

SEMiX 151GD128Ds

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SEMiX® 13s

SPT IGBT Modules

SEMiX 151GD128Ds

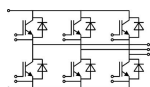
Preliminary Data

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



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Absolute Maximum Ratings		T _{case} = 25°C, unless otherwise specified		
Symbol	Conditions	Values		Units
IGBT				
V _{CES}	T _j = 25 °C	1200		V
I _C	T _j = 150 °C	T _{case} = 25 °C	150	A
		T _{case} = 80 °C	110	A
I _{CRM}	I _{CRM} =2xI _{Cnom}	150		A
V _{GES}		±20		V
t _{psc}	V _{CC} = 600 V; V _{GE} ≤ 20 V; T _j = 125 °C V _{CES} < 1200 V	10		µs
Inverse Diode				
I _F	T _j = 150 °C	T _{case} = 25 °C	120	A
		T _{case} = 80 °C	80	A
I _{FRM}	I _{FRM} =2xI _{Fnom}	150		A
I _{FSM}	t _p = 10 ms; sin. T _j = 25 °C	720		A
Module				
I _{t(RMS)}		600		A
T _{vj}		-40 ... + 150		°C
T _{stg}		-40 ... + 125		°C
V _{isol}	AC, 1 min.	4000		V

Characteristics		T _{case} = 25°C, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 3 mA	4,5	5	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES} T _j = 25 °C			0,3	mA
V _{CE0}	T _j = 25 °C T _j = 125 °C		1 0,9	1,15 1,05	V V
r _{CE}	V _{GE} = 15 V T _j = 25°C T _j = 125°C		12 16	16 20	mΩ mΩ
V _{CE(sat)}	I _{Cnom} = 75 A, V _{GE} = 15 V T _j = 25°C _{chiplev.} T _j = 125°C _{chiplev.}		1,9 2,1	2,35 2,55	V V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz		6,9		nF
C _{oes}			0,46		nF
C _{res}			0,29		nF
Q _G	V _{GE} = -8 V ... +15 V		720		nC
t _{d(on)}	R _{Gon} = 5,5 Ω	V _{CC} = 600V I _{Cnom} = 75A T _j = 125 °C	200		ns
t _r			33		ns
E _{on}	7,9			mJ	
t _{d(off)}	R _{Goff} = 5,5 Ω		330		ns
t _f			44		ns
E _{off}			7,9		mJ
R _{th(j-c)}	per IGBT				0,19

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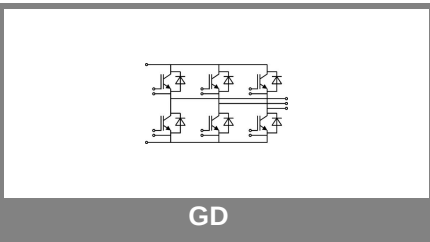
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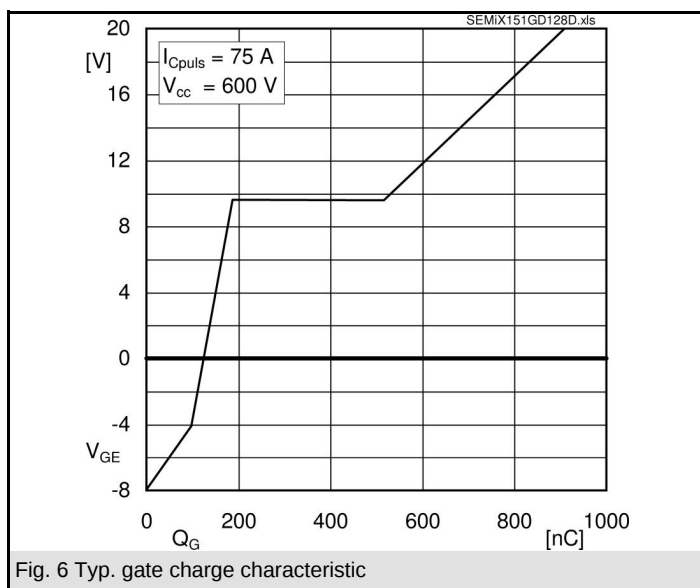
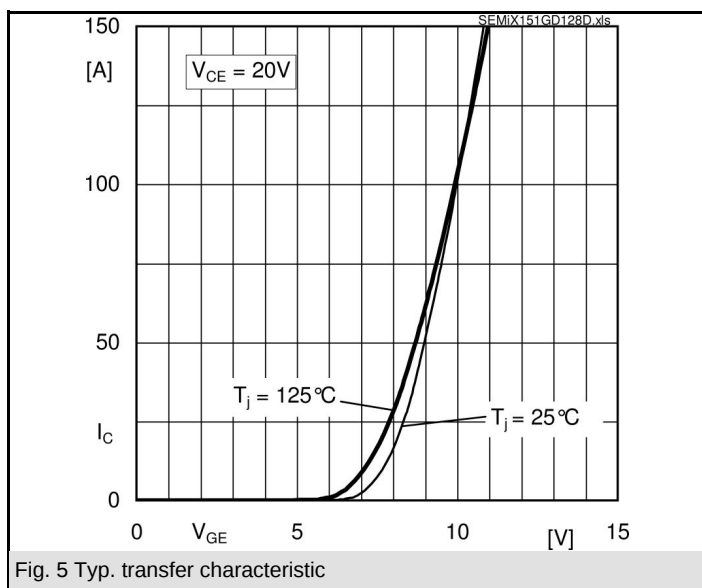
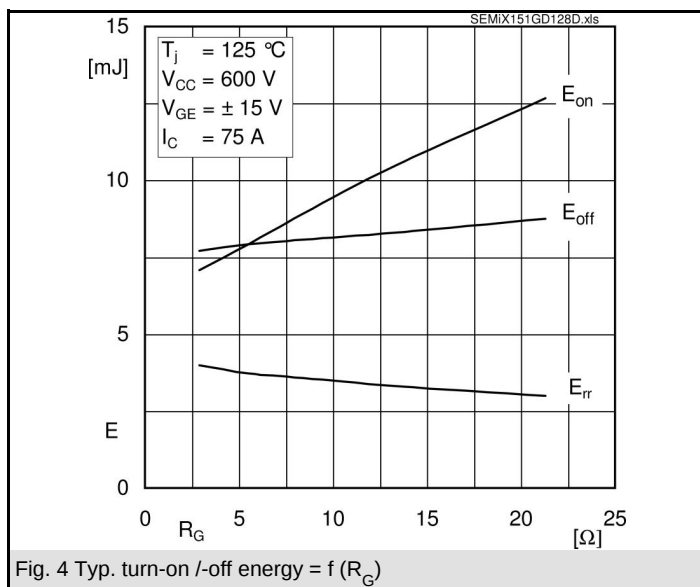
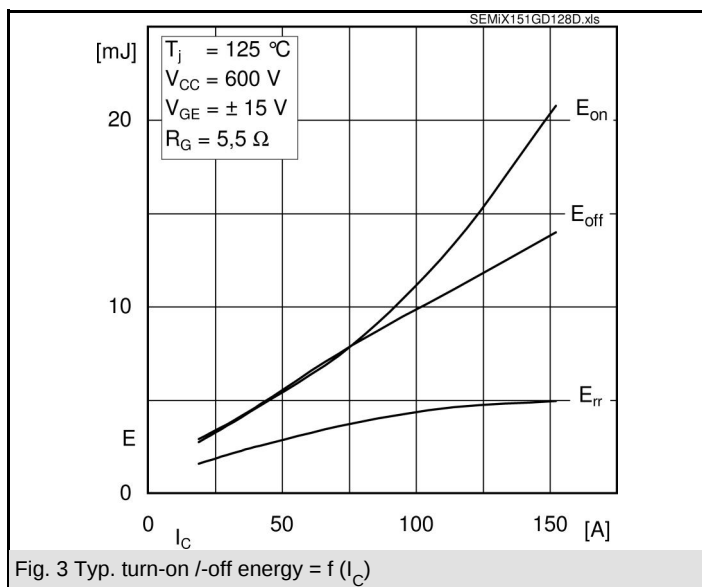
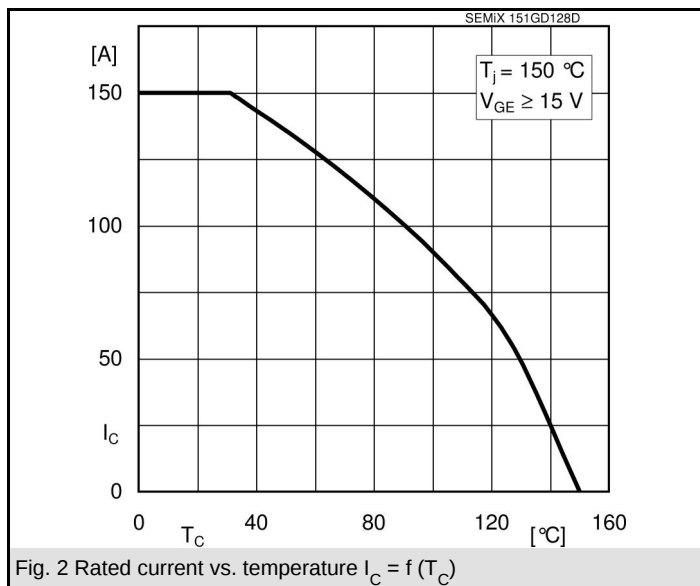
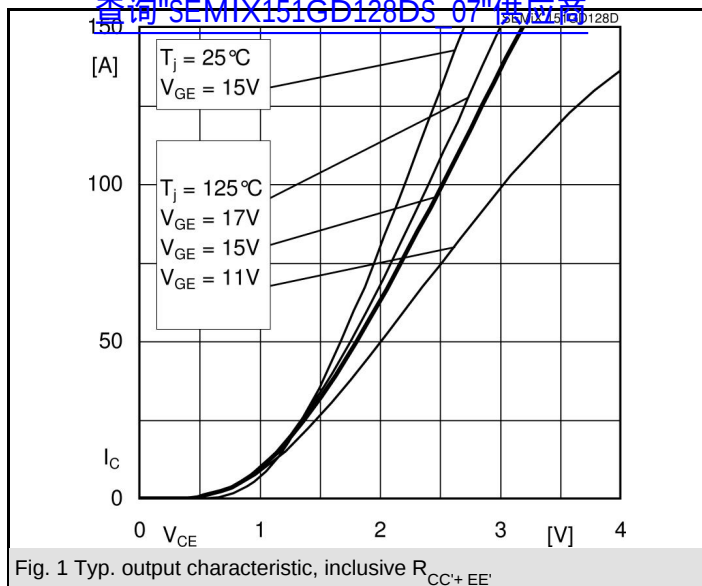
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Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 75\text{ A}; V_{GE} = 0\text{ V}$				
	$T_j = 25\text{ }^{\circ}\text{C}_{chiplev.}$		2	2,5	V
	$T_j = 125\text{ }^{\circ}\text{C}_{chiplev.}$		1,8	2,3	V
V_{F0}	$T_j = 25\text{ }^{\circ}\text{C}$		1,1	1,45	V
	$T_j = 125\text{ }^{\circ}\text{C}$		0,85	1,2	V
r_F	$T_j = 25\text{ }^{\circ}\text{C}$		12	14	mΩ
	$T_j = 125\text{ }^{\circ}\text{C}$		12,7	14,7	mΩ
I_{RRM}	$I_{Fnom} = 75\text{ A}$		90		A
Q_{rr}	$di/dt = 2500\text{ A}/\mu\text{s}$		11		μC
E_{rr}	$V_{GE} = -15\text{ V}; V_{CC} = 600\text{ V}$		3,5		mJ
$R_{th(j-c)D}$	per diode			0,36	K/W
Module					
L_{CE}			20		nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25\text{ }^{\circ}\text{C}$	0,7		mΩ
		$T_{case} = 125\text{ }^{\circ}\text{C}$	1		mΩ
$R_{th(c-s)}$	per module		0,04		K/W
M_s	to heat sink (M5)	3		5	Nm
M_t	to terminals (M6)	2,5		5	Nm
w				350	g
Temperature sensor					
R_{100}	$T_c = 100^{\circ}\text{C}$ ($R_{25} = 5\text{ k}\Omega$)		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

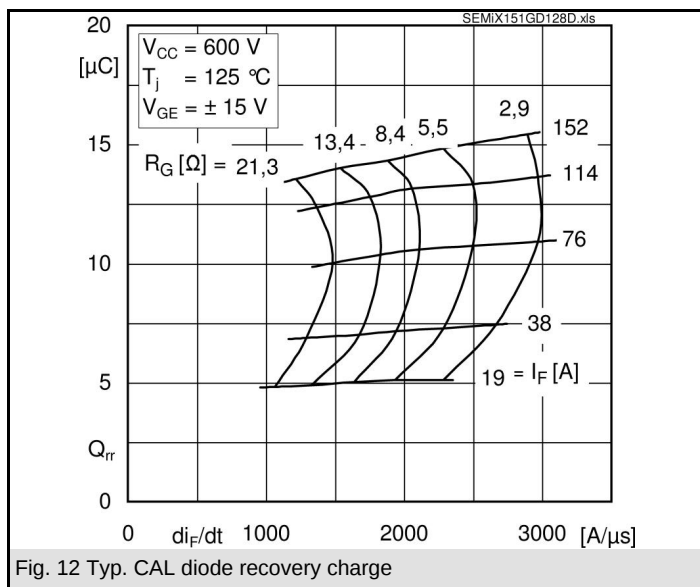
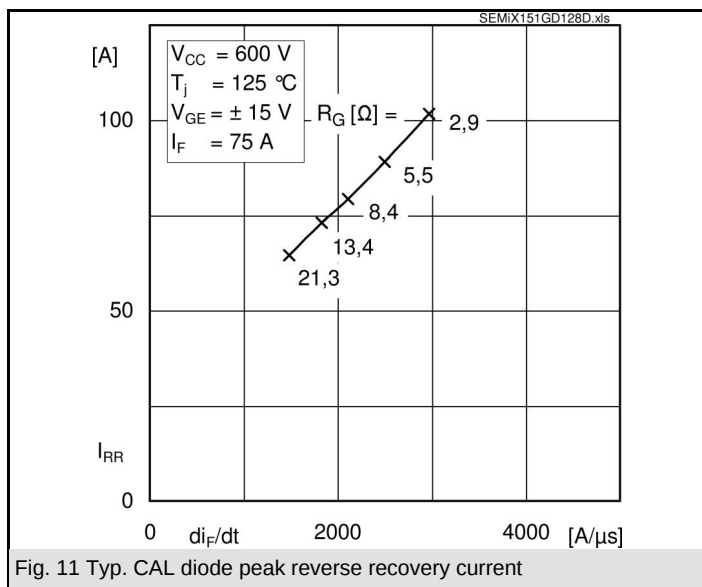
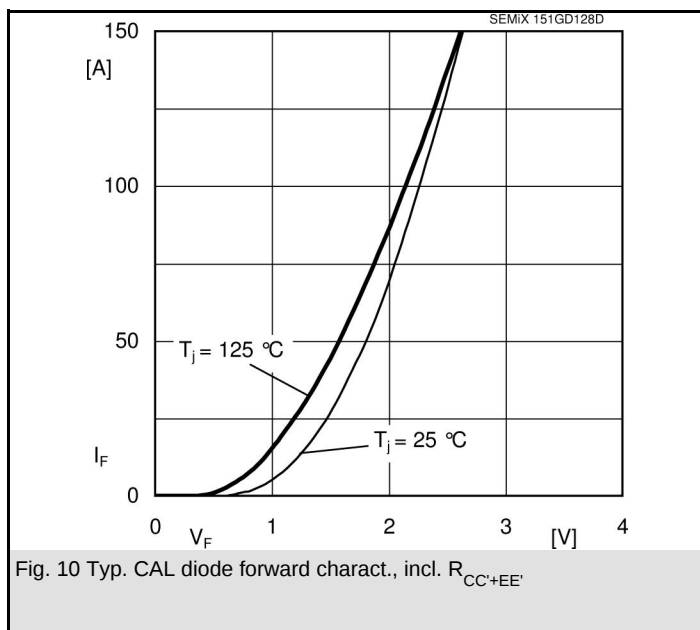
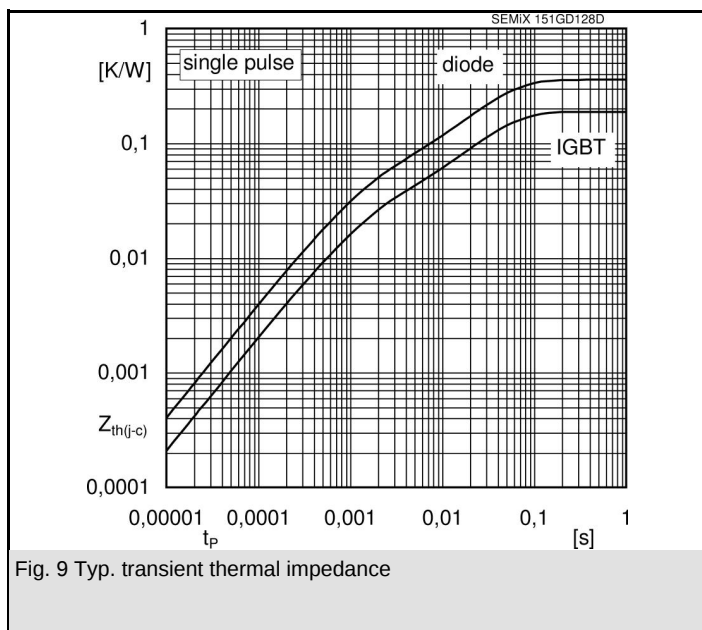
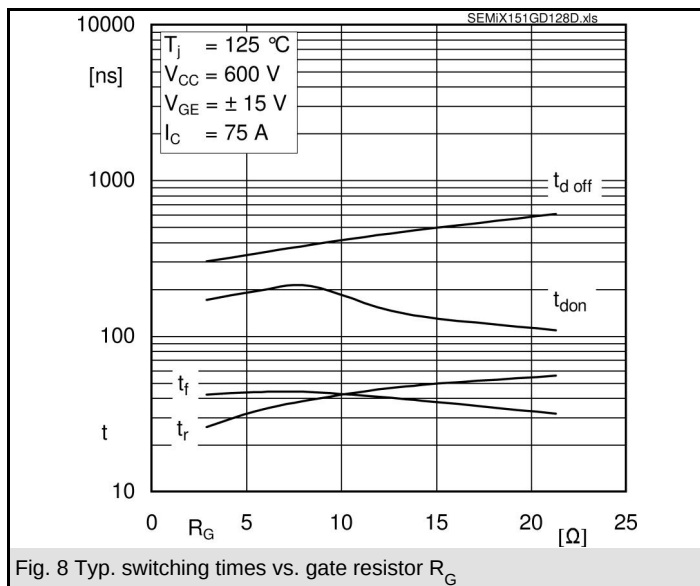
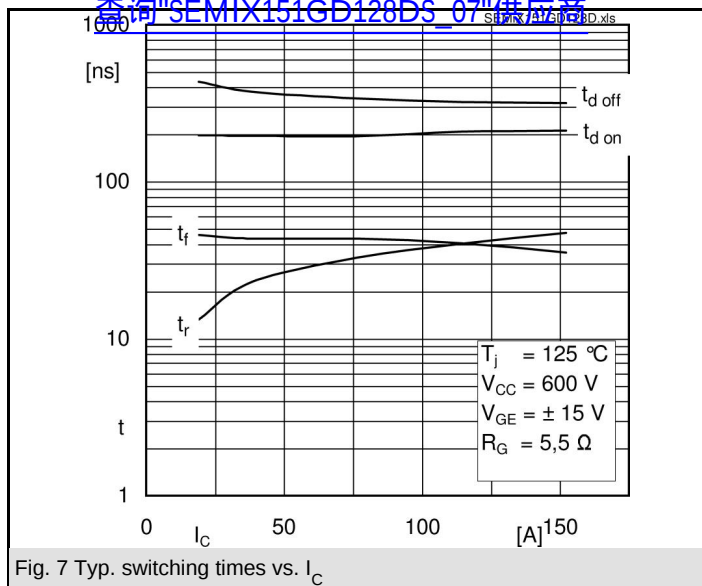
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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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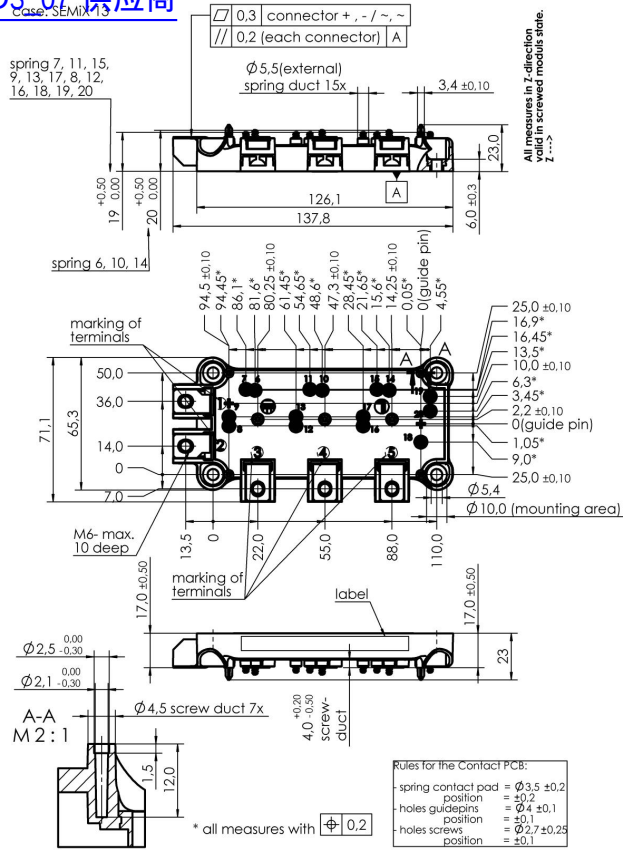


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Case SEMiX 13s

