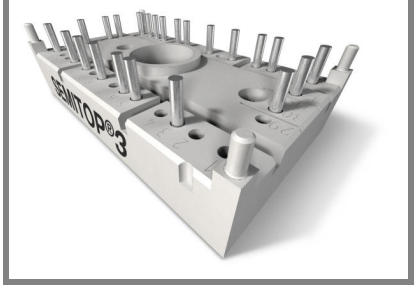
SK 115 MD 10

MOSFET TRANSISTOR



SEMITOP® 3

MOSFET Module

SK 115 MD 10

Preliminary Data

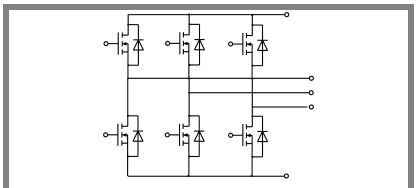
Features

- 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 switched mode power supplies
- DC servo drives
- UPS

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



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Absolute Maximum Ratings		T_s = 25 °C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
MOSFET			
V_{DSS}		100	V
V_{GSS}		± 20	V
I_D	T_s = 25 (80) °C; 1)	80 (60)	A
I_{DM}	t_p < 1 ms; T_s = (80) °C; 1)	(120)	A
T_j		- 40 ... + 150	°C
Inverse diode			
I_F = - I_D	T_s = 25 (80) °C;	80 (60)	A
I_{FM} = - I_{DM}	t_p < 1 ms; T_s = (80) °C;	(120)	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 = 5,6 mA	100			V
$V_{GS(th)}$	V_{GS} = V_{DS}; I_D = 5,6 mA	2,5	3,3		V
I_{DSS}	V_{GS} = 0 V; V_{DS} = V_{DSS}; T_j = 25 °C			100	µA
I_{GSS}	V_{GS} = ± 20V ;V_{DS} = 0 V			100	nA
$R_{DS(on)}$	I_D = 80 A; V_{GS} = 10 V; T_j = 25 °C			7,5	mΩ
$R_{DS(on)}$	I_D = 80 A; V_{GS} = 10 V; T_j = 125 °C			13,5	mΩ
C_{CHC}	per MOSFET				pF
C_{iss}	under following conditions:		9,1		nF
C_{oss}	V_{GS} = 0 V; V_{DS} = 25 V; f = 1 MHz		1,8		nF
C_{rss}			1,6		nF
L_{DS}					nH
$t_{d(on)}$	under following conditions:		300		ns
t_r	V_{DD} = 50 V; V_{GS} = 10 V; I_D = 50 A		150		ns
$t_{d(off)}$	R_G = 56 Ω		1600		ns
t_f			160		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 = 50 °C		0,9		V
I_{RRM}	under following conditions:		24		A
Q_{rr}	I_F = 50 A; T_{vj} = 25 °C; R_G = 56 Ω		0,9		µC
t_{rr}	V_R = 65 A; di/dt = 100 A/µs		70		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			2,5	Nm
w			20		g
Case	SEMITOP® 3		T 16		

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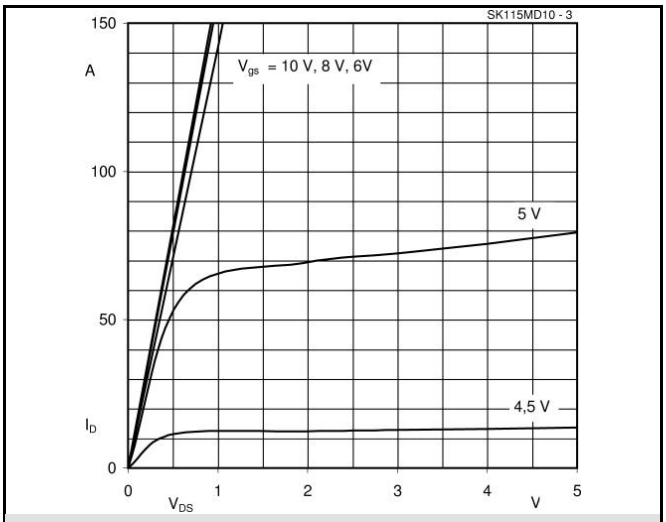

Fig. 3 Output characteristic, t_p = 80 µs, T_j = 25 °C

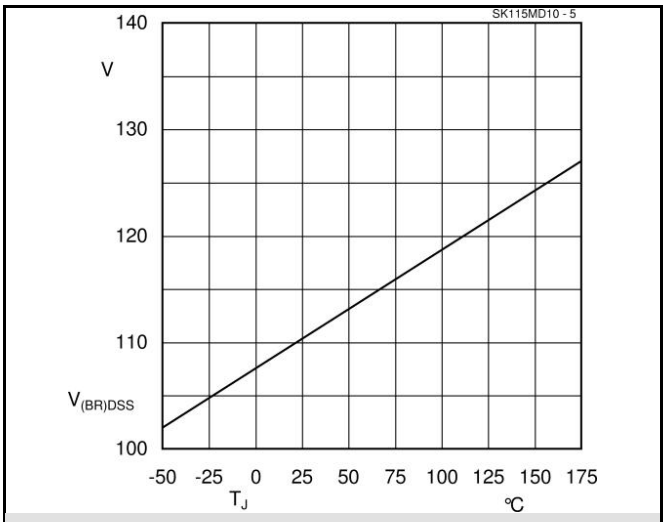

Fig. 5 Breakdown voltage vs. temperature

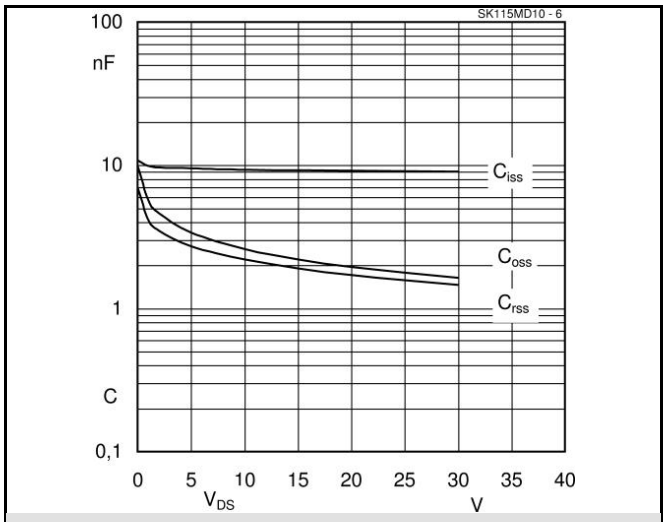

Fig. 6 Typ. capacitancies vs. drain-source voltage

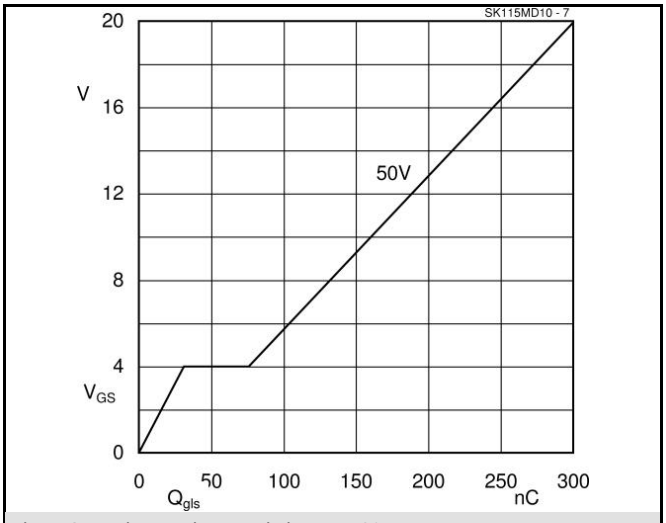

Fig. 7 Gate charge characteristic, I_{Dp} = 80 A

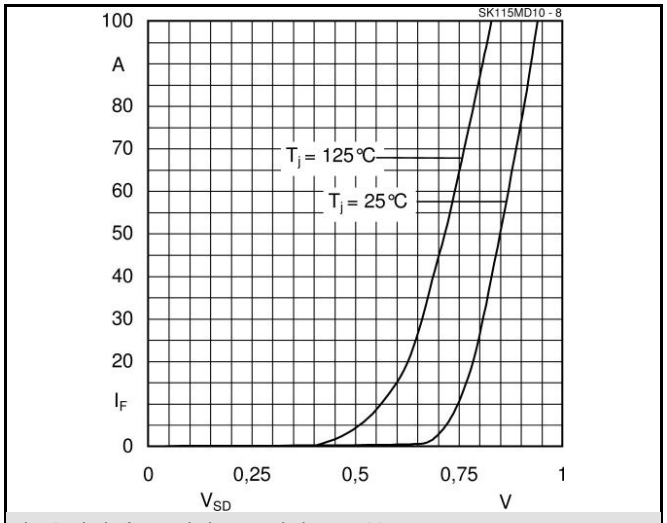

Fig. 8 Diode forward characteristic, t_p = 80 µs

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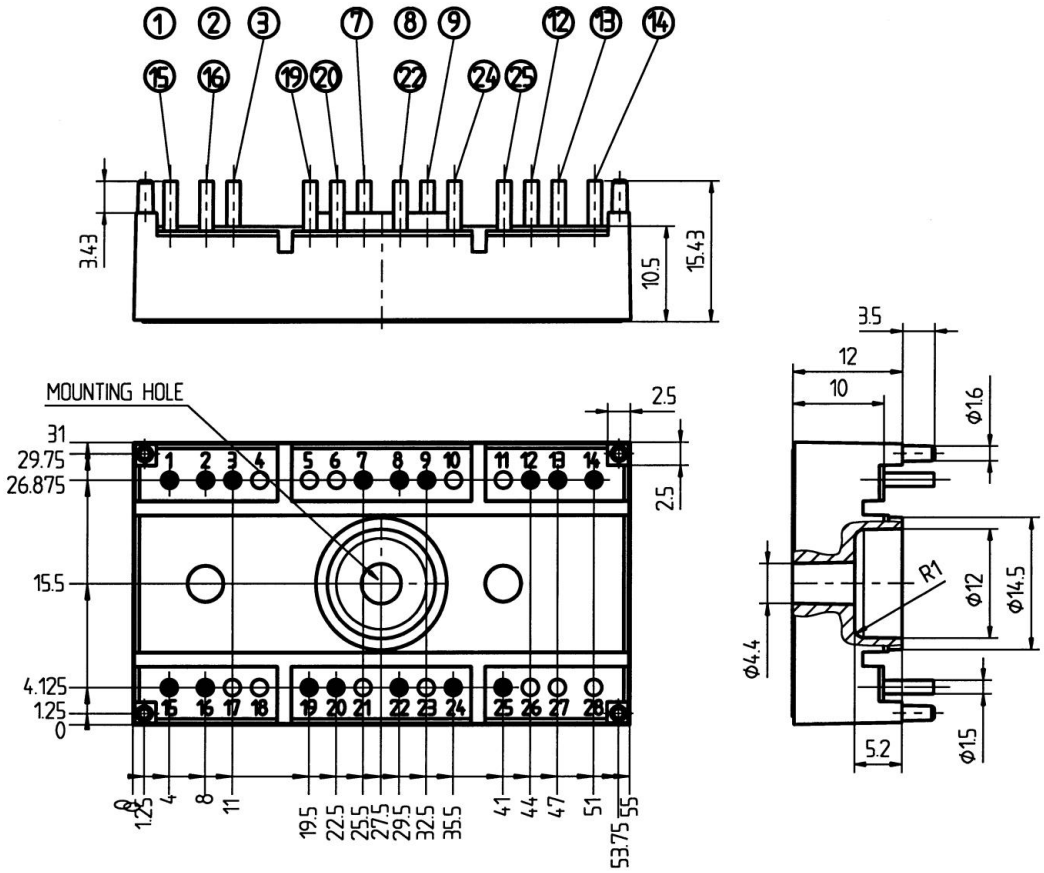
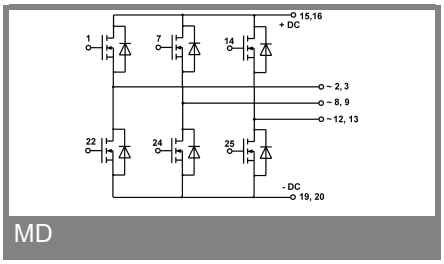
Dimensions in mm



SUGGESTED HOLEDIAMETER FOR THE SOLDER PINS AND THE MOUNTING PINS IN THE PCB: 2 mm

Case T16



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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.

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