

SKM 300 GARL 066 T



SEMITRANS® 5

Trench IGBT Modules

SKM 300 GARL 066 T

Target Data

Features

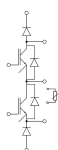
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- Integrated NTC temperature sensor

Typical Applications

- UPS
- 3 Level Inverter

Remarks

- Case temperature limited to $T_c = 125^\circ\text{C}$ max, recommended $T_{op} = -40..+150^\circ\text{C}$



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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 = 175 °C	T _c = 25 °C	400	A
		T _c = 80 °C	300	A
I _{CRM}	I _{CRM} =2xI _{Cnom}		600	A
V _{GES}			± 20	V
t _{psc}	V _{CC} = 360 V; V _{GE} ≤ 15 V; T _j = 150 °C V _{CES} < 600 V		6	μs
Inverse Diode				
I _F	T _j = 150 °C	T _c = 25 °C	40	A
		T _c = 80 °C	30	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		60	A
I _{FSM}	t _p = 10 ms; half sine wave T _j = 150 °C		160	A
Freewheeling Diode				
I _F	T _j = 175 °C	T _c = 25 °C	400	A
		T _c = 80 °C	290	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		600	A
I _{FSM}	t _p = 10 ms; half sine wave T _j = 150 °C		2100	A
Module				
I _{t(RMS)}			500	A
T _{vj}			- 40 ... + 175	°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 = 4,8 mA		5	5,8	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES} T _j = 25 °C		0,015			mA
I _{GES}	V _{CE} = 0 V, V _{GE} = 20 V T _j = 25 °C		1200			nA
V _{CE0}	T _j = 25 °C		0,9			V
	T _j = 150 °C		0,85			0,9 V
r _{CE}	V _{GE} = 15 V T _j = 25°C		1,8			3 mΩ
	T _j = 150°C		2,7			3,8 mΩ
V _{CE(sat)}	I _{Cnom} = 300 A, V _{GE} = 15 V T _j = 25°C _{chiplev.}		1,45			1,9 V
	T _j = 150°C _{chiplev.}		1,7			2,1 V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz		18,4			nF
C _{oes}			1,14			nF
C _{res}			0,54			nF
R _{Gint}	T _j = °C		1			Ω
t _{d(on)}	R _{Gon} = 1 Ω	V _{CC} = 300V I _C = 300A T _j = 150 °C V _{GE} = -8V/+15V	1,56			ns
t _r						ns
E _{on}	R _{Goff} = 2 Ω		9,4		mJ	
t _{d(off)}					ns	
t _f	ns					
E _{off}	mJ					
R _{th(j-c)}	per IGBT		0,15			K/W

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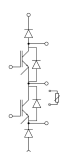
Remarks

- Case temperature limited to $T_C = 125^\circ\text{C}$ max, recommended $T_{op} = -40..+150^\circ\text{C}$

Characteristics		min.	typ.	max.	Units
Symbol	Conditions				
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 30\text{ A}; V_{GE} = 0\text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	1,45	1,7	V
		$T_j = 125^\circ\text{C}_{chiplev.}$	1,45	1,7	V
V_{F0}		$T_j = 25^\circ\text{C}$	1	1,1	V
		$T_j = 125^\circ\text{C}$	0,9	1	V
r_F		$T_j = 25^\circ\text{C}$	15	20	mΩ
		$T_j = 125^\circ\text{C}$	18	23,3	mΩ
I_{RRM}	$I_F = 30\text{ A}$	$T_j = 125^\circ\text{C}$			A
Q_{rr}					μC
E_{rr}	$V_{GE} = -8\text{ V}; V_{CC} = 300\text{ V}$				mJ
$R_{th(j-c)D}$	per diode		2		K/W
Free-wheeling diode					
$V_F = V_{EC}$	$I_{Fnom} = 300\text{ A}; V_{GE} = 0\text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	1,35	1,6	V
		$T_j = 125^\circ\text{C}_{chiplev.}$	1,3	1,5	V
V_{F0}		$T_j = 25^\circ\text{C}$	0,9	1	V
		$T_j = 125^\circ\text{C}$	0,85	0,9	V
r_F		$T_j = 25^\circ\text{C}$	1,5	2	V
		$T_j = 125^\circ\text{C}$	1,5	2	V
I_{RRM}	$I_F = 300\text{ A}$	$T_j = 125^\circ\text{C}$			A
Q_{rr}					μC
E_{rr}	$V_{GE} = 0\text{ V}; V_{CC} = 600\text{ V}$		5		mJ
$R_{th(j-c)FD}$	per diode		0,26		K/W
M_s	to heat sink M6		3	5	Nm
M_t	to terminals M6		2,5	5	Nm
w				310	g
Temperature sensor					
R_{100}	$T_s = 100^\circ\text{C}$ ($R_{25} = 5\text{ k}\Omega$)		493±5%		Ω
					K

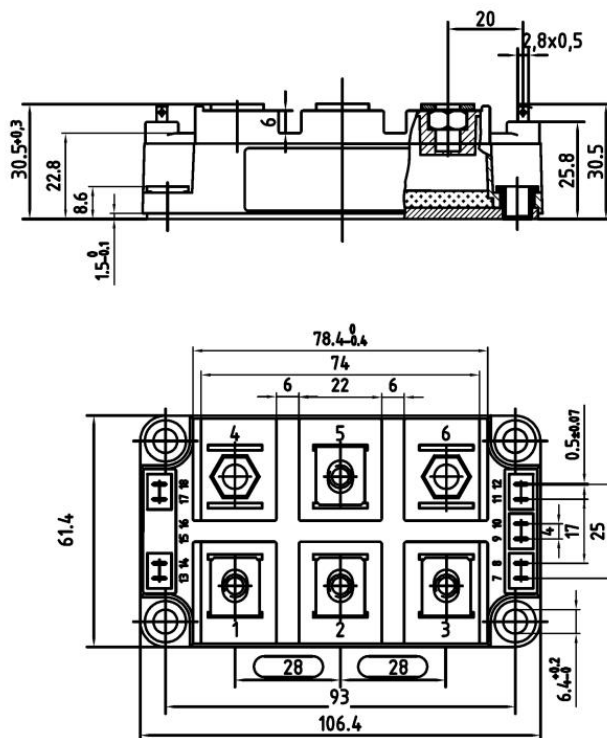
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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

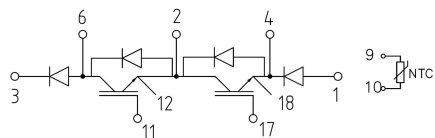


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Case D61



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