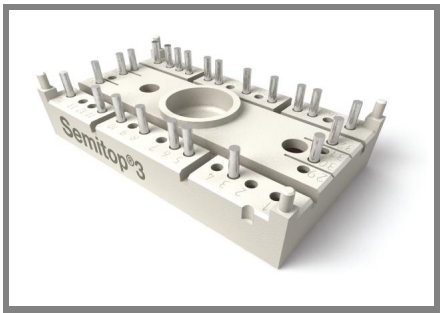
SK25MLI065



SEMITOP® 3

IGBT Module

SK25MLI065

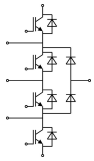
Target Data

Features

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

Typical Applications

- Multi level inverter



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 = 125 °C	T_s = 25 °C	30	A
		T_s = 80 °C	22	A
I_{CRM}	I_{CRM}= 2 x I_{Cnom}		60	A
V_{GES}			± 20	V
t_{psc}	V_{CC} = 300 V; $V_{GE} \leq$ 20 V; V_{CES} < 600 V	T_j = 125 °C	10	µs
Inverse Diode				
I_F	T_j = 150 °C	T_s = 25 °C	36	A
		T_s = 80 °C	24	A
I_{FRM}	I_{FRM}= 2 x I_{Fnom}			A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	200	A
Freewheeling Diode				
I_F	T_j = 150 °C	T_{case} = 25 °C	36	A
		T_{case} = 80 °C	24	A
I_{FRM}				A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	200	A
Module				
$I_{t(RMS)}$				A
T_{vj}			-40 ... +150	°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 = 0,7 mA		3	4	5	V
I_{CES}	V_{GE} = 0 V, V_{CE} = V_{CES}	T_j = 25 °C			0,0022	mA
I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V	T_j = 25 °C			120	nA
V_{CE0}		T_j = 25 °C		1,4	1,9	V
		T_j = 125 °C		1,7	2,2	V
r_{CE}	V_{GE} = 15 V	T_j = 25°C				mΩ
		T_j = 125°C		44		mΩ
$V_{CE(sat)}$	I_{Cnom} = 30 A, V_{GE} = 15 V	T_j = 25°C$_{chiplev.}$		1,8		V
		T_j = 125°C$_{chiplev.}$		2,1		V
C_{ies}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		1,6		nF
C_{oes}				0,15		nF
C_{res}				0,09		nF
$t_{d(on)}$	R_{Gon} = 33 Ω	V_{CC} = 300V		30		ns
t_r		I_{Cnom}= 25A		25		ns
E_{on}		T_j = 125 °C		0,75		mJ
$t_{d(off)}$	R_{Goff} = 33 Ω	V_{GE}=±15V		250		ns
t_f				15		ns
E_{off}				0,6		mJ
$R_{th(j-s)}$	per IGBT				1,4	K/W

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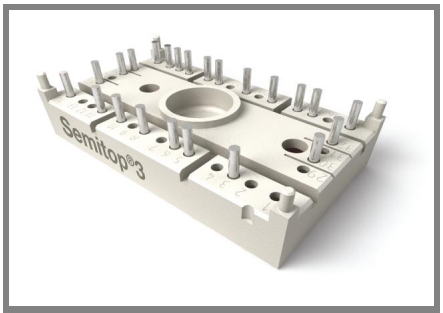

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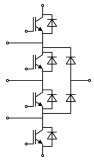

MLI

Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
Antiparallel Diode (D1)						
$V_F = V_{EC}$	I_{Fnom} = 25 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		1,45		V
		T_j = 125 °$C_{chiplev.}$		1,4		V
V_{F0}		T_j = 25 °C				V
		T_j = 125 °C		0,85		V
r_F		T_j = 25 °C				mΩ
		T_j = 125 °C		22		mΩ
I_{RRM}	I_{Fnom} = 25 A	T_j = 125 °C				A
Q_{rr}	di/dt = -2400 A/µs					µC
E_{rr}	V_R= 300V			0,32		mJ
$R_{th(j-s)D}$	per diode				1,7	K/W
Freewheeling Diode (D2)						
$V_F = V_{EC}$	I_{Fnom} = 25 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		1,45		V
		T_j = 125 °$C_{chiplev.}$		1,4		V
V_{F0}		T_j = 125 °C		0,85		V
r_F		T_j = 125 °C		22		V
I_{RRM}	I_{Fnom} = 25 A	T_j = 125 °C				A
Q_{rr}	di/dt = -2400 A/µs					µC
E_{rr}	V_R=300V			0,32		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.

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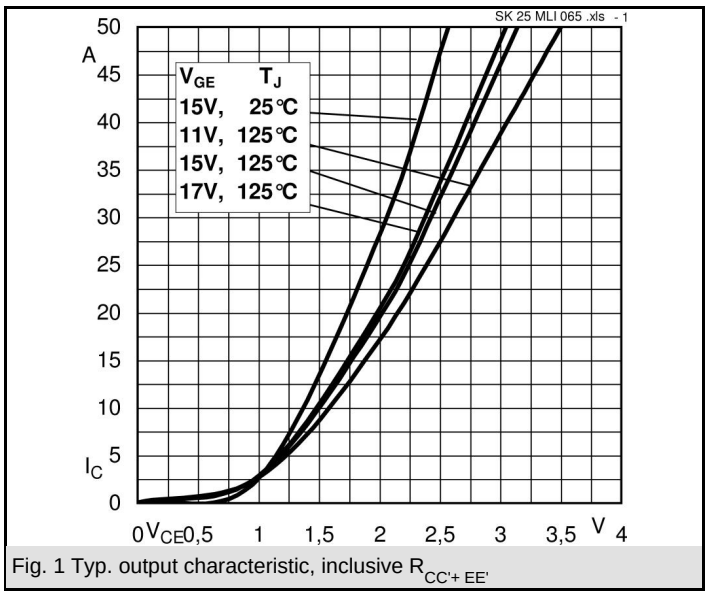

Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

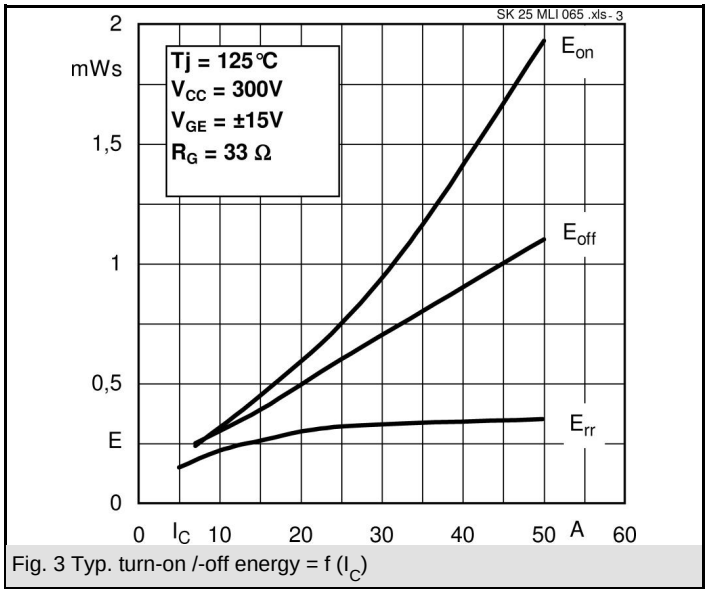

Fig. 3 Typ. turn-on /-off energy = f (I_C)

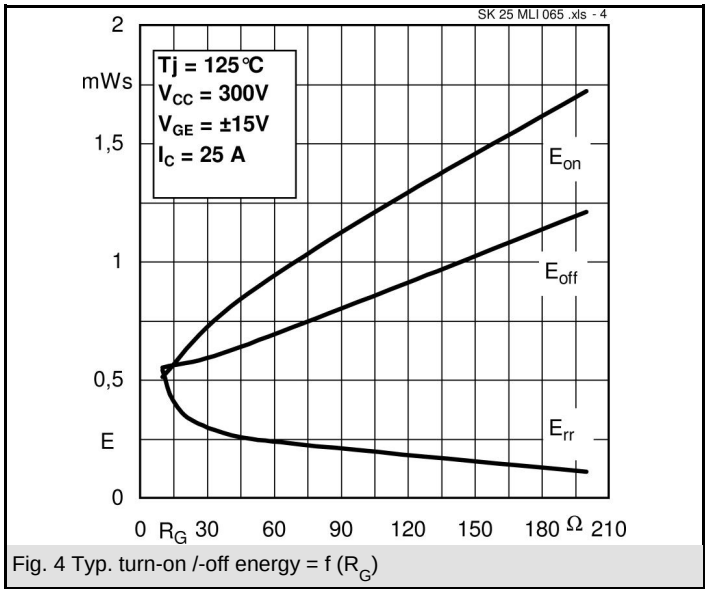

Fig. 4 Typ. turn-on /-off energy = f (R_G)

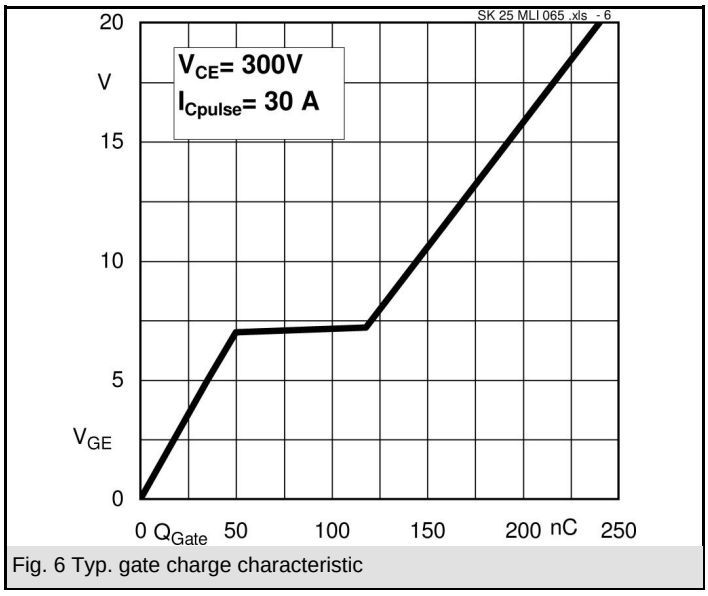

Fig. 6 Typ. gate charge characteristic

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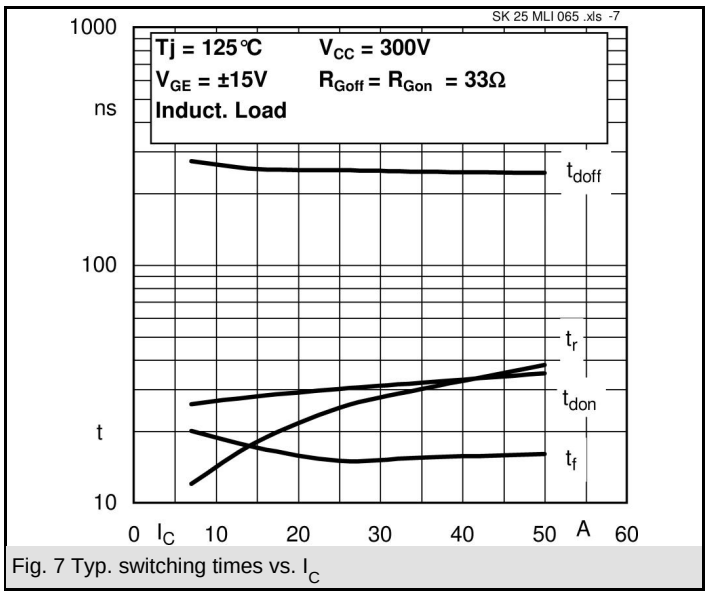

Fig. 7 Typ. switching times vs. I_C

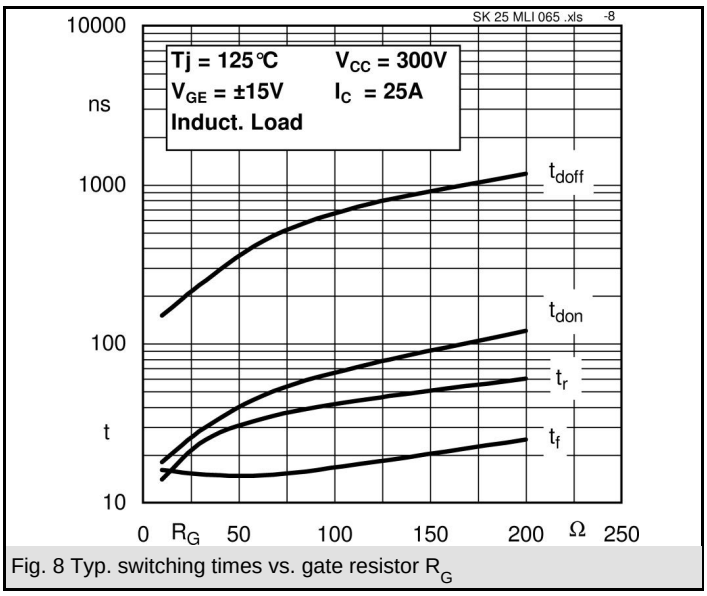

Fig. 8 Typ. switching times vs. gate resistor R_G

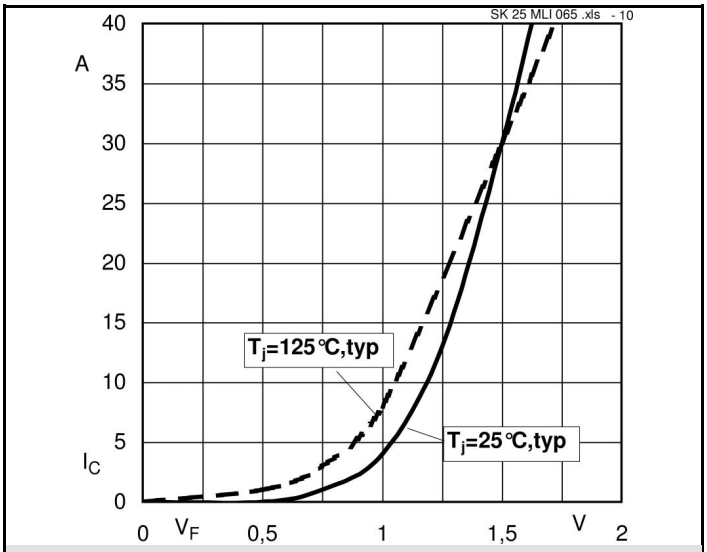

Fig. 10 CAL diode forward characteristic

Antiparalle Diode (D1)

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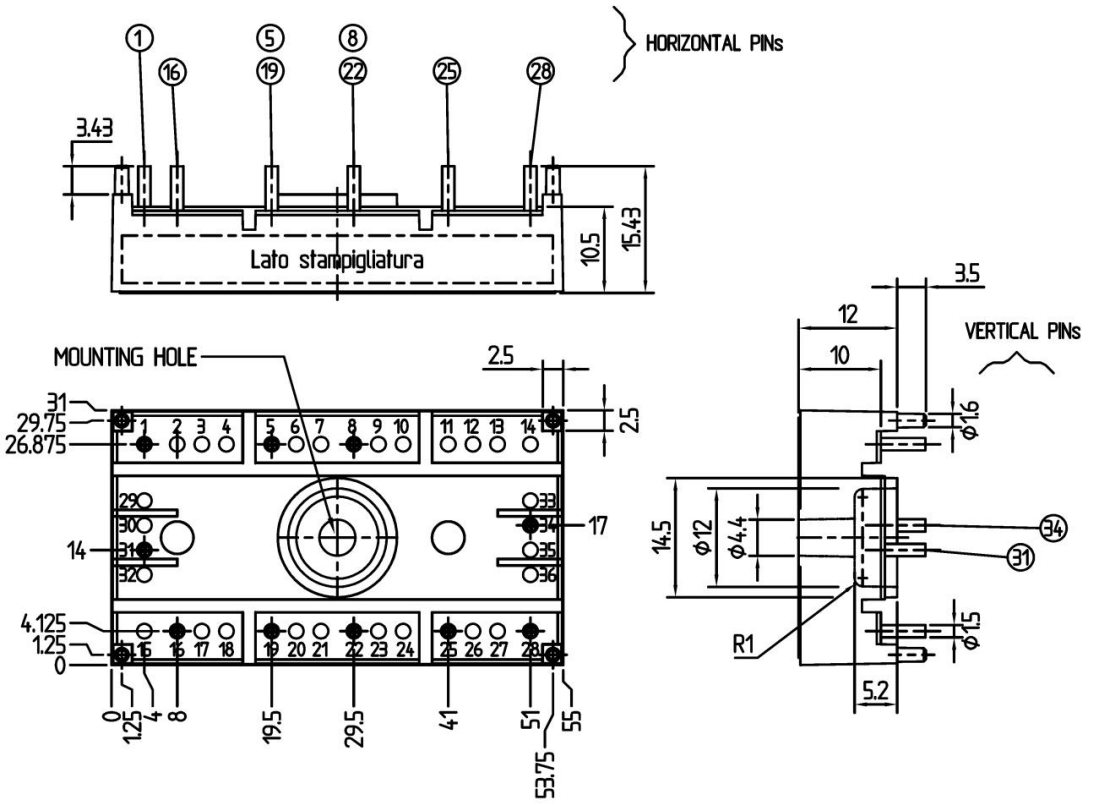
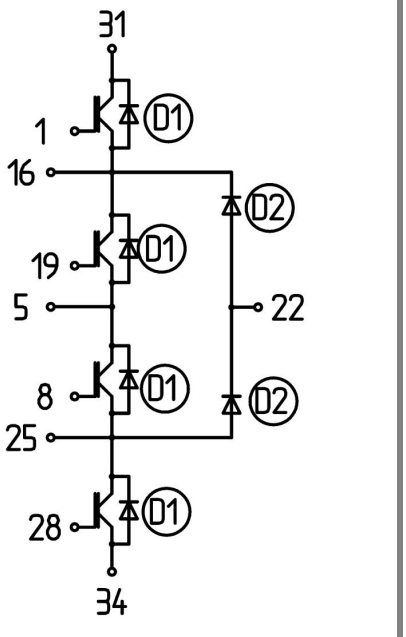


Case T 76 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 76 MLI

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