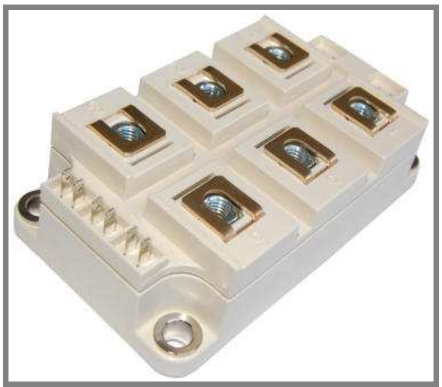
SKM150MLI066TAT



SEMITRANS® 5

Trench IGBT Modules

SKM150MLI066TAT

Target Data

Features

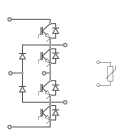
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- Integrated NTC temperature sensor

Typical Applications*

- UPS
- 3 Level Inverter

Remarks

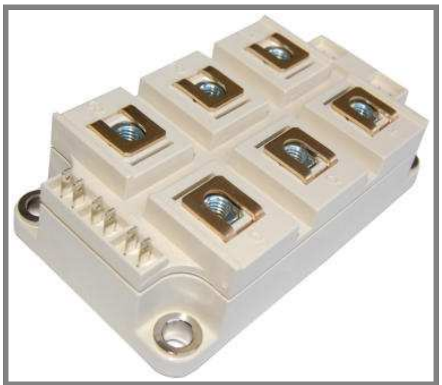
- Case temperature limited to T_c =125°C max
- Recommended T_{op} = -40..+150°C
- T_{vj} is intended as absolute maximum rating
- Fig.2 is referred to IGBT current capability



MLI-TAT

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	200	A
		T_c = 80 °C	150	A
I_{CRM}	I_{CRM}=2xI_{Cnom}		300	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	200	A
		T_c = 80 °C	145	A
I_{FRM}	I_{FRM}=2xI_{Fnom}		300	A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	1080	A
Freewheeling Diode				
I_F	T_j = 150 °C	T_c = 25 °C	200	A
		T_c = 80 °C	145	A
I_{FRM}	I_{FRM}=2xI_{Fnom}		300	A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	1080	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 = 2,4 mA		5	5,8	6,5	V
I_{CES}	V_{GE} = 0 V, V_{CE} = V_{CES}	T_j = 25 °C			0,0076	mA
I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V	T_j = 25 °C			600	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		3,6	6	mΩ
		T_j = 150°C		5,4	7,6	mΩ
$V_{CE(sat)}$	I_{Cnom} = 150 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		9,2		nF
C_{oes}				0,57		nF
C_{res}				0,27		nF
R_{Gint}	T_j = °C			2		Ω
$t_{d(on)}$	R_{Gon} = 4,4 Ω di/dt = 3400 A/µs	V_{CC} = 300V I_C= 150A T_j = 150 °C V_{GE} = -15V/+15V		140		ns
t_r				89		ns
E_{on}				1,7		mJ
$t_{d(off)}$	R_{Goff} = 4,4 Ω di/dt = 3400 A/µs			433		ns
t_f				116		ns
E_{off}				5,1		mJ
$R_{th(j-c)}$	per IGBT			0,29		K/W



SEMITRANS® 5

Trench IGBT Modules

SKM150MLI066TAT

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Typical Applications*

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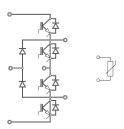


MLI-TAT

Characteristics

Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 150 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		1,35	1,6	V
		T_j = 150 °$C_{chiplev.}$		1,35	1,6	V
V_{F0}		T_j = 25 °C		1	1,1	V
		T_j = 150 °C		0,9	1	V
r_F		T_j = 25 °C		2,3	3,3	mΩ
		T_j = 150 °C		3	4	mΩ
I_{RRM}	I_F = 150 A	T_j = 150 °C				A
Q_{rr}						µC
E_{rr}	V_{GE} = -8 V; V_{CC} = 300 V					mJ
$R_{th(j-c)D}$	per diode			0,52		K/W
Free-wheeling diode (Neutral Clamp Diode)						
$V_F = V_{EC}$	I_{Fnom} = 150 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		1,35	1,6	V
		T_j = 150 °$C_{chiplev.}$		1,35	1,6	V
V_{F0}		T_j = 25 °C		1	1,1	V
		T_j = 150 °C		0,9	1	V
r_F		T_j = 25 °C		2,3	3,3	V
		T_j = 150 °C		3	4	V
I_{RRM}	I_F = 150 A	T_j = 150 °C		95		A
Q_{rr}	di/dt = 3400 A/µs			6		µC
E_{rr}	V_{GE} = 0 V; V_{CC} = 600 V			2		mJ
$R_{th(j-c)FD}$	per diode			0,52		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 staff.

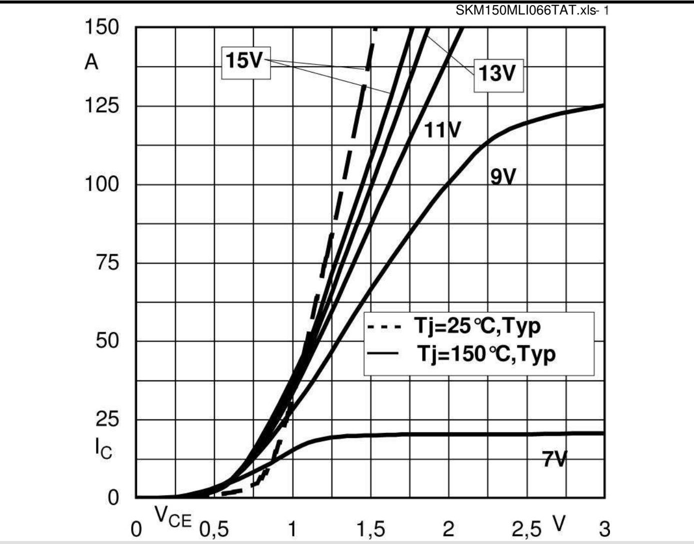


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

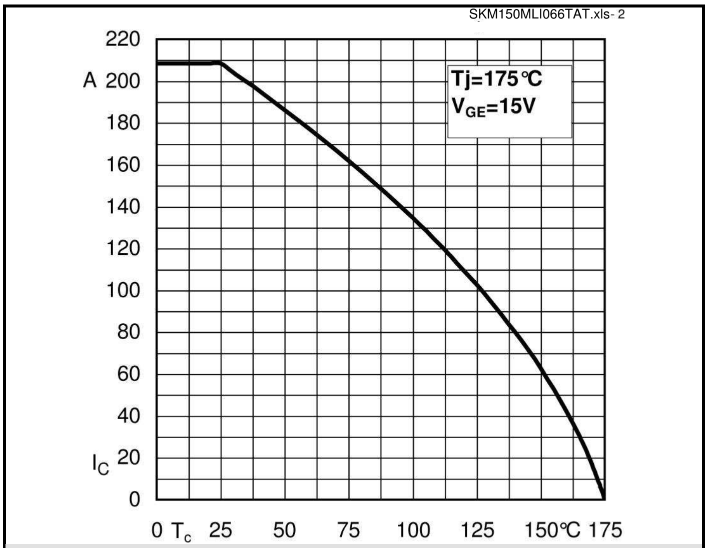


Fig. 2 Rated current vs. temperature $I_C = f(T_C)$

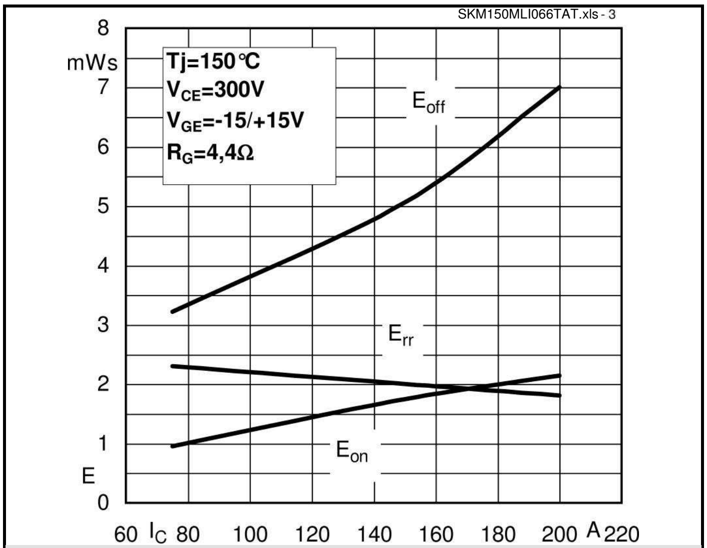


Fig. 3 Typ. turn-on /-off energy = f (I_C)

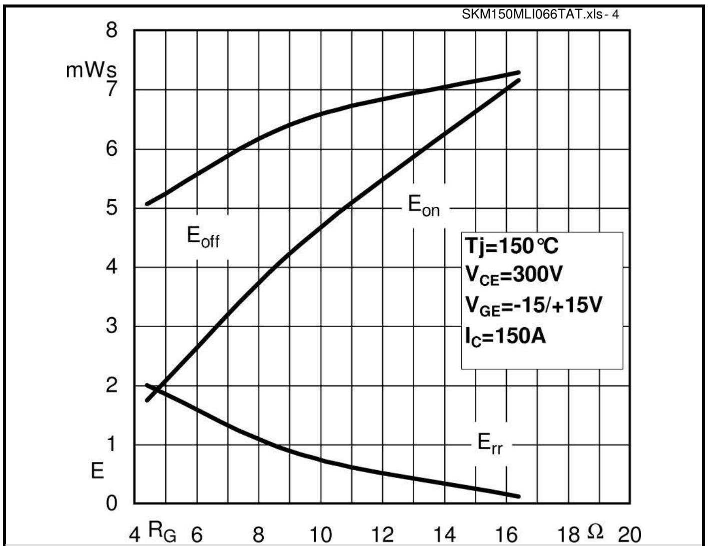


Fig. 4 Typ. turn-on /-off energy = f (R_G)

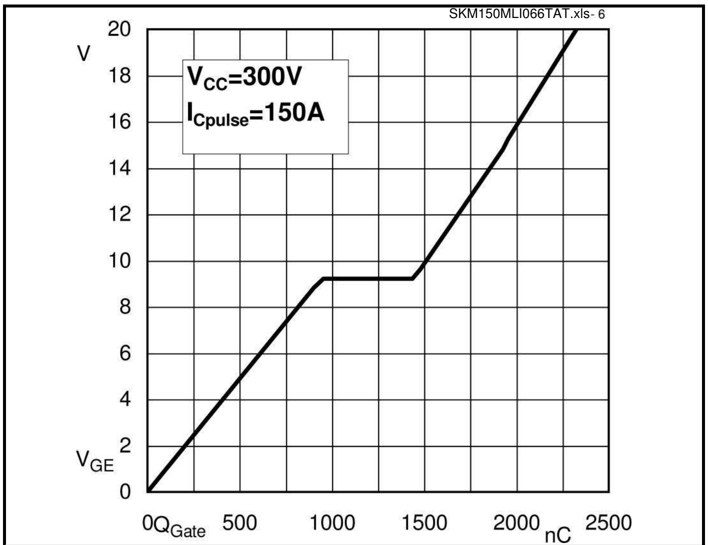


Fig. 6 Typ. gate charge characteristic

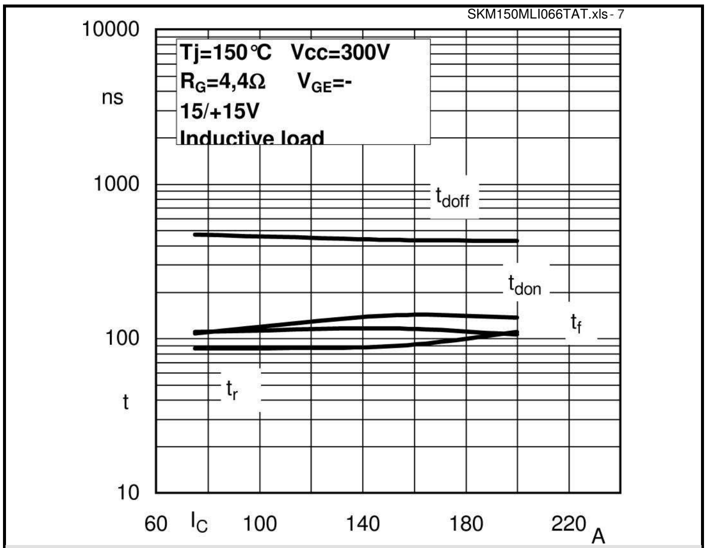


Fig. 7 Typ. switching times vs. I_C

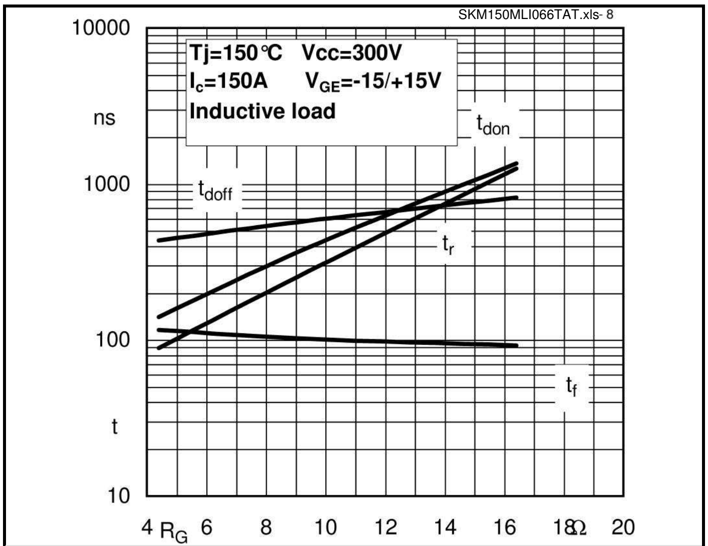


Fig. 8 Typ. switching times vs. gate resistor R_G

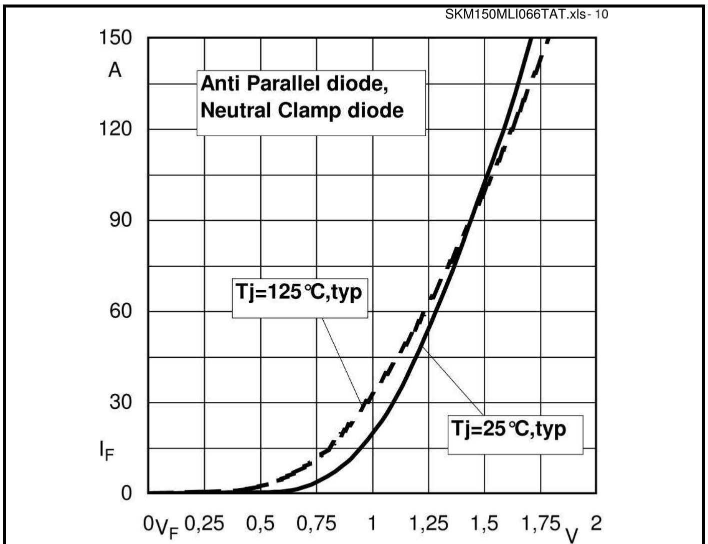
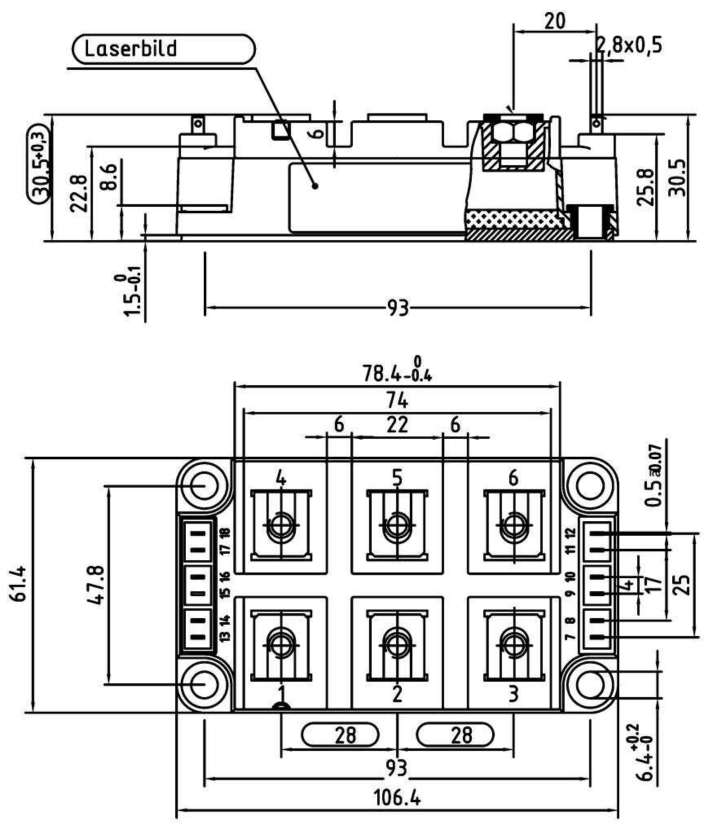


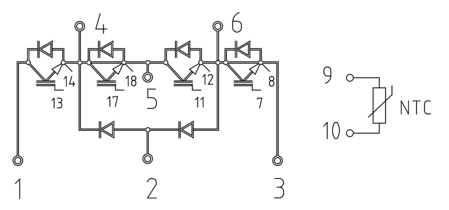
Fig. 10 CAL diode forward characteristic

SKM150MLI066TAT

UL recognized file no. E 63 532



Case D60



MLI-T Case D60