

SEMITOR[®] 4

MOSFET Module

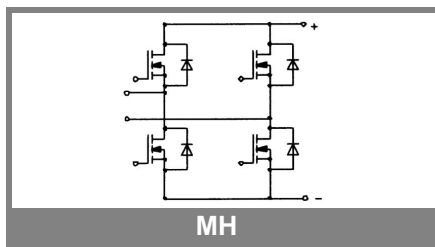
SK60MH60

Features

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

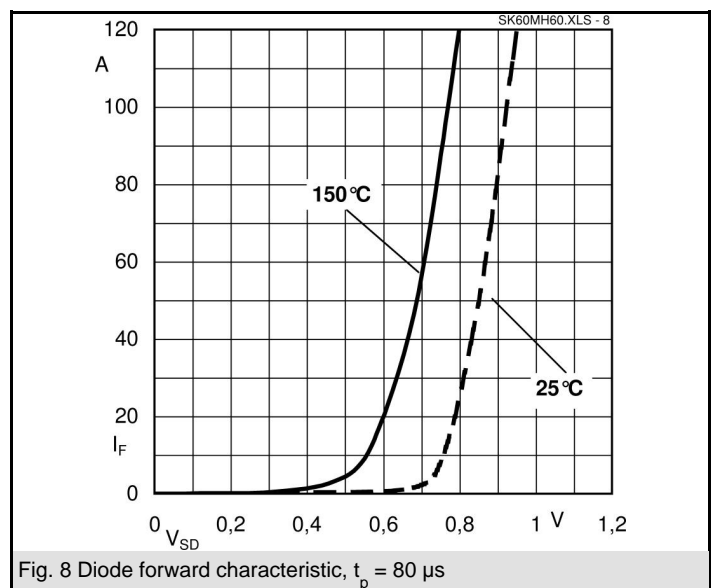
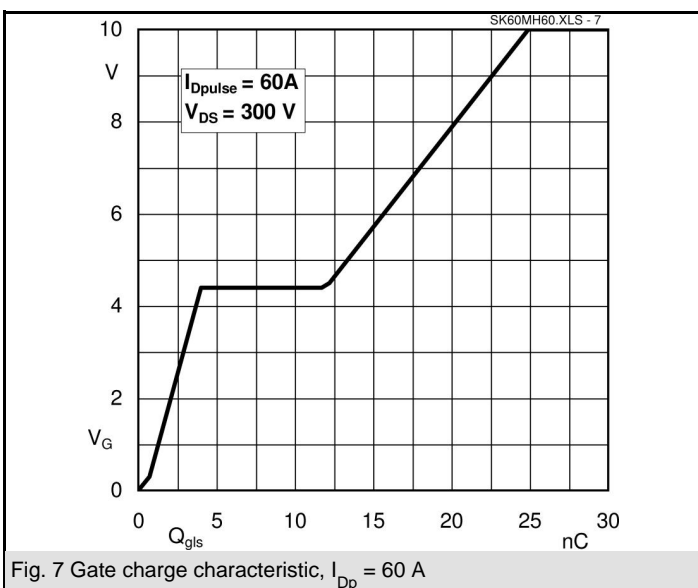
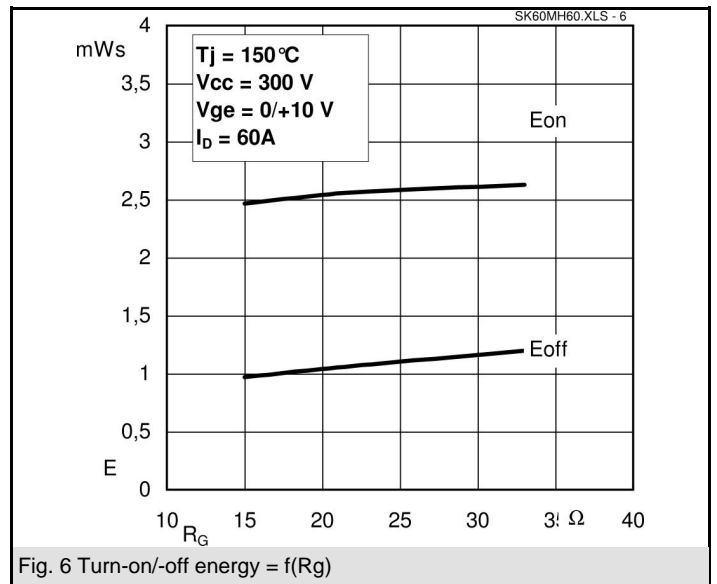
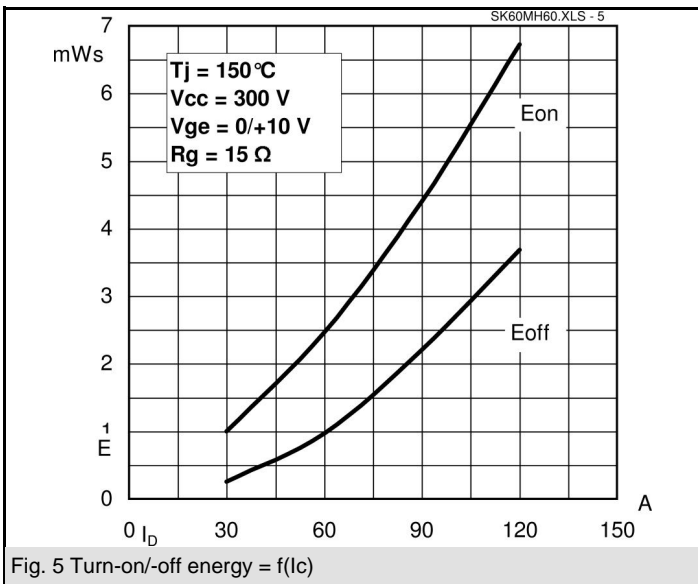
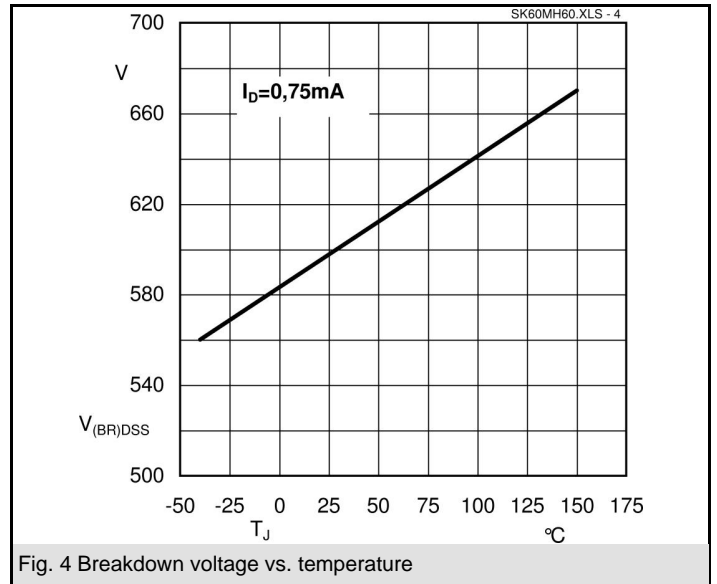
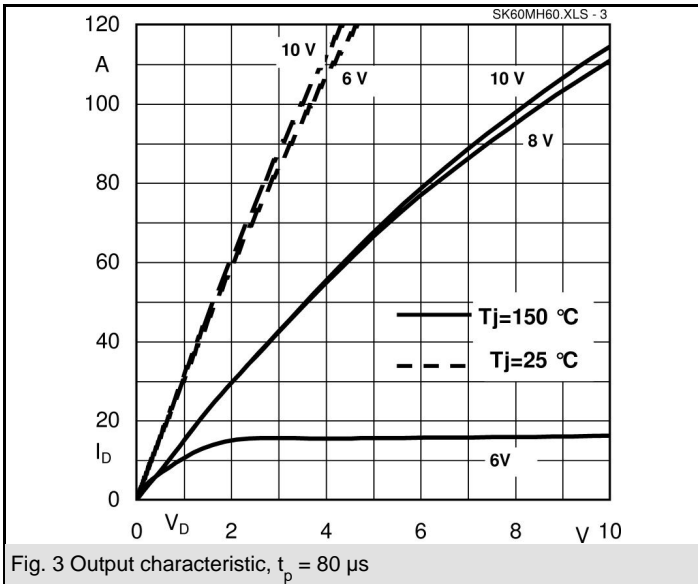
Typical Applications

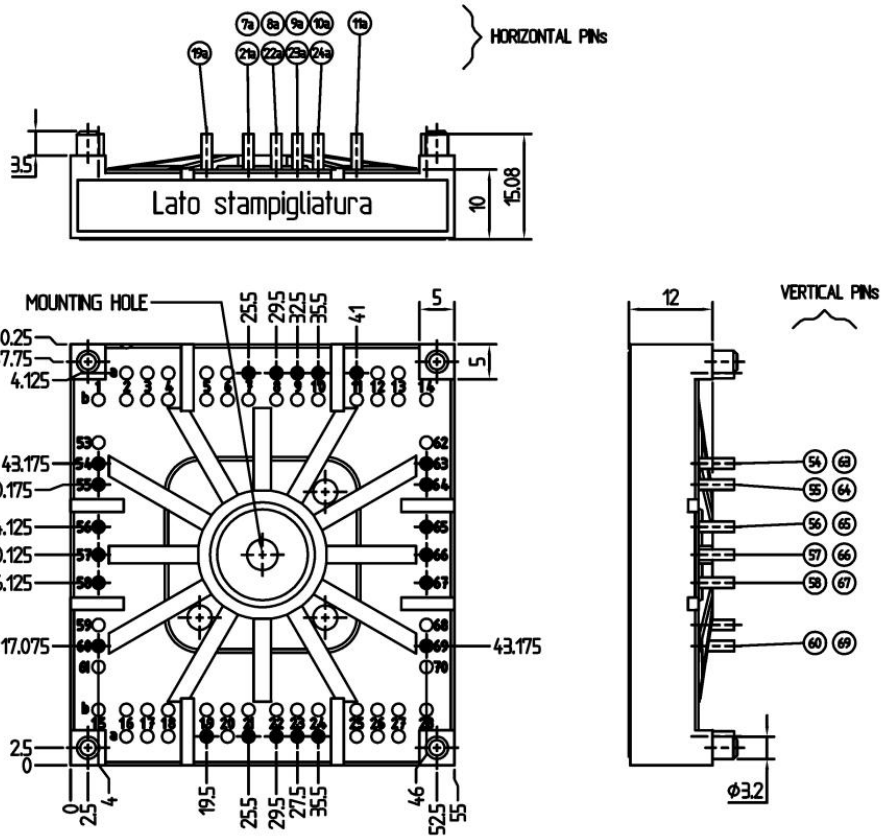
- Welding generator
 - For welding current up to 250A
- 1) Maximum PCB temperature, at pins contact, = 85°C
 - 2) $T_j = 175^\circ\text{C}$
 - 3) Operative junction temperature $T_{j,op} = 150^\circ\text{C}$
 - 4) Inverse diode: Mosfet body diode
 - 5) DUT for dynamic characterization= Mosfet and standard CAL diode as free-wheeling diode
 - 6) Fig.8 refers to the static curve of the Mosfet body diode
 - 7) FWD: $V_F = \text{chip level value}$



Absolute Maximum Ratings		$T_s = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
MOSFET			
V_{DSS}		600	V
V_{GSS}		± 20	V
I_D	$T_s = 25 (80)^\circ\text{C}; 1,2$	60 (50)	A
I_{DM}	$t_p < 1 \text{ ms}; T_s = (80)^\circ\text{C}; 1$	(100)	A
T_j		- 40 ... + 175	$^\circ\text{C}$
Inverse diode			
$I_F = -I_D$	$T_s = 25 (80)^\circ\text{C};$	60 (50)	A
$I_{FM} = -I_{DM}$	$t_p < 1 \text{ ms}; T_s = (80)^\circ\text{C};$	(100)	A
T_j		- 40 ... + 175	$^\circ\text{C}$
Freewheeling CAL diode			
$I_F = -I_D$	$T_s = ^\circ\text{C}$		A
T_j			$^\circ\text{C}$
T_{stg}		- 40 ... + 150	$^\circ\text{C}$
T_{sol}	Terminals, 10 s	260	$^\circ\text{C}$
V_{isol}	AC, 1 min (1s)	2500 / 3000	V

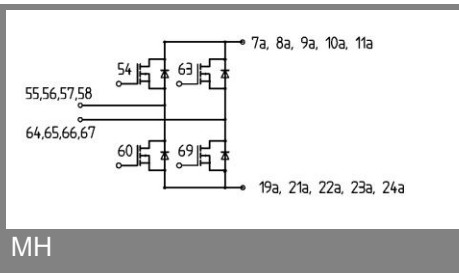
Characteristics		$T_s = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
MOSFET					
$V_{(BR)DSS}$	$V_{GS} = 0 \text{ V}; I_D = 0,5 \text{ mA}$	600			V
$V_{GS(th)}$	$V_{GS} = V_{DS}; I_D = 0,5 \text{ mA}$	2,5	3	3,5	V
I_{DSS}	$V_{GS} = 0 \text{ V}; V_{DS} = V_{DSS}; T_j = 25 (150)^\circ\text{C}$		(150)	15	μA
I_{GSS}	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			300	nA
$R_{DS(on)}$	$I_D = 60 \text{ A}; V_{GS} = 10 \text{ V}; T_j = 25^\circ\text{C}$		33		m Ω
$R_{DS(on)}$	$I_D = 60 \text{ A}; V_{GS} = 10 \text{ V}; T_j = 150^\circ\text{C}$		73		m Ω
C_{CHC}	per MOSFET				pF
C_{iss}	under following conditions:		8,4		nF
C_{oss}	$V_{GS} = 0 \text{ V}; V_{DS} = 25 \text{ V}; f = 1 \text{ MHz}$		0,4		nF
C_{rss}			0,4		nF
L_{DS}					nH
$t_{d(on)}$	under following conditions:		61		ns
t_r	$V_{DD} = 300 \text{ V}; V_{GS} = 10 \text{ V};$ $I_D = 60 \text{ A}$		76		ns
$t_{d(off)}$	$R_G = 15 \Omega$		282		ns
t_f			35		ns
$R_{th(j-s)}$	per MOSFET (per module)		0,45		K/W
Inverse diode					
V_{SD}	$I_F = 60 \text{ A}; V_{GS} = 0 \text{ V}; T_j = 50^\circ\text{C}$		0,7	0,85	V
I_{RRM}	under following conditions:				A
Q_{rr}	$I_F = \text{A}; T_{vj} = ^\circ\text{C}; R_G = \Omega$				μC
t_{rr}	$V_R = \text{A}; di/dt = \text{A}/\mu\text{s}$				ns
Free-wheeling diode					
V_F	$I_F = 50 \text{ A}; V_{GS} = 0 \text{ V}$		1,35	1,6	V
I_{RRM}	under following conditions:		40		A
Q_{rr}	$I_F = 60 \text{ A}; T_{vj} = 150^\circ\text{C}$		4		μC
t_{rr}	$V_r = 300 \text{ A}; di/dt = 1000 \text{ A}/\mu\text{s}$		200		ns
Mechanical data					
M1	mounting torque	2,25		2,5	Nm
w			30		g
Case	SEMITOR [®] 4		T		





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

Case T



MH

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

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