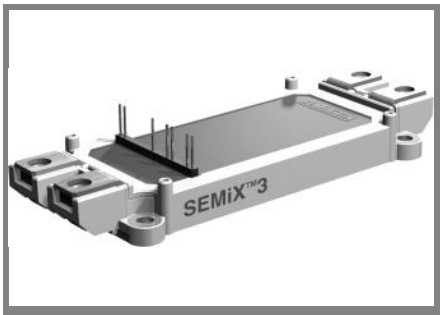
SEMiX 403GB128D



SEMiX® 3

SPT IGBT Modules

SEMiX 403GB128D

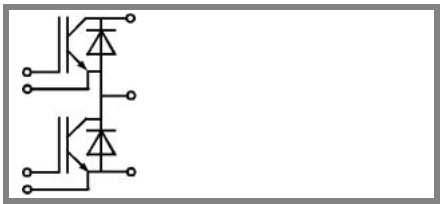
Preliminary Data

Features

- Homogeneous Si
- SPT = Soft-Punch-Through technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability

Typical Applications

- AC inverter drives
- UPS
- Electronic welders f_{sw} up to 20 kHz



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Absolute Maximum Ratings	T_{case} = 25°C, unless otherwise specified		
Symbol	**Conditions**	**Values**	**Units**
IGBT			
V_{CES}		1200	V
I_C	T_c = 25 (80) °C	420 (300)	A
I_{CRM}	t_p = 1 ms	450	A
V_{GES}		± 20	V
T_{vj}, (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	°C
V_{isol}	AC, 1 min.	4000	V
Inverse diode			
I_F	T_c = 25 (80) °C	340 (230)	A
I_{FRM}	t_p = 1 ms	450	A
I_{FSM}	t_p = 10 ms; sin.; T_j = 25 °C	2000	A

Characteristics	T_{case} = 25°C, unless otherwise specified				
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
IGBT					
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 9 mA	4,5	5,5	6,5	V
I_{CES}	V_{GE} = 0, V_{CE} = V_{CES}, T_j = 25 (125) °C			0,3	mA
$V_{CE(TO)}$	T_j = 25 (125) °C		1 (0,9)	1,15 (1,05)	V
r_{CE}	V_{GE} = 15 V, T_j = 25 (125) °C		4 (5,3)	5,3 (6,7)	mΩ
$V_{CE(sat)}$	I_{Cnom} = 225 A, V_{GE} = 15 V, T_j = 25 (125) °C, chip level		1,9 (2,1)	2,35 (2,55)	V
C_{ies}	under following conditions		18,6		nF
C_{oes}	V_{GE} = 0, V_{CE} = 25 V, f = 1 MHz		2,2		nF
C_{res}			2,1		nF
L_{CE}			20		nH
$R_{CC'+EE'}$	terminal-chip, T_c= 25 (125) °C		0,7 (1)		mΩ
$t_{d(on)}$/t_r	V_{CC} = 600 V, I_{Cnom} = 225 A		145 / 60		ns
$t_{d(off)}$/t_f	V_{GE} = ± 15 V		575 / 70		ns
E_{on} (E_{off})	R_{Gon} = R_{Goff} = 4 Ω, T_j = 125 °C		19 (22)		mJ
Inverse diode					
V_F = V_{EC}	I_{Fnom} = 225 A; V_{GE} = 0 V; T_j = 25 (125) °C, chip level		2 (1,8)	2,5 (2,3)	V
$V_{(TO)}$	T_j = 25 (125) °C		1,1	1,2	V
r_T	T_j = 25 (125) °C		4	5,8	mΩ
I_{RRM}	I_{Fnom} = 225 A; T_j = 25 (125) °C		(260)		A
Q_{rr}	di/dt = 4950 A/µs		(29)		µC
E_{rr}	V_{GE} = -15 V		(10)		mJ
Thermal characteristics					
$R_{th(j-c)}$	per IGBT			0,075	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,133	K/W
$R_{th(j-c)FD}$	per FWD				K/W
$R_{th(c-s)}$	per module		0,04		K/W
Temperature sensor					
R_{25}	T_c = 25 °C		5 ±5%		kΩ
$B_{25/85}$	R_2=R_1exp[B(1/T_2-1/T_1)] ; T[K];B		3420		K
Mechanical data					
M_s/M_t	to heatsink (M5) / for terminals (M6)	3/2,5		5 /5	Nm
w			289		g

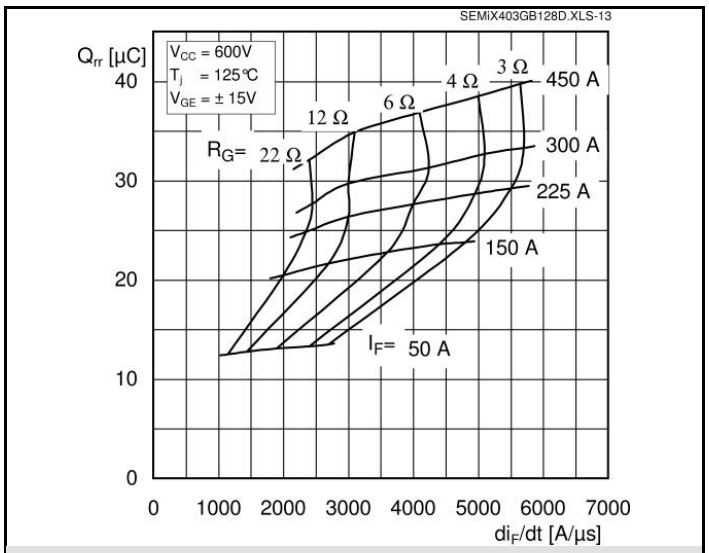
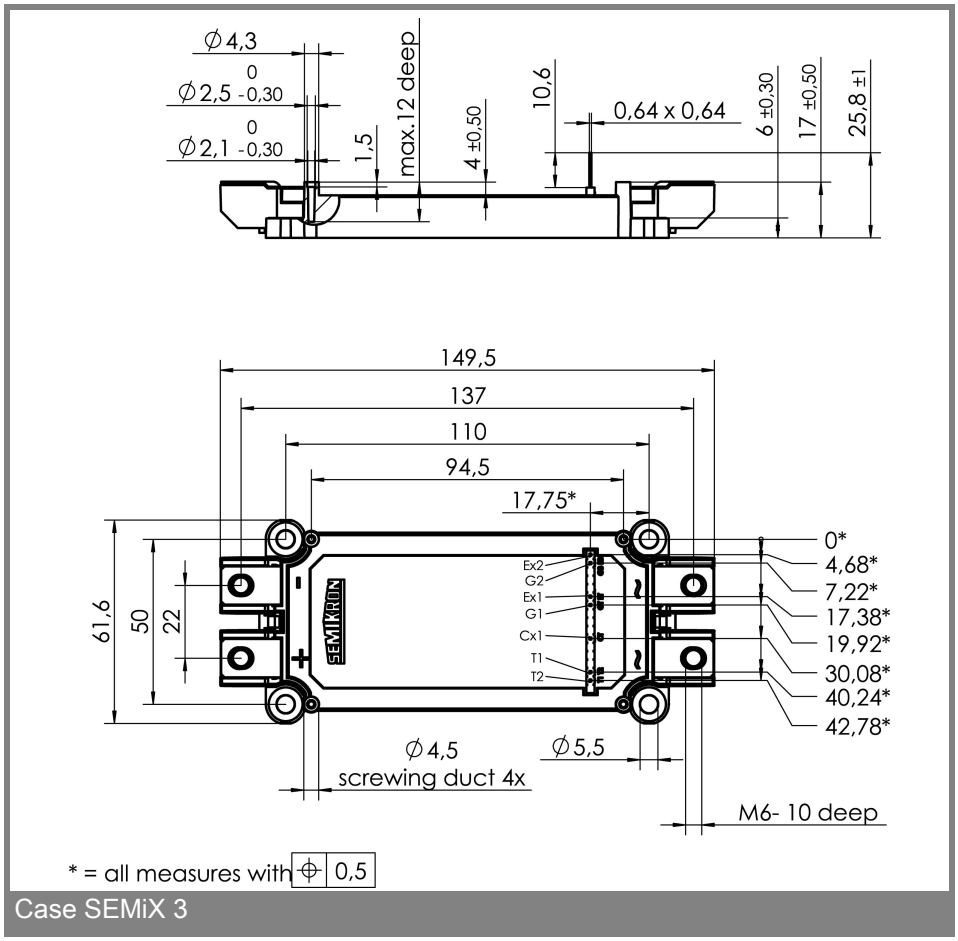
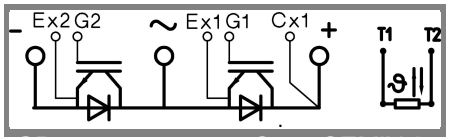


Fig. 13 Typ. CAL diode recovered charge



Case SEMiX 3



GB Case SEMiX 3

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

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