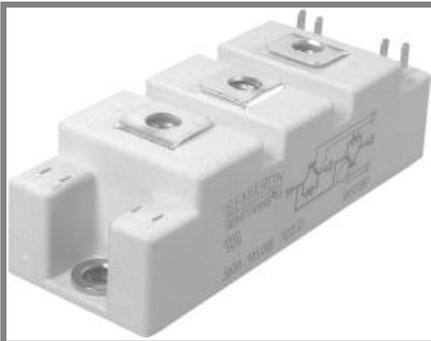


# SKM 100GB12T4



SEMITRANS® 2

## IGBT4 Modules

SKM 100GB12T4

Target Data

### Features

- IGBT4 = 4. Generation (Trench) IGBT
- $V_{CEsat}$  with positive temperature coefficient
- High short circuit capability, self limiting to  $6 \times I_{CNOM}$
- Soft switching 4. generation CAL diode (CAL4)

### Typical Applications

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

### Remarks

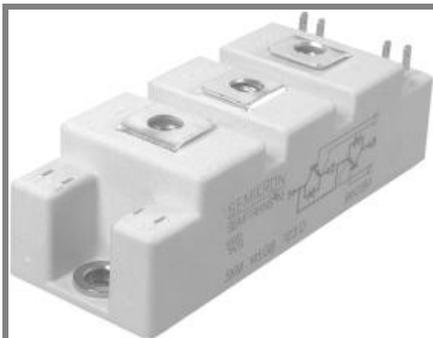
- Case temperature limited to  $T_c = 125^\circ\text{C}$  max, recomm.  $T_{op} = -40 \dots +150^\circ\text{C}$ , product rel. results valid for  $T_j \leq 150^\circ$



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Absolute Maximum Ratings		$T_c = 25^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	Values			Units
<b>IGBT</b>					
$V_{CES}$	$T_j = 25^\circ\text{C}$	1200			V
$I_C$	$T_j = 175^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	160		A
		$T_{case} = 80^\circ\text{C}$	125		A
$I_{CRM}$	$I_{CRM} = 3 \times I_{CNOM}$	300			A
$V_{GES}$		$\pm 20$			V
$t_{psc}$	$V_{CC} = 600\text{V}; V_{GE} \leq 15\text{V}; T_j = 150^\circ\text{C}$ $V_{CES} < 1200\text{V}$	10			$\mu\text{s}$
<b>Inverse Diode</b>					
$I_F$	$T_j = 175^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	120		A
		$T_{case} = 80^\circ\text{C}$	90		A
$I_{FRM}$	$I_{FRM} = 3 \times I_{FNOM}$	300			A
$I_{FSM}$	$t_p = 10\text{ms}; \text{sin.}$	$T_j = 175^\circ\text{C}$	550		A
<b>Module</b>					
$I_{t(RMS)}$		200			A
$T_{vj}$		-40 ... +175			$^\circ\text{C}$
$T_{stg}$		-40 ... +125			$^\circ\text{C}$
$V_{isol}$	AC, 1 min.	4000			V

Characteristics		$T_c = 25^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
$V_{GE(th)}$	$V_{GE} = V_{CE}; I_C = 4\text{mA}$	5	5,8	6,5	V
$I_{CES}$	$V_{GE} = V; V_{CE} = V_{CES}$				$T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$ mA
$V_{CE0}$		$T_j = 25^\circ\text{C}$	0,8	0,9	V
		$T_j = 150^\circ\text{C}$	0,7	0,8	V
$r_{CE}$	$V_{GE} = 15\text{V}$	$T_j = 25^\circ\text{C}$	10	11	$\text{m}\Omega$
		$T_j = 150^\circ\text{C}$	15	16	$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 100\text{A}; V_{GE} = 15\text{V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	1,8	2	V
		$T_j = 150^\circ\text{C}_{chiplev.}$	2,2	2,4	V
$C_{res}$	$V_{CE} = 25; V_{GE} = 0\text{V}$	$f = 1\text{MHz}$	6,2		nF
$C_{oes}$			0,41		nF
$C_{res}$			0,35		nF
$Q_G$	$V_{GE} = -8\text{V}/+15\text{V}$		570		nC
$R_{Gint}$	$T_j = 25^\circ\text{C}$		7,5		$\Omega$
$t_{d(on)}$	$R_{Gon} =$	$V_{CC} = 600\text{V}$ $I_{Cnom} = 100\text{A}$ $T_j = 150^\circ\text{C}$			ns
$t_r$					ns
$E_{on}$			11		mJ
$t_{d(off)}$	$R_{Goff} =$				ns
$t_f$					ns
$E_{off}$			11		mJ
$R_{th(j-c)}$	per IGBT		0,27		K/W



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### Remarks

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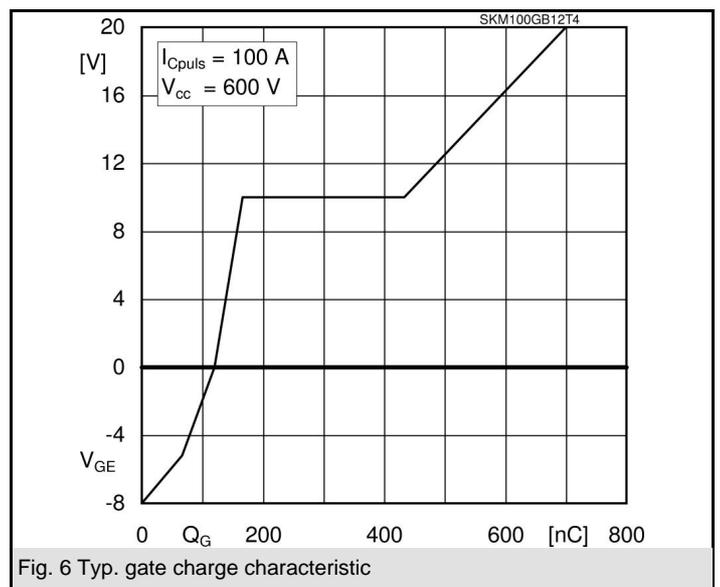
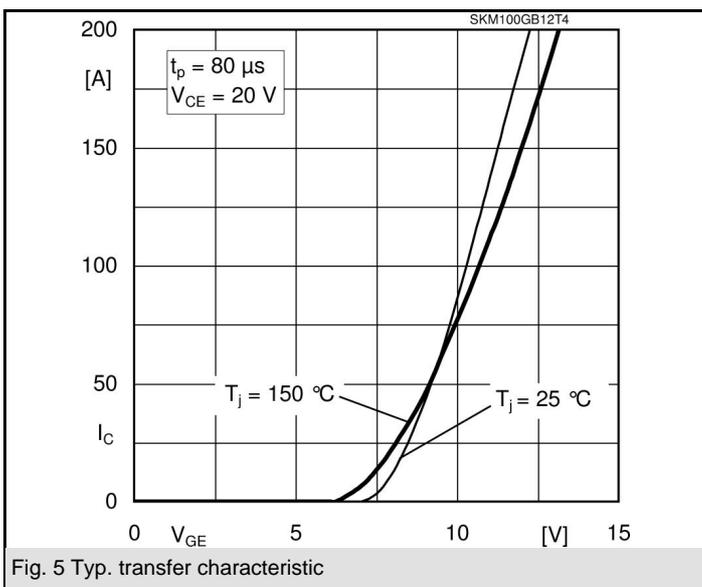
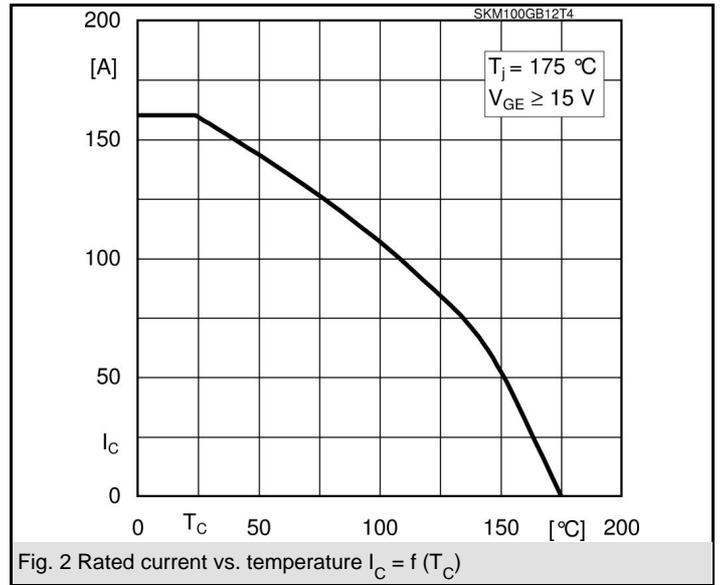
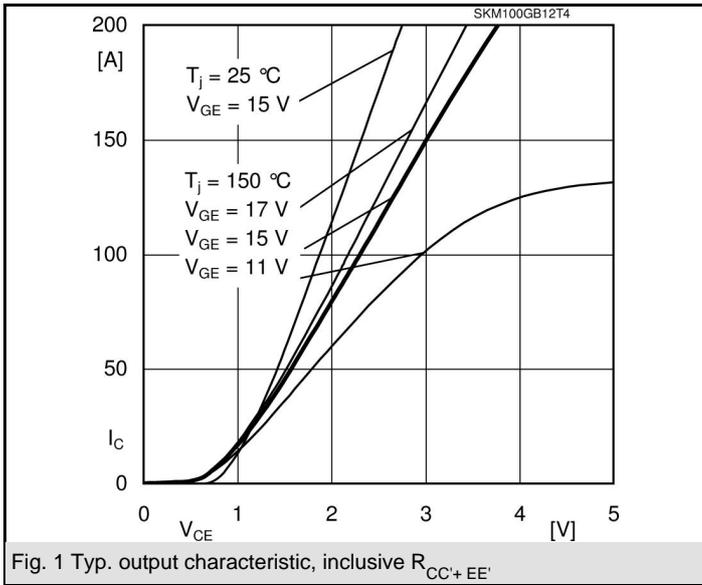


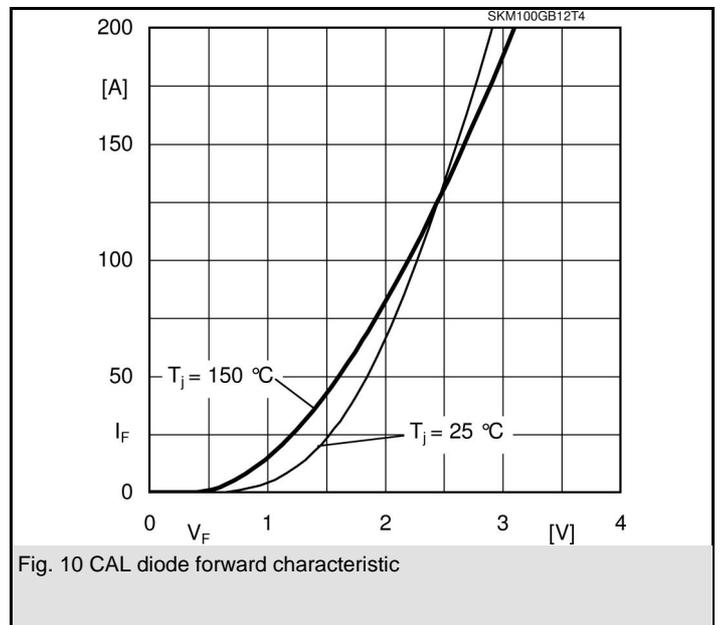
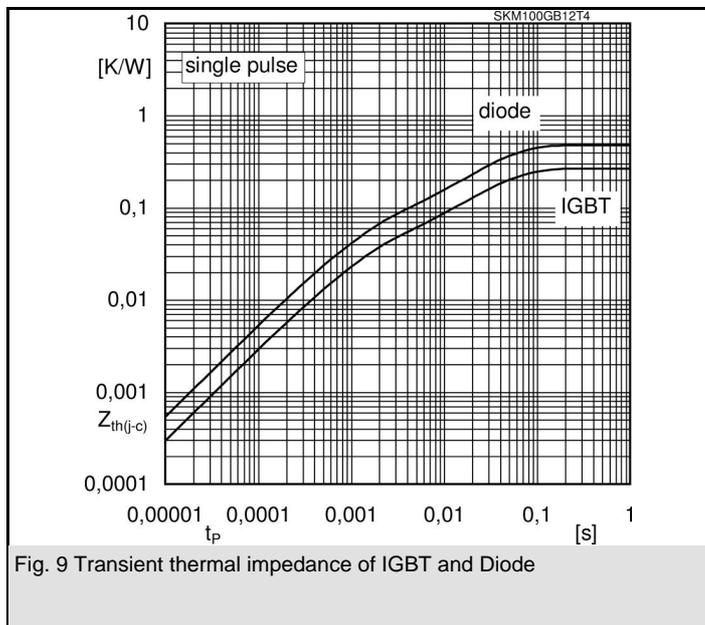
**GB**

Characteristics			min.	typ.	max.	Units
Symbol	Conditions					
<b>Inverse Diode</b>						
$V_F = V_{EC}$	$I_{Fnom} = 100 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$		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
$r_F$		$T_j = 25^\circ\text{C}$		9	11	mΩ
		$T_j = 150^\circ\text{C}$		12	13,5	mΩ
$I_{RRM}$	$I_{Fnom} = 100 \text{ A}$	$T_j = 150^\circ\text{C}$				A
$Q_{rr}$						μC
$E_{rr}$	$V_{GE} \leq -8\text{V}$			7,5		mJ
$R_{th(j-c)}$	per diode				0,48	K/W
<b>Freewheeling Diode</b>						
$V_F = V_{EC}$	$I_{Fnom} = \text{A}; V_{GE} = \text{V}$	$T_j = ^\circ\text{C}_{chiplev.}$				V
$V_{F0}$		$T_j = ^\circ\text{C}$				V
$r_F$		$T_j = ^\circ\text{C}$				V
$I_{RRM}$	$I_{Fnom} = \text{A}$	$T_j = ^\circ\text{C}$				A
$Q_{rr}$						μC
$E_{rr}$						mJ
	per diode					K/W
<b>Module</b>						
$L_{CE}$				20	30	nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25^\circ\text{C}$			0,75	mΩ
		$T_{case} = 125^\circ\text{C}$			1	mΩ
$R_{th(c-s)}$	per module				0,05	K/W
$M_s$	to heat sink M6			3	5	Nm
$M_t$	to terminals M5			2,5	5	Nm
w					160	g

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

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# SKM 100GB12T4

UL recognized file

CASED61

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