

SKM 300 GARL 066 T



SEMITRANS® 5

Trench IGBT Modules

SKM 300 GARL 066 T

Target Data

Features

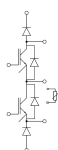
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- Integrated NTC temperature sensor

Typical Applications*

- UPS
- 3 Level Inverter

Remarks

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



GARL-T

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		$T_{case} = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 4,8\text{ mA}$	5	5,8	6,5	V
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES} \quad T_j = 25^\circ\text{C}$			0,5	mA
I_{GES}	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V} \quad T_j = 25^\circ\text{C}$			1200	nA
V_{CE0}			$T_j = 25^\circ\text{C}$	0,9	V
			$T_j = 150^\circ\text{C}$	0,85	V
r_{CE}	$V_{GE} = 15\text{ V}$		$T_j = 25^\circ\text{C}$	1,8	$\text{m}\Omega$
			$T_j = 150^\circ\text{C}$	2,7	$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 300\text{ A}, V_{GE} = 15\text{ V}$		$T_j = 25^\circ\text{C}_{chiplev.}$	1,45	V
			$T_j = 150^\circ\text{C}_{chiplev.}$	1,7	V
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V} \quad f = 1\text{ MHz}$			18,4	nF
C_{oes}				1,14	nF
C_{res}				0,54	nF
Q_G	$V_{GE} = -15\text{V}...+15\text{V}$		3900		nC
R_{Gint}	$T_j = ^\circ\text{C}$		1		Ω
$t_{d(on)}$	$R_{Gon} = 2,2\ \Omega$ $di/dt = 3400\text{ A}/\mu\text{s}$	$V_{CC} = 300\text{V}$ $I_C = 300\text{A}$	140		ns
t_r			89		ns
E_{on}	$R_{Goff} = 2,2\ \Omega$ $di/dt = 3400\text{ A}/\mu\text{s}$	$T_j = 150^\circ\text{C}$ $V_{GE} = -15\text{V}/+15\text{V}$	3,5		mJ
$t_{d(off)}$			433		ns
t_f			116		ns
E_{off}			10,1		mJ
$R_{th(j-c)}$	per IGBT		0,15		K/W

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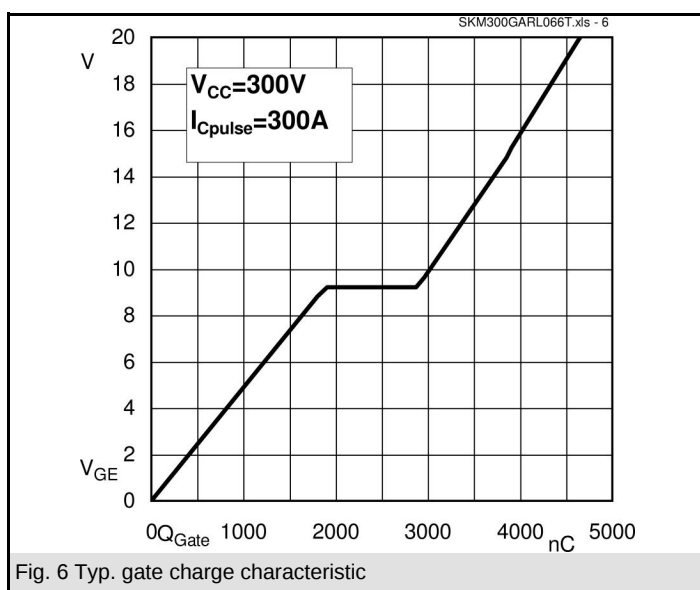
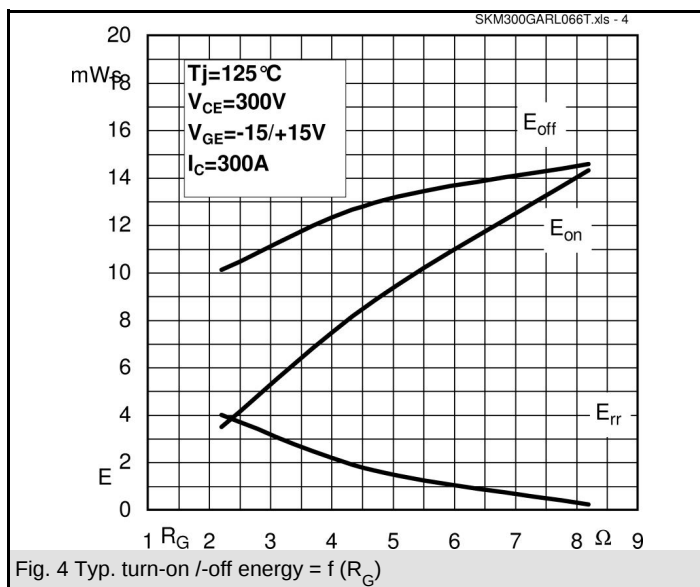
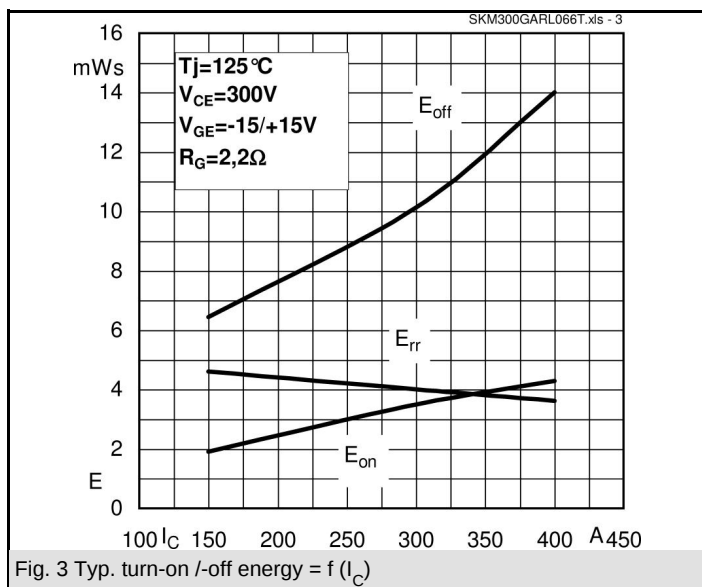
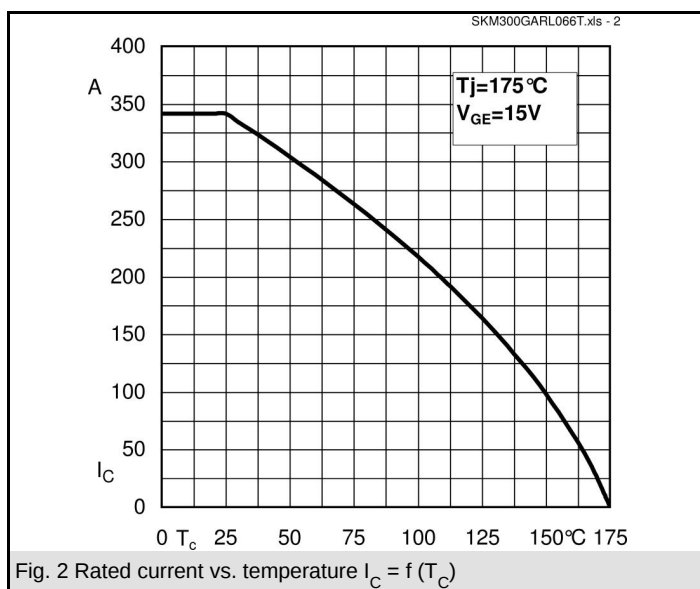
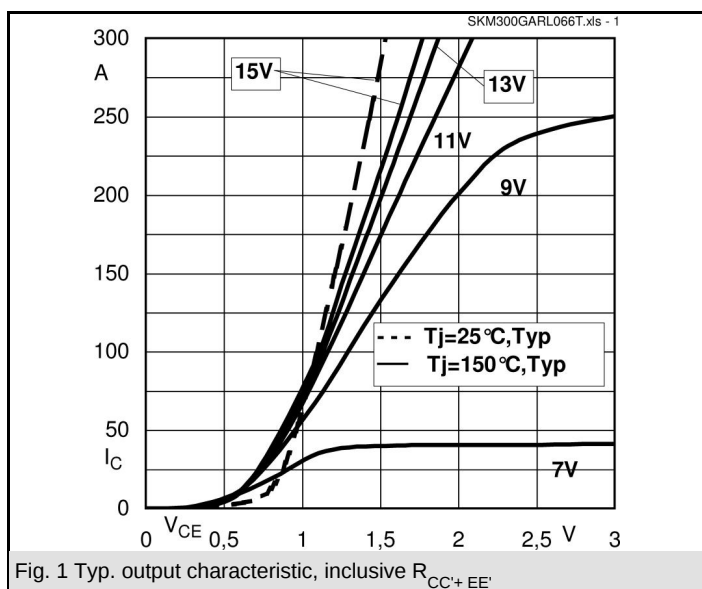
Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 30\text{ A}; V_{GE} = 0\text{ V}$				
	$T_j = 25^\circ\text{C}_{chiplev.}$		1,45	1,7	V
	$T_j = 125^\circ\text{C}_{chiplev.}$		1,45	1,7	V
V_{F0}					
	$T_j = 25^\circ\text{C}$		1	1,1	V
	$T_j = 125^\circ\text{C}$		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}	$I_F = 30\text{ A}$				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}	$I_F = 300\text{ A}$		194		A
Q_{rr}			13		μC
E_{rr}	$V_{GE} = 0\text{ V}; V_{CC} = 600\text{ V}$		4		mJ
$R_{th(j-c)FD}$	per diode		0,28		K/W
$R_{th(c-s)}$	per module			0,038	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

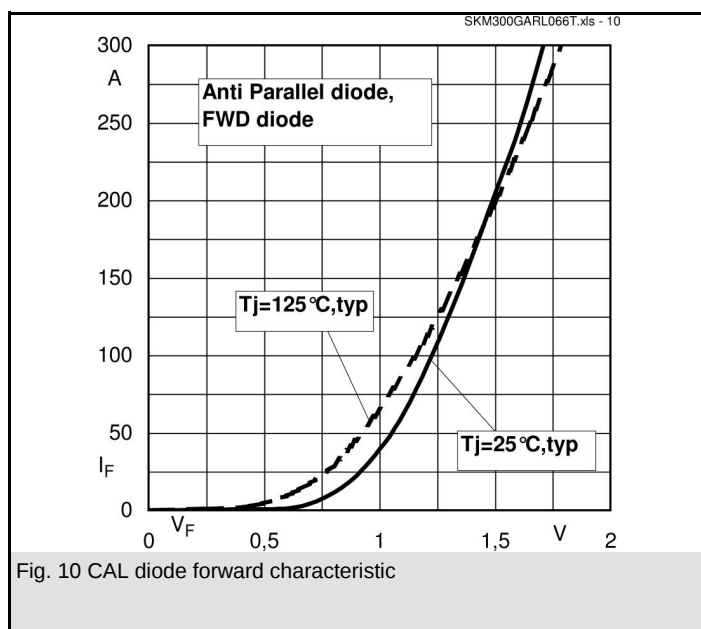
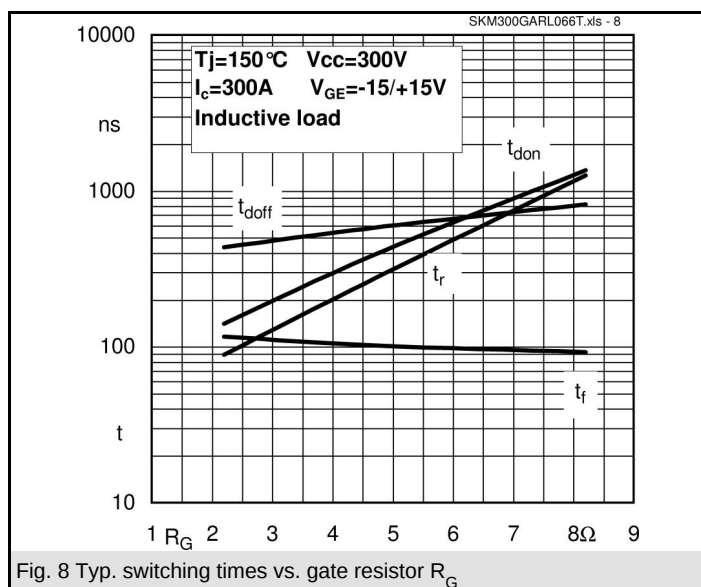
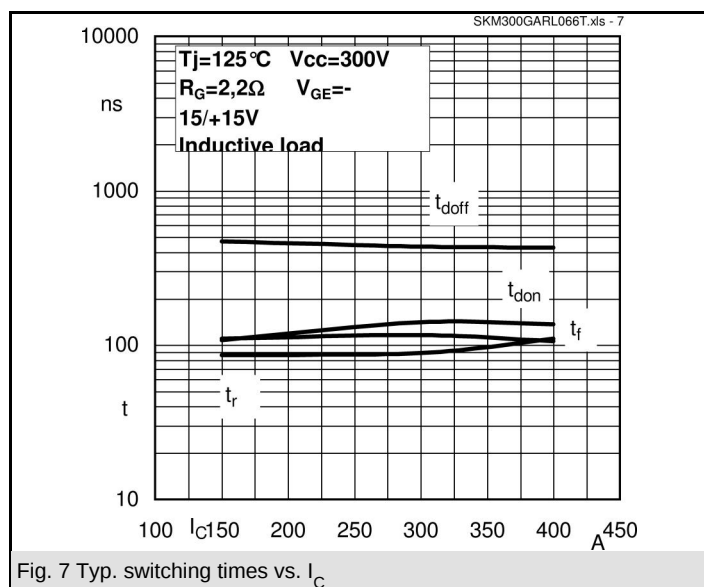
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

* 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.

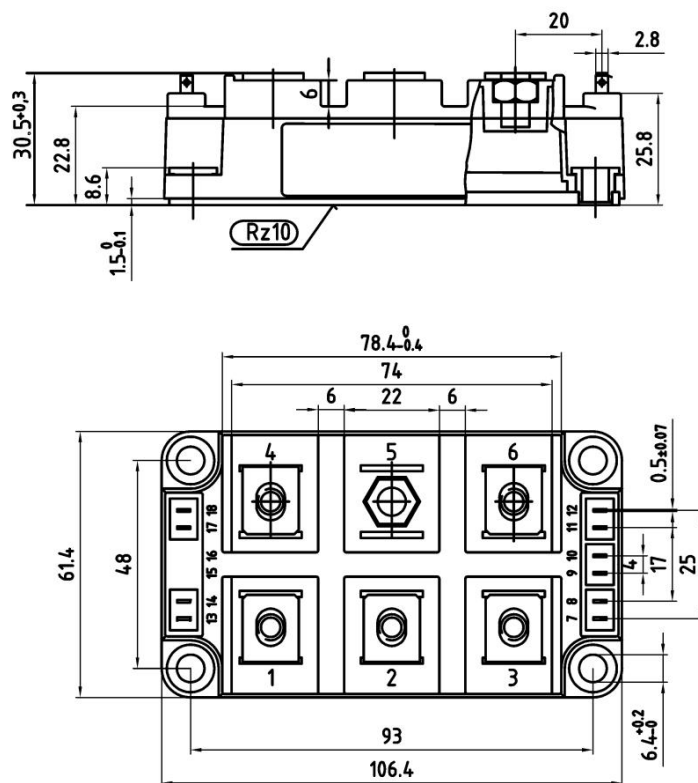


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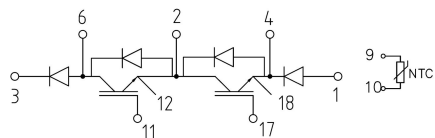




SKM 300 GARL 066 T



Case D61



GARL-T

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