

SEMIX 754GB128D

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SEMIX® 4

SPT IGBT Modules

SEMIX 754GB128D

Preliminary Data

Features

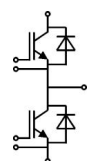
- Homogeneous Si
- SPT = Soft-Punch-Through technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability

Typical Applications

- AC inverter drives
- UPS
- Electronic welders up to 20 kHz

Remarks

- Not for new design



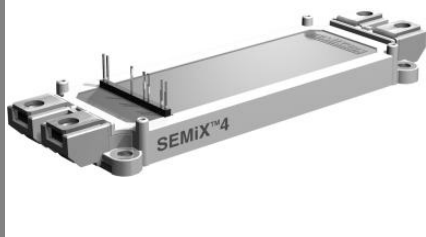
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Absolute Maximum Ratings		$T_{case} = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	Values			Units
IGBT					
V_{CES}	$T_j = 25^\circ\text{C}$	1200			V
I_C	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	675		A
		$T_{case} = 80^\circ\text{C}$	480		A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	800			A
V_{GES}		± 20			V
t_{psc}	$V_{CC} = 600\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125^\circ\text{C}$ $V_{CES} < 1200\text{ V}$	10			μs
Inverse Diode					
I_F	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	565		A
		$T_{case} = 80^\circ\text{C}$	385		A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$	800			A
I_{FSM}	$t_p = 10\text{ ms}; \sin.$	$T_j = 25^\circ\text{C}$	3100		A
Module					
$I_{t(RMS)}$		600			A
T_{vj}		-40 ... +150			$^\circ\text{C}$
T_{stg}		-40 ... +125			$^\circ\text{C}$
V_{isol}	AC, 1 min.	4000			V

Characteristics		$T_{case} = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 16\text{ mA}$	4,5	5	6,5	V
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$	$T_j = 25^\circ\text{C}$	0,6		mA
		$T_j = 125^\circ\text{C}$	0,9		mA
V_{CE0}		$T_j = 25^\circ\text{C}$	1		V
		$T_j = 125^\circ\text{C}$	1,05		V
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$	2,3		$\text{m}\Omega$
		$T_j = 125^\circ\text{C}$	3,8		$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 400\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	1,9		V
		$T_j = 125^\circ\text{C}_{chiplev.}$	2,55		V
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V}$	37,7			nF
C_{oes}		2,5			nF
C_{res}		1,6			nF
Q_G	$V_{GE} = -8\text{ V} \dots +15\text{ V}$	3800			nC
$t_{d(on)}$	$R_{Gon} = 2,5\ \Omega$	$V_{CC} = 600\text{ V}$ $I_{Cnom} = 400\text{ A}$	180		ns
t_r			88		ns
E_{on}	$R_{Goff} = 2,5\ \Omega$	$T_j = 125^\circ\text{C}$	48		mJ
$t_{d(off)}$			655		ns
t_f			120		ns
E_{off}			44		mJ
$R_{th(j-c)}$	per IGBT	0,05			K/W

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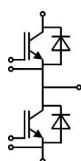
- Not for new design

Characteristics

Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 400 \text{ A}; V_{GE} = 0 \text{ V}$		2	2,5	V
			1,8	2,3	V
V_{F0}			1,1	1,45	V
			0,85	1,2	V
r_F			2,3	2,6	mΩ
			2,4	2,8	mΩ
I_{RRM}	$I_{Fnom} = 400 \text{ A}$		365		A
Q_{rr}	$di/dt = 5800 \text{ A}/\mu\text{s}$		58		μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$		22		mJ
$R_{th(j-c)D}$	per diode			0,082	K/W
Module					
L_{CE}			22		nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25 \text{ °C}$	0,7		mΩ
		$T_{case} = 125 \text{ °C}$	1		mΩ
$R_{th(c-s)}$	per module		0,03		K/W
M_s	to heat sink (M5)		3	5	Nm
M_t	to terminals (M6)		2,5	5	Nm
w				400	g
Temperature sensor					
R_{100}	$T_c = 100 \text{ °C}$ ($R_{25} = 5 \text{ k}\Omega$)		0,493±5%		kΩ
$B_{100/125}$	$R(T) = R_{100} \exp[B_{100/125} (1/T - 1/T_{100})]$; $T[\text{K}]; B$		3550±2%		K

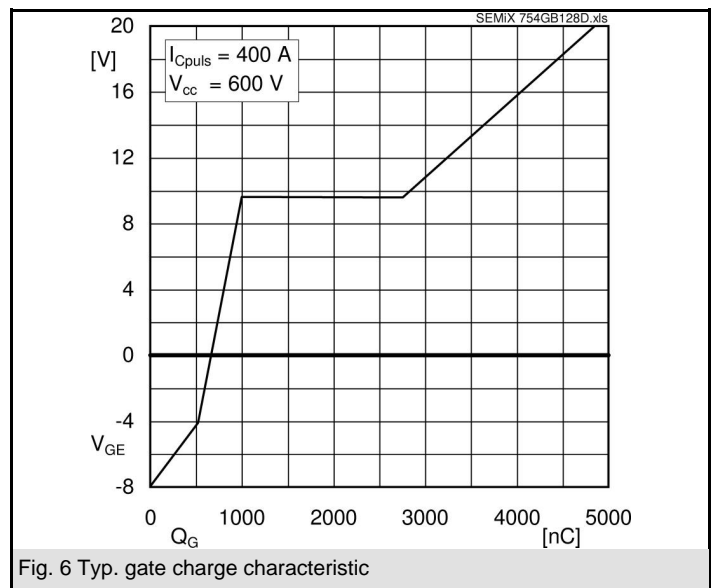
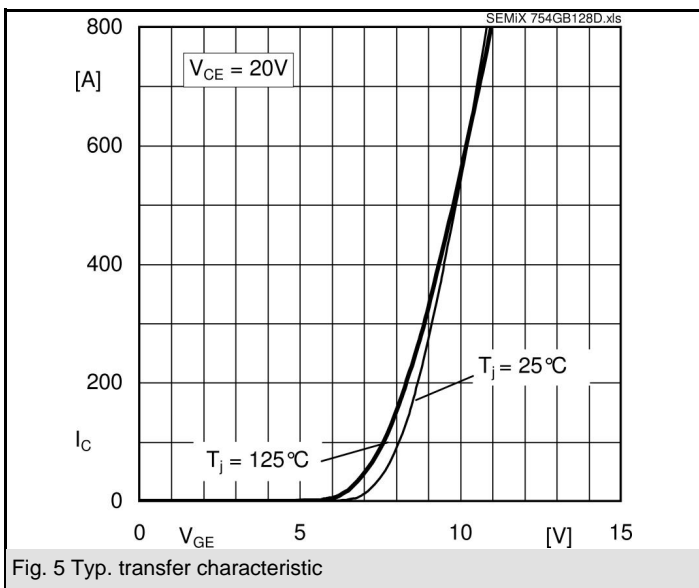
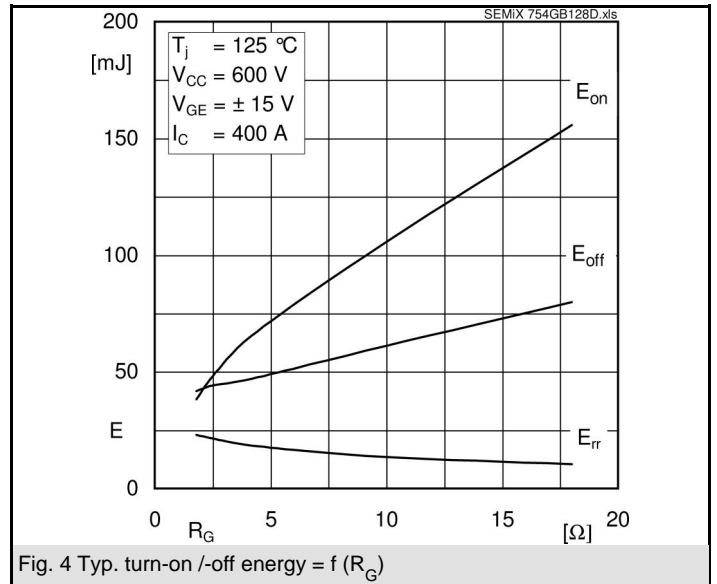
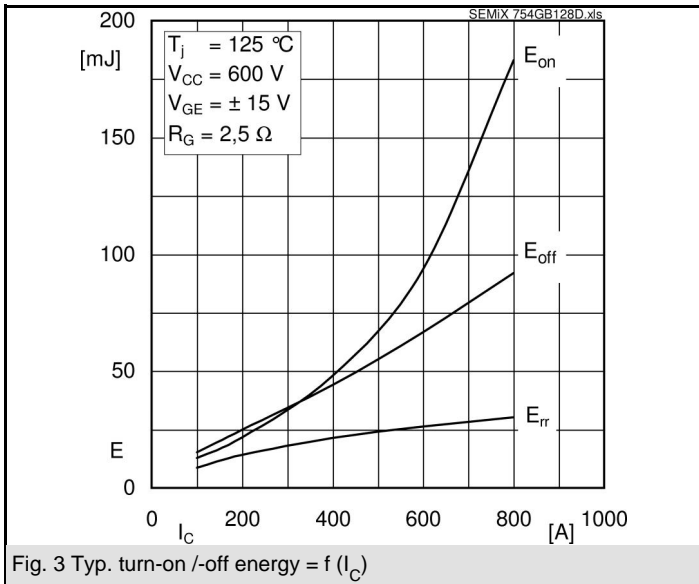
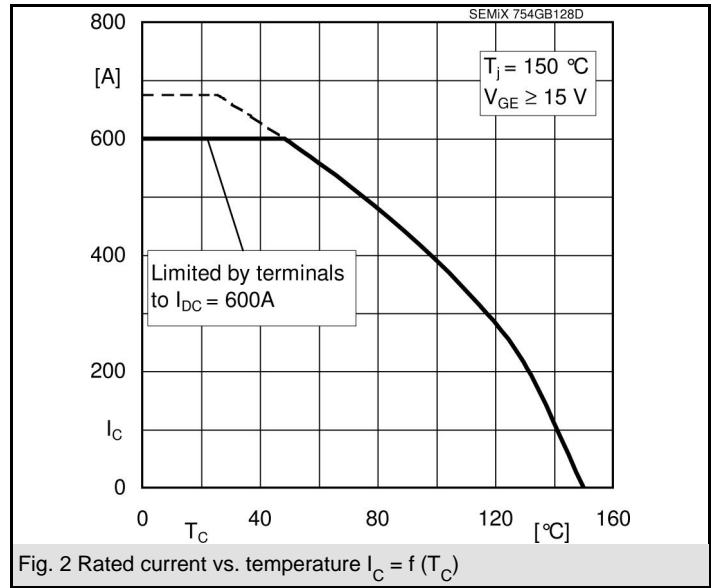
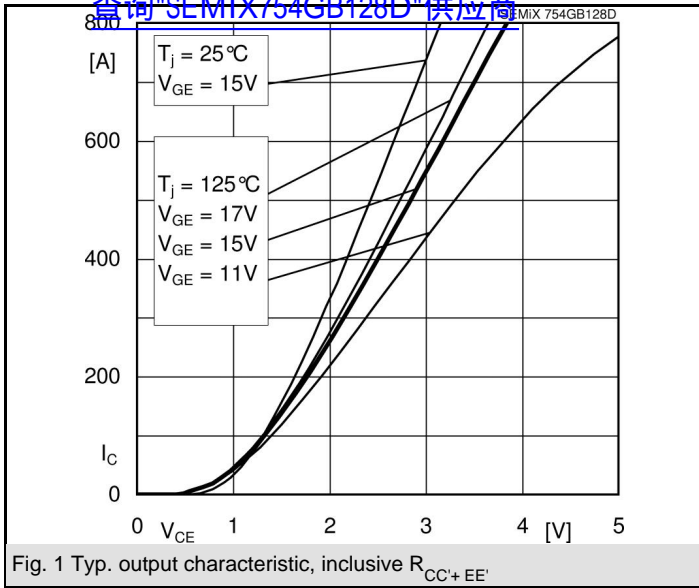
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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

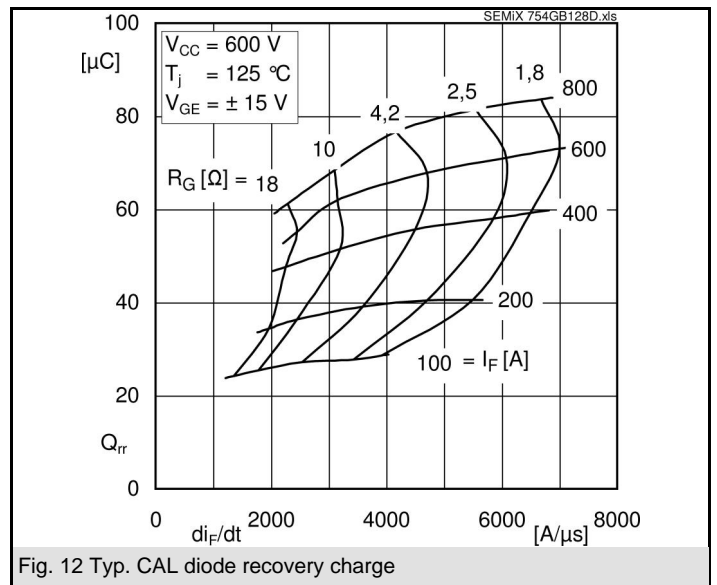
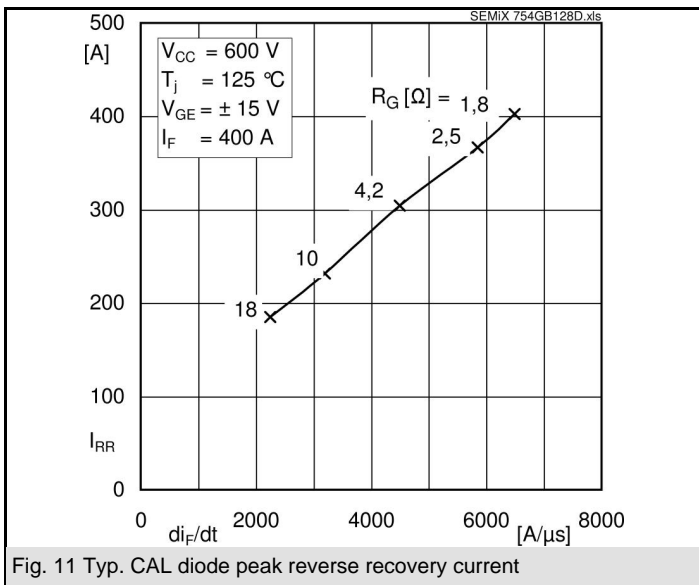
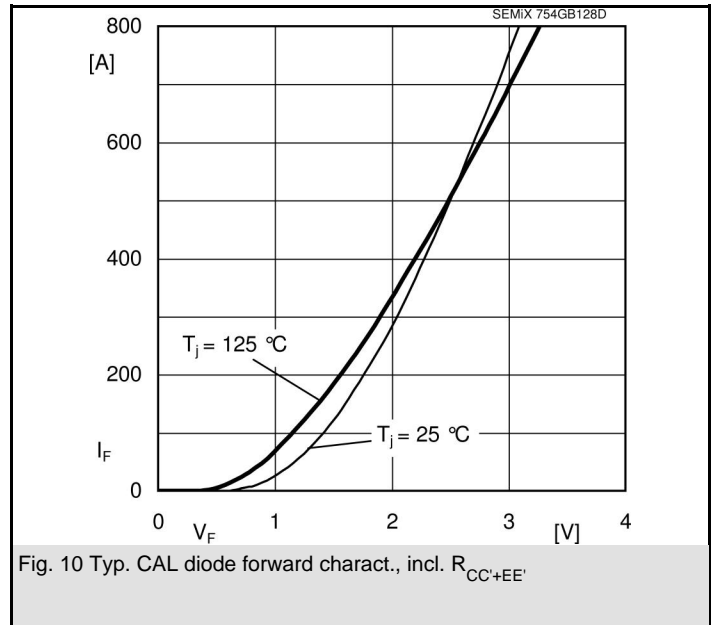
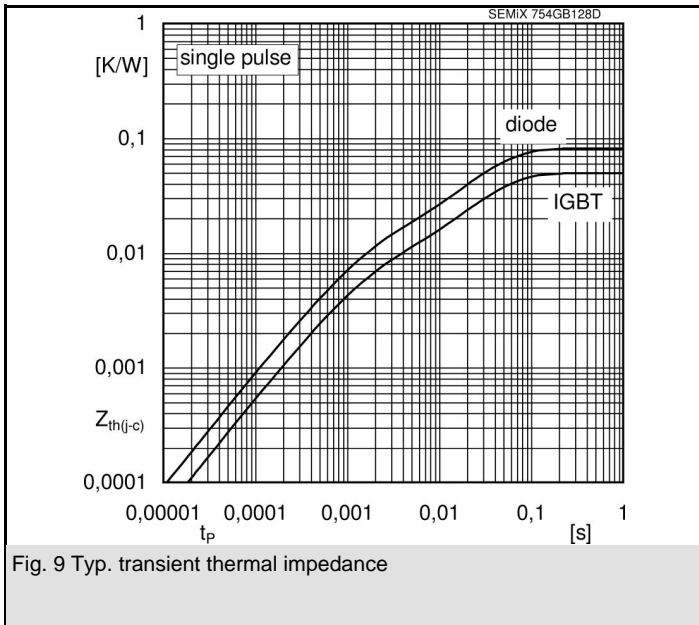
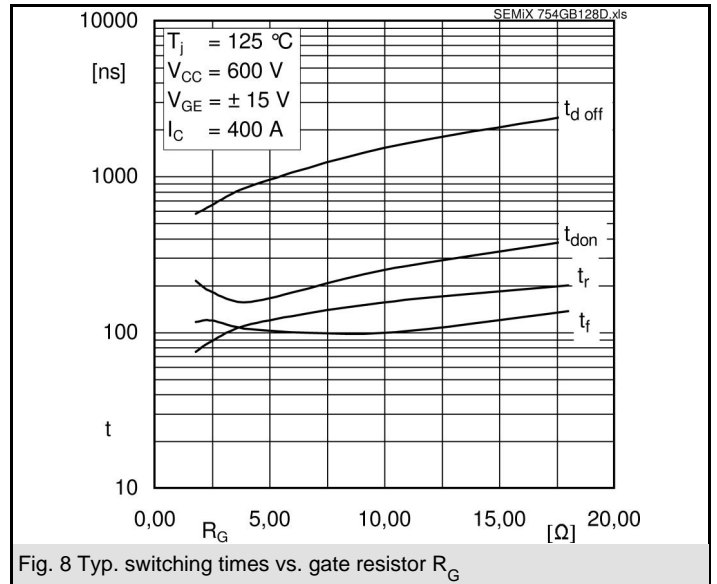
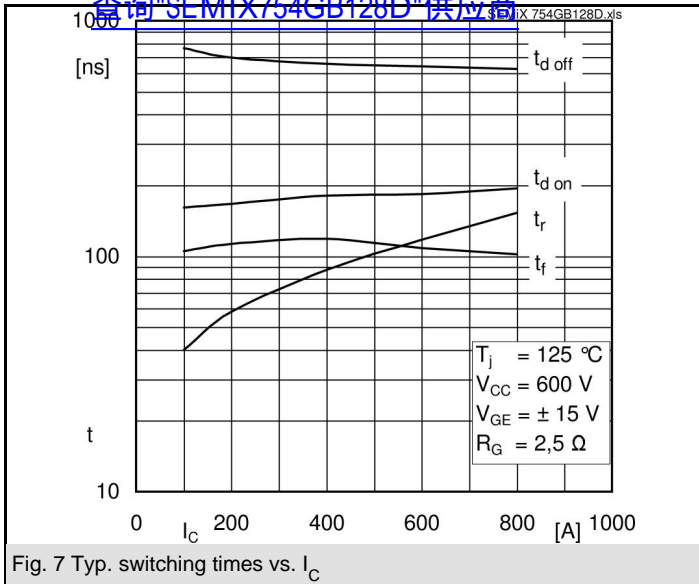


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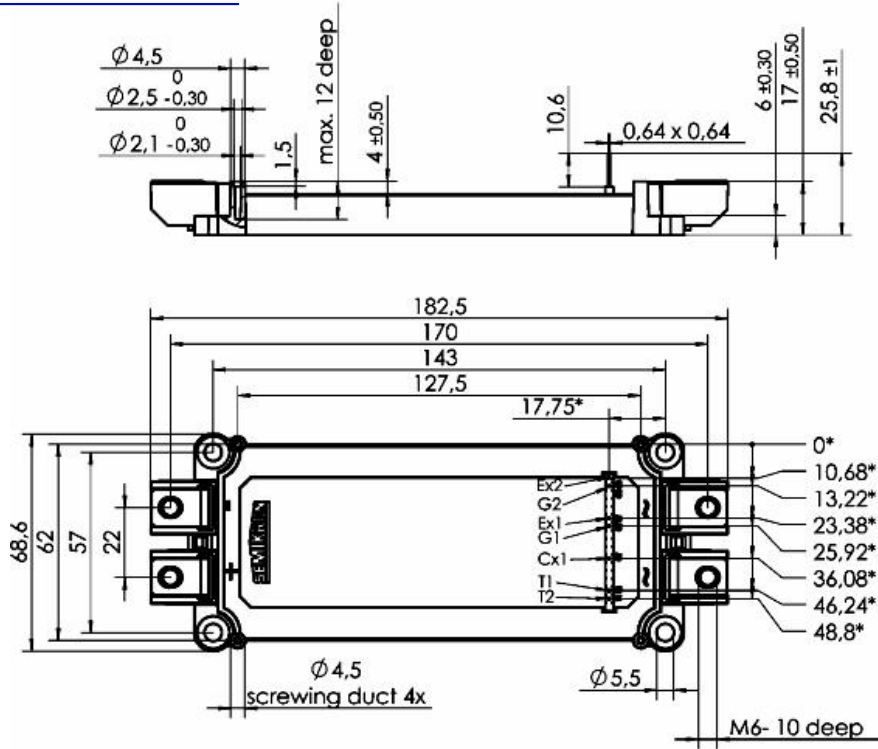
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*= all measures with ± 0.5

Case SEMiX 4

