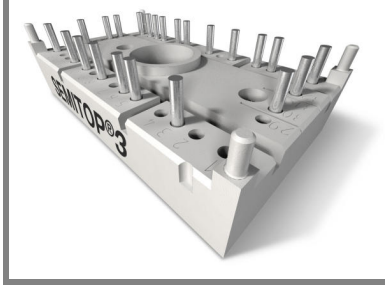
SK 80 MBBB 055



SEMITOP® 3

MOSFET Module

SK80MBBB055

Publish Data

Features

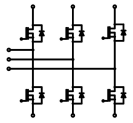
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonding aluminium oxide ceramic (DBC)
- Trench-gate technology
- Short internal connections and low inductance case

Typical Applications*

- Low power SMPS
- EV vehicles

1) Maximum PCB temperature, at pins contact, = 85°C

2) $R_{ds(on)}$ = chip level value



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Absolute Maximum Ratings		T_s = 25 °C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
MOSFET			
V_{DSS}		55	V
V_{GSS}		± 20	V
I_D	T_s = 25 (80) °C; 1)	117 (87)	A
I_{DM}	t_p < 1 ms; T_s = 25 (80) °C;	234 (174)	A
T_j		- 40 ... + 150	°C
Inverse diode			
I_F = - I_D	T_s = 25 (80) °C;	117 (87)	A
I_{FM} = - I_{DM}	t_p < 1 ms; T_s = 25 (80) °C;	234 (174)	A
T_j		- 40 ... + 150	°C
Freewheeling CAL diode			
I_F = - I_D	T_s = °C		A
T_j			°C
T_{stg}		- 40 ... + 125	°C
T_{sol}	Terminals, 10 s	260	°C
V_{isol}	AC, 1 min (1s)	2500 / 3000	V

Characteristics		T_s = 25 °C, unless otherwise specified			
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
MOSFET					
$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 0,25 mA	55			V
$V_{GS(th)}$	V_{GS} = V_{DS}; I_D = 0,25 mA	2,5	3,2	4,5	V
I_{DSS}	V_{GS} = 0 V; V_{DS} = V_{DSS}; T_j = 25 °C			1	µA
I_{GSS}	V_{GS} = ± 20V ;V_{DS} = 0 V			100	nA
$R_{DS(on)}$	I_D = 20 A; V_{GS} = 10 V; T_j = 25 °C		2,2	2,9	mΩ
$R_{DS(on)}$	I_D = 20 A; V_{GS} = 10 V; T_j = 125 °C		3,4	4,5	mΩ
C_{CHC}	per MOSFET				pF
C_{iss}	under following conditions:		10,6		nF
C_{oss}	V_{GS} = 0 V; V_{DS} = 25 V; f = 1 MHz		1,65		nF
C_{rss}			0,8		nF
L_{DS}					nH
$t_{d(on)}$	under following conditions:		438		ns
t_r	V_{DD} = 25 V; V_{GS} = 15 V; I_D = 90 A		398		ns
$t_{d(off)}$	R_G = 100 Ω		1444		ns
t_f			349		ns
$R_{th(j-s)}$	per MOSFET (per module)			1,1	K/W
Inverse diode					
V_{SD}	I_F = 50 A; V_{GS} = 0 V; T_j = 25 °C		0,9		V
I_{RRM}	under following conditions:				A
Q_{rr}	I_F = A; T_{vj} = °C; R_G = Ω				µC
t_{rr}	V_R = A; di/dt = A/µs				ns
Free-wheeling diode					
V_F	I_F = A; V_{GS} = V				V
I_{RRM}	under following conditions:				A
Q_{rr}	I_F = A; T_{vj} = °C				µC
t_{rr}	V_r = A; di/dt = A/µs				ns
Mechanical data					
M1	mounting torque	2,25		2,5	Nm
w			30		g
Case	SEMITOP® 3		T 47		

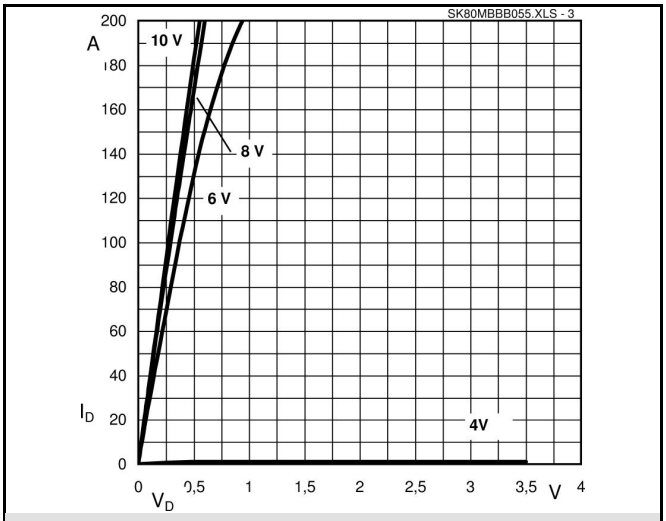


Fig. 3 Output characteristic, t_p = 80 µs, T_j = 25 °C

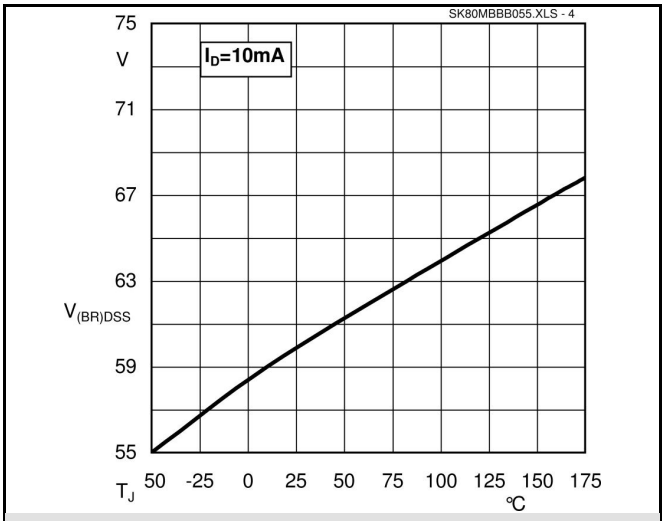


Fig. 4 Breakdown voltage vs. temperature

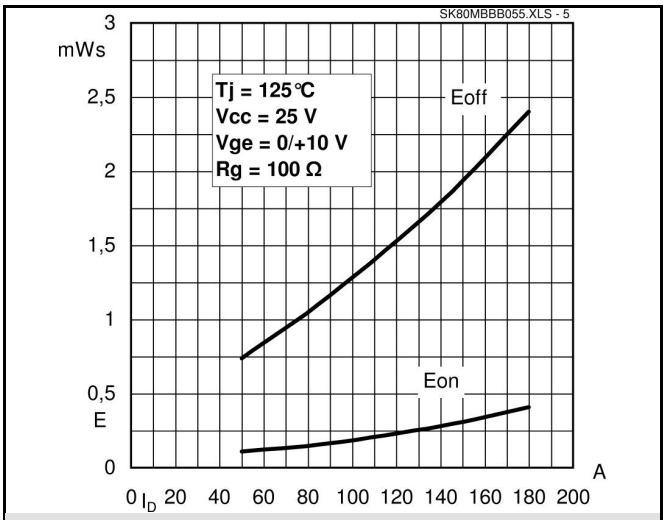


Fig. 5 Typ. Turn-on/-off energy=f(Ic)

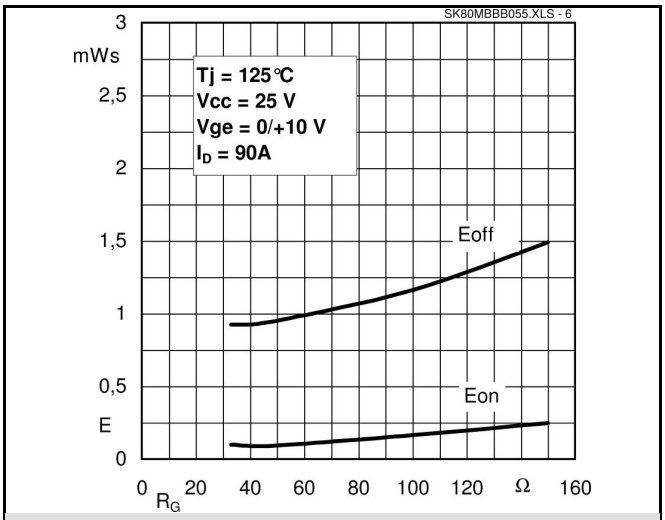


Fig. 6 Typ. Turn-on/-off energy=f(Rg)

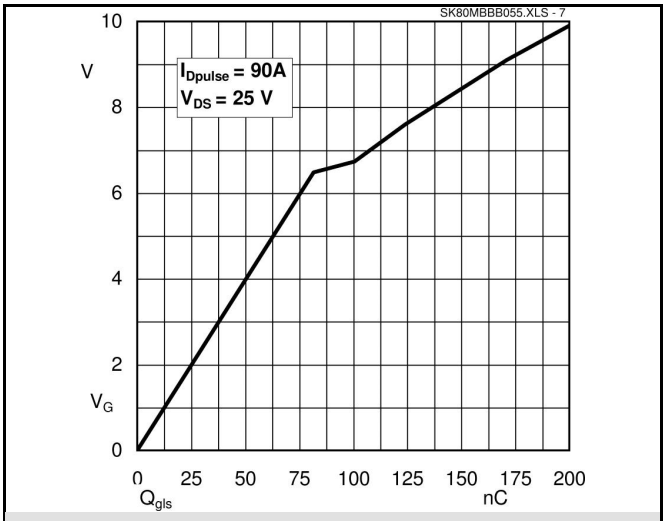


Fig. 7 Gate charge characteristic, I_{Dp} = 90 A

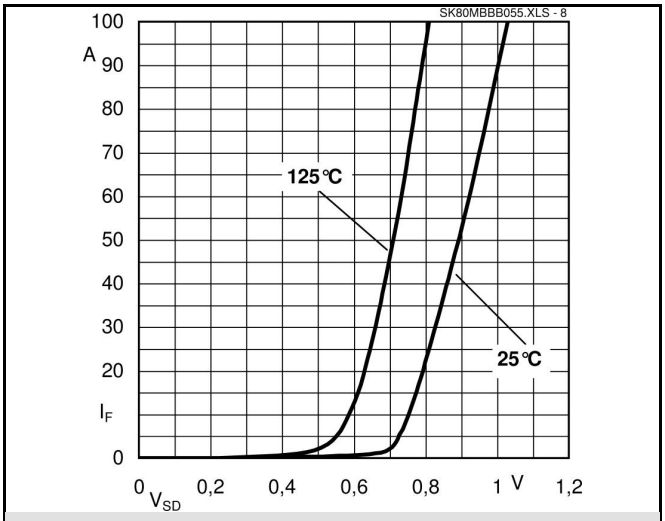
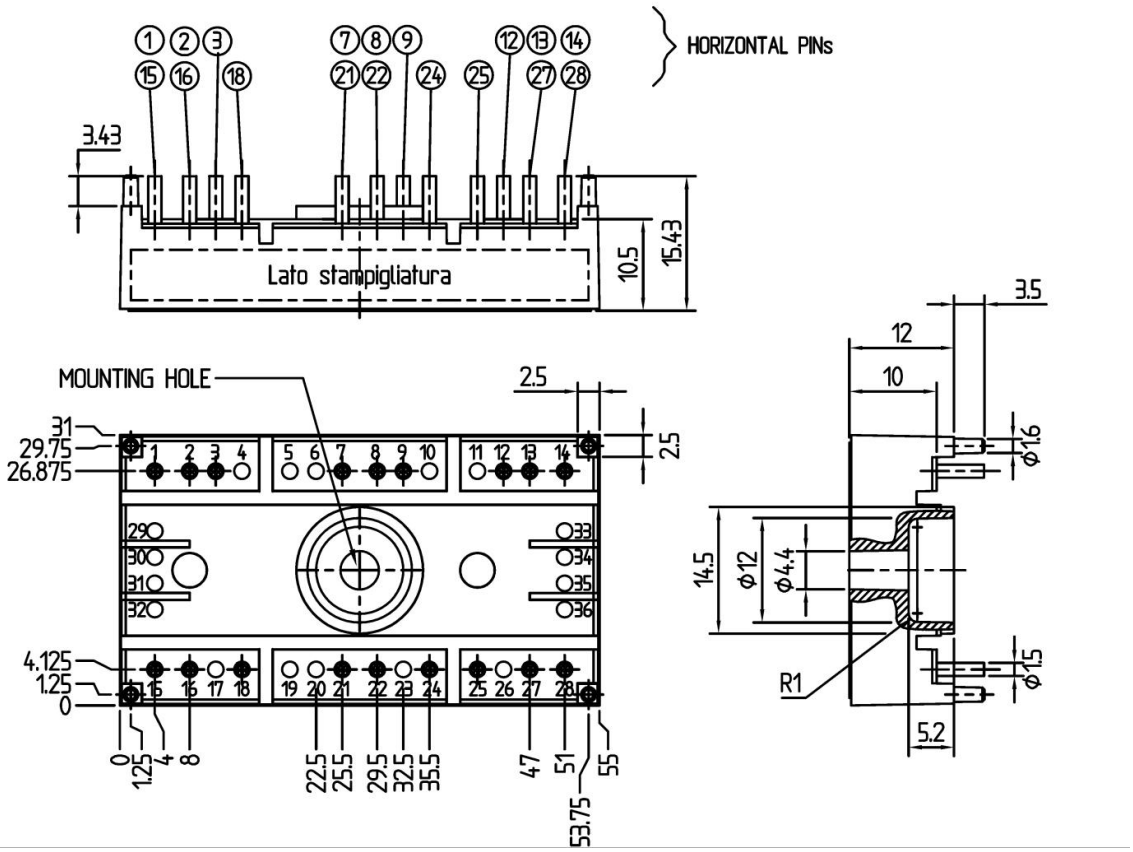
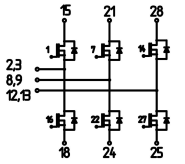


Fig. 8 Diode forward characteristic, t_p = 80 µs

Dimensions in mm



Case T 77



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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.

