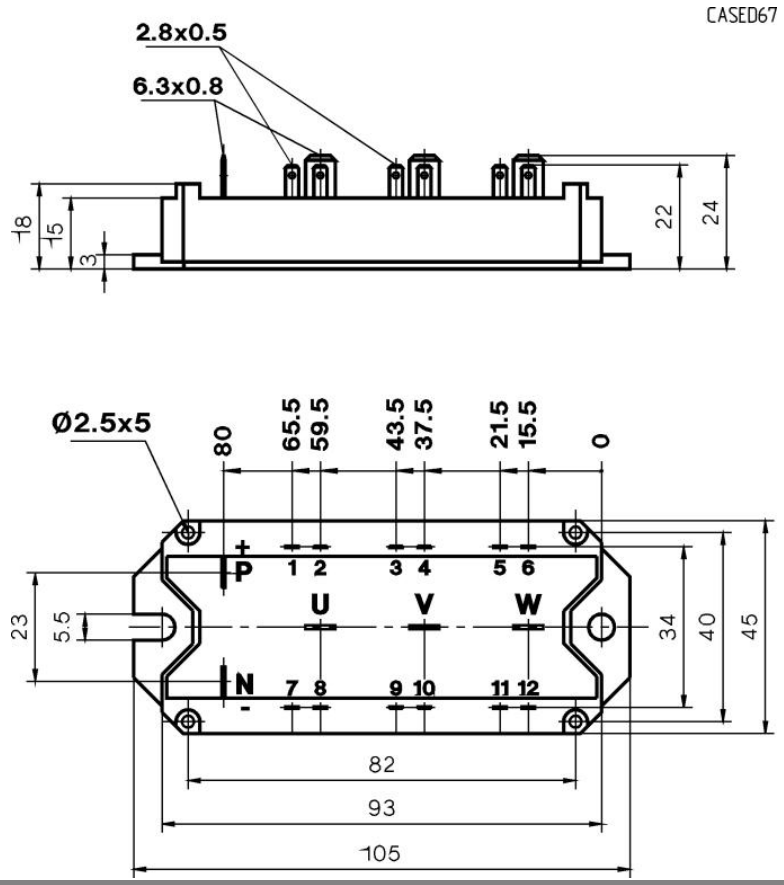


Fig. 12 Typ. CAL recovered charge

UL recognized file no E 63 532



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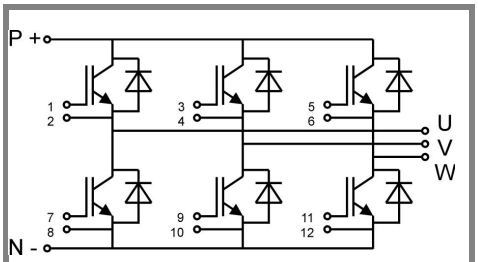

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