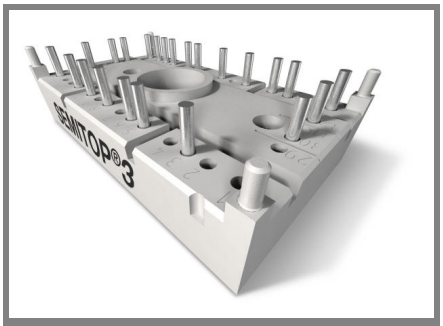
SK50MLI066



SEMITOP® 3

IGBT Module

SK50MLI066

Target Data

Features

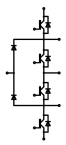
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- Trench IGBT technology
- CAL technology FWD

Typical Applications

- 3 Level Inverter
- UPS

Remarks

- Visol = 3000V AC, 1s, 50Hz
- Dynamic measure: DUT= IGBT (Gate pin 1) and Neutral Clamp Diode (Kathode pin 16) as free-wheeling diode

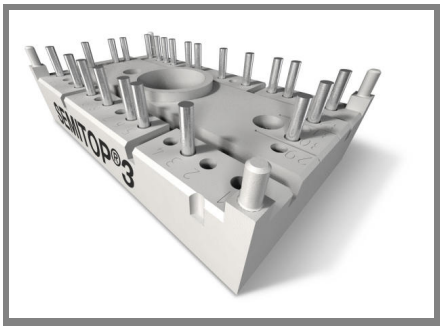


MLI

Absolute Maximum Ratings	T_s = 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_s = 25 °C	60	A
		T_s = 70 °C	50	A
I_{CRM}	I_{CRM}= 2 x I_{Cnom}		100	A
V_{GES}			± 20	V
t_{psc}	V_{CC} = 360 V; $V_{GE} \leq$ 20 V; V_{CES} < 600 V	T_j = 150 °C	6	µs
Inverse Diode				
I_F	T_j = 175 °C	T_s = 25 °C	56	A
		T_s = 70 °C	44	A
I_{FRM}	I_{FRM}= 2 x I_{Fnom}		100	A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	320	A
Freewheeling Diode				
I_F	T_j = 175 °C	T_s = 25 °C	56	A
		T_s = 70 °C	44	A
I_{FRM}	I_{FRM}= 2 x I_{Fnom}		60	A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	320	A
Module				
$I_{t(RMS)}$				A
T_{vj}			-40 ... +175	°C
T_{stg}			-40 ... +125	°C
V_{isol}	AC, 1 min.		2500	V

Characteristics	T_s = 25 °C, unless otherwise specified					
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
IGBT						
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 0,8 mA		5	5,8	6,5	V
I_{CES}	V_{GE} = 0 V, V_{CE} = V_{CES}	T_j = 25 °C			0,0026	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	1,1	V
		T_j = 150 °C		0,8	1	V
r_{CE}	V_{GE} = 15 V	T_j = 25°C		11		mΩ
		T_j = 150°C		17		mΩ
$V_{CE(sat)}$	I_{Cnom} = 50 A, V_{GE} = 15 V	T_j = 25°C$_{chiplev.}$		1,45		V
		T_j = 150°C$_{chiplev.}$		1,65		V
C_{ies}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		3,1		nF
C_{oes}				0,2		nF
C_{res}				0,093		nF
$t_{d(on)}$	R_{Gon} = 16 Ω	V_{CC} = 300V		30		ns
t_r		I_C= 50A		31		ns
E_{on}		T_j = 150 °C		1,46		mJ
$t_{d(off)}$	R_{Goff} = 16 Ω	V_{GE}= -7/+15 V		351		ns
t_f				45		ns
E_{off}				2,02		mJ
$R_{th(j-s)}$	per IGBT			1,11		K/W

SK50MLI066



SEMITOP® 3

IGBT Module

SK50MLI066

Target Data

Features

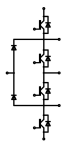
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- Trench IGBT technology
- CAL technology FWD

Typical Applications

- 3 Level Inverter
- UPS

Remarks

- Visol = 3000V AC, 1s, 50Hz
- Dynamic measure: DUT= IGBT (Gate pin 1) and Neutral Clamp Diode (Kathode pin 16) as free-wheeling diode



MLI

Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
Inverse Diode (Antiparallel Diode)						
$V_F = V_{EC}$	I_{Fnom} = 50 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		1,5		V
		T_j = 150 °$C_{chiplev.}$		1,5		V
V_{F0}		T_j = 25 °C		1		V
		T_j = 150 °C		0,9		V
r_F		T_j = 25 °C		10		mΩ
		T_j = 150 °C		12		mΩ
I_{RRM}	I_F = 50 A	T_j = 150 °C				A
Q_{rr}						µC
E_{rr}	V_R= 300V			1,07		mJ
$R_{th(j-s)D}$	per diode			1,7		K/W
Freewheeling Diode (Neutral Clampo diode)						
$V_F = V_{EC}$	I_{Fnom} = 50 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		1,5		V
		T_j = 150 °$C_{chiplev.}$		1,5		V
V_{F0}		T_j = 25 °C		1		V
		T_j = 150 °C		0,9		V
r_F		T_j = 25 °C		10		V
		T_j = 150 °C		12		V
I_{RRM}	I_F = 50 A	T_j = 150 °C		40		A
Q_{rr}	di/dt = -2670 A/µs			2,2		µC
E_{rr}	V_R=300V			1,07		mJ
$R_{th(j-s)FD}$	per diode			1,7		K/W
M_s	to heat sink		2,25		2,5	Nm
w				30		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.

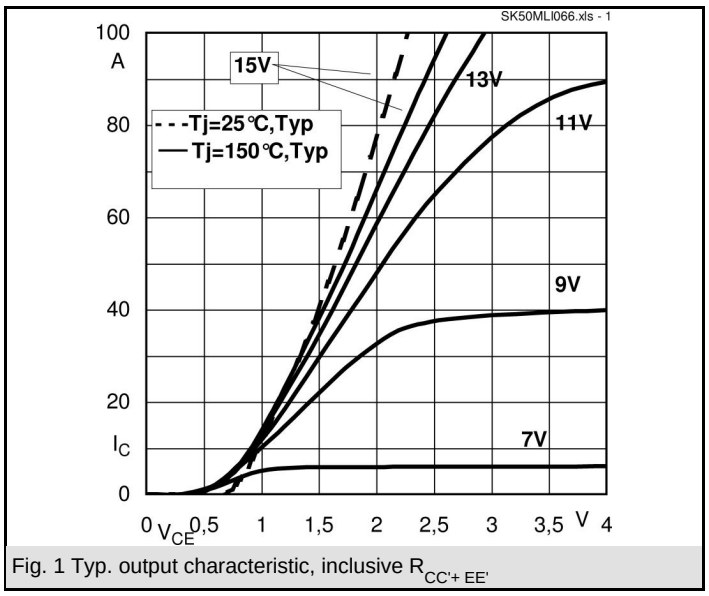


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

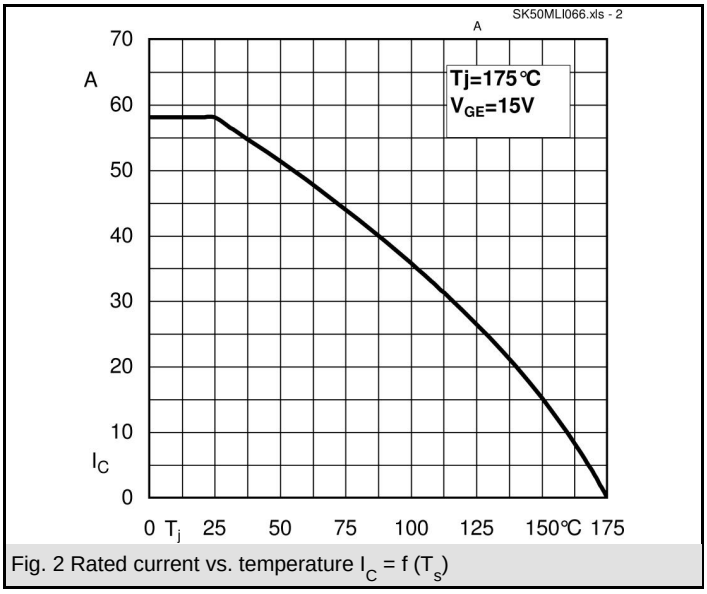


Fig. 2 Rated current vs. temperature $I_C = f(T_s)$

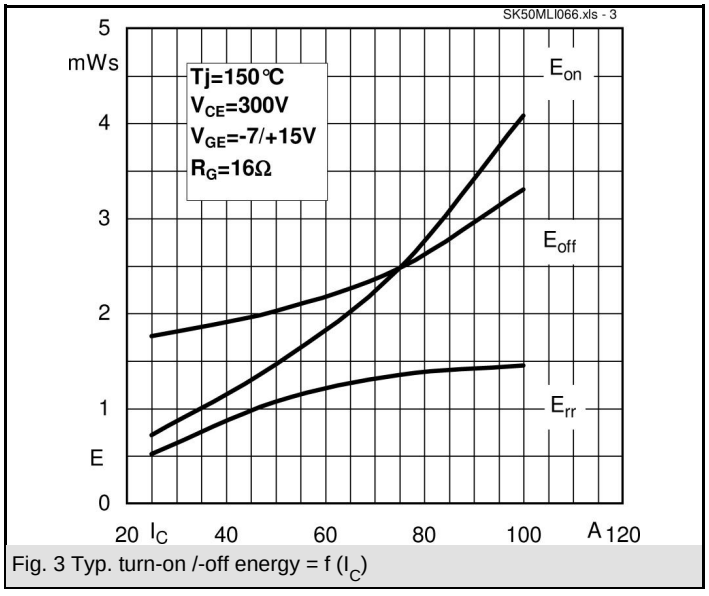


Fig. 3 Typ. turn-on /-off energy = f (I_C)

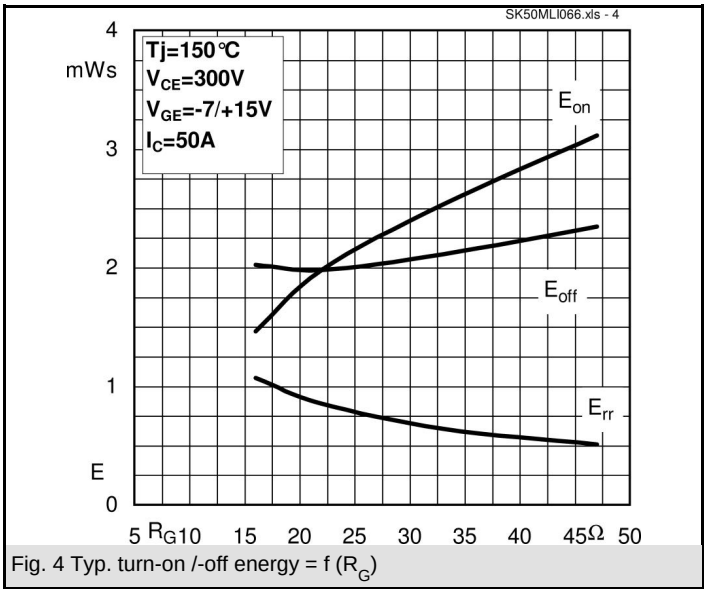


Fig. 4 Typ. turn-on /-off energy = f (R_G)

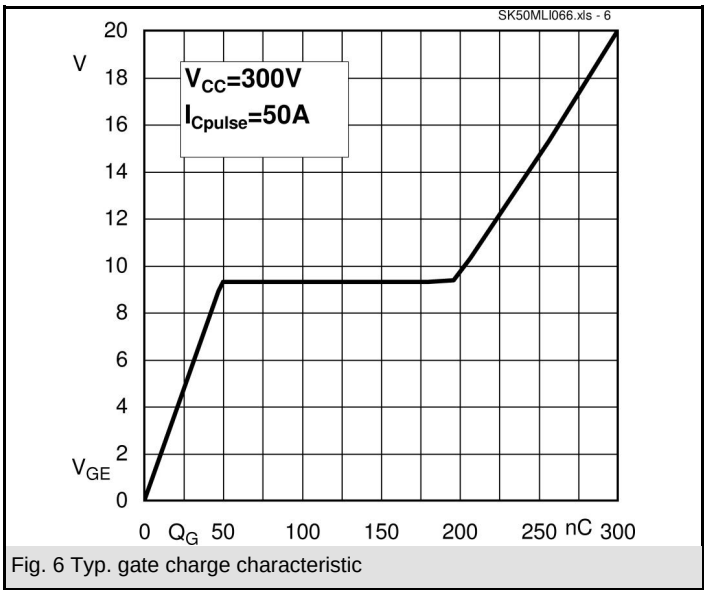


Fig. 6 Typ. gate charge characteristic

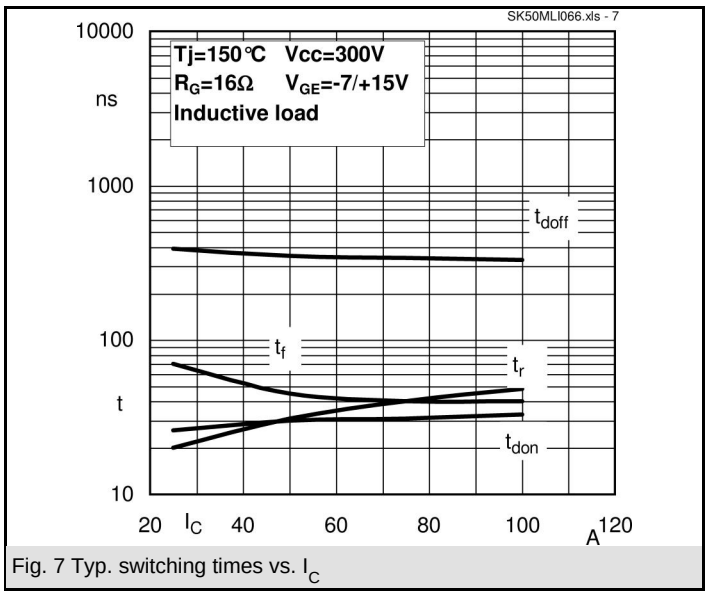


Fig. 7 Typ. switching times vs. I_C

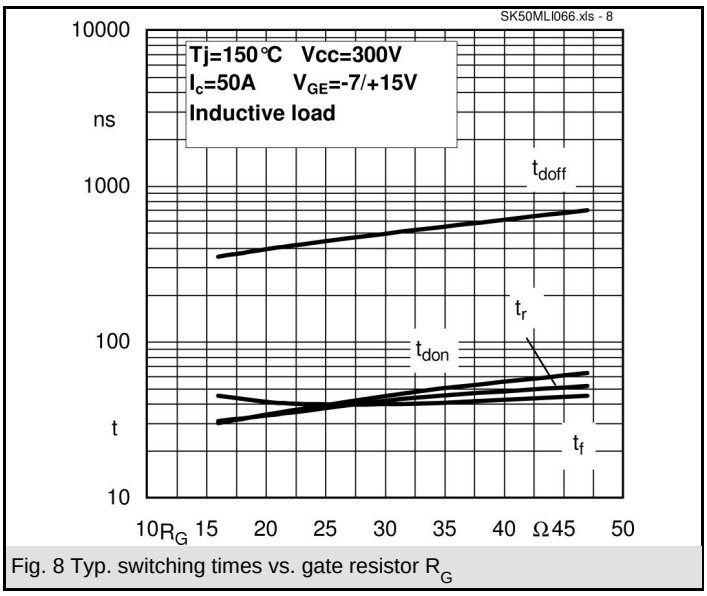


Fig. 8 Typ. switching times vs. gate resistor R_G

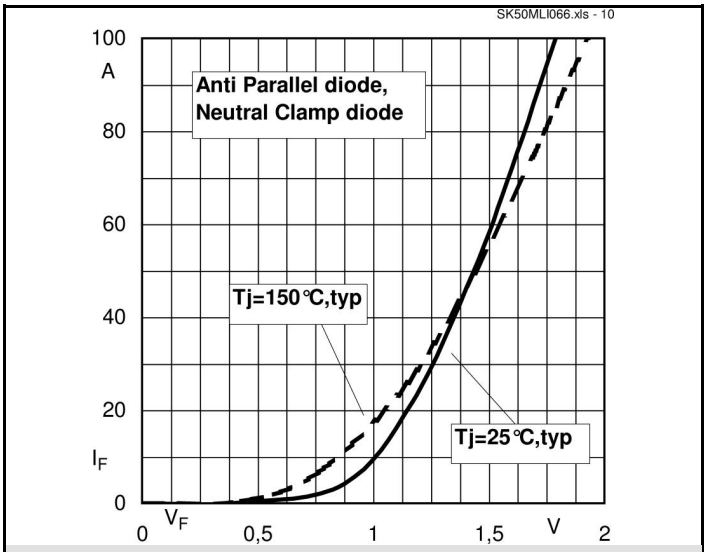
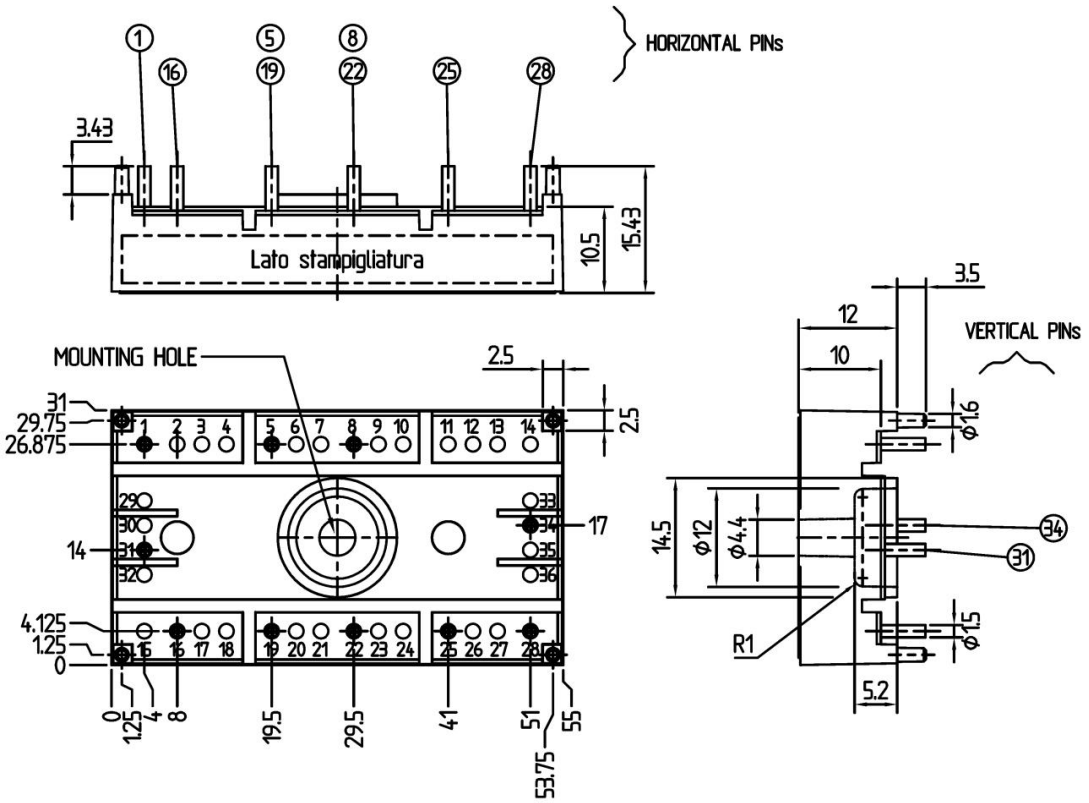


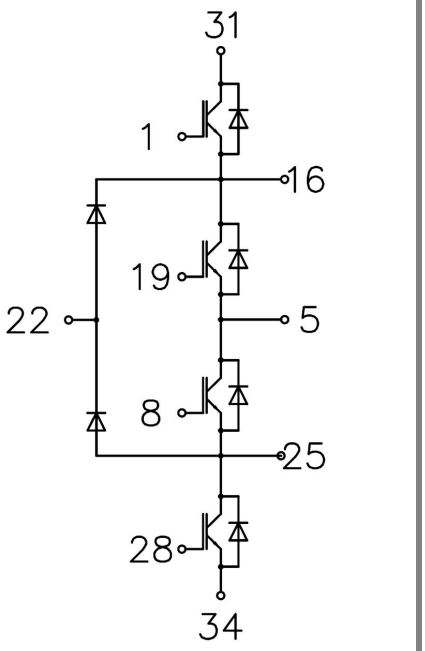
Fig. 10 CAL diode forward characteristic

Antiparallel Diode (D1)

UL recognized file no. E 63 532



Case T 76 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 76 MLI

