



**SEMITRANS<sup>®</sup> 6**

## Superfast NPT-IGBT Module

**SKM 100GD063DL**

### Features

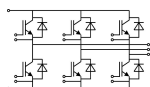
- Si structure (NPT IGBT)
- $V_{CE(sat)}$  with positive temperature coefficient
- High short circuit capability, self limiting to  $6 \times I_C$

### Typical Applications

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

Absolute Maximum Ratings		$T_{case} = 25^\circ C$ , unless otherwise specified		
Symbol	Conditions	Values	Units	
<b>IGBT</b>				
$V_{CES}$	$T_j = 25^\circ C$	600	V	
$I_C$	$T_j = 150^\circ C$	$T_c = 25^\circ C$	130	A
		$T_c = 80^\circ C$	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; $T_j = 125^\circ C$ $V_{CES} < 600$ V	10	$\mu s$	
<b>Inverse Diode</b>				
$I_F$	$T_j = 150^\circ C$	$T_c = 25^\circ C$	100	A
		$T_c = 80^\circ C$	75	A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$	200	A	
$I_{FSM}$	$t_p = 10$ ms; sin. $T_j = 150^\circ C$	720	A	
<b>Module</b>				
$I_{t(RMS)}$			A	
$T_{vj}$		- 40 ... +150	$^\circ C$	
$T_{stg}$		- 40 ... +125	$^\circ C$	
$V_{isol}$	AC, 1 min.	2500	V	

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



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### Typical Applications

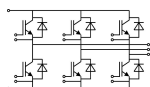
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- Three phase inverters for AC motor speed control
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### Characteristics

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
$I_{RRM}$	$I_{Fnom} = 100$ 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.

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



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