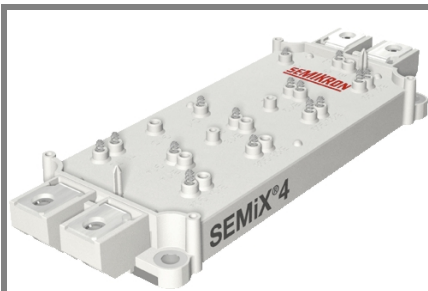


SEMiX 404GB12T4s



SEMiX® 4s

Trench IGBT Modules

SEMiX 404GB12T4s

Target Data

Features

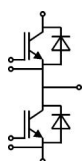
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability

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

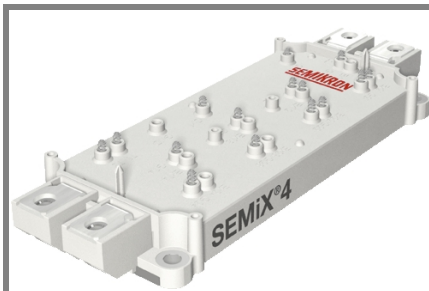


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Absolute Maximum Ratings			T _{case} = 25°C, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	T _j = 175 °C	T _c = 25 °C	615	A
		T _c = 80 °C	475	A
I _{CRM}	I _{CRM} =3xI _{Cnom}		1200	A
V _{GES}			± 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	440	A
		T _c = 80 °C	330	A
I _{FRM}	I _{FRM} =3xI _{Fnom}		1200	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 = 16 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	2,5	2,75	mΩ	
		T _j = 150°C	3,75	4	mΩ	
V _{CE(sat)}	I _{Cnom} = 400 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	24,8			nF
C _{oes}			1,7			nF
C _{res}			1,4			nF
Q _G	V _{GE} = -8 ... +15V		2300			nC
R _{Gint}	T _j = 25 °C		1,9			Ω
t _{d(on)}	R _{Gon} = Ω	V _{CC} = V I _{Cnom} = A T _j = 150 °C	45			ns
t _r						ns
E _{on}				45		
t _{d(off)}	R _{Goff} = Ω		45			ns
t _f		ns				
E _{off}				45		
R _{th(j-c)}	per IGBT		0,072			K/W

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Typical Applications

- AC inverter drives
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- Electronic Welding

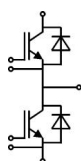
Remarks

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

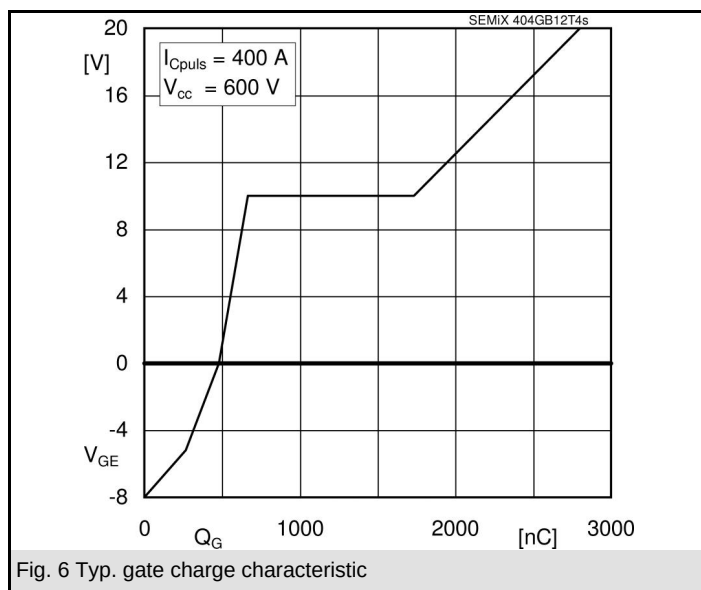
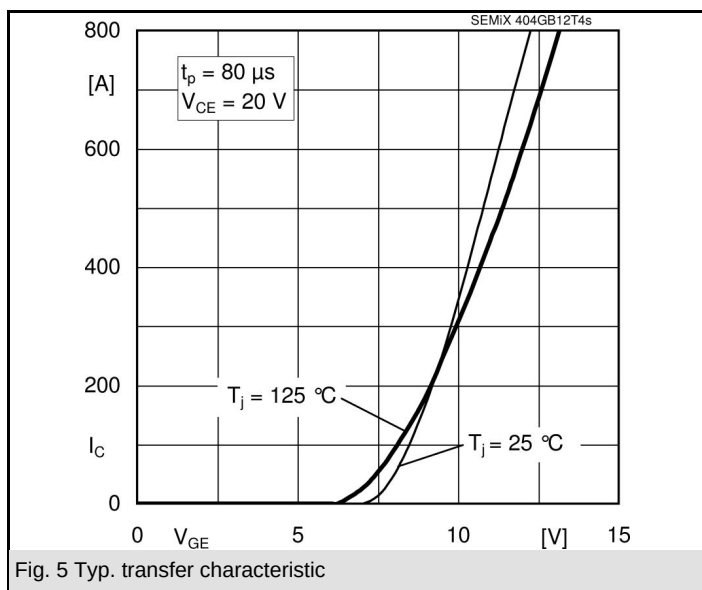
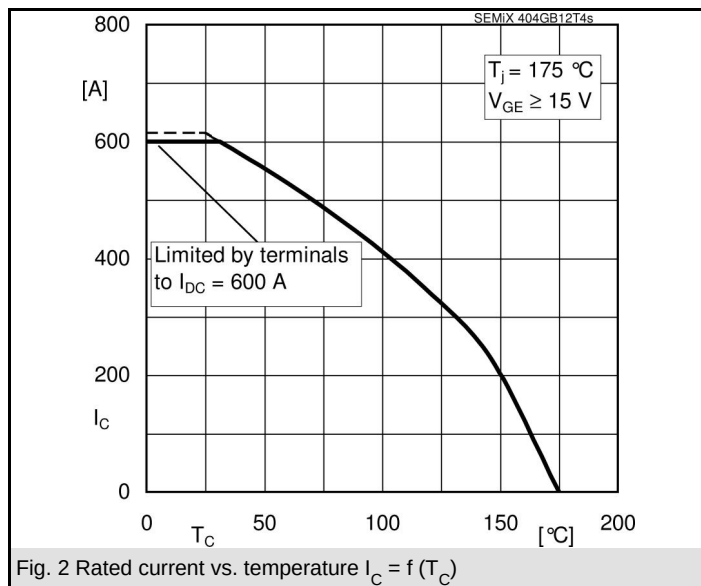
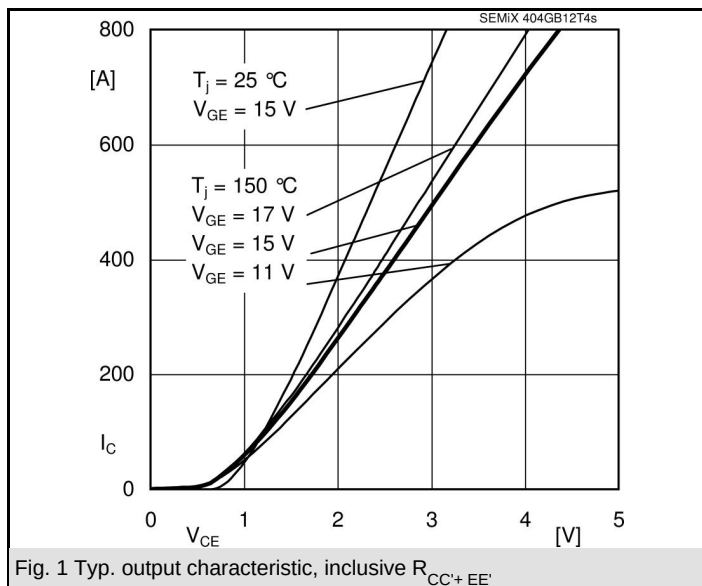
Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 400 \text{ A}; V_{GE} = 0 \text{ V}$				
	$T_j = 25^{\circ}\text{C}_{chiplev.}$		2,2	2,5	V
	$T_j = 150^{\circ}\text{C}_{chiplev.}$		2,1	2,45	V
V_{F0}	$T_j = 25^{\circ}\text{C}$		1,3	1,5	V
	$T_j = 150^{\circ}\text{C}$		0,9	1,1	V
r_F	$T_j = 25^{\circ}\text{C}$		2,3	2,5	mΩ
	$T_j = 150^{\circ}\text{C}$		3	3,4	mΩ
I_{RRM}	$I_{Fnom} = 400 \text{ A}$				A
Q_{rr}	$T_j = 150^{\circ}\text{C}$				μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$		30		mJ
$R_{th(j-c)D}$	per diode			0,14	K/W
Module					
L_{CE}			22		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		0,03		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}	$T_c = 100^{\circ}\text{C}$ ($R_{25} = 5 \text{ k}\Omega$)		0,493±5%		kΩ
$B_{100/125}$	$R(T) = R_{100} \exp[B_{100/125}(1/T - 1/T_{100})]$; $T[\text{K}]$		3550±2%		K

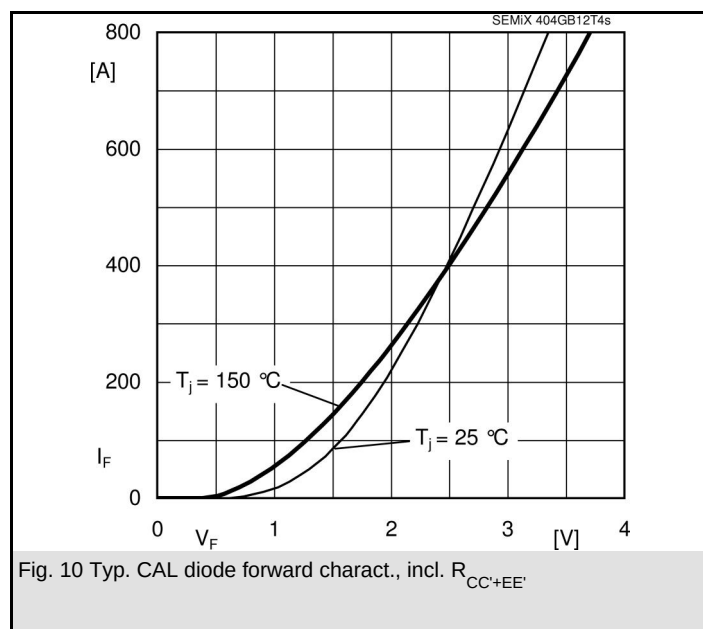
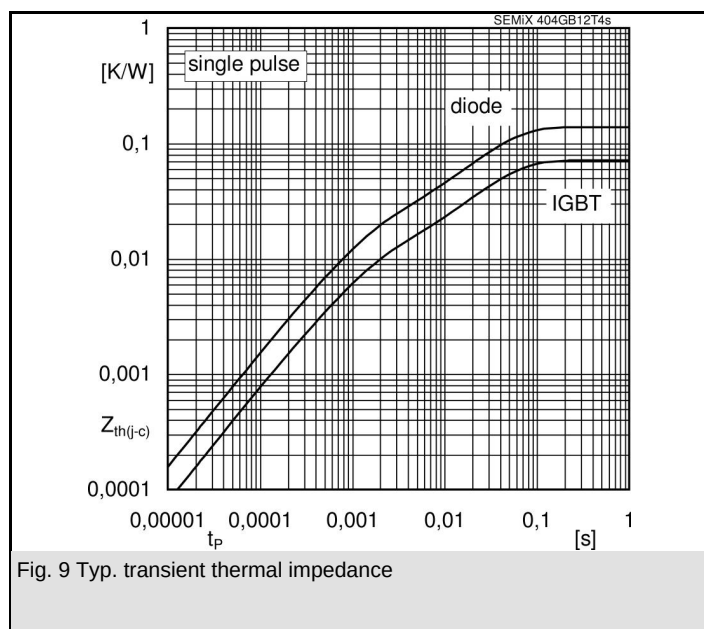
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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

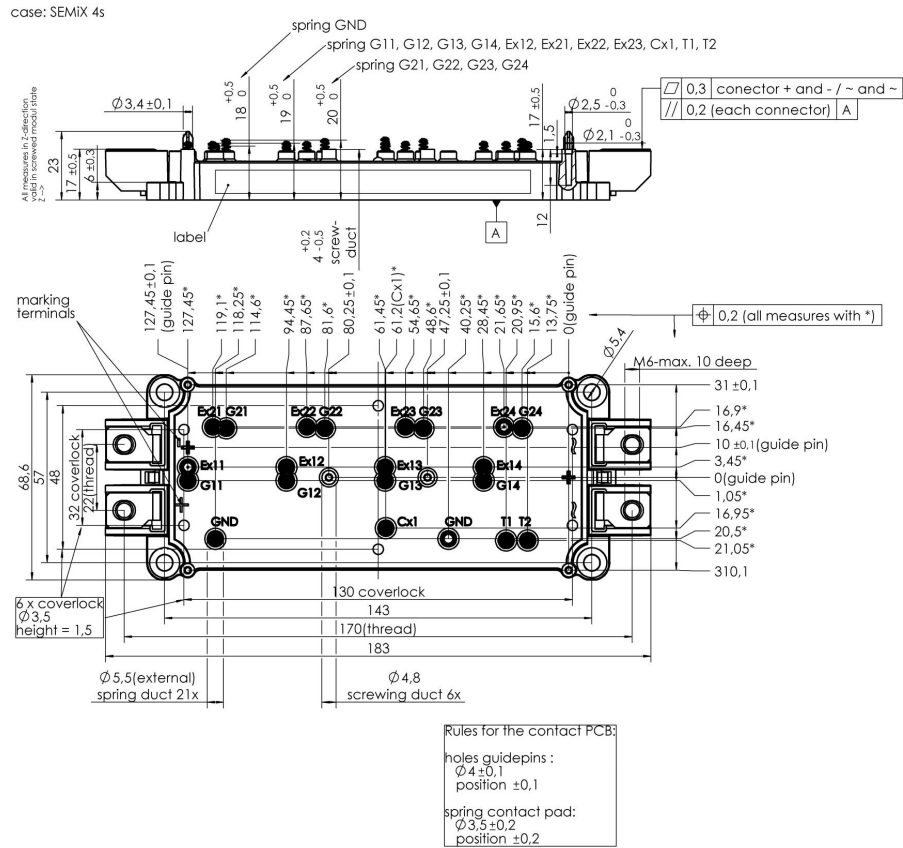


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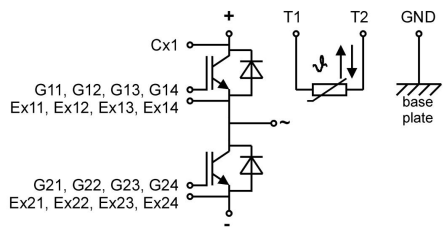




SEMiX 404GB12T4s



Case SEMiX 4s



Pinout

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