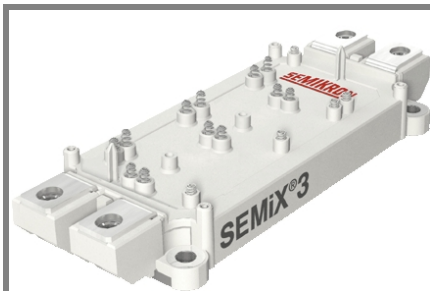


SEMiX 303GB12T4s



SEMiX® 3s

Trench IGBT Modules

SEMiX 303GB12T4s

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Target Data

Features

- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability

Typical Applications

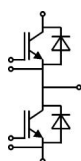
- AC inverter drives
- UPS
- Electronic Welding

Remarks

- Case temperature limited to $T_C=125^\circ\text{C}$ max.
- Product reliability results are valid for $T_j=150^\circ\text{C}$

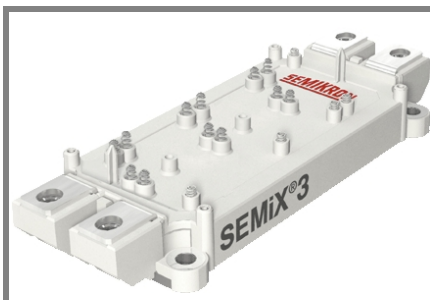
Absolute Maximum Ratings		T _{case} = 25°C, unless otherwise specified		
Symbol	Conditions	Values	Units	
IGBT				
V _{CES}	T _j = 25 °C	1200	V	
I _C	T _j = 175 °C	T _c = 25 °C	465	A
		T _c = 80 °C	355	A
I _{CRM}	I _{CRM} =3xI _{Cnom}	900	A	
V _{GES}		± 20	V	
t _{psc}	V _{CC} = 600 V; V _{GE} ≤ 20 V; T _j = 150 °C V _{CES} < 1200 V	10	µs	
Inverse Diode				
I _F	T _j = 175 °C	T _c = 25 °C	340	A
		T _c = 80 °C	255	A
I _{FRM}	I _{FRM} =3xI _{FRom}	900	A	
Module				
I _{t(RMS)}		600	A	
T _{vj}		- 40 ... + 175	°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 = 12 mA	5	5,8	6,5	V			
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES} T _j = 25 °C				mA			
V _{CE0}	T _j = 25 °C		0,8	0,9	V			
			0,7	0,8	V			
r _{CE}	V _{GE} = 15 V T _j = 25°C		3,3	3,7	mΩ			
			5	5,3	mΩ			
V _{CE(sat)}	I _{Cnom} = 300 A, V _{GE} = 15 V T _j = 25°C _{chiplev.}		1,8	2	V			
			2,2	2,4	V			
C _{ies}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz		18,6		nF			
C _{oes}			1,3		nF			
C _{res}			1,1		nF			
Q _G	V _{GE} = -8 ... +15V		1700		nC			
R _{Gint}	T _j = 25 °C		2,5		Ω			
t _{d(on)}	R _{Gon} = Ω	V _{CC} = V I _{Cnom} = A T _j = 150 °C	33		ns			
t _r					ns			
E _{on}	R _{Goff} = Ω							
t _{d(off)}					ns			
t _f					ns			
E _{off}			33		mJ			
R _{th(j-c)}	per IGBT			0,095	K/W			



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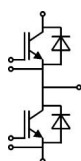
Remarks

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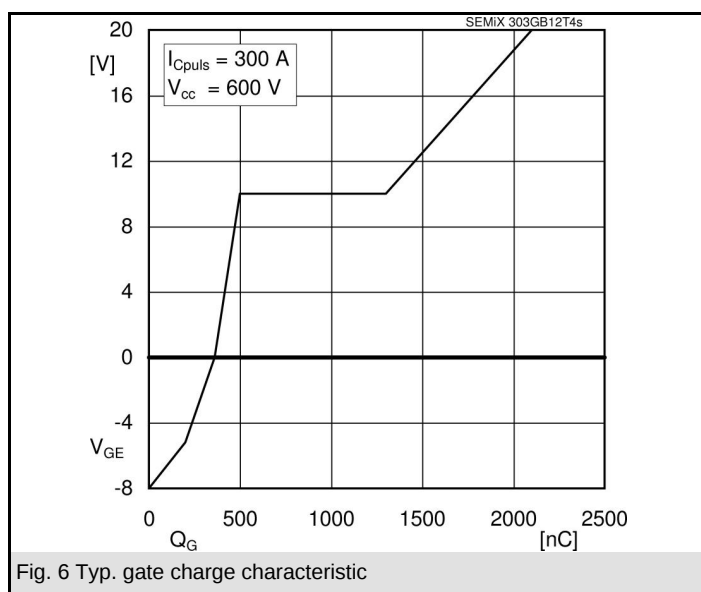
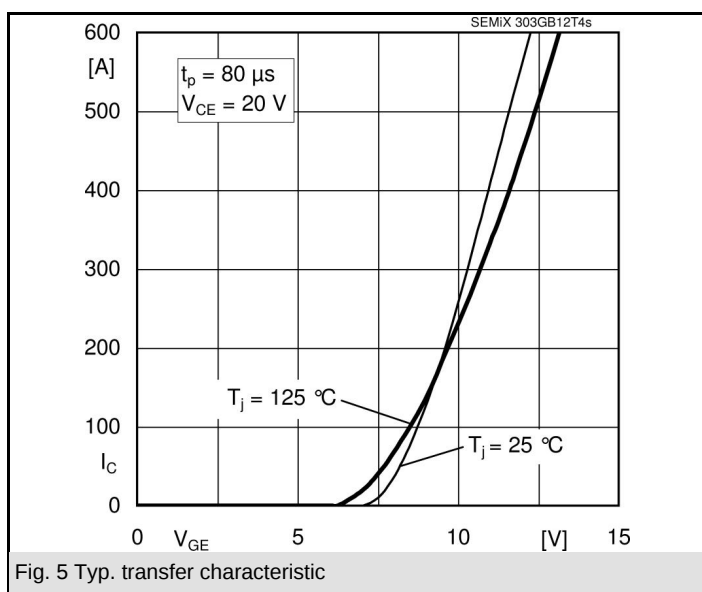
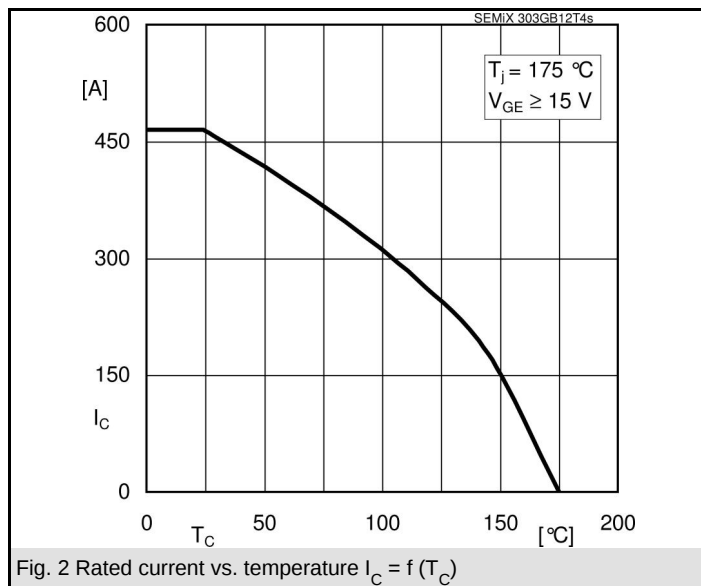
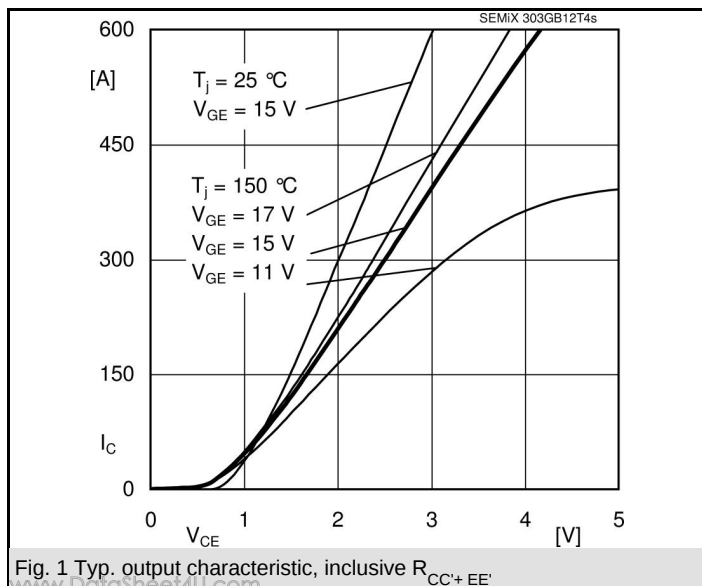
Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 300 \text{ A}; V_{GE} = 0 \text{ V}$				
	$T_j = 25^{\circ}\text{C}_{chiplev.}$		2,2	2,5	V
	$T_j = 150^{\circ}\text{C}_{chiplev.}$		2,1	2,45	V
V_{F0}	$T_j = 25^{\circ}\text{C}$		1,3	1,5	V
	$T_j = 150^{\circ}\text{C}$		0,9	1,1	V
r_F	$T_j = 25^{\circ}\text{C}$		3	3,3	mΩ
	$T_j = 150^{\circ}\text{C}$		4	4,5	mΩ
I_{RRM}	$I_{Fnom} = 300 \text{ A}$				A
Q_{rr}	$T_j = 150^{\circ}\text{C}$				μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$		22,5		mJ
$R_{th(j-c)D}$	per diode			0,18	K/W
Module					
L_{CE}			20		nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25^{\circ}\text{C}$	0,7		mΩ
		$T_{case} = 125^{\circ}\text{C}$	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				300	g
Temperature sensor					
R_{100}	$T_c = 100^{\circ}\text{C}$ ($R_{25} = 5 \text{ kΩ}$)		0,493±5%		kΩ
$B_{100/125}$	$R(T) = R_{100} \exp[B_{100/125}(1/T - 1/T_{100})]$; $T[\text{K}]$		3550±2%		K

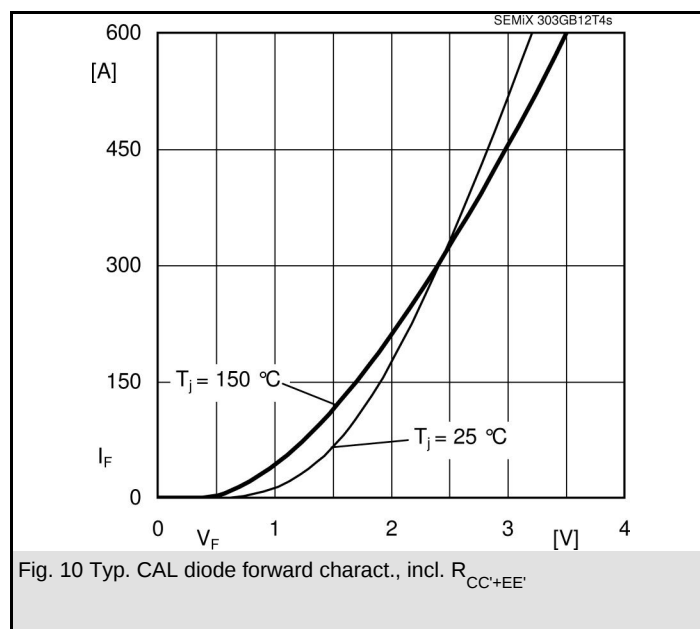
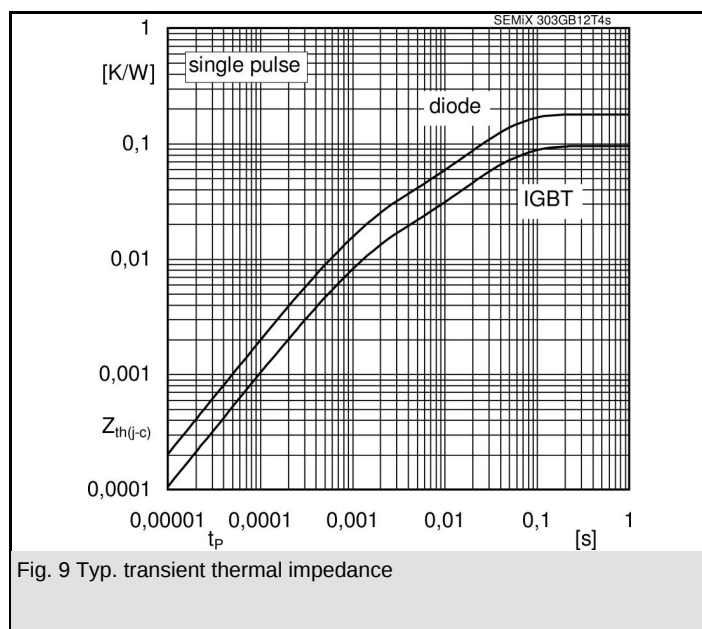
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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

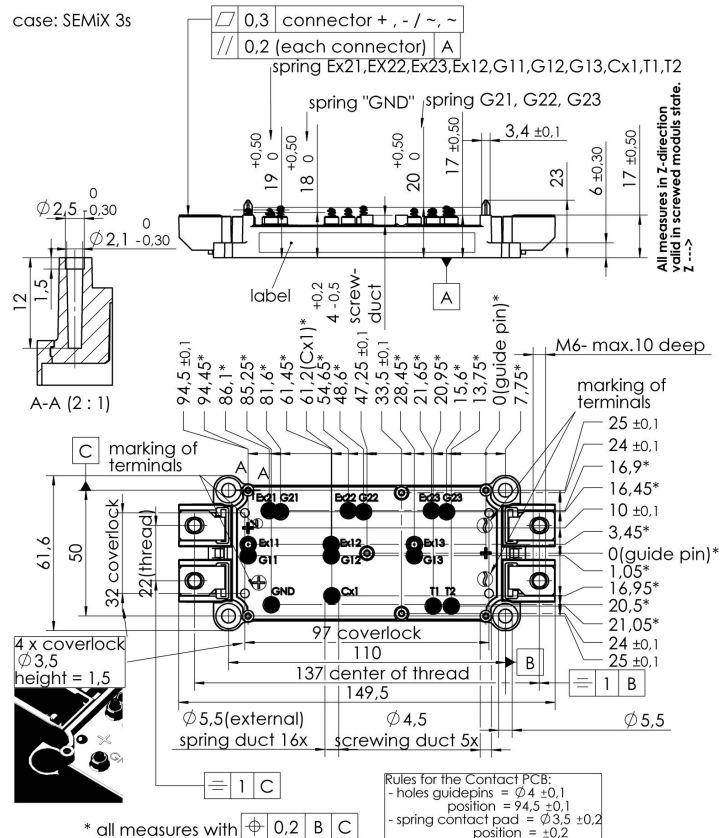


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SEMiX 303GB12T4s



Case SEMiX 3s

