

**SEMITRANS® 6**

## Superfast NPT-IGBT Module

SKM 100GD063DL

### Features

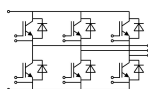
- Si structure (NPT IGBT)
- $V_{CE(sat)}$  with positive temperature coefficient
- High short circuit capability, self limiting to  $6 \times I_C$

### Typical Applications\*

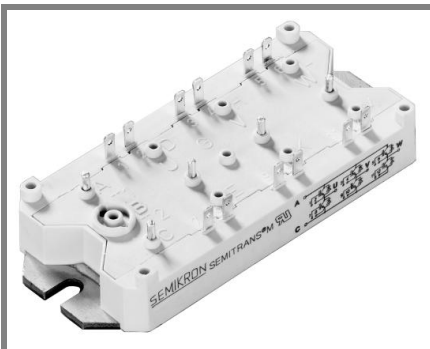
- Switched mode power supplies
- Three phase inverters for AC motor speed control
- For  $f_{sw} > 10$  kHz

Absolute Maximum Ratings		$T_{case} = 25^\circ\text{C}$ , unless otherwise specified		
Symbol	Conditions	Values	Units	
<b>IGBT</b>				
$V_{CES}$	$T_j = 25^\circ\text{C}$	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	
$V_{GES}$		$\pm 20$	V	
$t_{psc}$	$V_{CC} = 300$ V; $V_{GE} \leq 20$ V; $T_j = 125^\circ\text{C}$ $V_{CES} < 600$ V	10	$\mu\text{s}$	
<b>Inverse Diode</b>				
$I_F$	$T_j = 150^\circ\text{C}$	$T_c = 25^\circ\text{C}$	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
<b>Module</b>				
$I_{t(RMS)}$			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
<b>IGBT</b>					
$V_{GE(th)}$	$V_{GE} = V_{CE}$ , $I_C = 3$ 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 $\Omega$
		$T_j = 125^\circ\text{C}$	14		m $\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 100$ 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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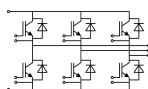
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### Characteristics

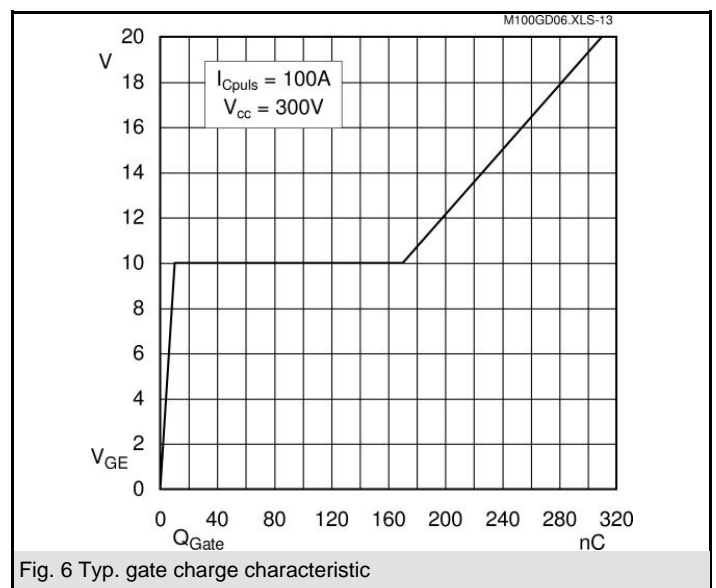
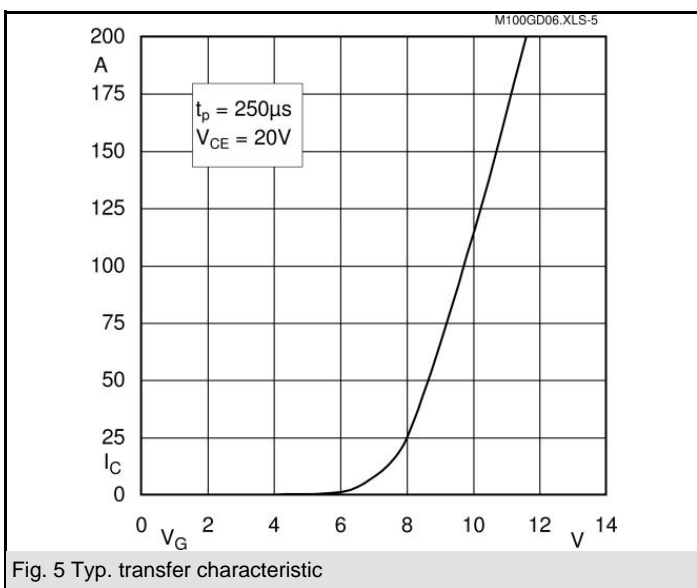
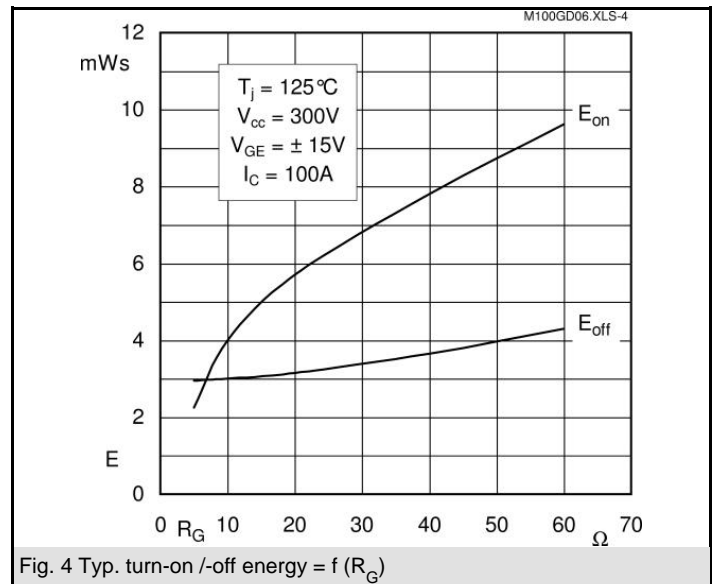
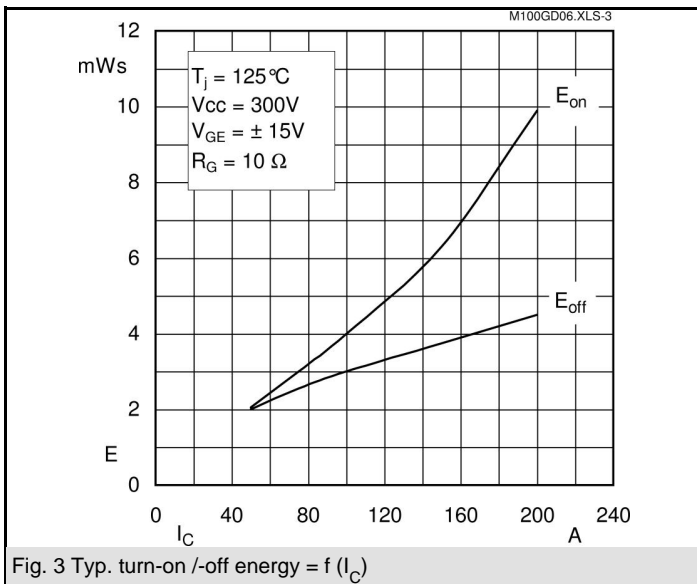
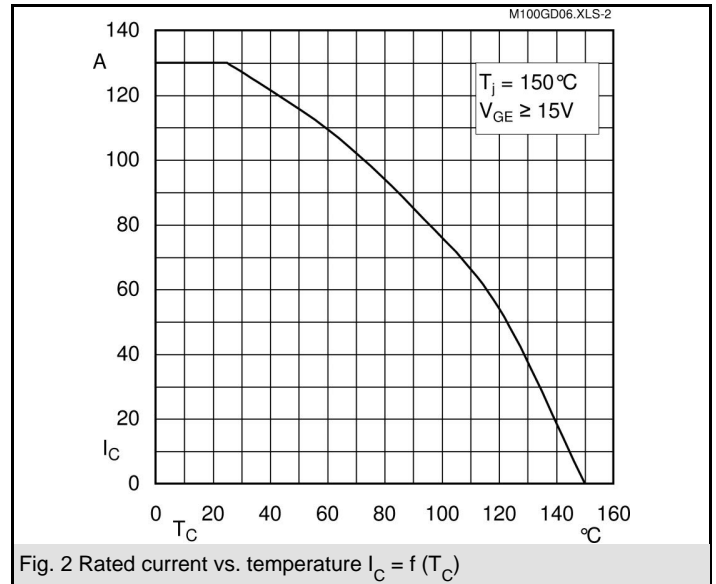
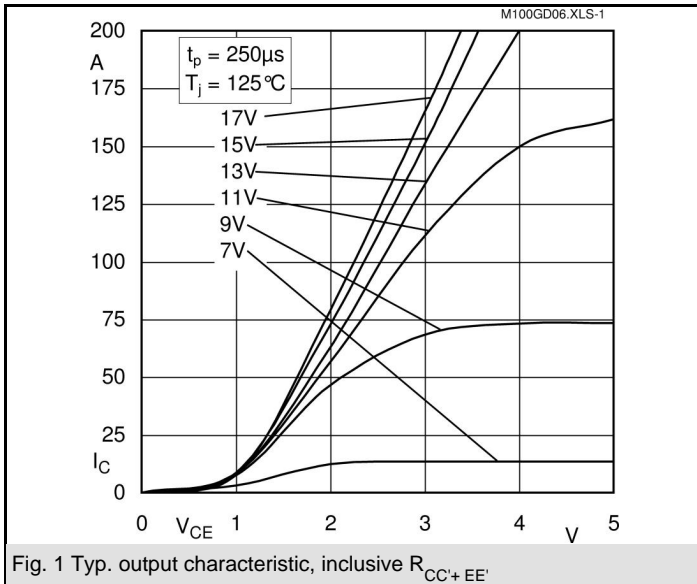
Symbol	Conditions	min.	typ.	max.	Units
<b>Inverse Diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 100$ A; $V_{GE} = 0$ V	$T_j = 25$ °C <sub>chiplev.</sub>	1,55	1,9	V
		$T_j = 125$ °C <sub>chiplev.</sub>	1,55		V
$V_{F0}$				0,9	V
$r_F$				10	mΩ
$I_{RRM}$	$I_F = 100$ A		8		A
$Q_{rr}$	$di/dt = 1000$ A/μs		44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

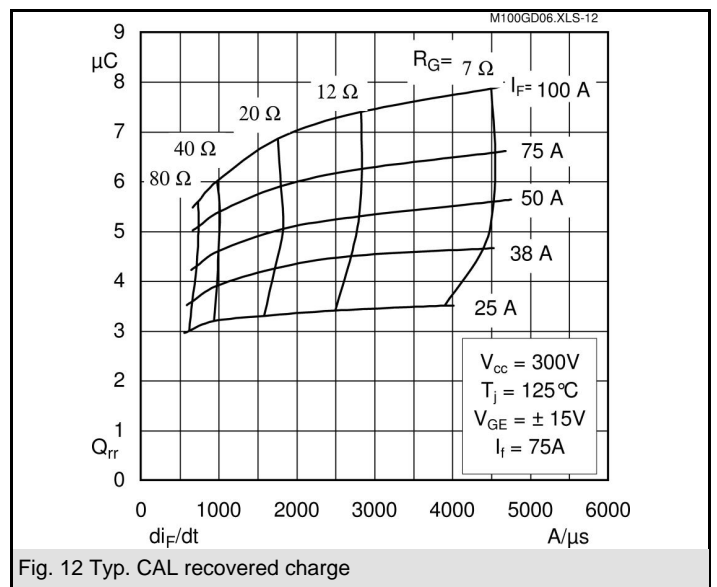
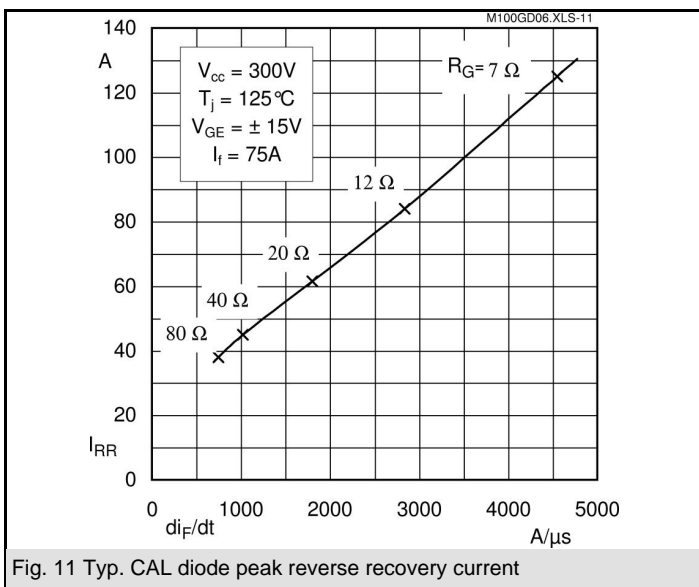
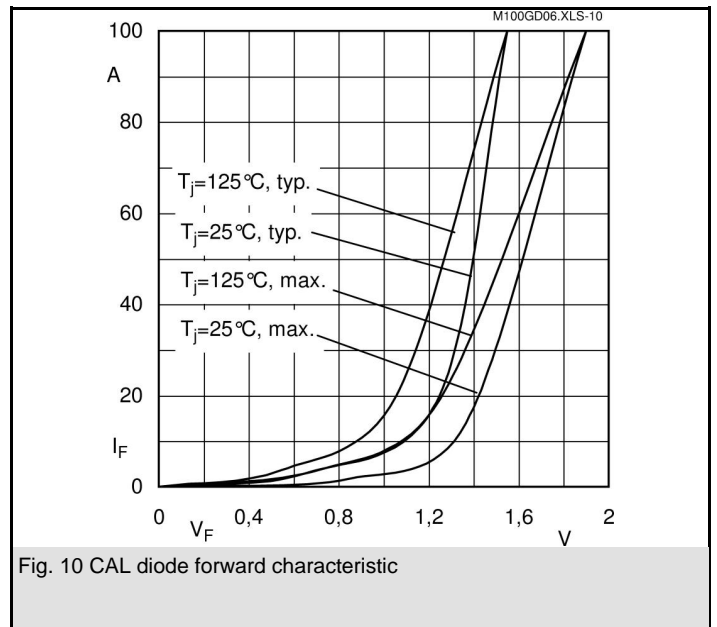
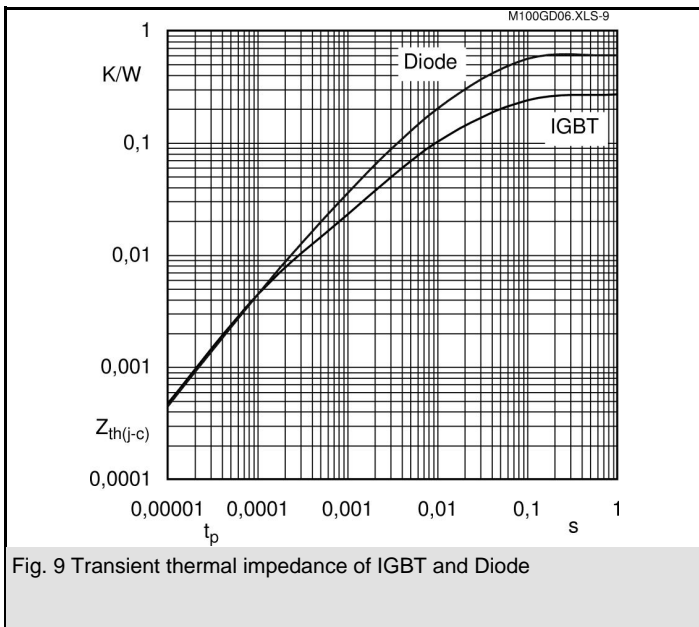
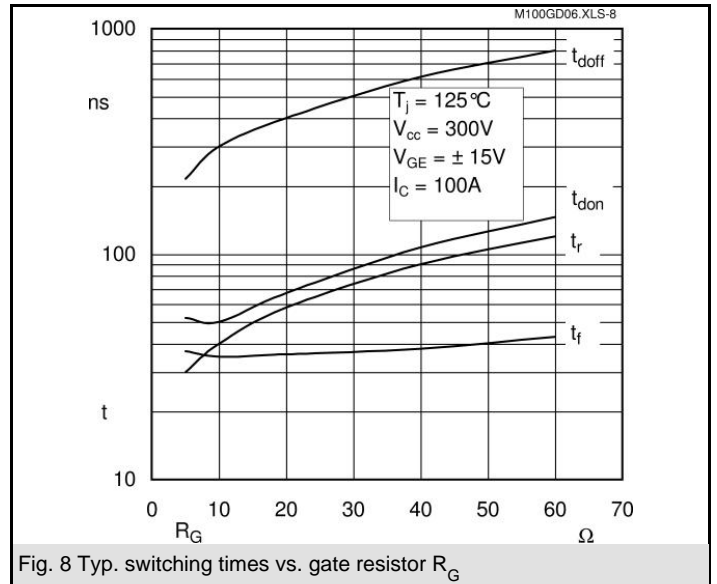
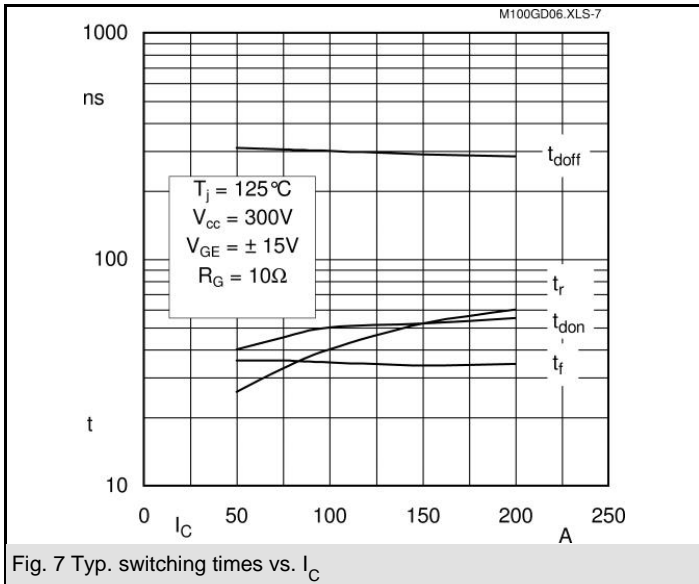
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

\* 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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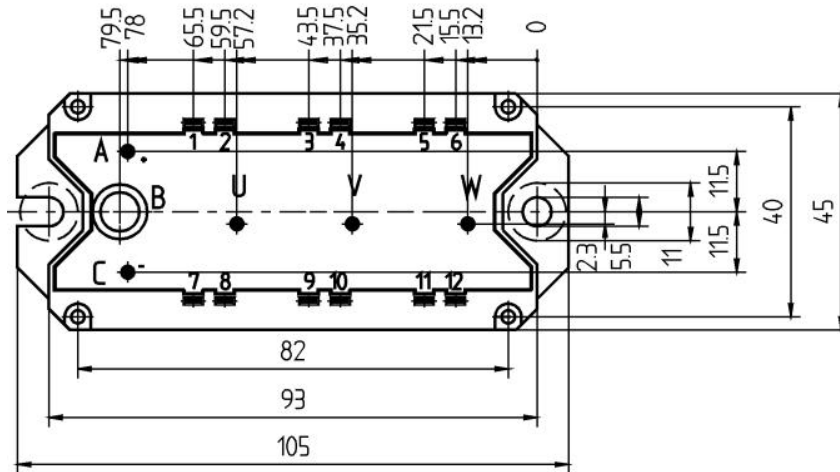
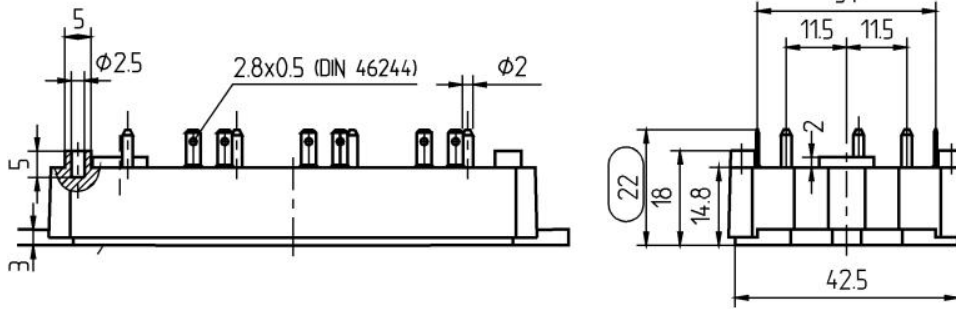


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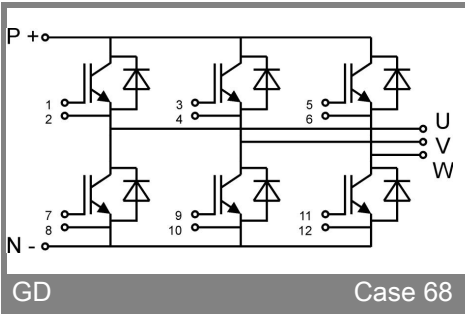
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