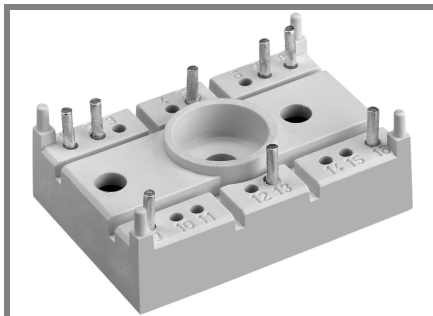


# SK 85 MH 10 T



**SEMITOP<sup>®</sup> 2**

## MOSFET Module

**SK 85 MH 10 T**

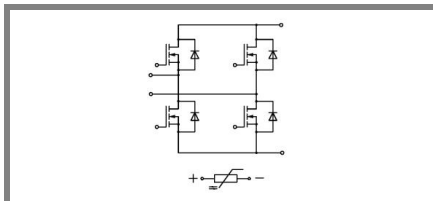
Preliminary Data

### 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



**MH - T**

Absolute Maximum Ratings		$T_s = 25\text{ }^\circ\text{C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>MOSFET</b>			
$V_{DSS}$		100	V
$V_{GSS}$		$\pm 20$	V
$I_D$	$T_s = 25\text{ (80) }^\circ\text{C}; 1)$	80 (60)	A
$I_{DM}$	$t_p < 1\text{ ms}; T_s = 80\text{ }^\circ\text{C}; 1)$	120	A
$T_j$		- 40 ... + 150	$^\circ\text{C}$
<b>Inverse diode</b>			
$I_F = -I_D$	$T_s = 25\text{ (80) }^\circ\text{C};$	80 (60)	A
$I_{FM} = -I_{DM}$	$t_p < 1\text{ ms}; T_s = 80\text{ ( ) }^\circ\text{C};$	120	A
$T_j$		- 40 ... + 150	$^\circ\text{C}$
<b>Freewheeling CAL diode</b>			
$I_F = -I_D$	$T_s = \text{ }^\circ\text{C}$		A
$T_j$			$^\circ\text{C}$
$T_{stg}$		- 40 ... + 125	$^\circ\text{C}$
$T_{sol}$	Terminals, 10 s	260	$^\circ\text{C}$
$V_{isol}$	AC, 1 min (1s)	2500 / 3000	V

Characteristics		$T_s = 25\text{ }^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>MOSFET</b>					
$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}; I_D = 5,6\text{ mA}$	100			V
$V_{GS(th)}$	$V_{GS} = V_{DS}; I_D = 5,6\text{ mA}$	2,5	3,3		V
$I_{DSS}$	$V_{GS} = 0\text{ V}; V_{DS} = V_{DSS}; T_j = 25\text{ }^\circ\text{C}$			100	$\mu\text{A}$
$I_{GSS}$	$V_{GS} = \pm 20\text{ V}; V_{DS} = 0\text{ V}$			100	nA
$R_{DS(on)}$	$I_D = 80\text{ A}; V_{GS} = 10\text{ V}; T_j = 25\text{ }^\circ\text{C}$			7,5	m $\Omega$
$R_{DS(on)}$	$I_D = 80\text{ A}; V_{GS} = 10\text{ V}; T_j = 125\text{ }^\circ\text{C}$			13,5	m $\Omega$
$C_{CHC}$	per MOSFET				pF
$C_{iss}$	under following conditions:		9,1		nF
$C_{oss}$	$V_{GS} = 0\text{ V}; V_{DS} = 25\text{ V}; f = 1\text{ MHz}$		1,8		nF
$C_{riss}$			1,6		nF
$L_{DS}$					nH
$t_{d(on)}$	under following conditions:		300		ns
$t_r$	$V_{DD} = 50\text{ V}; V_{GS} = 10\text{ V};$ $I_D = 50\text{ A}$		140		ns
$t_{d(off)}$	$R_G = 56\text{ }\Omega$		1550		ns
$t_f$			150		ns
$R_{th(j-s)}$	per MOSFET (per module)			1,1	K/W
<b>Inverse diode</b>					
$V_{SD}$	$I_F = 50\text{ A}; V_{GS} = 0\text{ V}; T_j = \text{ }^\circ\text{C}$		0,9		V
$I_{RRM}$	under following conditions:		24		A
$Q_{rr}$	$I_F = 50\text{ A}; T_{vj} = 25\text{ }^\circ\text{C}; R_G = 56\text{ }\Omega$		0,9		$\mu\text{C}$
$t_{rr}$	$V_R = 65\text{ A}; di/dt = 100\text{ A}/\mu\text{s}$		70		ns
<b>Free-wheeling diode</b>					
$V_F$	$I_F = \text{ A}; V_{GS} = \text{ V}$				V
$I_{RRM}$	under following conditions:				A
$Q_{rr}$	$I_F = \text{ A}; T_{vj} = \text{ }^\circ\text{C}$				$\mu\text{C}$
$t_{rr}$	$V_r = \text{ A}; di/dt = \text{ A}/\mu\text{s}$				ns
<b>Mechanical data</b>					
M1	mounting torque			2	Nm
w			20		g
Case					

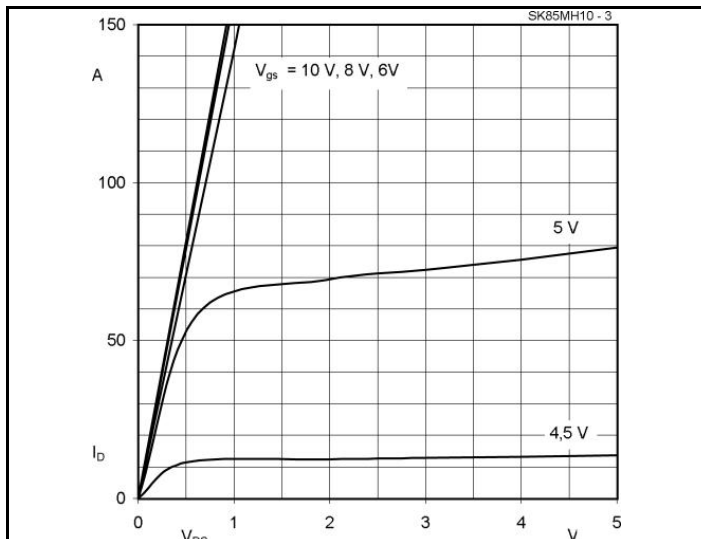


Fig. 3 Output characteristic,  $t_p = 80 \mu s$ ,  $T_j = 25^\circ C$

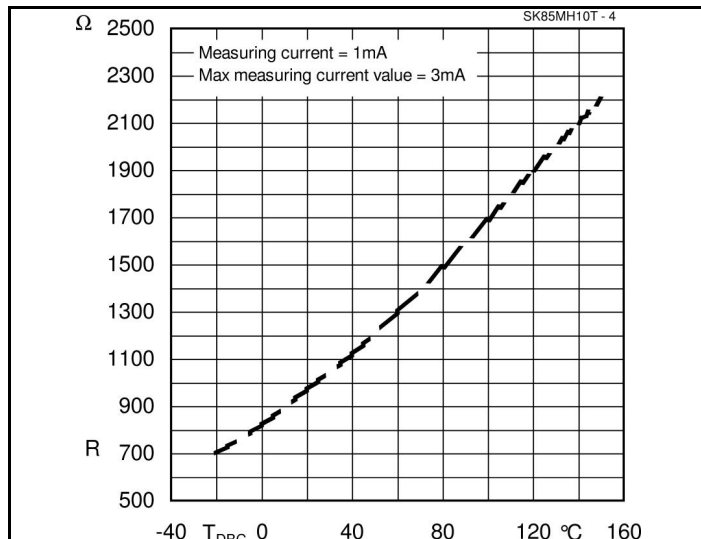


Fig. 4 Temperature Sensor Characteristic

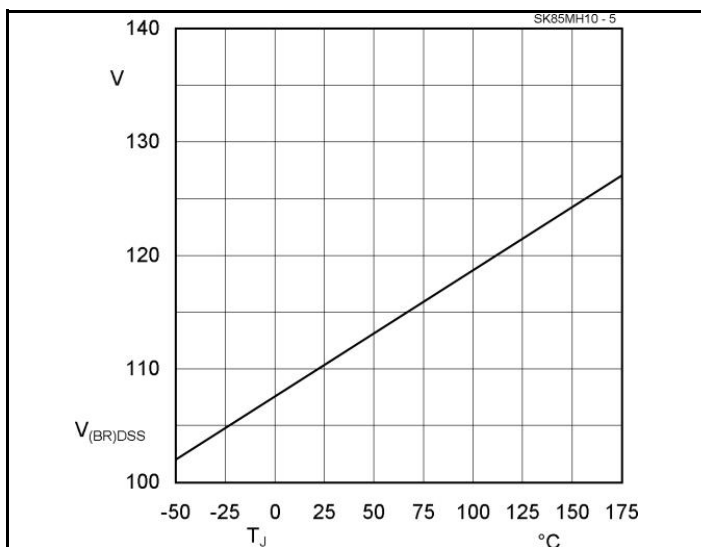


Fig. 5 Breakdown voltage vs. temperature

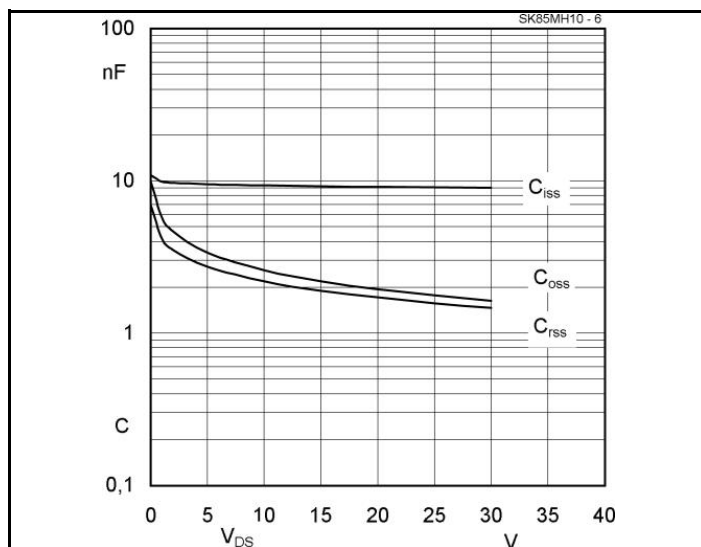


Fig. 6 Typ. capacitances vs. drain-source voltage

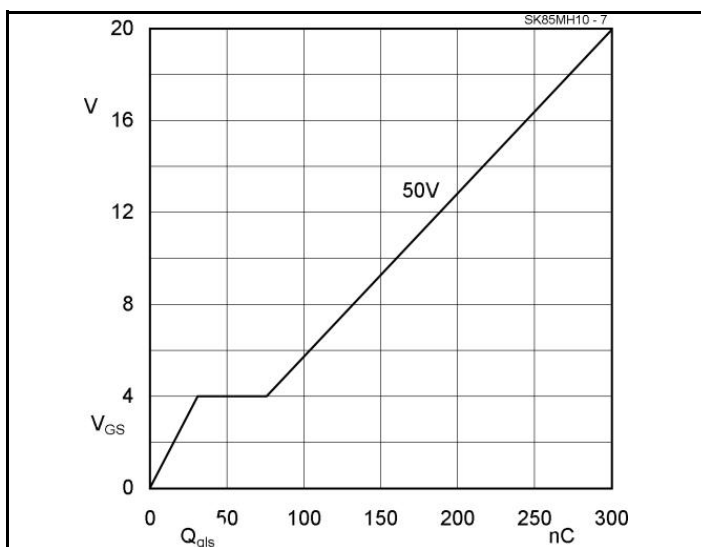


Fig. 7 Gate charge characteristic,  $I_{Dp} = 80 A$

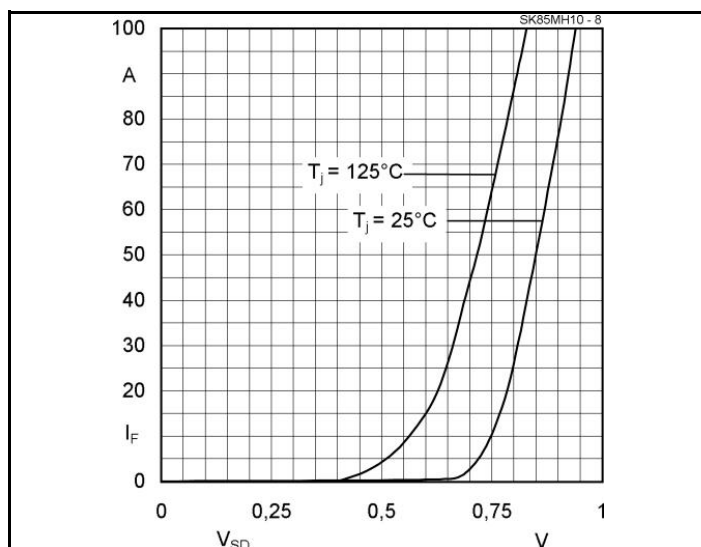
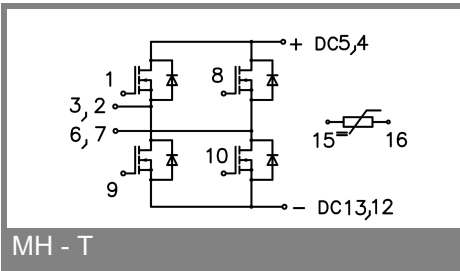
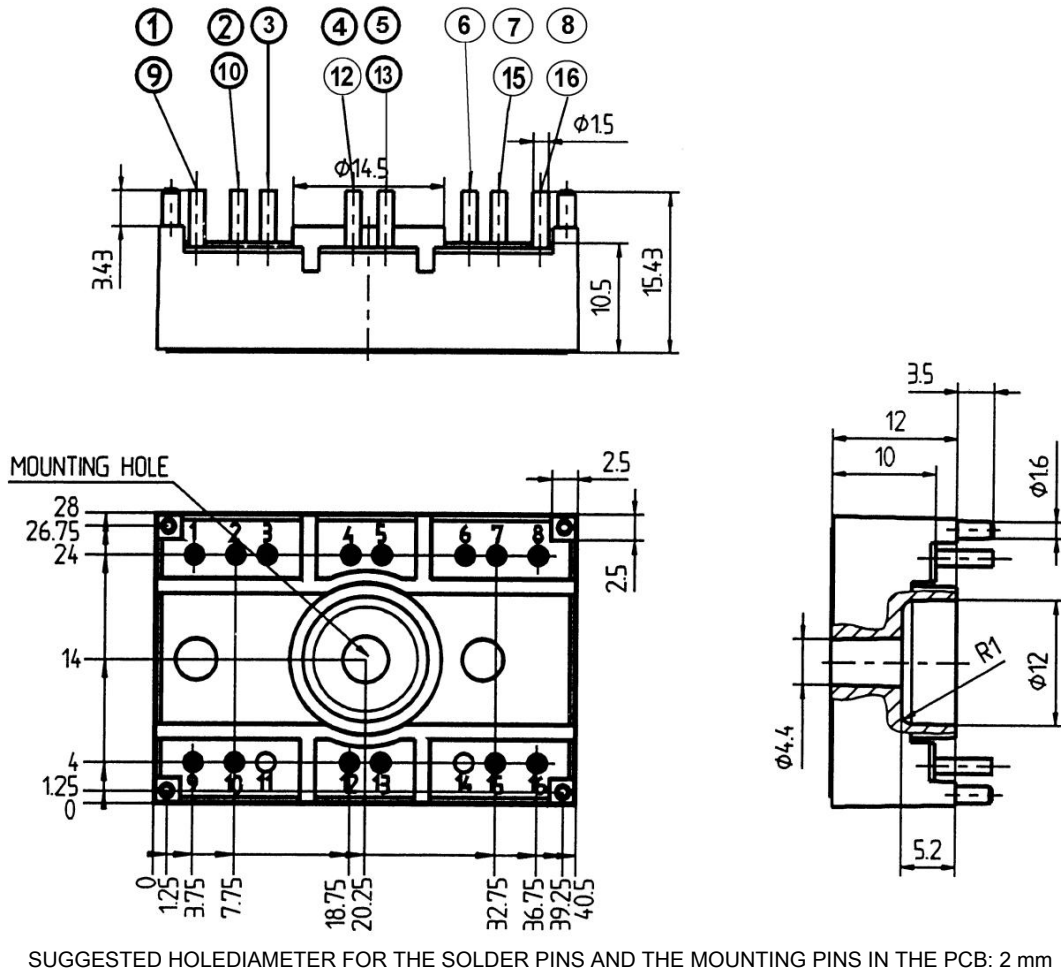


Fig. 8 Diode forward characteristic,  $t_p = 80 \mu s$

# SK 85 MH 10 T

Dimensions in mm



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

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