

# SKM 75GB12T4



SEMITRANS® 2

## IGBT4 Modules

SKM 75GB12T4

Target Data

### Features

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

### Typical Applications

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



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Absolute Maximum Ratings		$T_c = 25\text{ }^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	Values		Units	
<b>IGBT</b>					
$V_{CES}$	$T_j = 25\text{ }^\circ\text{C}$	1200		V	
$I_C$	$T_j = 175\text{ }^\circ\text{C}$	$T_{case} = 25\text{ }^\circ\text{C}$	110		A
		$T_{case} = 80\text{ }^\circ\text{C}$	90		A
$I_{CRM}$	$I_{CRM} = 3 \times I_{CNOM}$	225		A	
$V_{GES}$		$\pm 20$		V	
$t_{psc}$	$V_{CC} = 600\text{ V}; V_{GE} \leq 15\text{ V}; T_j = 150\text{ }^\circ\text{C}$ $V_{CES} < 1200\text{ V}$	10		$\mu\text{s}$	
<b>Inverse Diode</b>					
$I_F$	$T_j = 175\text{ }^\circ\text{C}$	$T_{case} = 25\text{ }^\circ\text{C}$	95		A
		$T_{case} = 80\text{ }^\circ\text{C}$	75		A
$I_{FRM}$	$I_{FRM} = 3 \times I_{FNOM}$	225		A	
$I_{FSM}$	$t_p = 10\text{ ms}; \text{sin.}$	$T_j = 175\text{ }^\circ\text{C}$	430		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		$T_c = 25\text{ }^\circ\text{C}$ , unless otherwise specified				
Symbol	Conditions	min.	typ.	max.	Units	
<b>IGBT</b>						
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 3\text{ mA}$	5	5,8	6,5	V	
$I_{CES}$	$V_{GE} = V, V_{CE} = V_{CES}, T_j = \text{ }^\circ\text{C}$				mA	
$V_{CE0}$		$T_j = 25\text{ }^\circ\text{C}$	0,8		0,9	V
		$T_j = 150\text{ }^\circ\text{C}$	0,7		0,8	V
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}$	14		15,3	$\text{m}\Omega$
		$T_j = 150\text{ }^\circ\text{C}$	20,7		22	$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 75\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}_{chiplev.}$	1,85		2,05	V
		$T_j = 150\text{ }^\circ\text{C}_{chiplev.}$	2,25		2,45	V
$C_{res}$	$V_{CE} = 25, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$	4,4			nF	
$C_{oes}$		0,29			nF	
$C_{res}$		0,24			nF	
$Q_G$	$V_{GE} = -8\text{V}/15\text{V}$	425			nC	
$R_{Gint}$	$T_j = 25\text{ }^\circ\text{C}$	10			$\Omega$	
$t_{d(on)}$	$R_{Gon} =$	$V_{CC} = 600\text{V}$ $I_{Cnom} = 75\text{A}$ $T_j = 150\text{ }^\circ\text{C}$	8,3		ns	
$t_r$			8,3		ns	
$E_{on}$	$R_{Goff} =$	8,3			mJ	
$t_{d(off)}$		8,3		ns		
$t_f$		8,3		ns		
$E_{off}$	8,3				mJ	
$R_{th(j-c)}$	per IGBT	0,38			K/W	

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**SEMITRANS® 2**

## IGBT4 Modules

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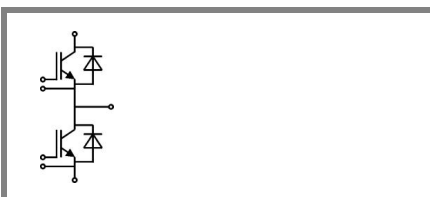
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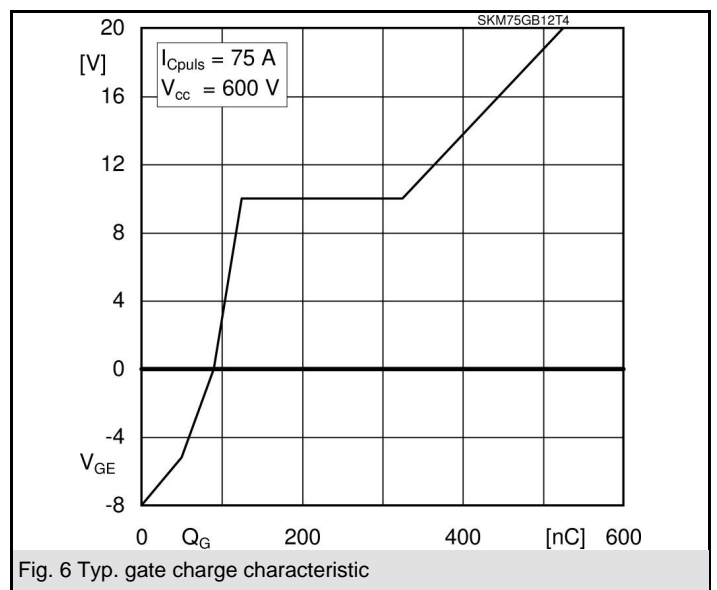
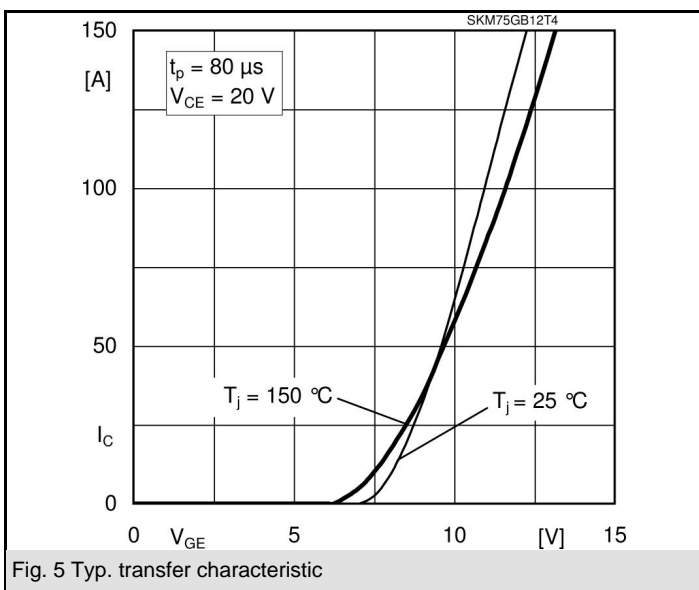
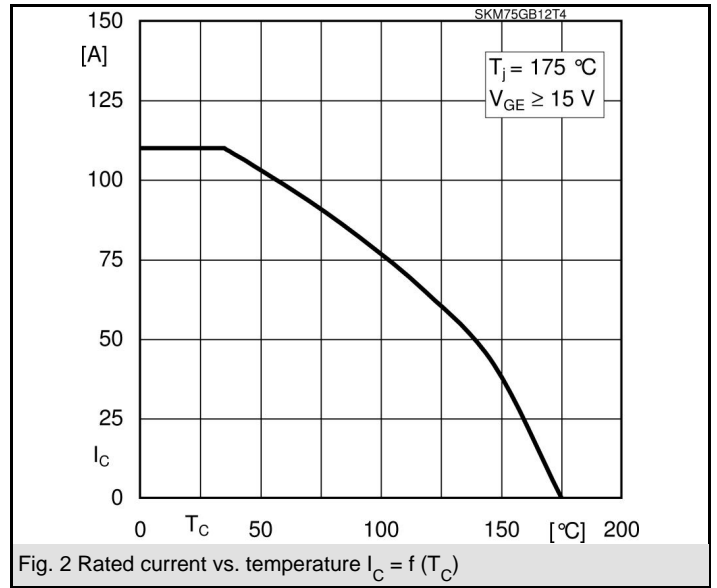
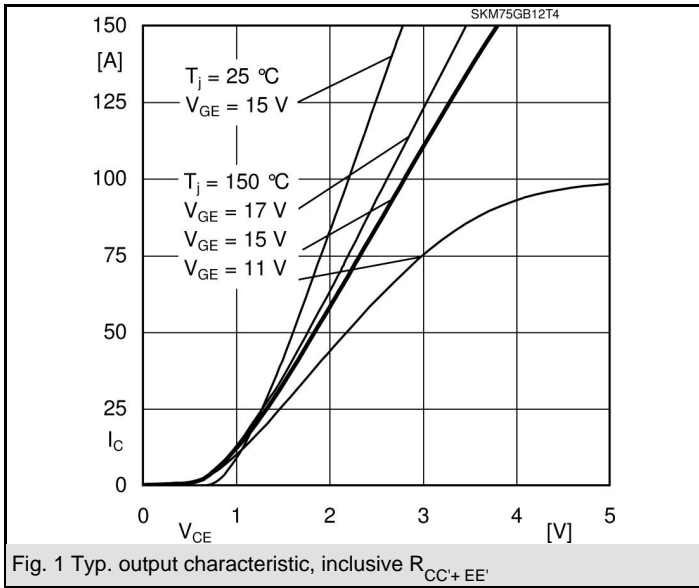


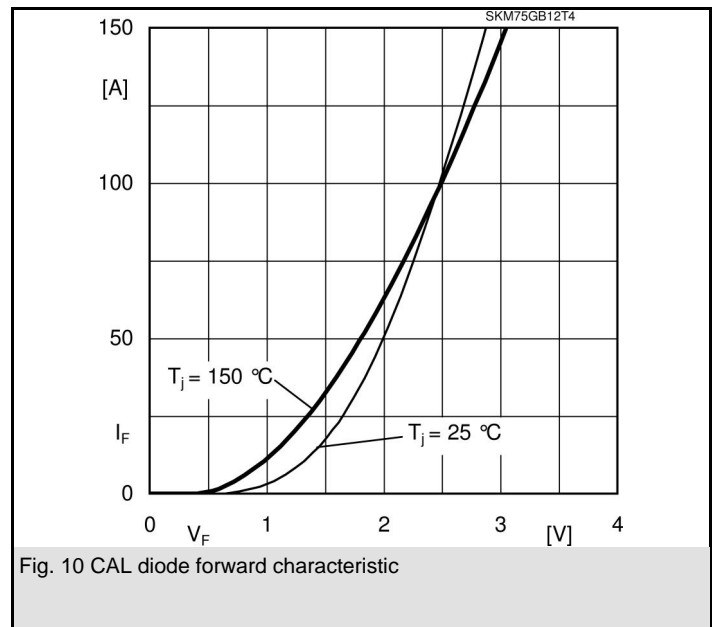
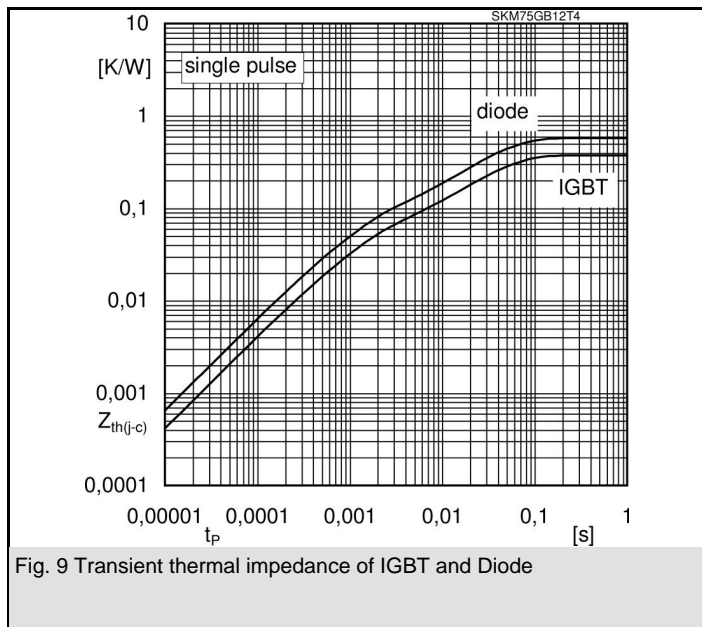
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Characteristics			min.	typ.	max.	Units
Symbol	Conditions					
<b>Inverse Diode</b>						
$V_F = V_{EC}$	$I_{Fnom} = 75 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$		2,2	2,5	V
		$T_j = 150 \text{ }^\circ\text{C}_{chiplev.}$		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
$r_F$		$T_j = 25 \text{ }^\circ\text{C}$		12	13,3	mΩ
		$T_j = 150 \text{ }^\circ\text{C}$		16	18	mΩ
$I_{RRM}$	$I_{Fnom} = 75 \text{ A}$	$T_j = 150 \text{ }^\circ\text{C}$				A
$Q_{rr}$				5,6		μC
$E_{rr}$						mJ
$R_{th(j-c)}$	per diode				0,58	K/W
<b>Freewheeling Diode</b>						
$V_F = V_{EC}$	$I_{Fnom} = \text{A}; V_{GE} = \text{V}$	$T_j = \text{ }^\circ\text{C}_{chiplev.}$				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
<b>Module</b>						
$L_{CE}$				20	30	nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25 \text{ }^\circ\text{C}$			0,75	mΩ
		$T_{case} = 125 \text{ }^\circ\text{C}$			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.

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



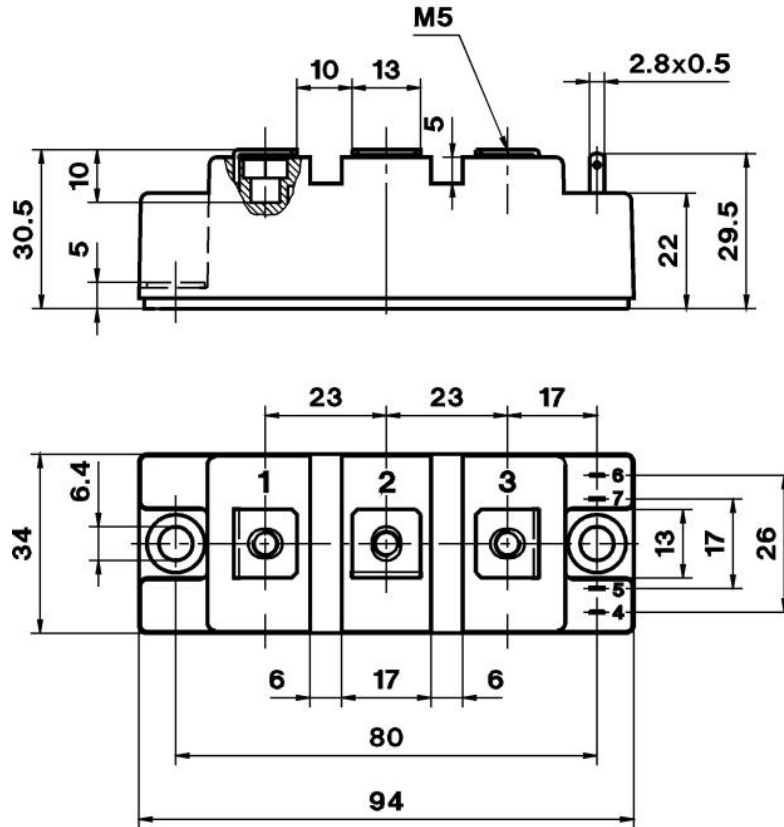


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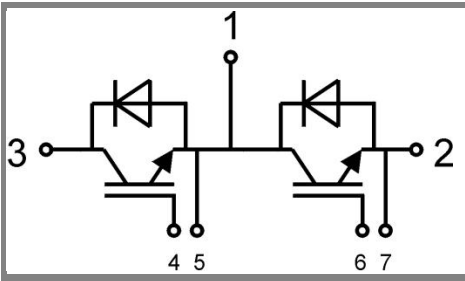
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Case D61



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