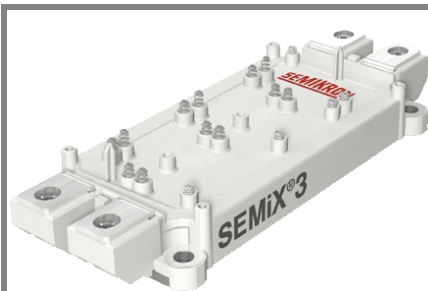


SEMiX 303GB12T4s



SEMiX® 3s

Trench IGBT Modules

SEMiX 303GB12T4s

Target Data

Features

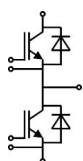
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability

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 $T_j=150^\circ\text{C}$

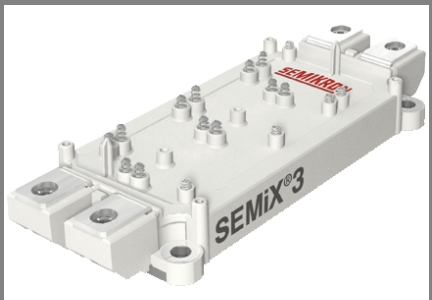


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Absolute Maximum Ratings			T _{case} = 25°C, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	T _j = 175 °C	T _c = 25 °C	465	A
		T _c = 80 °C	355	A
I _{CRM}	I _{CRM} =3xI _{Cnom}		900	A
V _{GES}			± 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 _{Fnom}		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				
	T _j = 150 °C			0,7	0,8	V				
r _{CE}	V _{GE} = 15 V T _j = 25°C			3,3	3,7	mΩ				
	T _j = 150°C			5	5,3	mΩ				
V _{CE(sat)}	I _{Cnom} = 300 A, V _{GE} = 15 V T _j = 25°C _{chiplev.}			1,8	2	V				
	T _j = 150°C _{chiplev.}			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}	mJ									
t _{d(off)}	ns									
t _f	R _{Goff} = Ω	T _j = 150 °C	33			ns				
E _{off}						mJ				
R _{th(j-c)}	per IGBT					0,095			K/W	

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Typical Applications

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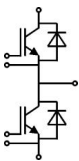
Remarks

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

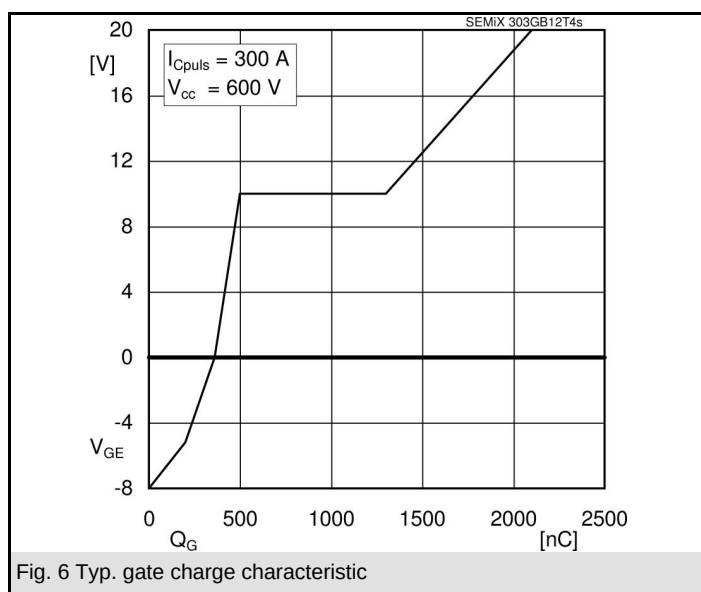
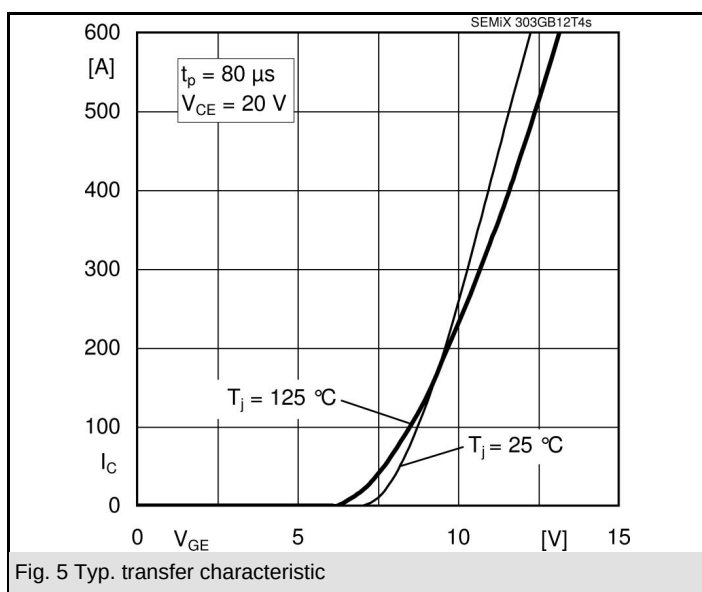
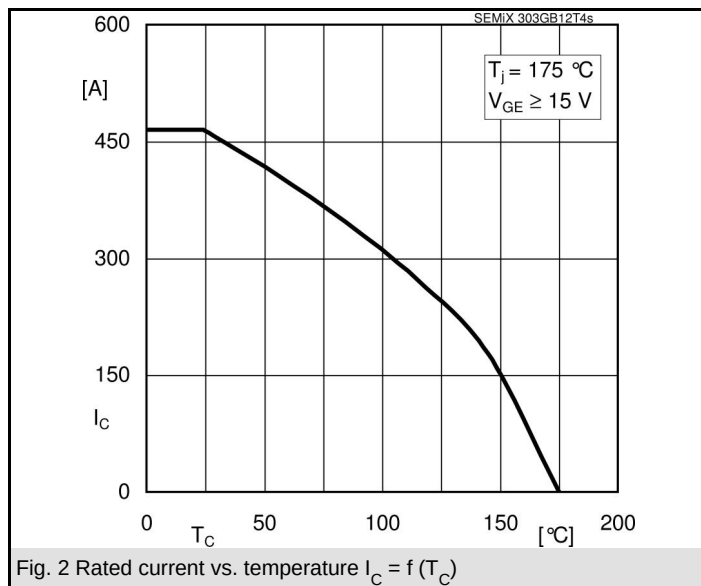
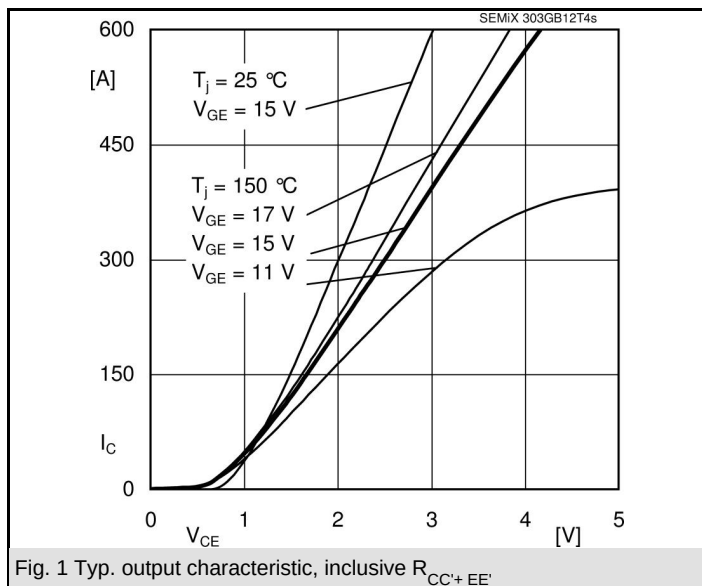
Characteristics						
Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
V _F = V _{EC}	I _{Fnom} = 300 A; V _{GE} = 0 V	T _j = 25 °C _{chiplev.}		2,2	2,5	V
		T _j = 150 °C _{chiplev.}		2,1	2,45	V
V _{F0}		T _j = 25 °C		1,3	1,5	V
		T _j = 150 °C		0,9	1,1	V
r _F		T _j = 25 °C		3	3,3	mΩ
		T _j = 150 °C		4	4,5	mΩ
I _{RRM}	I _{Fnom} = 300 A V _{GE} = -15 V; V _{CC} = 600 V	T _j = 150 °C	22,5			A
Q _{rr}						μC
E _{rr}						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 °C		0,7		mΩ
		T _{case} = 125 °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°C (R ₂₅ =5 kΩ)			0,493±5%		kΩ
B _{100/125}	R(T)=R ₁₀₀ exp[B _{100/125} (1/T-1/T ₁₀₀)]; T[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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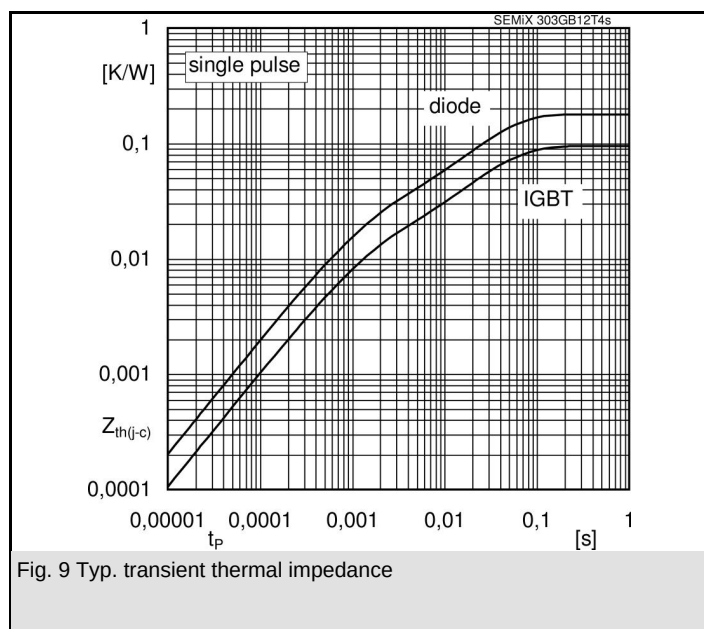


Fig. 9 Typ. transient thermal impedance

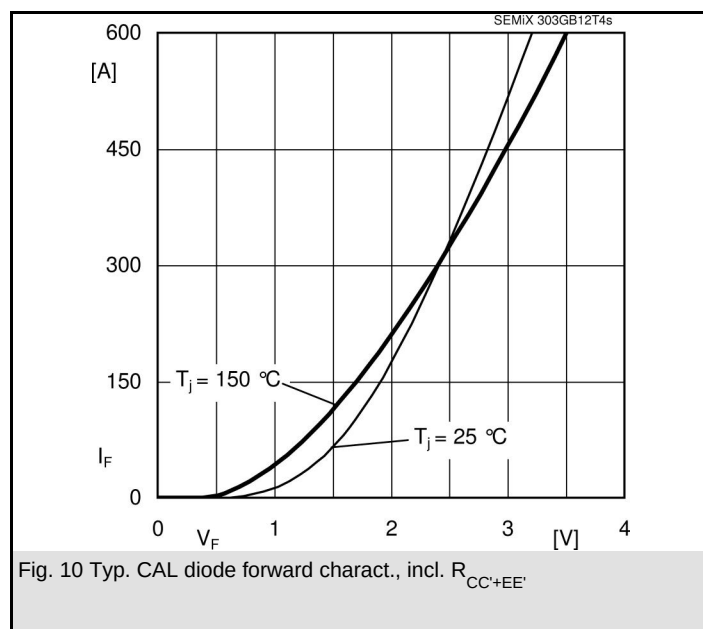
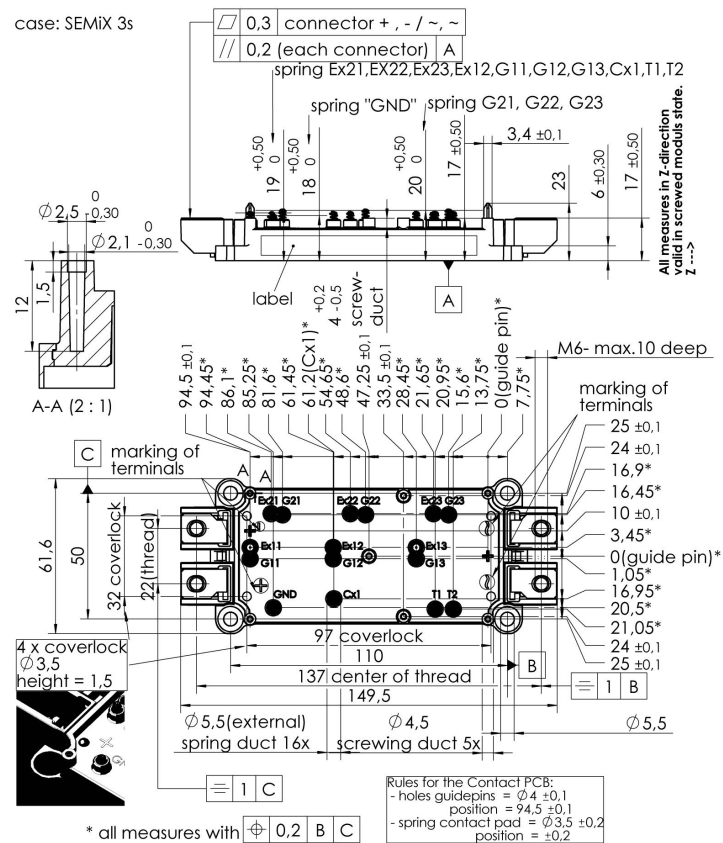


Fig. 10 Typ. CAL diode forward charact., incl. $R_{CC+EE'}$



Case SEMiX 3s

