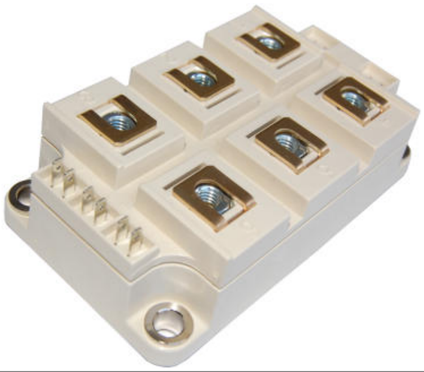
SKM 300 MLI 066 T



SEMITRANS® 5

Trench IGBT Modules

SKM 300 MLI 066 T

Target Data

Features

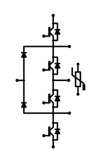
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- Integrated NTC temperature sensor

Typical Applications*

- UPS
- 3 Level Inverter

Remarks

- Case temperature limited to T_c =125°C max, recommended T_{op} = -40..+150°C

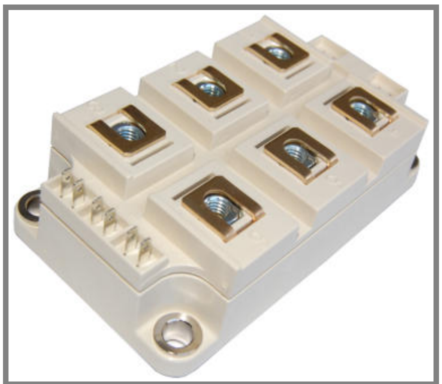


MLI-T

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; VCES < 600 V	T_j = 150 °C	6	µs
Inverse Diode				
I_F	T_j = 150 °C	T_c = 25 °C	324	A
		T_c = 80 °C	211	A
I_{FRM}	I_{FRM}=2xI_{Fnom}		420	A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	2100	A
Freewheeling Diode				
I_F	T_j = 150 °C	T_c = 25 °C	324	A
		T_c = 80 °C	211	A
I_{FRM}	I_{FRM}=2xI_{Fnom}		420	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			0,5	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	1	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
Q_G	V_{GE} = -15V...+15V			3900		nC
R_{Gint}	T_j = °C			1		Ω
$t_{d(on)}$	R_{Gon} = 2,2 Ω	V_{CC} = 300V		140		ns
t_r	di/dt = 3400 A/µs	I_C= 300A		89		ns
E_{on}		T_j = 125 °C		3,5		mJ
$t_{d(off)}$	R_{Goff} = 2,2 Ω	V_{GE} = --15V/+15V		433		ns
t_f	di/dt = 3400 A/µs			116		ns
E_{off}				10,1		mJ
$R_{th(j-c)}$	per IGBT			0,15		K/W

SKM 300 MLI 066 T



SEMITRANS® 5

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SKM 300 MLI 066 T

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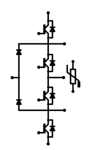


MLI-T

Characteristics

Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 245 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		1,35	1,6	V
		T_j = 125 °$C_{chiplev.}$		1,35	1,6	V
V_{F0}		T_j = 25 °C		1	1,1	V
		T_j = 125 °C		0,9	1	V
r_F		T_j = 25 °C		1,42	2	mΩ
		T_j = 125 °C		1,8	2,4	mΩ
I_{RRM}	I_F = 245 A	T_j = 125 °C				A
Q_{rr}						µC
E_{rr}	V_{GE} = -8 V; V_{CC} = 300 V					mJ
$R_{th(j-c)D}$	per diode			0,28		K/W
Free-wheeling diode (Neutral Clamp Diode)						
$V_F = V_{EC}$	I_{Fnom} = 245 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		1,35	1,6	V
		T_j = 125 °$C_{chiplev.}$		1,35	1,6	V
V_{F0}		T_j = 25 °C		1	1,1	V
		T_j = 125 °C		0,9	1	V
r_F		T_j = 25 °C		1,42	2	V
		T_j = 125 °C		1,8	2,4	V
I_{RRM}	I_F = 300 A	T_j = 125 °C		194		A
Q_{rr}	di/dt = 3400 A/µs			13		µC
E_{rr}	V_{GE} = 0 V; V_{CC} = 300 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°C (R_{25}=5kΩ)			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.

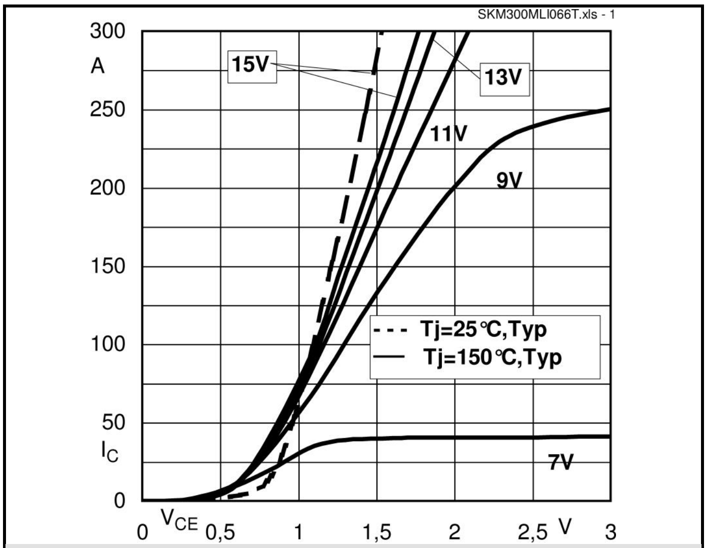


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+ EE'}$

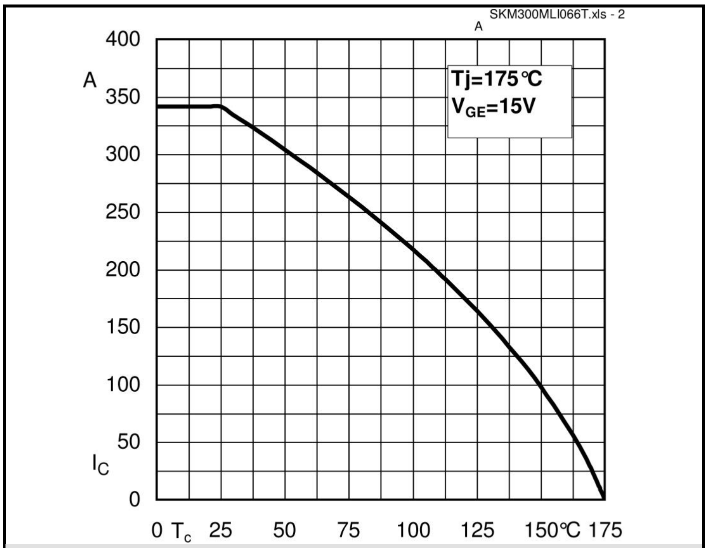


Fig. 2 Rated current vs. temperature I_C = f (T_C)

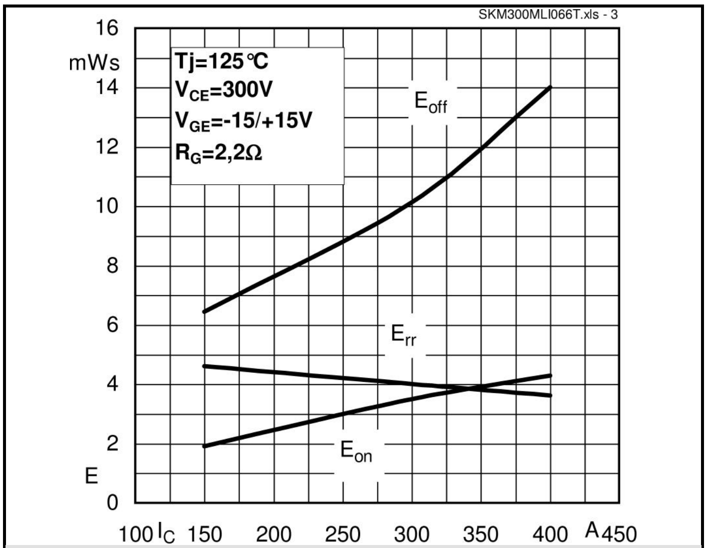


Fig. 3 Typ. turn-on /-off energy = f (I_C)

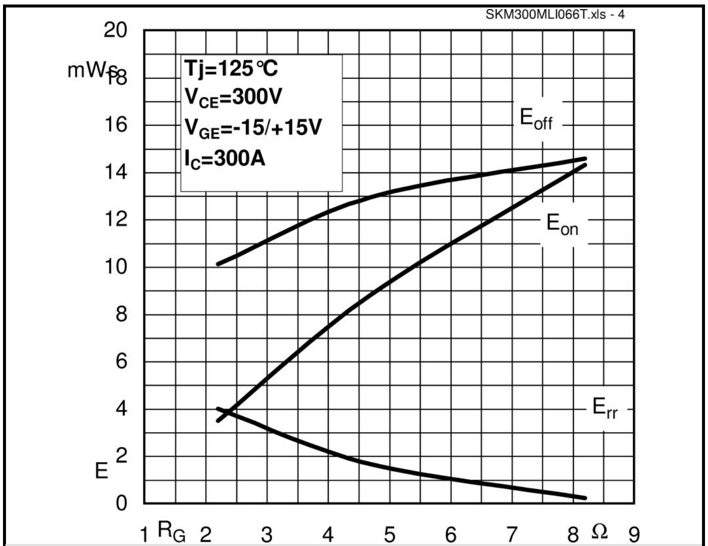


Fig. 4 Typ. turn-on /-off energy = f (R_G)

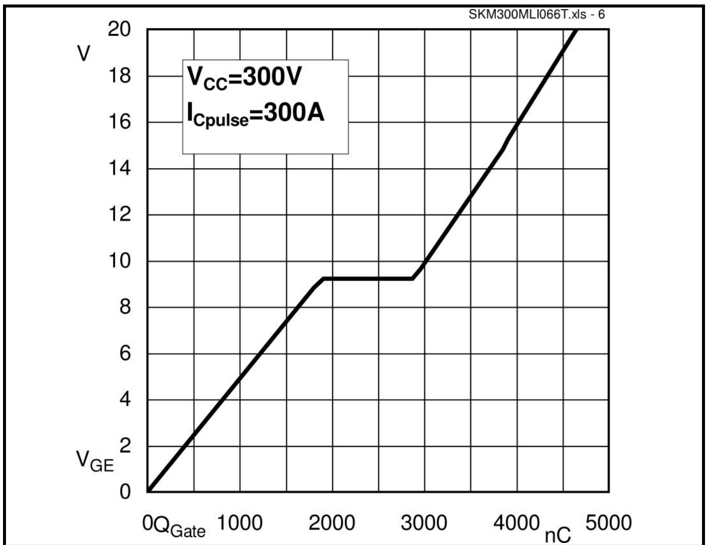


Fig. 6 Typ. gate charge characteristic

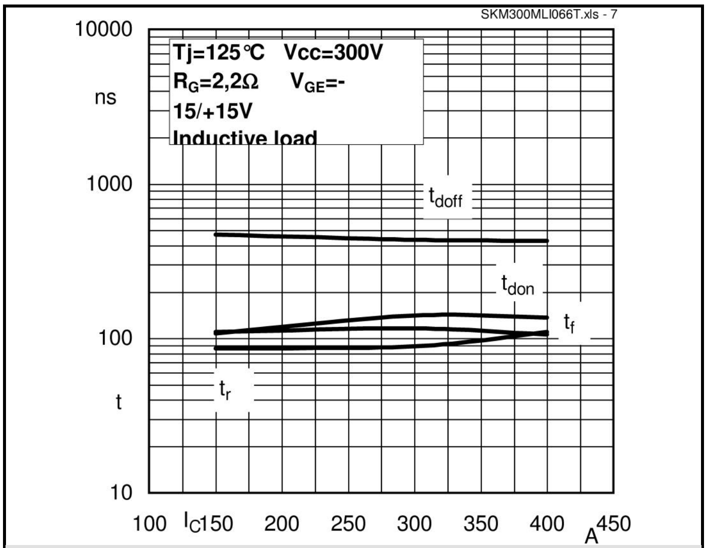


Fig. 7 Typ. switching times vs. I_C

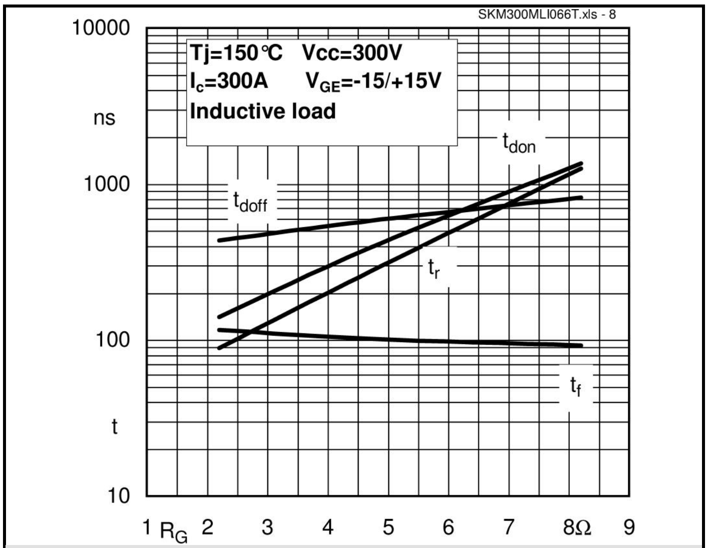


Fig. 8 Typ. switching times vs. gate resistor R_G

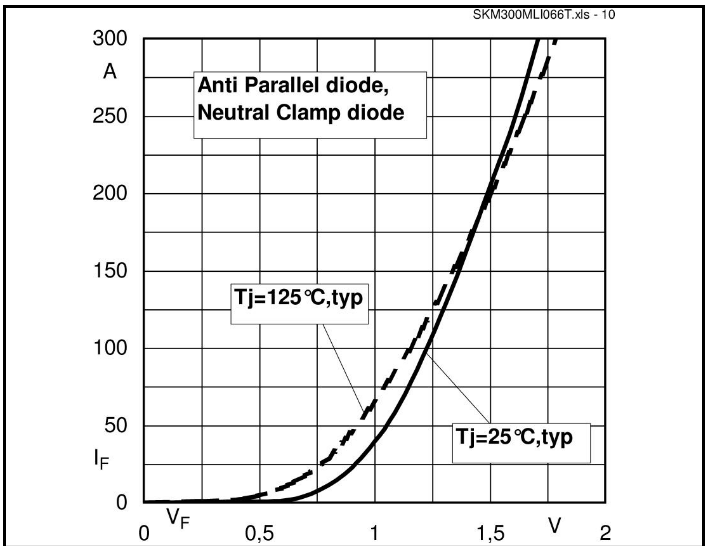
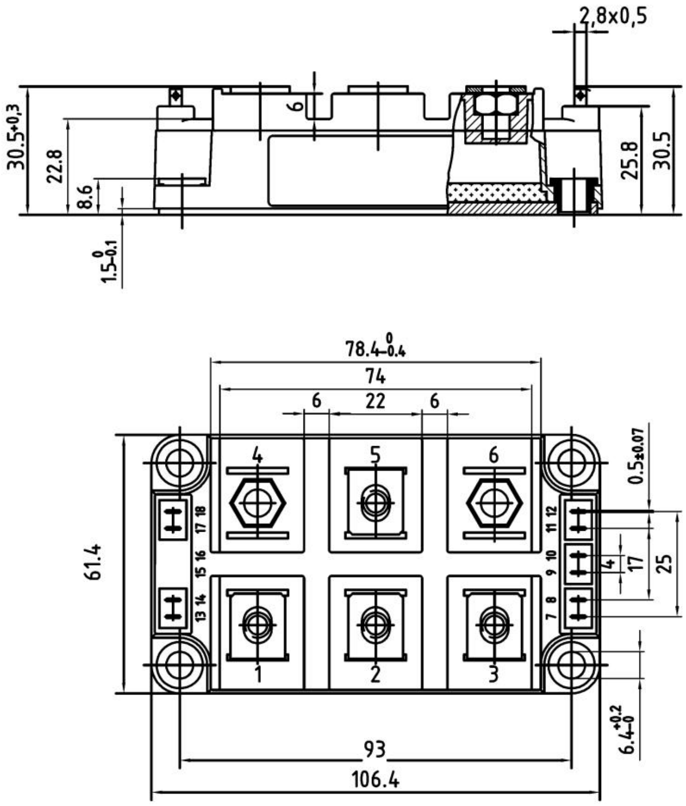
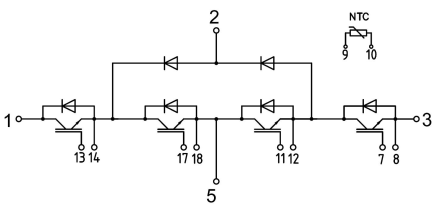


Fig. 10 CAL diode forward characteristic

SKM 300 MLI 066 T



Case D60



MLI-T Case D60

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