SEMITOP® 3

MOSFET Module

Engineering Sample

SK280MB10

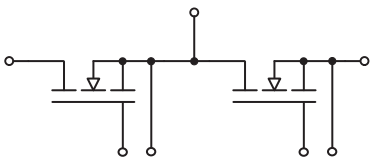
Target Data

Features

- **Single leg of inverter**
- **Compact design**
- **One screw mounting module**
- **Improved thermal performance by aluminum oxide substrate**
- **Trench technology**
- **Short internal connections and low inductance case**
- **UL recognized, file no. E 63 532**

Typical Applications*

- **Low switched mode power supplies**
- **DC servo drives**
- **UPS**



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Absolute Maximum Ratings				
Symbol	**Conditions**		**Values**	**Unit**
MOSFET 1				
V_{DSS}			100	V
I_D	T_j = 175 °C	T_s = 25 °C	278	A
		T_s = 70 °C	233	A
I_{DM}			960	A
I_{DRM}			t.b.d.	A
V_{GS}			-20 ... 20	V
T_j			-40 ... 175	°C
Integrated body diode				
I_{FM}			960	A
I_{FRM}			t.b.d.	A

Absolute Maximum Ratings			
Symbol	**Conditions**	**Values**	**Unit**
Module			
$I_{t(RMS)}$		t.b.d.	A
T_{stg}		-40 ... 125	°C
V_{isol}	AC, sinusoidal, t = 1 min	2500	V

Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
MOSFET 1						
$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 2 mA, T_j = 25 °C		100			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 0.55 mA, T_j = 25 °C		2	2.7	3.5	V
I_{DSS}	V_{GS} = 0 V, V_{DS} = 100 V, T_j = 25 °C				0.2	mA
I_{GSS}	V_{DS} = 0 V, V_{GS} = 20 V, T_j = 25 °C				200	nA
$R_{DS(on)}$	V_{GS} = 10 V I_D = 200 A chiplevel	T_j = 25 °C		1.15	1.35	mΩ
		T_j = 150 °C		2.1		mΩ
C_{iss}	V_{GS} = 0 V, V_{DS} = 50 V, f = 1 MHz			22200		pF
C_{oss}	V_{GS} = 0 V, V_{DS} = 50 V, f = 1 MHz			3880		pF
C_{rss}	V_{GS} = 0 V, V_{DS} = 50 V, f = 1 MHz			138		pF
R_{Gint}	T_j = 25 °C			4.0		Ω
Q_G	V_{GS} = 0…+10 V, V_{DD} = 50 V, I_D = 200 A			310		nC
$t_{d(on)}$	V_{DD} = 50 V V_{GS} = 10 V I_D = 200 A	T_j = 150 °C				ns
$t_{d(off)}$		T_j = 150 °C				ns
t_r		T_j = 150 °C				ns
t_f		T_j = 150 °C				ns
E_{on}		T_j = 150 °C		0.35		mJ
E_{off}		T_j = 150 °C		0.17		mJ
$R_{th(j-s)}$	per MOSFET, λ_{paste}=0.8 W/(mK)			0.68		K/W
Integrated body diode						
$V_F = V_{SD}$	$-I_D$ = 200 A V_{GS} = 0 V chiplevel	T_j = 25 °C		0.88		V
		T_j = 150 °C		0.77		V
$V_{F0} = V_{SD0}$	chiplevel	T_j = 25 °C		0.71		V
		T_j = 150 °C		0.53		V
$r_F = r_{SD}$	chiplevel	T_j = 25 °C		0.85		mΩ
		T_j = 150 °C		1.20		mΩ
t_{rr}	V_{DD} = 50 V $-I_D$ = 200 A	T_j = 150 °C		-		ns
Q_{rr}		T_j = 150 °C		-		µC
I_{rr}		T_j = 150 °C		-		A
E_{rr}		T_j = 150 °C		0.04		mJ

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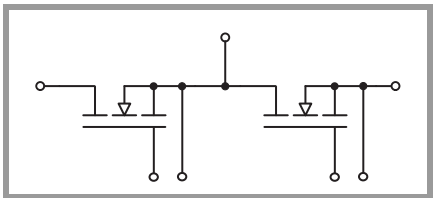

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Characteristics					
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
Module					
L_{CE}			t.b.d.		nH
M_s	to heatsink	2.25		2.5	Nm
w	weight		29		g

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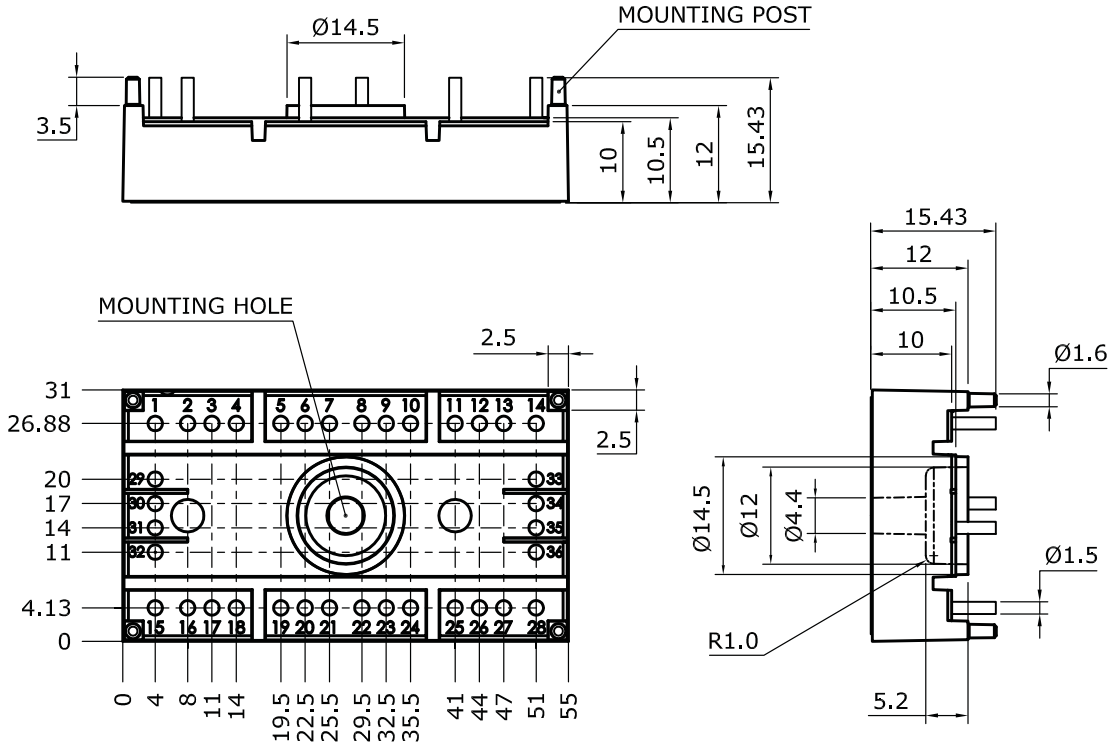
Dimensions: mm
Tolerance system: ISO 2768-m



Suggested hole diameter for solder pins in the circuit board:

- 2.0 mm

Suggested hole diameter for the mounting post in the circuit board:

- 2.0 mm

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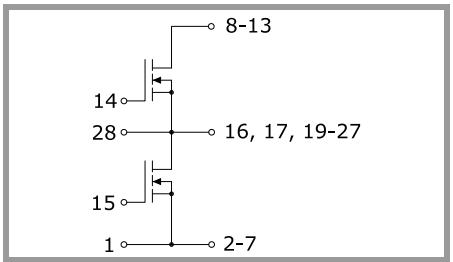

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This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, chapter IX.

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