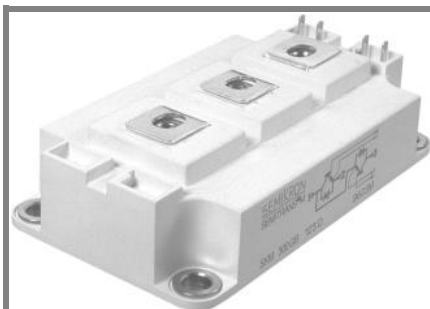


SKM 400GB12T4



SEMITRANS® 3

IGBT4 Modules

SKM 400GB12T4

Target Data

Features

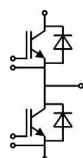
- IGBT4 = 4. Generation (Trench) IGBT
- V_{CEsat} with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_{CNOM}$
- Electronic welders at f_{sw} up to 20 kHz

Typical Applications

- AC inverter drives
- UPS
- Electronic welders at f_{sw} up to 20 kHz

Remarks

- Case temperature limited to $T_c = 125^\circ\text{C}$ max, recomm. $T_{op} = -40 \dots +150^\circ\text{C}$, product rel. results valid for $T_j \leq 150^\circ$

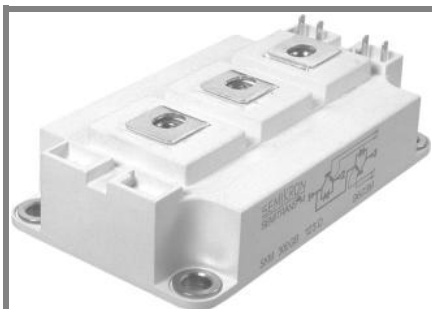


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Absolute Maximum Ratings			$T_c = 25\text{ }^{\circ}\text{C}$, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V_{CES}	$T_j = 25\text{ }^{\circ}\text{C}$		1200	V
I_C	$T_j = 175\text{ }^{\circ}\text{C}$	$T_{case} = 25\text{ }^{\circ}\text{C}$	610	A
		$T_{case} = 80\text{ }^{\circ}\text{C}$	475	A
I_{CRM}	$I_{CRM} = 3 \times I_{CNOM}$		1200	A
V_{GES}			± 20	V
t_{psc}	$V_{CC} = V; V_{GE} \leq V; V_{CES} < V$ $T_j = \text{ }^{\circ}\text{C}$			μs
Inverse Diode				
I_F	$T_j = 175\text{ }^{\circ}\text{C}$	$T_{case} = 25\text{ }^{\circ}\text{C}$	440	A
		$T_{case} = 80\text{ }^{\circ}\text{C}$	330	A
I_{FRM}	$I_{FRM} = 3 \times I_{FNOM}$		1200	A
I_{FSM}	$t_p = 10\text{ ms; sin.}$	$T_j = 175\text{ }^{\circ}\text{C}$	2190	A
Module				
$I_{t(RMS)}$			500	A
T_{vj}			-40 ... +175	$^{\circ}\text{C}$
T_{stg}			-40 ... +125	$^{\circ}\text{C}$
V_{isol}	AC, 1 min.		4000	V

Characteristics			T _c = 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			V	
			T _j = 150 °C			V	
r _{CE}	V _{GE} = 15 V		T _j = 25°C		2,5	2,8	mΩ
			T _j = 150°C		3,8	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}					1,64		nF
C _{res}					1,4		nF
Q _G	V _{GE} = -8V /+15V		2250			nC	
R _{Gint}	T _j = 25 °C		1,9			Ω	
t _{d(on)}	R _{Gon} = 1 Ω	V _{CC} = 600V I _{Cnom} = 400A T _j = 150 °C V _{GE} = -8V	44			ns	
t _r						ns	
E _{on}	mJ						
t _{d(off)}	R _{Goff} = 1 Ω		40			ns	
t _f						ns	
E _{off}	mJ						
R _{th(j-c)}	per IGBT		0,072			K/W	

SKM 400GB12T4



SEMITRANS® 3

IGBT4 Modules

SKM 400GB12T4

Target Data

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- V_{CEsat} with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_{CNOM}$
- Electronic welders at f_{sw} up to 20 kHz

Typical Applications

- AC inverter drives
- UPS
- Electronic welders at f_{sw} up to 20 kHz

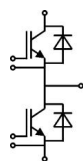
Remarks

- Case temperature limited to $T_c = 125^\circ\text{C}$ max, recomm. $T_{op} = -40 \dots +150^\circ\text{C}$, product rel. results valid for $T_j \leq 150^\circ$

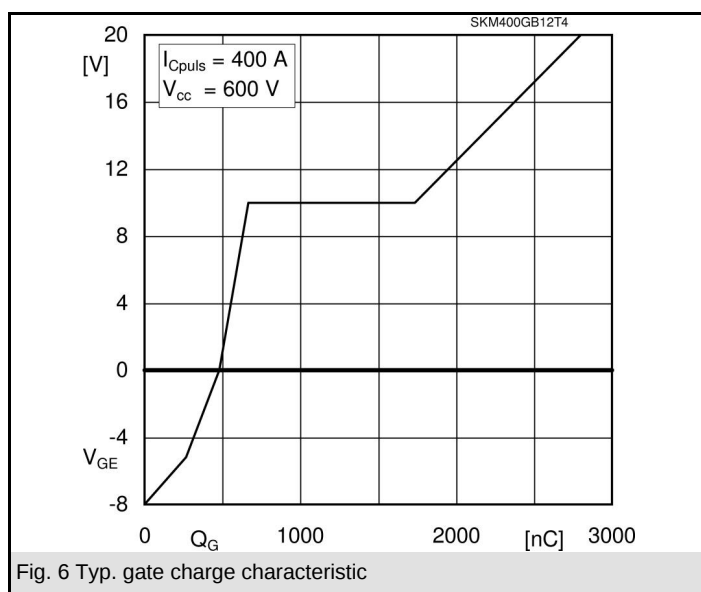
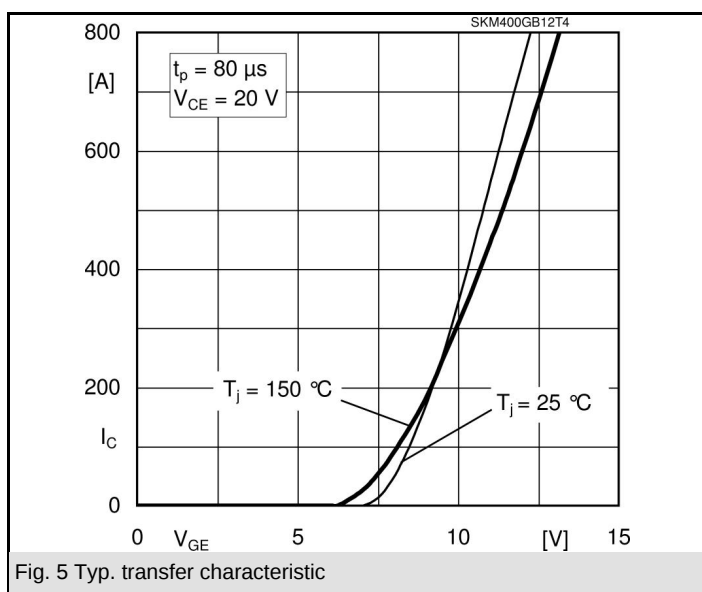
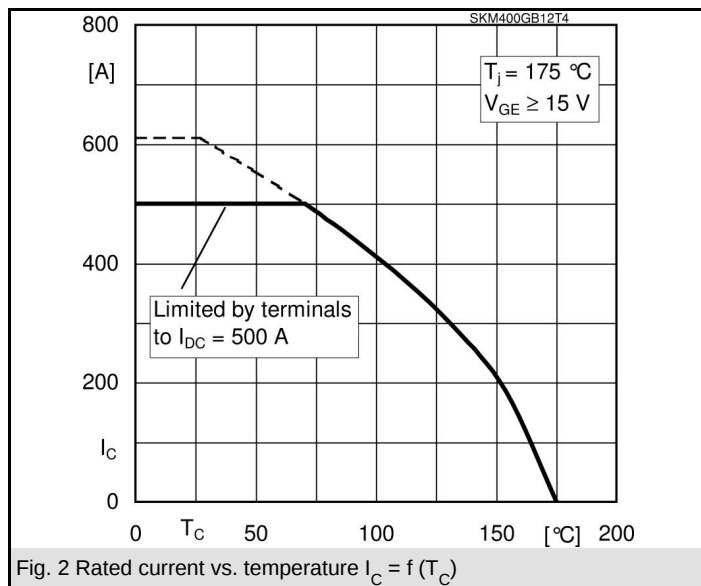
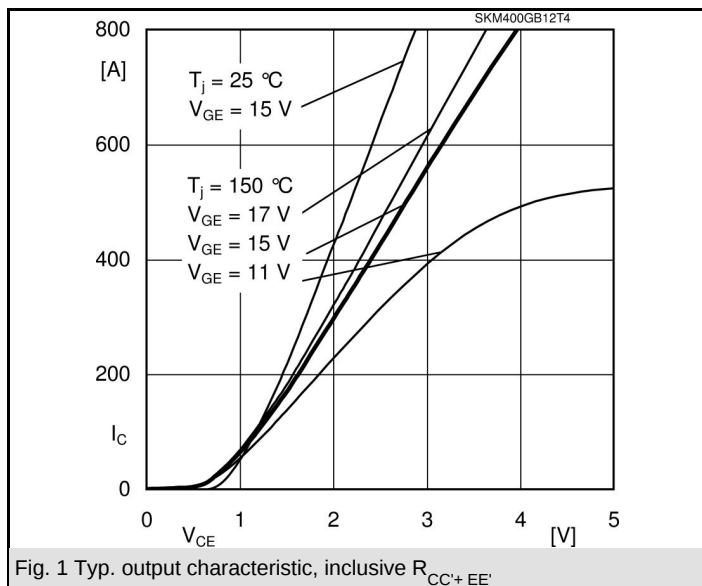
Characteristics							
Symbol	Conditions			min.	typ.	max.	Units
Inverse Diode							
$V_F = V_{EC}$	$I_{Fnom} = 400\text{ A}; V_{GE} = 0\text{ V}$	$T_j = 25\text{ }^{\circ}\text{C}_{chiplev.}$		2,2	2,5		V
		$T_j = 150\text{ }^{\circ}\text{C}_{chiplev.}$		2,1	2,45		V
V_{F0}		$T_j = 25\text{ }^{\circ}\text{C}$		1,3	1,5		V
		$T_j = 150\text{ }^{\circ}\text{C}$		0,9	1,1		V
r_F		$T_j = 25\text{ }^{\circ}\text{C}$		2,25	2,5		mΩ
		$T_j = 150\text{ }^{\circ}\text{C}$		3	1,35		mΩ
I_{RRM}	$I_{Fnom} = 400\text{ A}$	$T_j = 150\text{ }^{\circ}\text{C}$					A
Q_{rr}							μC
E_{rr}	$V_{GE} = -8\text{V}$			33			mJ
$R_{th(j-c)}$	per diode					0,14	K/W
Freewheeling Diode							
$V_F = V_{EC}$	$I_{Fnom} = \text{A}; V_{GE} = \text{V}$	$T_j = \text{ }^{\circ}\text{C}_{chiplev.}$					V
V_{F0}		$T_j = \text{ }^{\circ}\text{C}$					V
r_F		$T_j = \text{ }^{\circ}\text{C}$					V
I_{RRM}	$I_{Fnom} = \text{A}$	$T_j = \text{ }^{\circ}\text{C}$					A
Q_{rr}							μC
E_{rr}							mJ
	per diode						K/W
Module							
L_{CE}				15	20		nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25\text{ }^{\circ}\text{C}$			0,35		mΩ
		$T_{case} = 125\text{ }^{\circ}\text{C}$			0,5		mΩ
$R_{th(c-s)}$	per module			0,02	0,038		K/W
M_s	to heat sink M6			3	5		Nm
M_t	to terminals M6			2,5	5		Nm
w						325	g

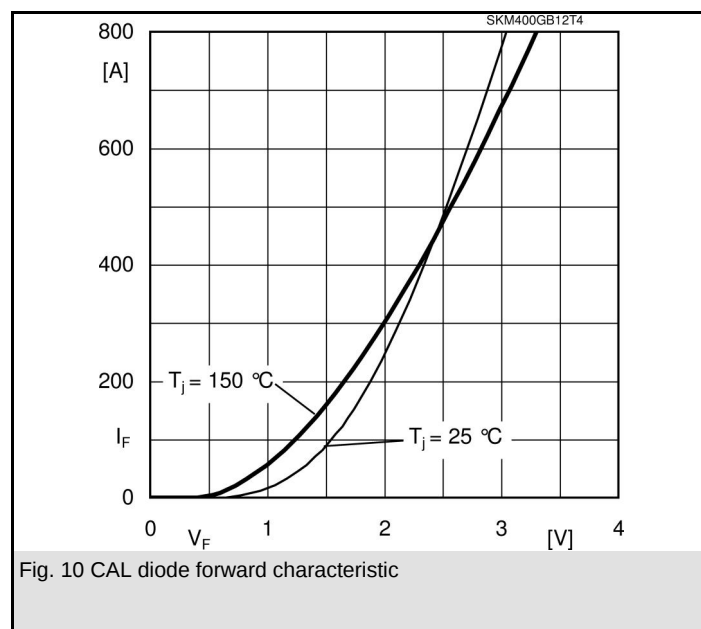
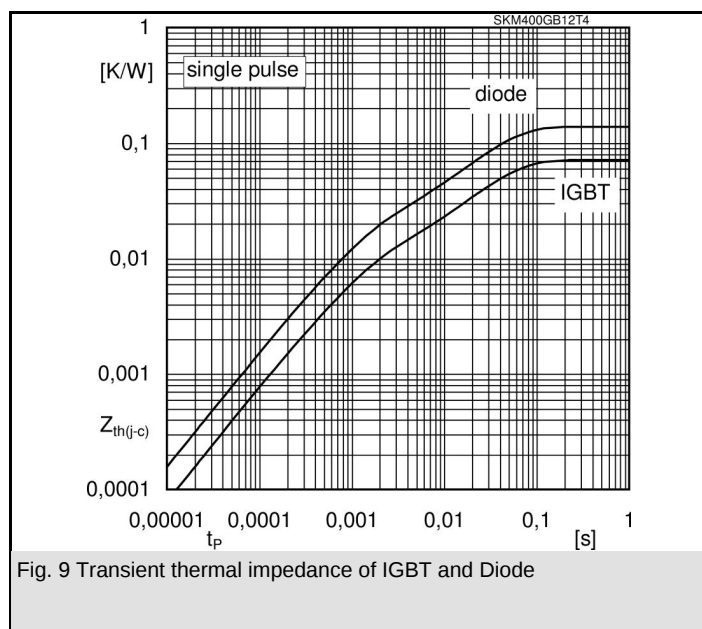
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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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