

SK75GAL12T4



SEMITOP® 2

IGBT Module

SK75GAL12T4

SK75GAR12T4

Target Data

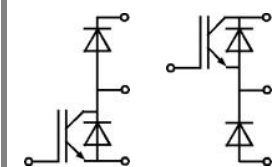
Features

- One screw mounting module
- Trench4 IGBT technology
- CAL4 technology FWD

Typical Applications*

Remarks

- $V_{CE,sat}$, V_F = chip level value



GAL

GAR

Absolute Maximum Ratings				$T_s = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions			Values	Units
IGBT					
V_{CES}	$T_j = 25^\circ\text{C}$			1200	V
I_C	$T_j = 175^\circ\text{C}$	$T_s = 25^\circ\text{C}$		80	A
		$T_s = 70^\circ\text{C}$		65	A
I_{CRM}	$I_{CRM} = 3 \times I_{Cnom}$			225	A
V_{GES}				± 20	V
t_{psc}	$V_{CC} = 800\text{ V}$; $V_{GE} \leq 15\text{ V}$; $T_j = 150^\circ\text{C}$ $V_{CES} < 1200\text{ V}$			10	μs
Inverse Diode					
I_F	$T_j = 175^\circ\text{C}$	$T_s = 25^\circ\text{C}$		20	A
		$T_s = 70^\circ\text{C}$		16	A
I_{FRM}	$I_{FRM} = 3 \times I_{Fnom}$			45	A
I_{FSM}	$t_p = 10\text{ ms}$; half sine wave $T_j = 150^\circ\text{C}$			90	A
Freewheeling Diode					
I_F	$T_j = 175^\circ\text{C}$	$T_s = 25^\circ\text{C}$		70	A
		$T_s = 70^\circ\text{C}$		55	A
I_{FRM}	$I_{FRM} = 3 \times I_{Fnom}$			225	A
I_{FSM}	$t_p = 10\text{ ms}$; half sine wave $T_j = 150^\circ\text{C}$			425	A
Module					
$I_{t(RMS)}$					A
T_{vj}				-40 ... +175	$^\circ\text{C}$
T_{stg}				-40 ... +125	$^\circ\text{C}$
V_{isol}	AC, 1 min.			2500	V

Characteristics			T _s = 25 °C, unless otherwise specified			
Symbol	Conditions		min.	typ.	max.	Units
IGBT						
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 3 mA		5	5,8	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES}	T _j = 25 °C			0,01	mA
		T _j = 150 °C				mA
I _{GES}	V _{CE} = 0 V, V _{GE} = 20 V	T _j = 25 °C			600	nA
		T _j = 150 °C				nA
V _{CE0}		T _j = 25 °C		1,1	1,3	V
		T _j = 150 °C		1	1,2	V
r _{CE}	V _{GE} = 15 V	T _j = 25°C		10		mΩ
		T _j = 150°C		16		mΩ
V _{CE(sat)}	I _{Cnom} = 75 A, V _{GE} = 15 V	T _j = 25°C _{chiplev.}		1,85	2,05	V
		T _j = 150°C _{chiplev.}		2,25	2,45	V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V	f = 1 MHz		4,4		nF
C _{oes}				0,29		nF
C _{res}				0,235		nF
Q _G	V _{GE} =-7V...+15V			570		nC
R _{Gint}	T _j = 25 °C			10		Ω
t _{d(on)}	R _{Gon} = 15 Ω di/dt = 2000 A/μs	V _{CC} = 600V I _C = 75A		50		ns
t _r				60		ns
E _{on}				13		mJ
t _{d(off)}	R _{Goff} = 15 Ω	T _j = 150 °C V _{GE} = -7/+15V		500		ns
t _f				60		ns
E _{off}				7		mJ
R _{th(j-s)}	per IGBT			0,74		K/W

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Typical Applications*

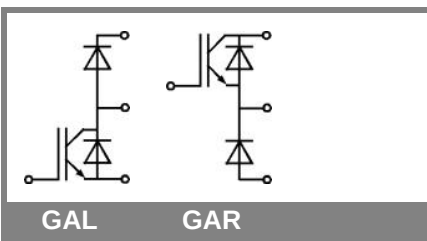
Remarks

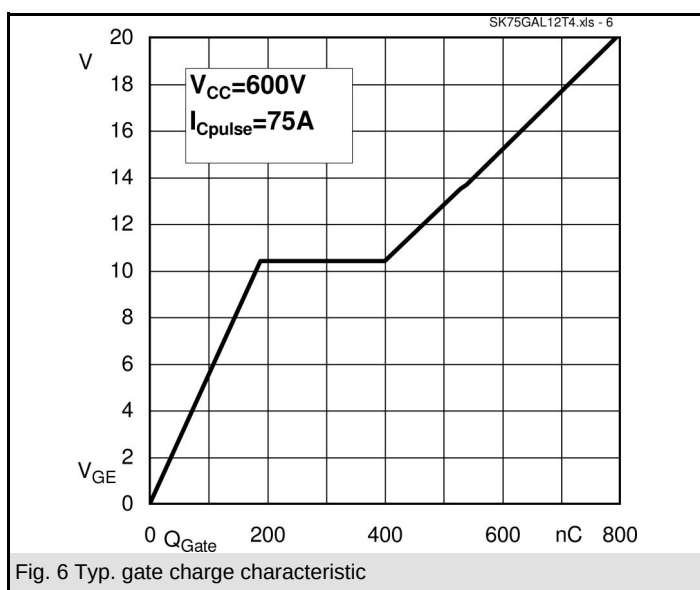
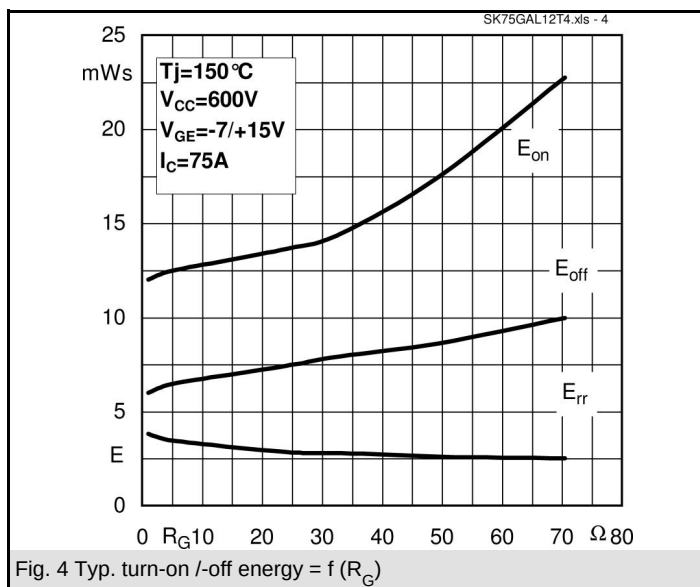
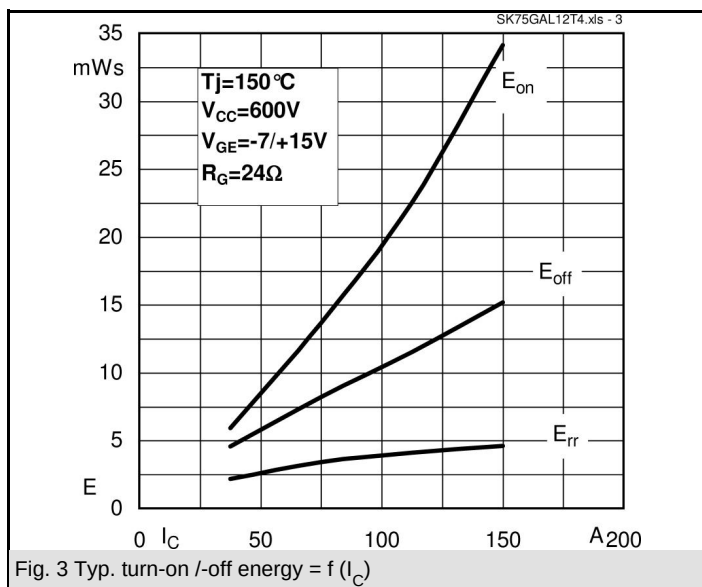
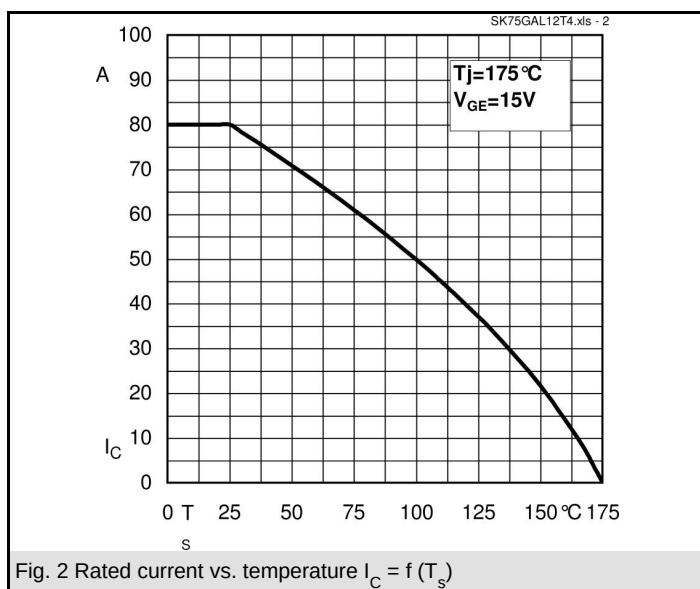
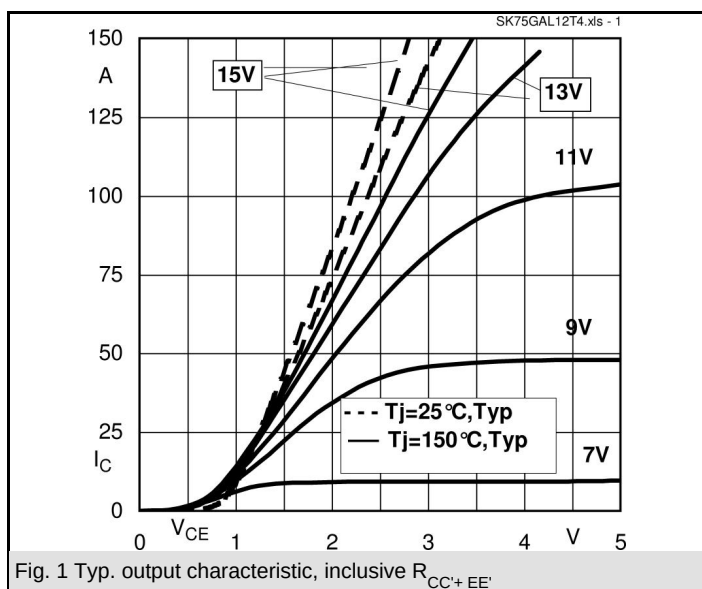
- $V_{CE,sat}$, V_F = chip level value

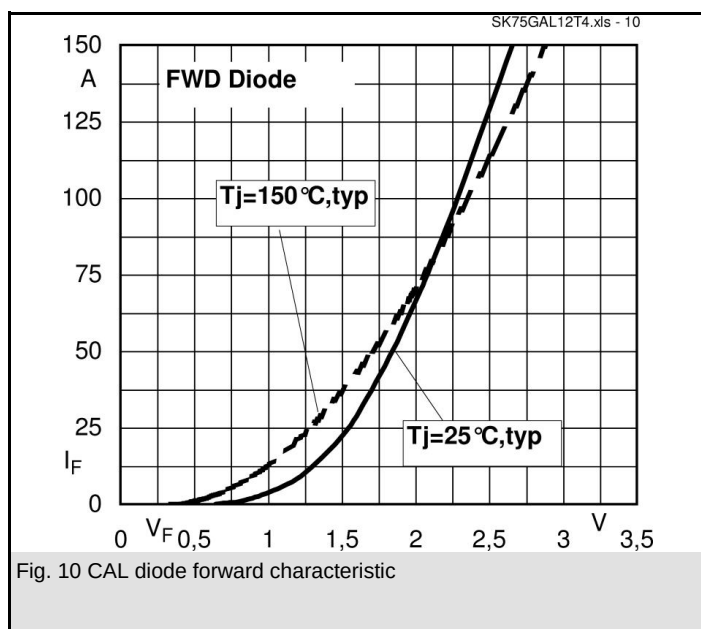
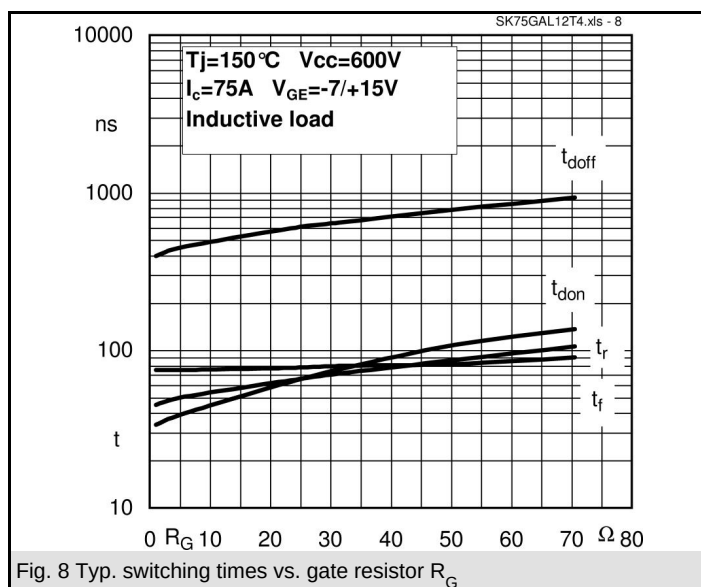
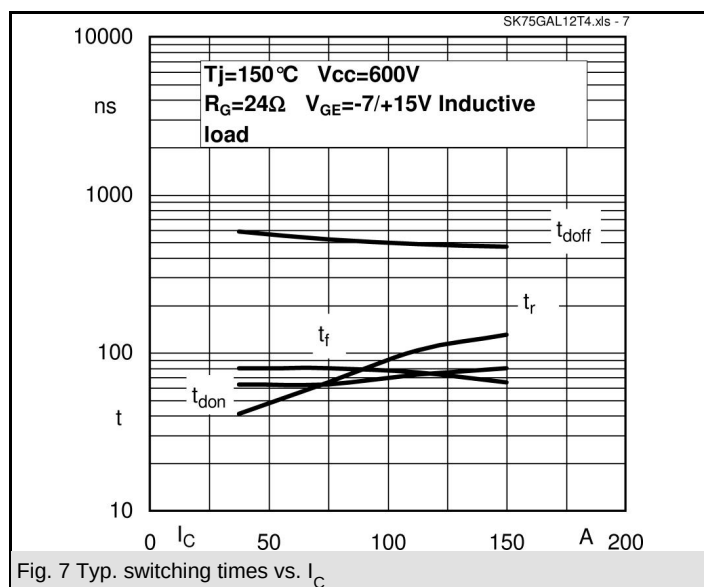
Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 15 \text{ A}$; $V_{GE} = 0 \text{ V}$				
	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$		2,38	2,71	V
	$T_j = 150 \text{ }^\circ\text{C}_{chiplev.}$		2,44	2,77	V
V_{F0}					
	$T_j = 25 \text{ }^\circ\text{C}$		1,3	1,5	V
	$T_j = 150 \text{ }^\circ\text{C}$		0,9	1,1	V
r_F					
	$T_j = 25 \text{ }^\circ\text{C}$		72	80,7	mΩ
	$T_j = 150 \text{ }^\circ\text{C}$		102,8	111,6	mΩ
I_{RRM}	$I_F = \text{A}$				A
Q_{rr}					μC
E_{rr}	$V_{CC} = 600\text{V}$				mJ
$R_{th(j-s)D}$	per diode		2,34		K/W
Freewheeling Diode					
$V_F = V_{EC}$	$I_{Fnom} = 75 \text{ A}$; $V_{GE} = 0 \text{ V}$				
	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$		2,1	2,5	V
	$T_j = 150 \text{ }^\circ\text{C}_{chiplev.}$		2,4	2,5	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	V
	$T_j = 150 \text{ }^\circ\text{C}$		16	17,3	V
I_{RRM}	$I_F = 75 \text{ A}$		45		A
Q_{rr}	$di/dt = 2000 \text{ A}/\mu\text{s}$		10		μC
E_{rr}	$V_{CC} = 600\text{V}$		3		mJ
$R_{th(j-s)FD}$	per diode		0,97		K/W
M_s	to heat sink			2,5	Nm
w			30		g
Temperature sensor					
R_{100}	$T_s = 100^\circ\text{C}$ ($R_{25} = 5\text{k}\Omega$)		493±5%		Ω

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

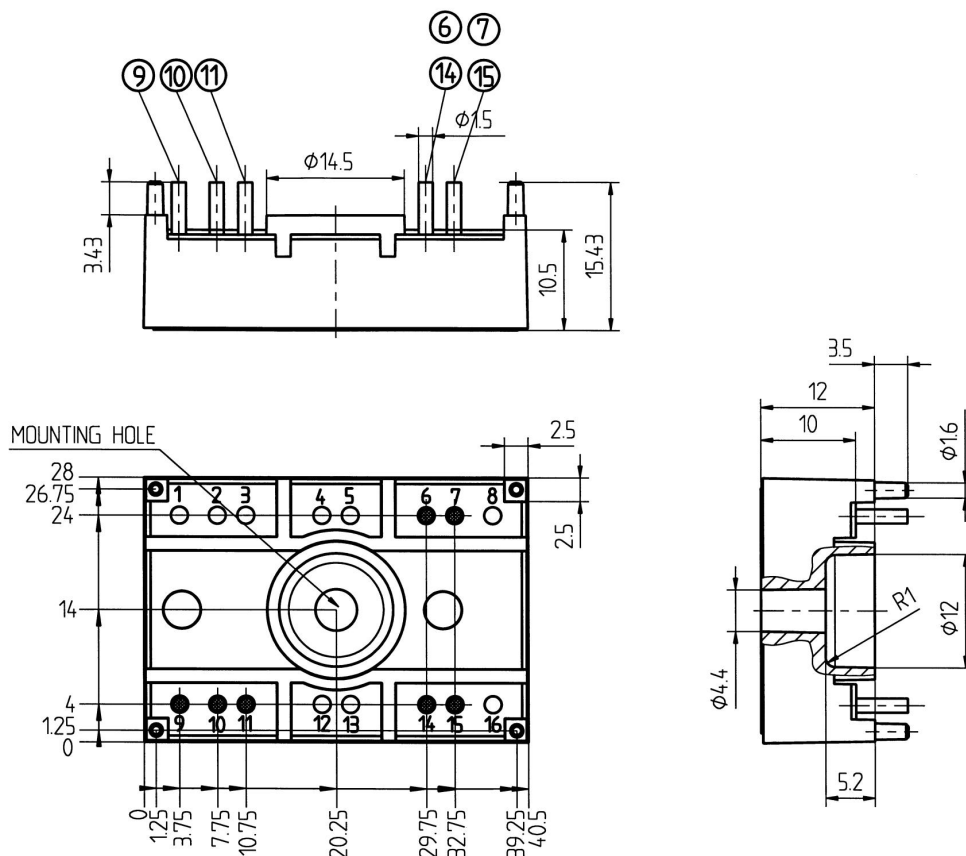
* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.



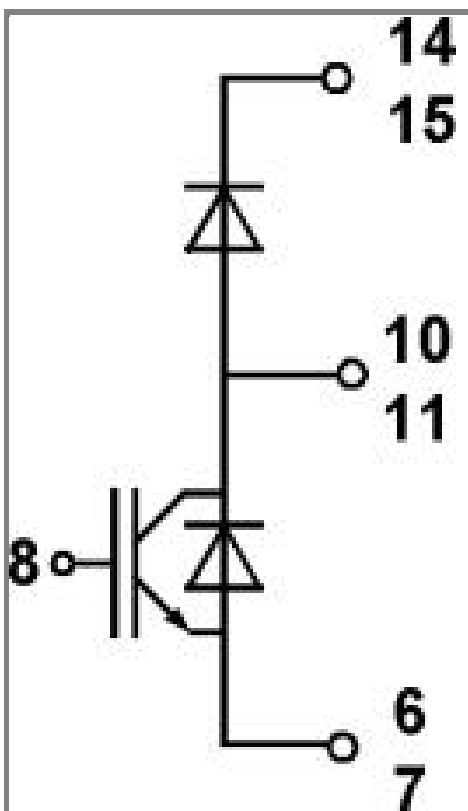




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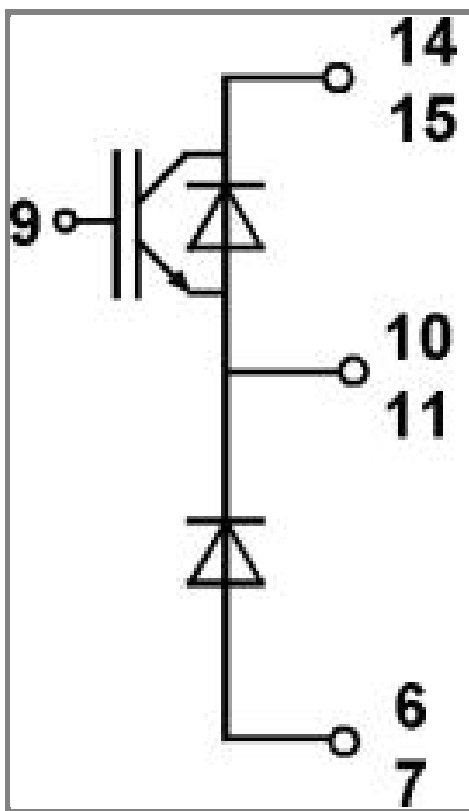


Case T18 (Suggested hole diameter for the solder pins and mounting plastic pins: 2mm)



Case T18

GAL



Case T18

GAR