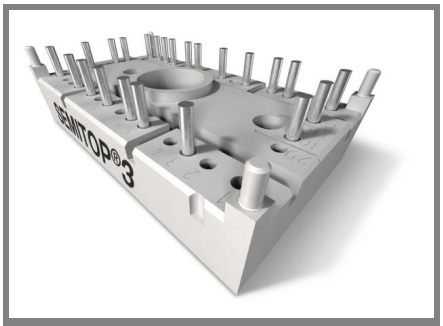


SEMITOP® 3

3-phase bridge rectifier + brake chopper +3-phase bridge inverter

SK 15 DGDL 126 ET

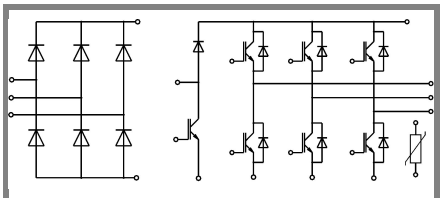
Preliminary Data

Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded alumium oxide ceramic (DCB)
- Trench technology IGBT
- CAL High Density FWD
- Integrated NTC temperature sensor

Typical Applications

- Inverter



DGDL - ET

Absolute Maximum Ratings		T_s= 25°C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
IGBT - Inverter, Chopper			
V_{CES}		1200	V
I_C	T_s = 25 (80) °C	22 (15)	A
I_{CRM}	I_{CRM}= 2 x I_{Cnom}, t_p = 1 ms	30	A
V_{GES}		±20	V
T_j		-40 ... +150	°C
Diode - Inverter, Chopper			
I_F	T_s = 25 (80) °C	25 (17)	A
I_{FRM}	I_{FRM} = 2xI_{Fnom}, t_p = 1 ms	30	A
T_j		-40 ... +150	°C
Rectifier			
V_{RRM}		1600	V
I_F	T_s = 80 °C	21	A
I_{FSM} / I_{TSM}	t_p = 10 ms , sin 180 ° ,T_j = 25 °C	220	A
I^2t	t_p = 10 ms , sin 180 ° ,T_j = 25 °C	240	A²s
T_j		-40 ... +150	°C
T_{sol}	Terminals, 10s	260	°C
T_{stg}		-40 ... +125	°C
V_{isol}	AC, 1 min. / 1s	2500 / 3000	V

Characteristics		T_s= 25°C, unless otherwise specified			
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
IGBT - Inverter, Chopper					
V_{CEsat}	I_C = 15 A, T_j = 25 (125) °C		1,7 (2)	2,1	V
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 0,6 mA	5	5,8	6,5	V
$V_{CE(TO)}$	T_j = 25 °C (125) °C		1 (0,9)		V
r_T	T_j = 25 °C (125) °C		45 (70)		mΩ
C_{ies}	V_{CE} = 25 V_{GE} = 0 V, f = 1 MHz		1,2		nF
C_{oes}	V_{CE} = 25 V_{GE} = 0 V, f = 1 MHz		0,1		nF
C_{res}	V_{CE} = 25 V_{GE} = 0 V, f = 1 MHz		9,1		nF
$R_{th(j-s)}$	per IGBT			1,6	K/W
$t_{d(on)}$	under following conditions		25		ns
t_r	V_{CC} = 600 V, V_{GE} = ± 15 V		25		ns
$t_{d(off)}$	I_C = 15 A, T_j = 125 °C		385		ns
t_f	R_{Gon} = R_{Goff} = 30 Ω		90		ns
E_{on}	inductive load		2		mJ
E_{off}			1,8		mJ
Diode - Inverter, Chopper					
V_F = V_{EC}	I_F = 15 A, T_j = 25(125) °C		1,6 (1,6)		V
$V_{(TO)}$	T_j = 25 °C (125) °C		1 (0,8)		V
r_T	T_j = 25 °C (125) °C		40 (53)		mΩ
$R_{th(j-s)}$	per diode			2,1	K/W
I_{RRM}	under following conditions		25		A
Q_{rr}	I_F = 15 A, V_R = 600 V		3		µC
E_{rr}	V_{GE} = 0 V, T_j = 125 °C		1,1		mJ
	$di_{F/dt}$ = 900 A/µs				
Diode rectifier					
V_F	I_F = 15 A, T_j = 25() °C		1,1		V
$V_{(TO)}$	T_j = 150 °C		0,9		V
r_T	T_j = 150 °C		20		mΩ
$R_{th(j-s)}$	per diode			2	K/W
Temperatur sensor					
R_{ts}	5 %, T_r = 25 (100) °C		5000(493)		Ω
Mechanical data					
w			30		g
M_s	Mounting torque			2,5	Nm

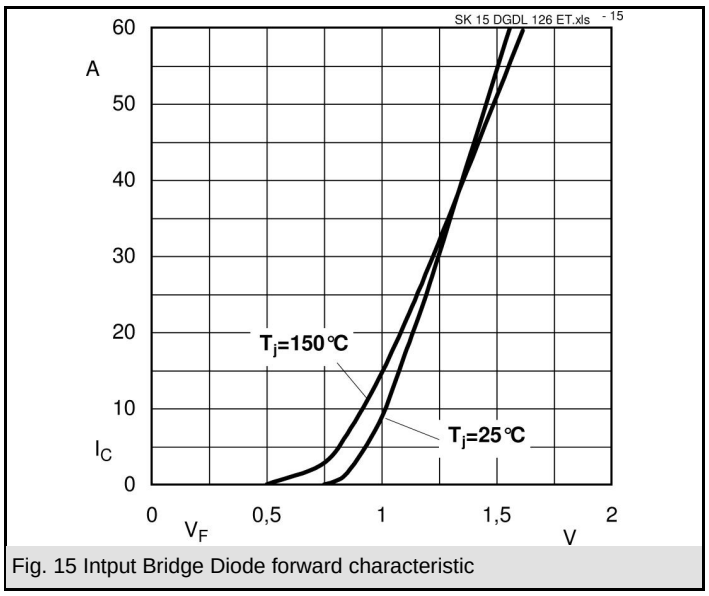


Fig. 15 Intput Bridge Diode forward characteristic

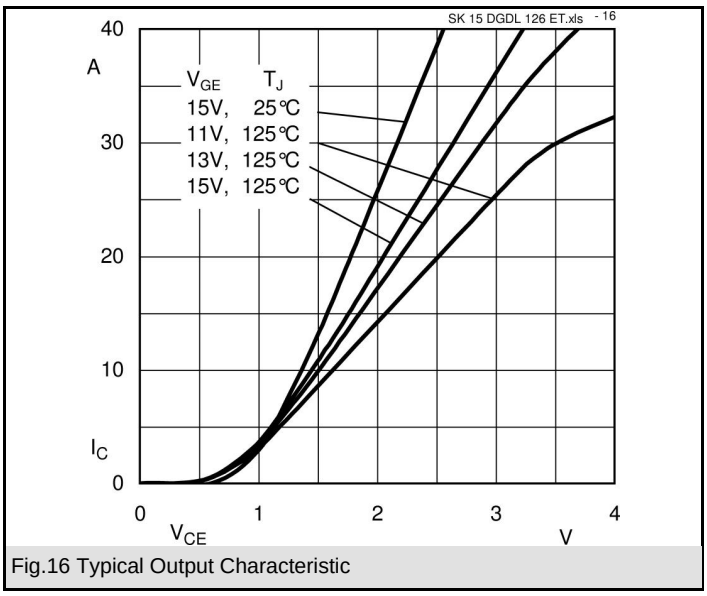


Fig.16 Typical Output Characteristic

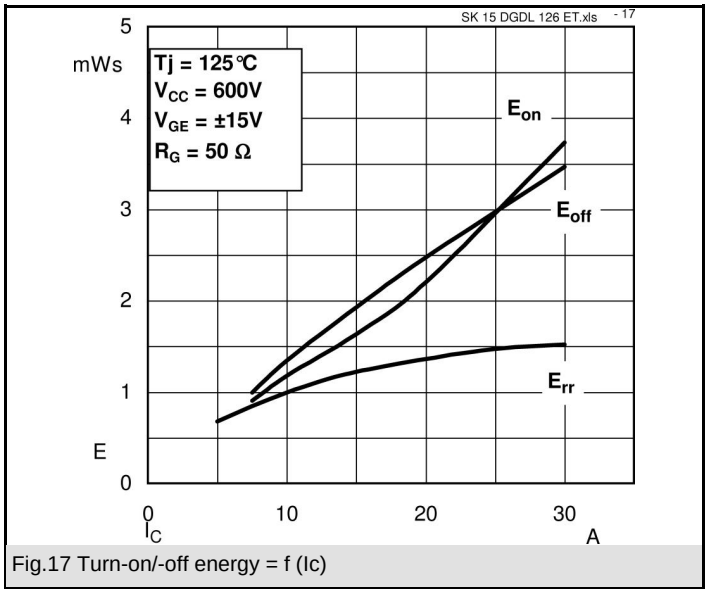


Fig.17 Turn-on/-off energy = f (Ic)

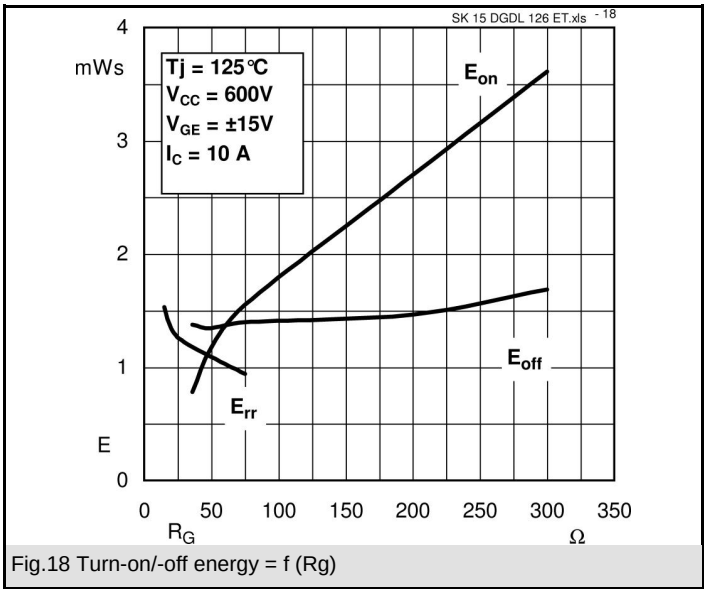


Fig.18 Turn-on/-off energy = f (Rg)

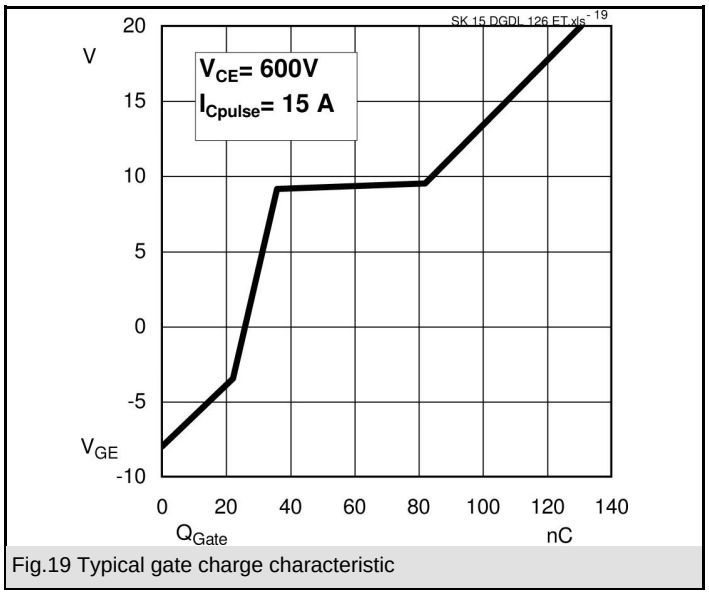


Fig.19 Typical gate charge characteristic

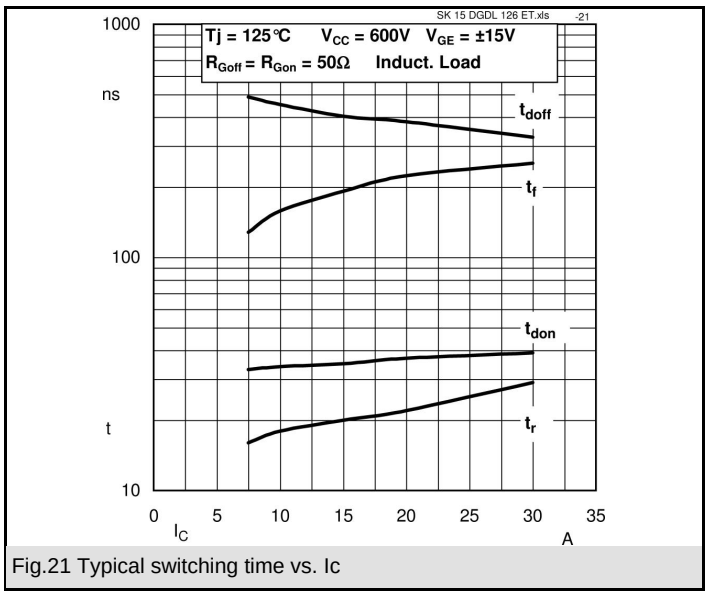


Fig.21 Typical switching time vs. Ic

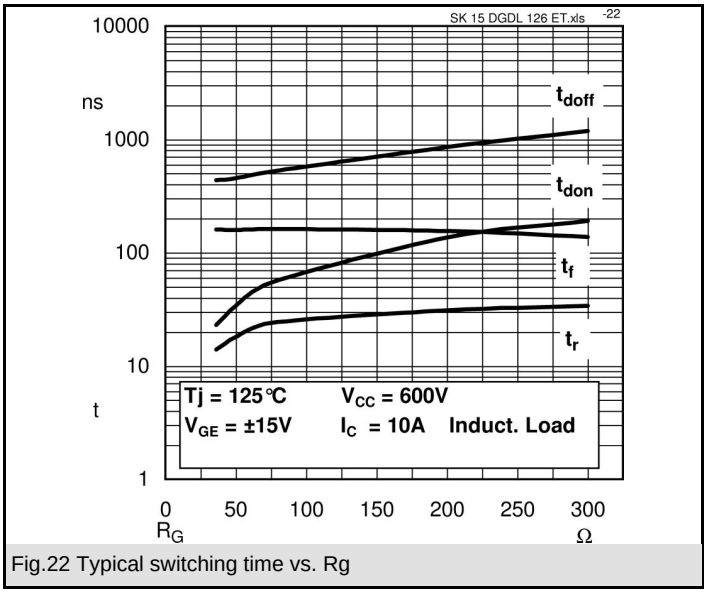


Fig.22 Typical switching time vs. Rg

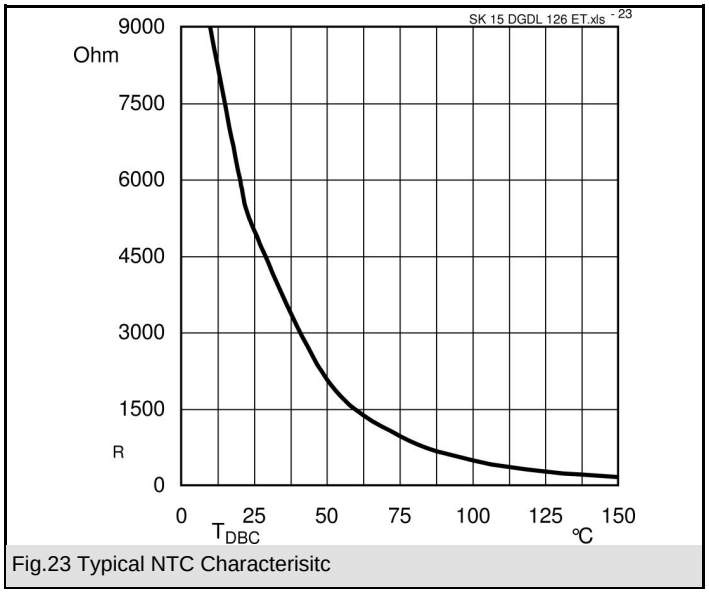


Fig.23 Typical NTC Characterisitc

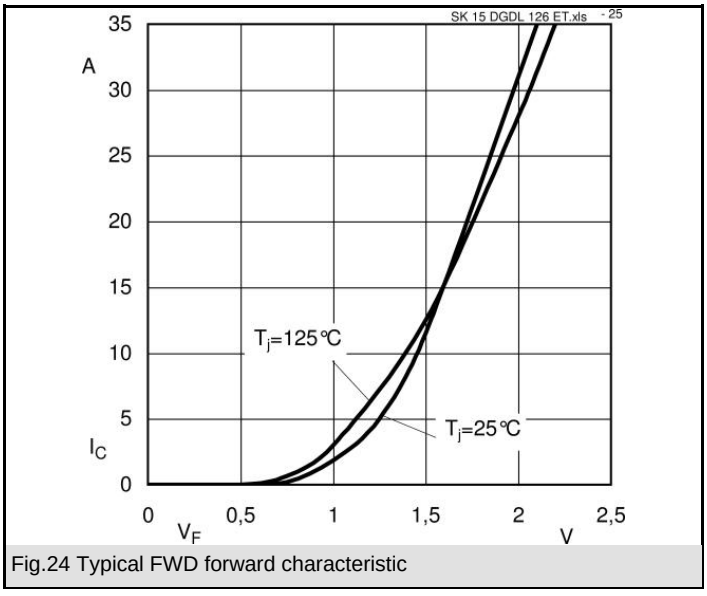
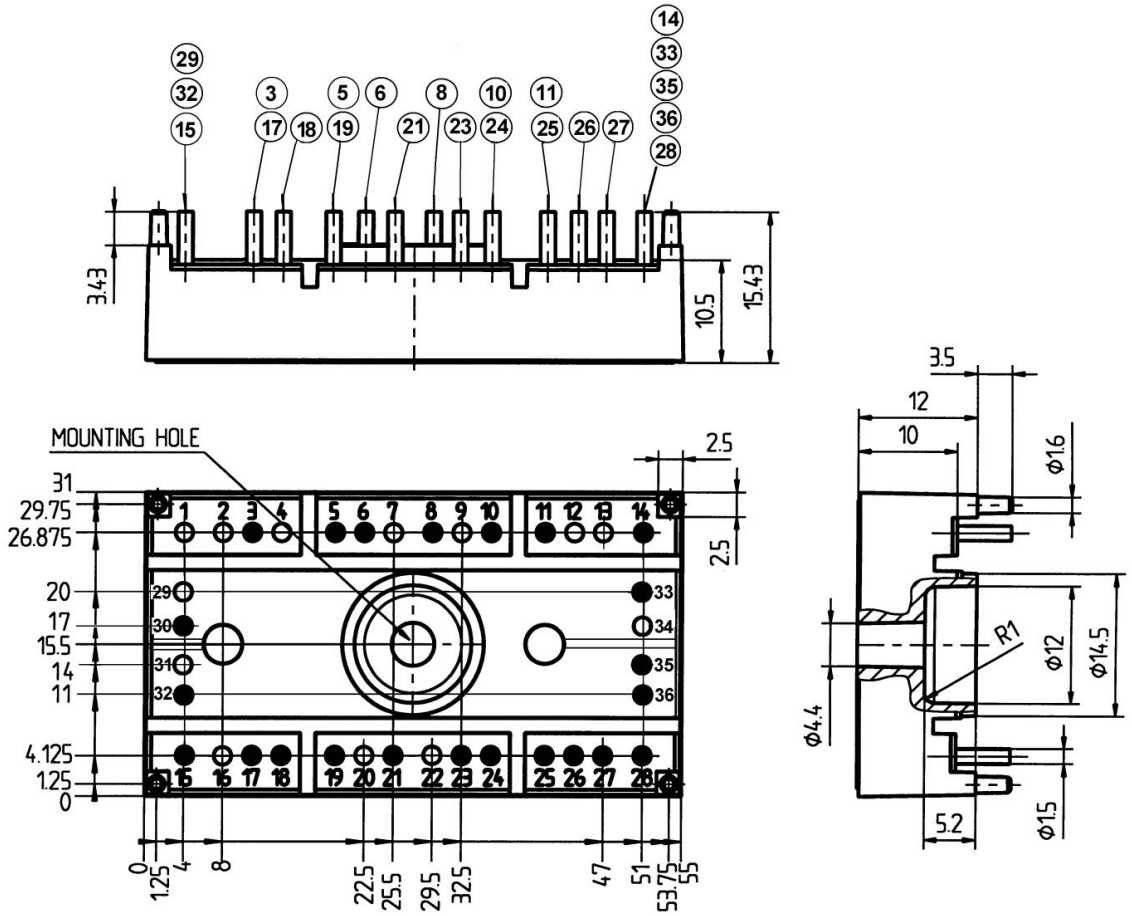


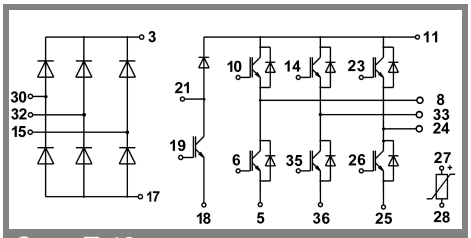
Fig.24 Typical FWD forward characteristic

UL Recognized
File no. E63 532

Dimensions in mm



Case T 49 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 49

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

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