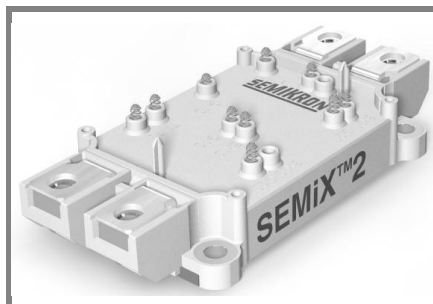


SEMiX 202GB128Ds



SEMiX® 2s

SPT IGBT Modules

SEMiX 202GB128Ds

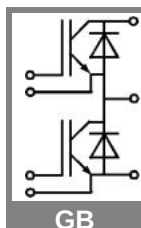
Preliminary Data

Features

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

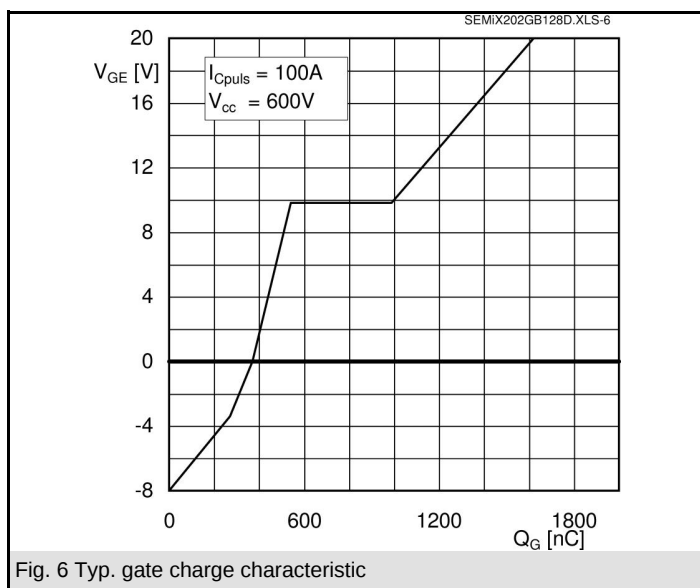
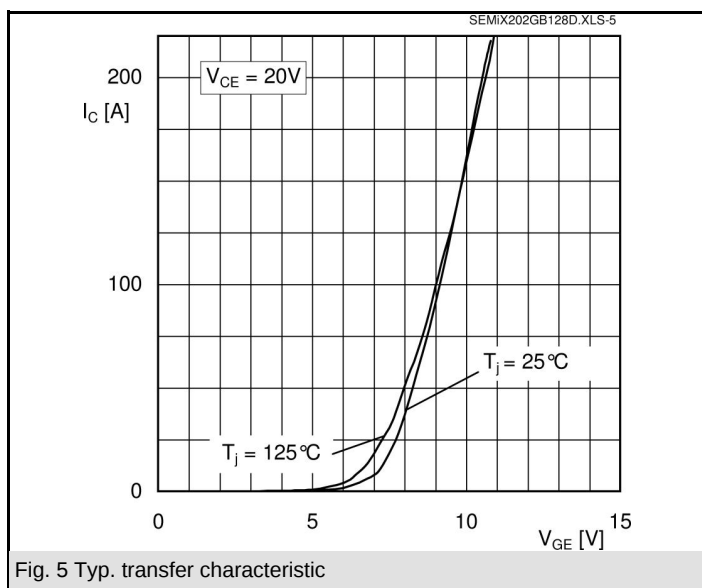
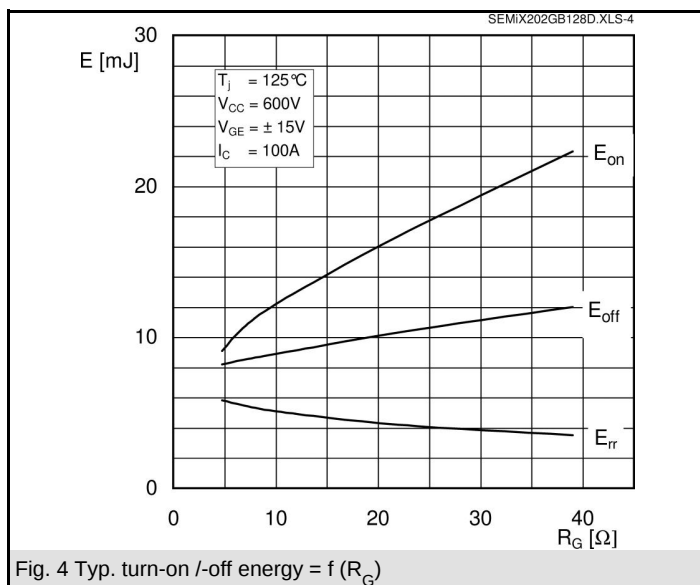
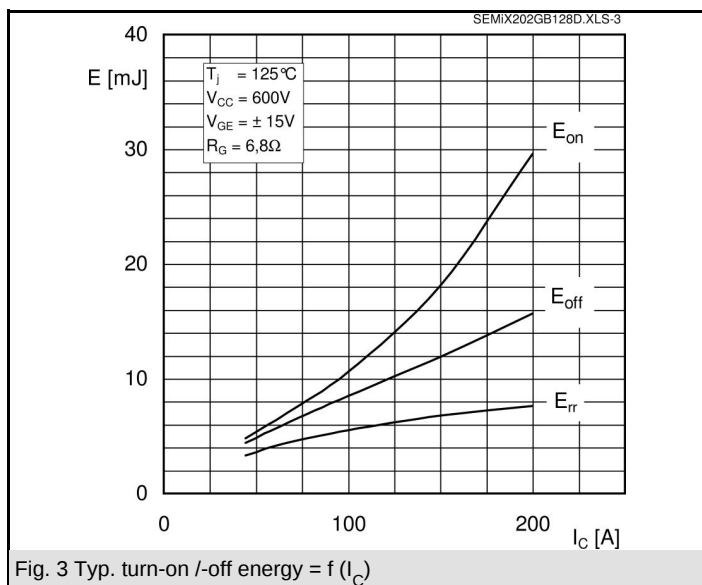
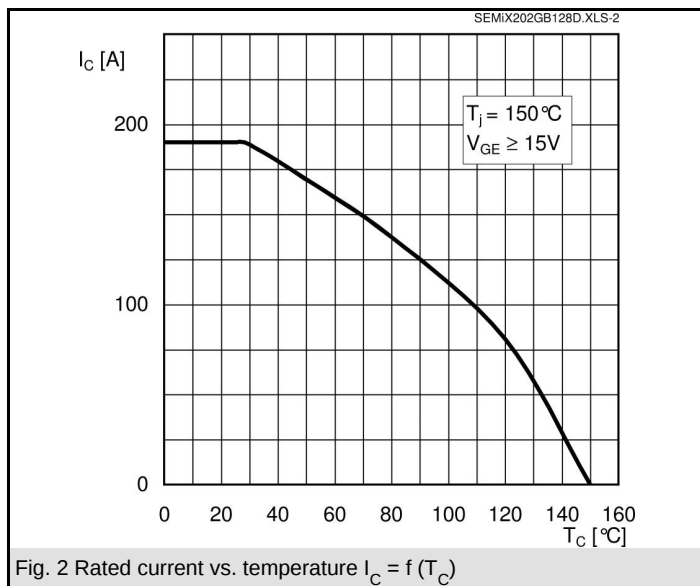
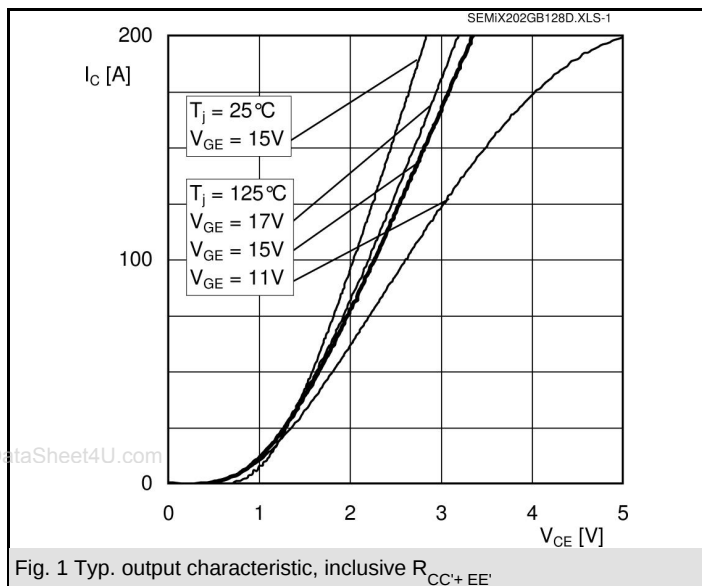
Typical Applications

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



Absolute Maximum Ratings		$T_{case} = 25^{\circ}C$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	$T_c = 25 (80)^{\circ}C$	190 (135)	A
I_{CRM}	$t_p = 1 \text{ ms}$	200	A
V_{GES}		± 20	V
T_{vj} , (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	$^{\circ}C$
V_{isol}	AC, 1 min.	4000	V
Inverse diode			
I_F	$T_c = 25 (80)^{\circ}C$	150 (100)	A
I_{FRM}	$t_p = 1 \text{ ms}$	200	A
I_{FSM}	$t_p = 10 \text{ ms}$; sin.; $T_j = 25^{\circ}C$	1000	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 = 4 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		9 (12)	12 (15)	mΩ
V _{CE(sat)}	I _{Cnom} = 100 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		9		nF
C _{oes}	V _{GE} = 0, V _{CE} = 25 V, f = 1 MHz				nF
C _{res}					nF
L _{CE}			18		nH
R _{CC'+EE'}	terminal-chip, T _c = 25 (125) °C				mΩ
t _{d(on)} /t _r	V _{CC} = 600 V, I _{Cnom} = 100 A		85 / 50		ns
t _{d(off)} /t _f	V _{GE} = ± 15 V		430 / 55		ns
E _{on} (E _{off})	R _{Gon} = R _{Goff} = 6,8 Ω, T _j = 125 °C		11 (8)		mJ
Inverse diode					
V _F = V _{EC}	I _{Fnom} = 100 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		9	13	mΩ
I _{RRM}	I _{Fnom} = 100 A; T _j = 25 (125) °C		(130)		A
Q _{rr}	di/dt = 3550 A/μs		(16)		μC
E _{rr}	V _{GE} = -15 V		(6)		mJ
Thermal characteristics					
R _{th(j-c)}	per IGBT			0,165	K/W
R _{th(j-c)D}	per Inverse Diode			0,3	K/W
R _{th(j-c)FD}	per FWD				K/W
R _{th(c-s)}	per module		0,045		K/W
Temperature sensor					
R ₂₅	T _c = 25 °C		5 ±5%		kΩ
B _{25/85}	R ₂ =R ₁ exp[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			236		g



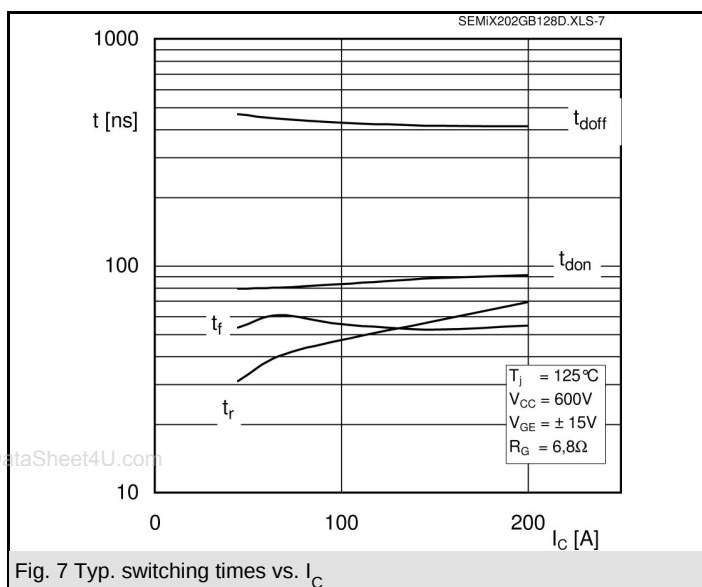


Fig. 7 Typ. switching times vs. I_C

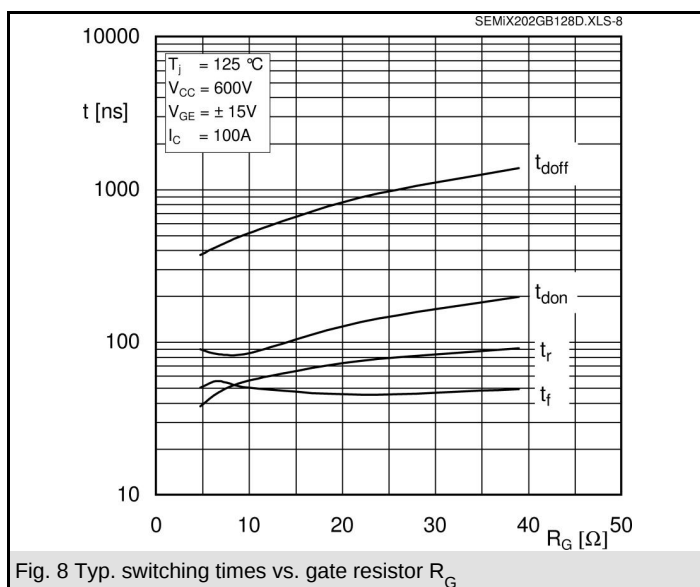


Fig. 8 Typ. switching times vs. gate resistor R_G

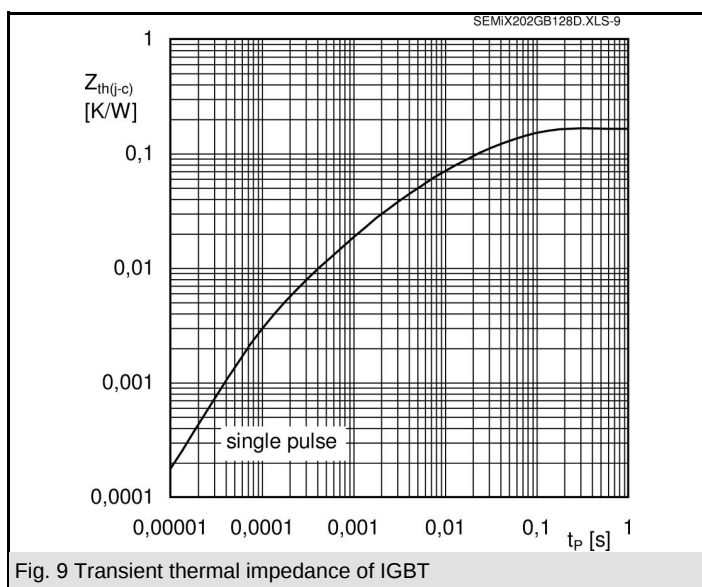


Fig. 9 Transient thermal impedance of IGBT

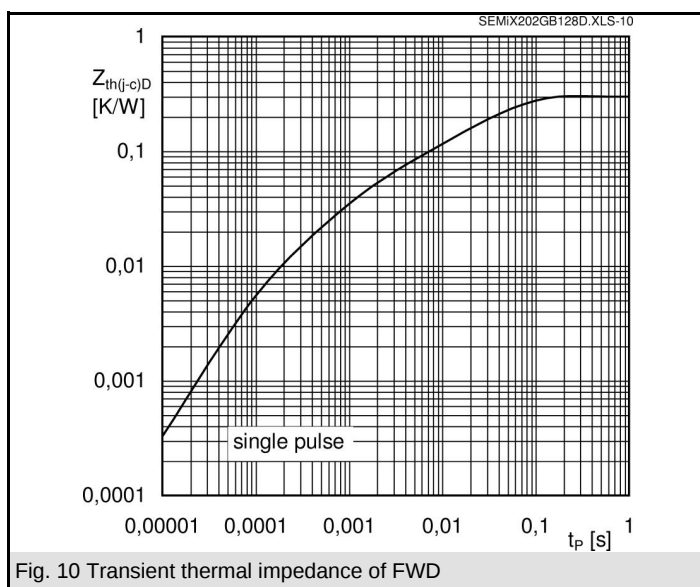


Fig. 10 Transient thermal impedance of FWD

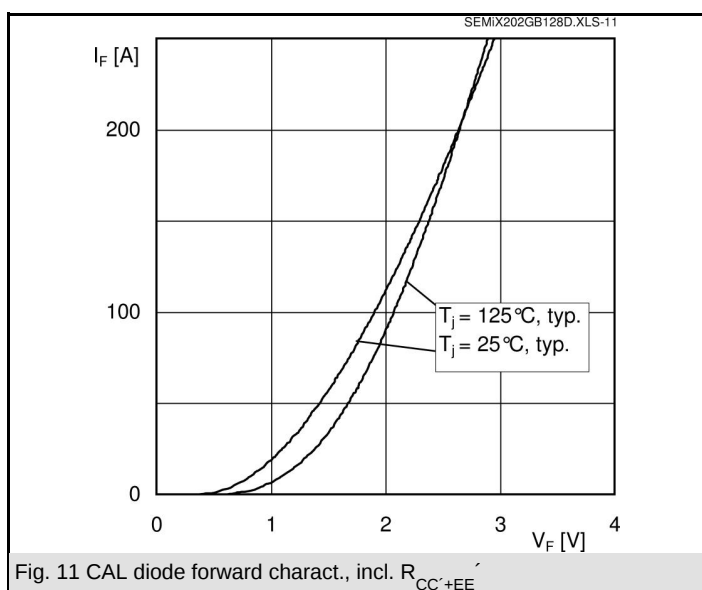


Fig. 11 CAL diode forward charact., incl. R_{CC+EE}

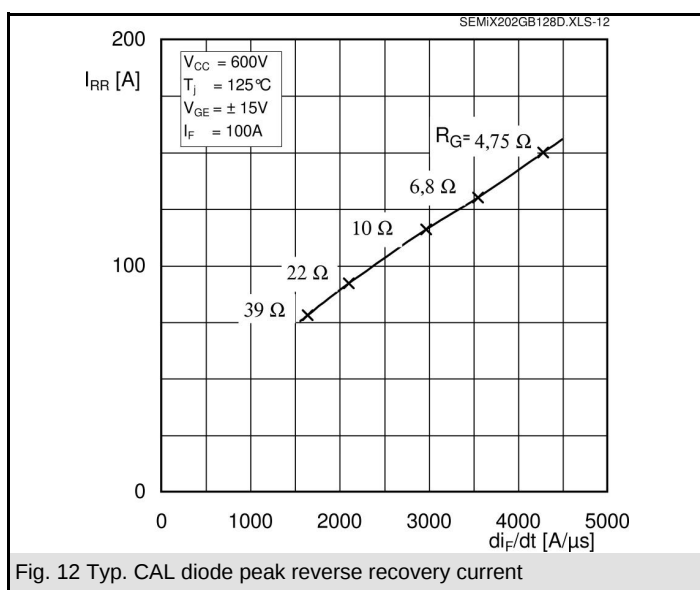


Fig. 12 Typ. CAL diode peak reverse recovery current

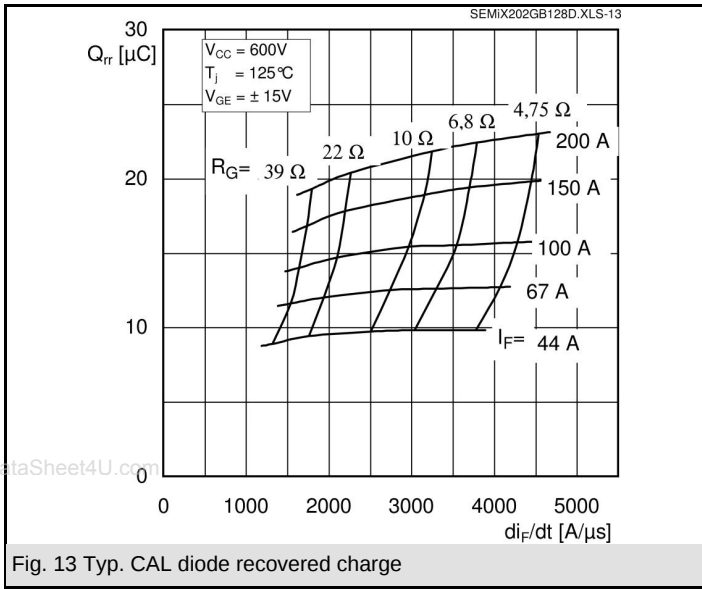
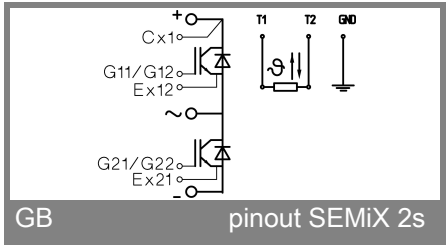
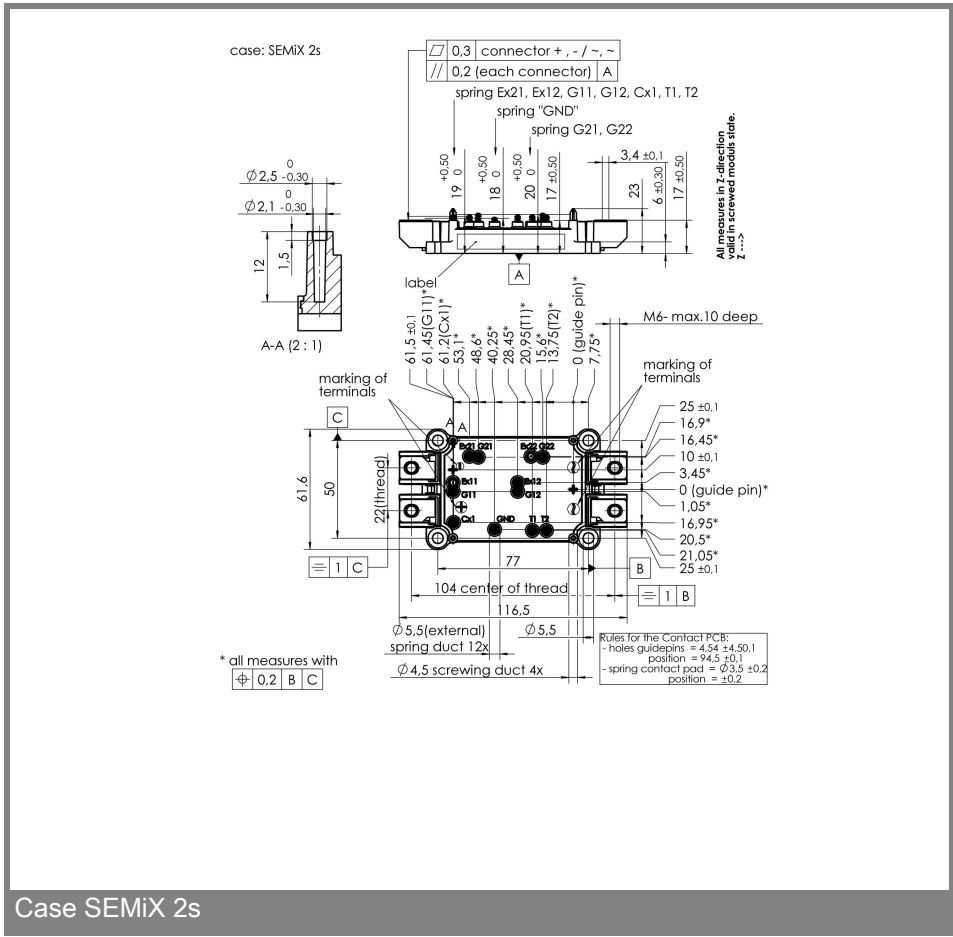


Fig. 13 Typ. CAL diode recovered charge



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

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.