

SEMITRANS[®] 6

Superfast NPT-IGBT Module

SKM 100GD063DL

Features

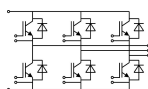
- Si structure (NPT IGBT)
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications*

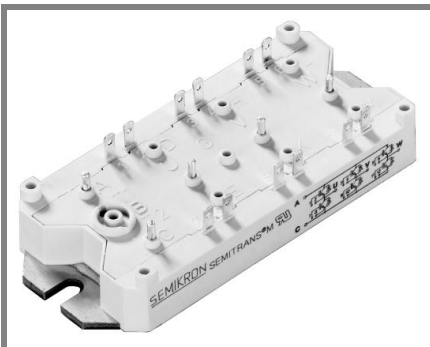
- Switched mode power supplies
- Three phase inverters for AC motor speed control
- For $f_{sw} > 10$ kHz

Absolute Maximum Ratings		$T_{case} = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values	Units	
IGBT				
V_{CES}	$T_j = 25^\circ\text{C}$	600	V	
I_C	$T_j = 150^\circ\text{C}$	$T_c = 25^\circ\text{C}$	130	A
		$T_c = 80^\circ\text{C}$	95	A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	200	A	
V_{GES}		± 20	V	
t_{psc}	$V_{CC} = 300$ V; $V_{GE} \leq 20$ V; $T_j = 125^\circ\text{C}$ $V_{CES} < 600$ V	10	μs	
Inverse Diode				
I_F	$T_j = 150^\circ\text{C}$	$T_c = 25^\circ\text{C}$	100	A
		$T_c = 80^\circ\text{C}$	75	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$	200	A	
I_{FSM}	$t_p = 10$ ms; sin.	$T_j = 150^\circ\text{C}$	720	A
Module				
$I_{t(RMS)}$			A	
T_{vj}		- 40 ... +150	$^\circ\text{C}$	
T_{stg}		- 40 ... +125	$^\circ\text{C}$	
V_{isol}	AC, 1 min.	2500	V	

Characteristics		$T_{case} = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 3$ mA	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0$ V, $V_{CE} = V_{CES}$		0,15	0,45	mA
V_{CE0}		$T_j = 25^\circ\text{C}$	1,05		V
		$T_j = 125^\circ\text{C}$	1		V
r_{CE}	$V_{GE} = 15$ V	$T_j = 25^\circ\text{C}$	10,5		m Ω
		$T_j = 125^\circ\text{C}$	14		m Ω
$V_{CE(sat)}$	$I_{Cnom} = 100$ A, $V_{GE} = 15$ V	$T_j = 25^\circ\text{C}_{chiplev.}$	2,1	2,5	V
		$T_j = 125^\circ\text{C}_{chiplev.}$	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	$V_{GE} = 0$ V...15V		240		nC
$t_{d(on)}$	$R_{Gon} = 10 \Omega$	$V_{CC} = 300$ V $I_C = 100$ A	50		ns
t_r			40		ns
E_{on}	$R_{Goff} = 10 \Omega$	$T_j = 125^\circ\text{C}$ $V_{GE} = \pm 15$ V	4		mJ
$t_{d(off)}$			300		ns
t_f			35		ns
E_{off}			3		mJ
$R_{th(j-c)}$	per IGBT			0,27	K/W



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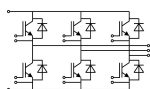
- Switched mode power supplies
- Three phase inverters for AC motor speed control
- For $f_{sw} > 10$ kHz

Characteristics

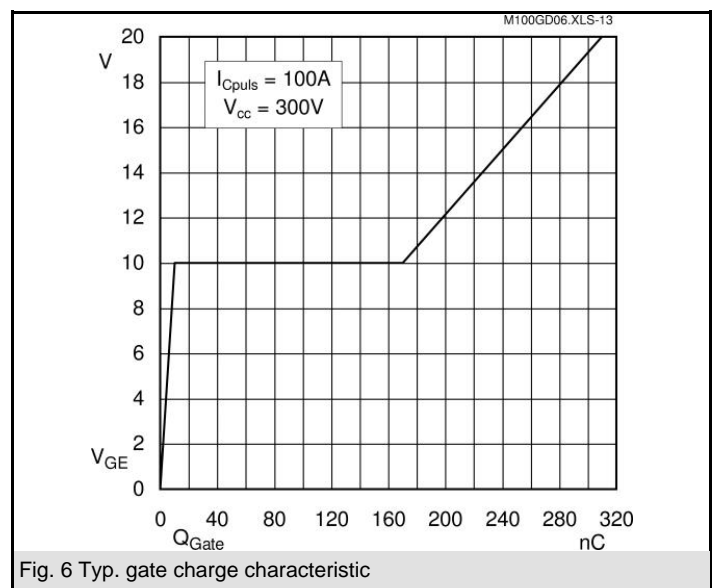
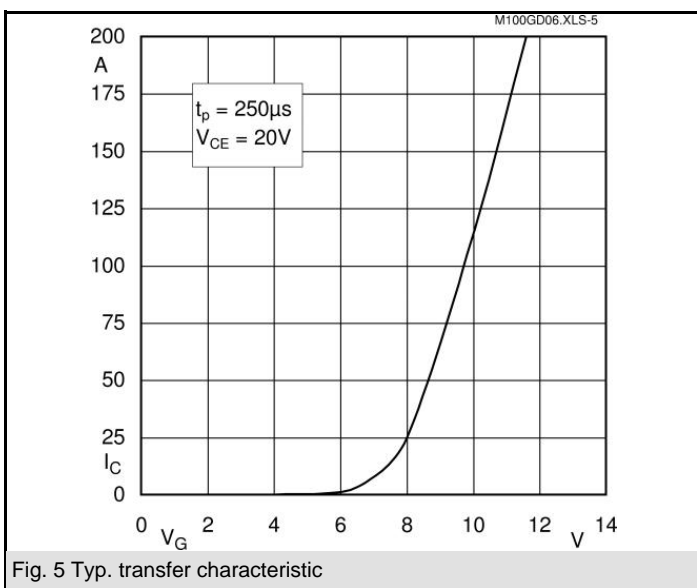
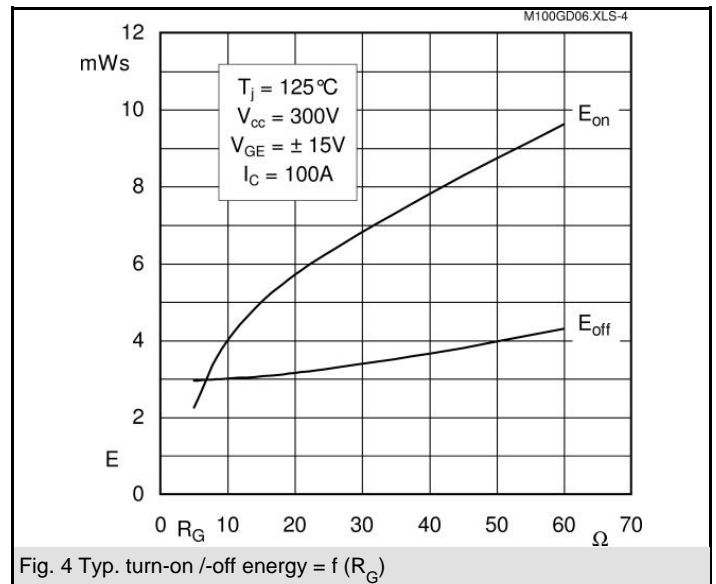
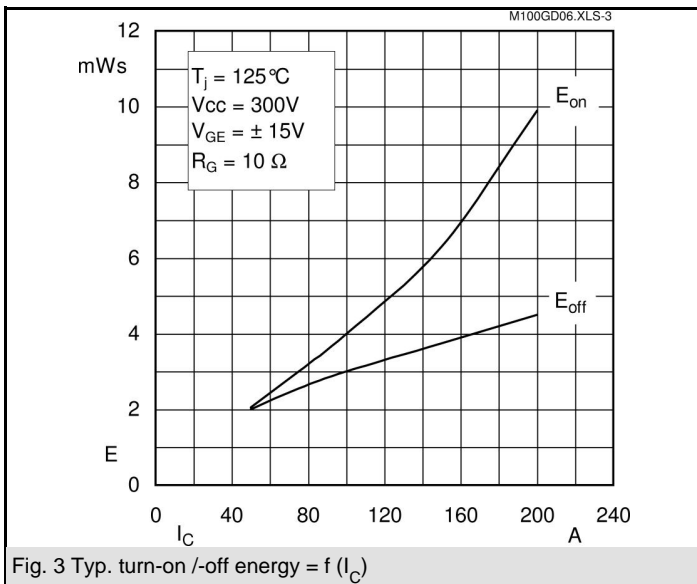
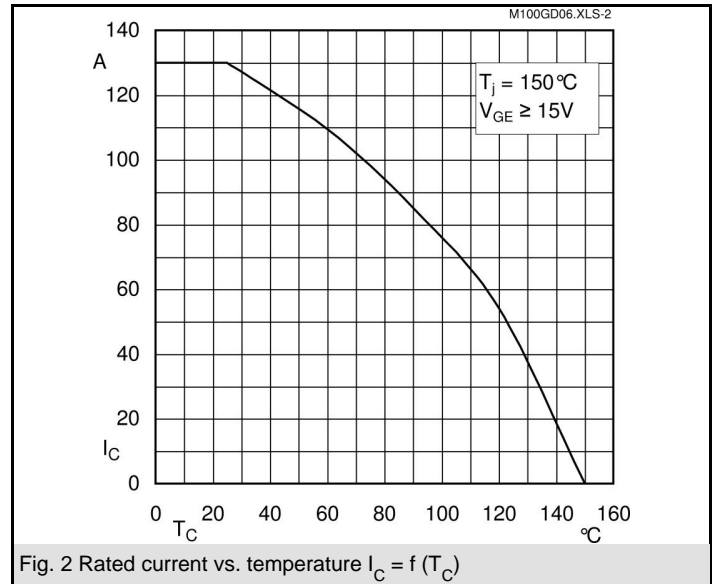
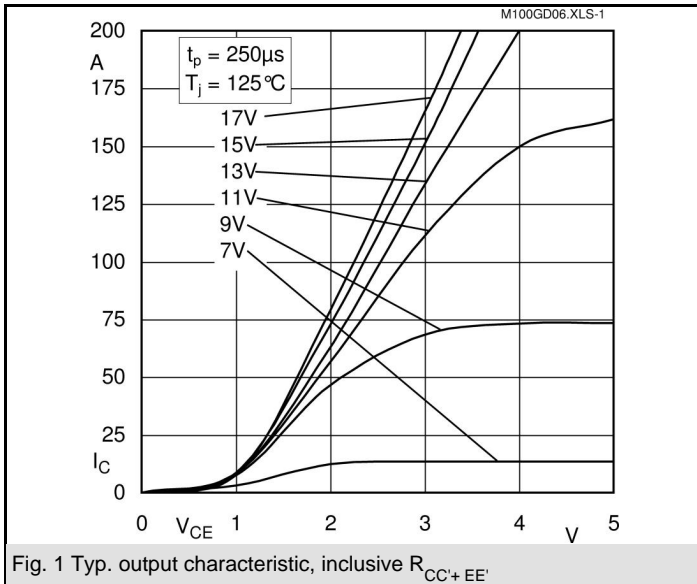
Symbol	Conditions	min.	typ.	max.	Units	
Inverse Diode						
$V_F = V_{EC}$	$I_{Fnom} = 100$ A; $V_{GE} = 0$ V		$T_j = 25$ °C _{chiplev.}	1,55	1,9	V
			$T_j = 125$ °C _{chiplev.}	1,55		V
V_{F0}				0,9	V	
r_F				10	mΩ	
I_{RRM}	$I_F = 100$ A		8		A	
Q_{rr}	$di/dt = 1000$ A/μs		44		μC	
E_{rr}	$V_{GE} = -15$ 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	

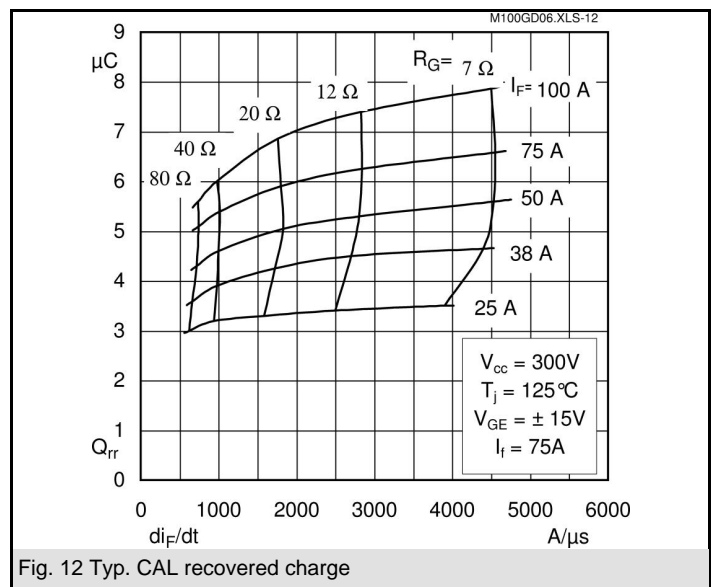
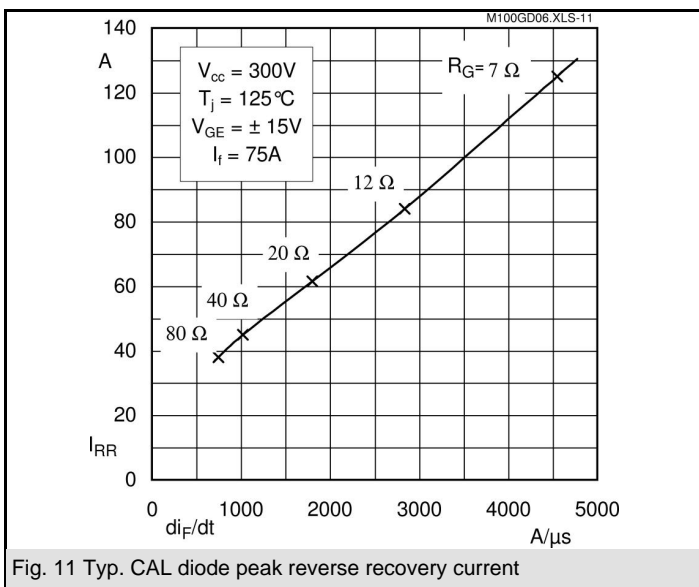
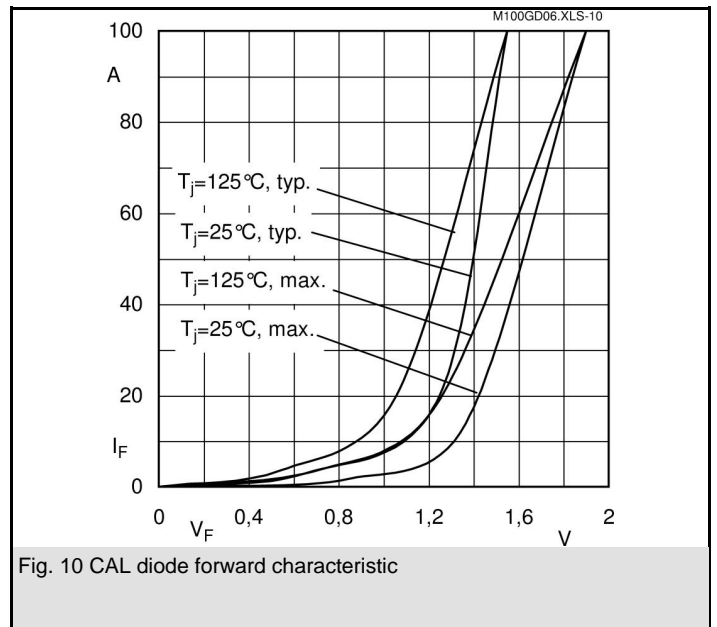
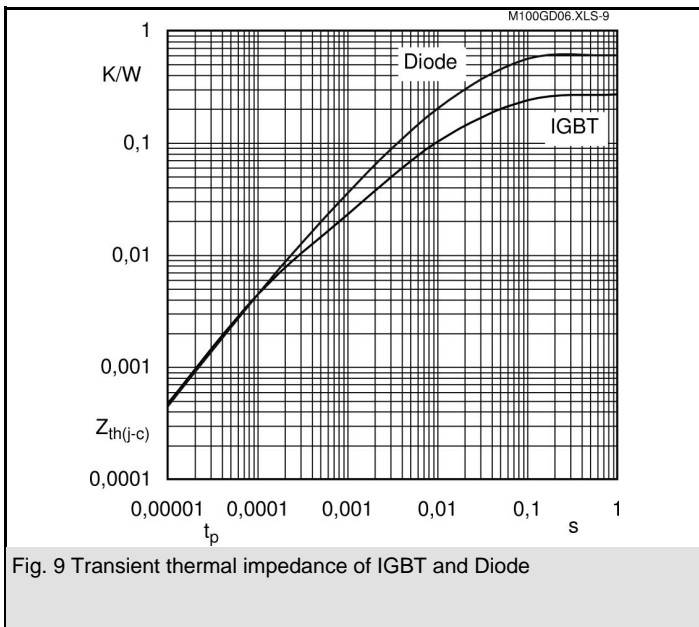
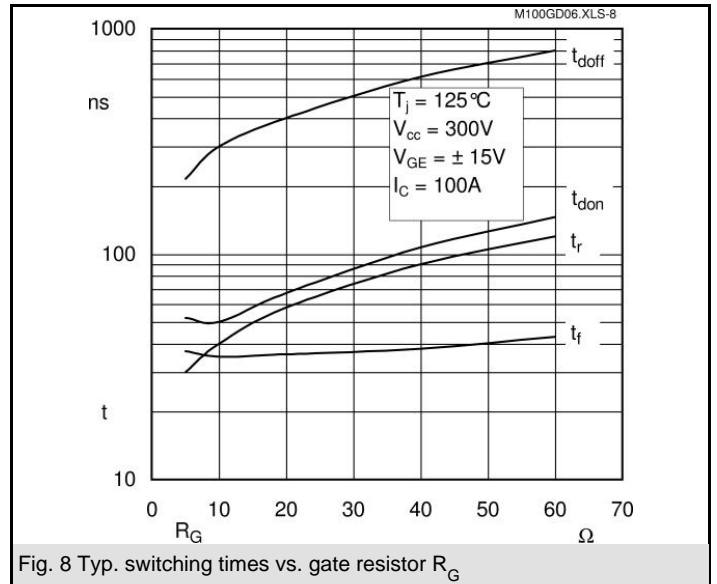
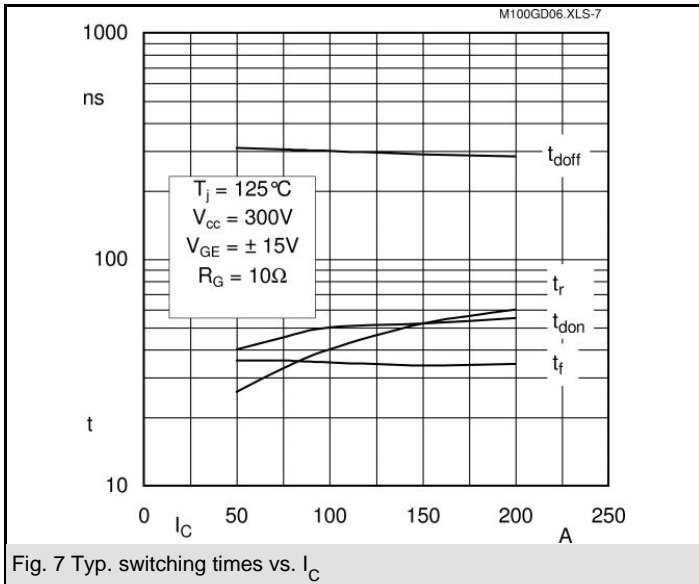
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

* 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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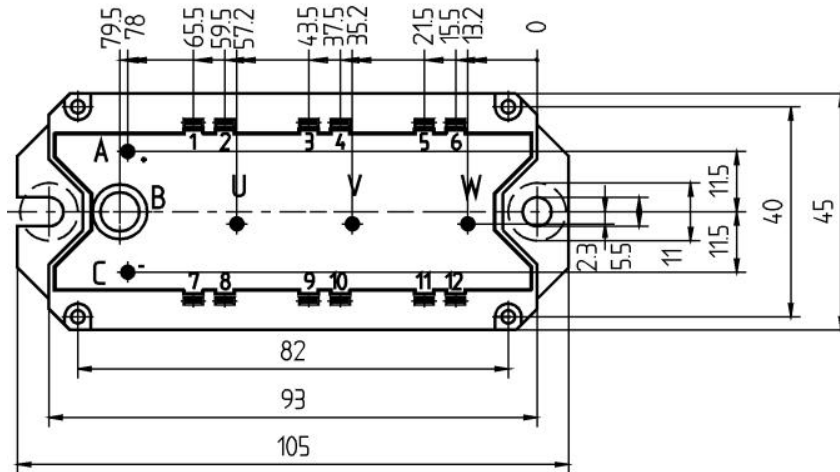
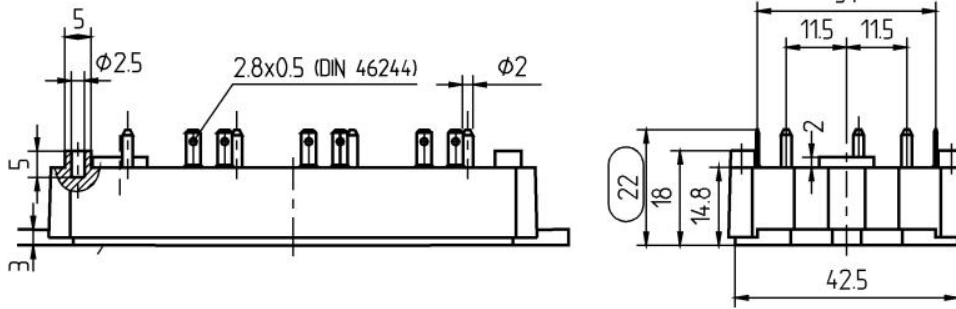


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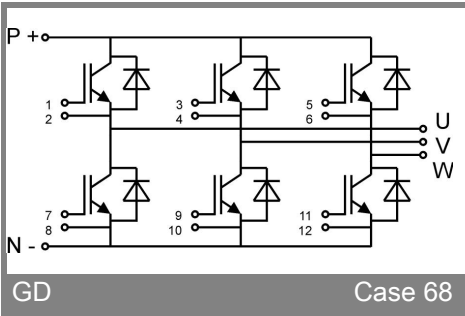
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Case 68