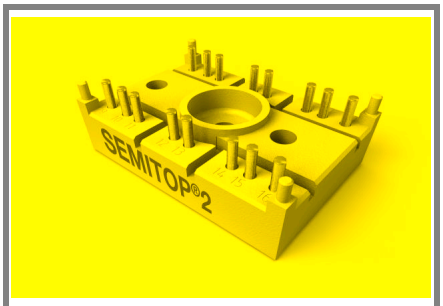
SK75GAL12T4



SEMITOP® 2

IGBT Module

SK75GAL12T4

SK75GAR12T4

Target Data

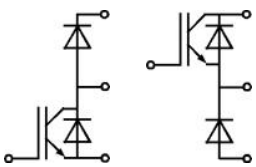
Features

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

Typical Applications*

Remarks

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

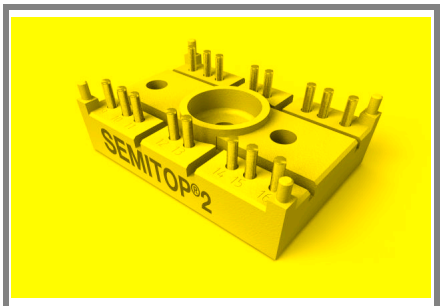


GAL GAR

Absolute Maximum Ratings			T_s = 25 °C, unless otherwise specified	
Symbol	**Conditions**		**Values**	**Units**
IGBT				
V_{CES}	T_j = 25 °C		1200	V
I_C	T_j = 175 °C	T_s = 25 °C	80	A
		T_s = 70 °C	65	A
I_{CRM}	I_{CRM}= 3 x I_{Cnom}		225	A
V_{GES}			± 20	V
t_{psc}	V_{CC} = 800 V; $V_{GE} \leq$ 15 V; V_{CES} < 1200 V	T_j = 150 °C	10	µs
Inverse Diode				
I_F	T_j = 175 °C	T_s = 25 °C	20	A
		T_s = 70 °C	16	A
I_{FRM}	I_{FRM}= 3 x I_{Fnom}		45	A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	90	A
Freewheeling Diode				
I_F	T_j = 175 °C	T_S = 25 °C	70	A
		T_S = 70 °C	55	A
I_{FRM}	I_{FRM} = 3xI_{Fnom}		225	A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	425	A
Module				
$I_{t(RMS)}$				A
T_{vj}			-40 ... +175	°C
T_{stg}			-40 ... +125	°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 T_j = 150 °C V_{GE}= -7/+15V		50		ns
t_r				60		ns
E_{on}				13		mJ
$t_{d(off)}$	R_{Goff} = 15 Ω			500		ns
t_f				60		ns
E_{off}				7		mJ
$R_{th(j-s)}$	per IGBT			0,74		K/W

SK75GAL12T4



SEMITOP® 2

IGBT Module

SK75GAL12T4

SK75GAR12T4

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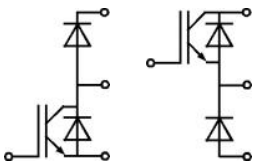
Typical Applications*

Remarks

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



GAL GAR

Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 15 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		2,38	2,71	V
		T_j = 150 °$C_{chiplev.}$		2,44	2,77	V
V_{F0}		T_j = 25 °C		1,3	1,5	V
		T_j = 150 °C		0,9	1,1	V
r_F		T_j = 25 °C		72	80,7	mΩ
		T_j = 150 °C		102,8	111,6	mΩ
I_{RRM}	I_F = A	T_j = 150 °C				A
Q_{rr}						µC
E_{rr}	V_{CC}= 600V					mJ
$R_{th(j-s)D}$	per diode			2,34		K/W
Freewheeling Diode						
$V_F = V_{EC}$	I_{Fnom} = 75 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		2,1	2,5	V
		T_j = 150 °$C_{chiplev.}$		2,4	2,5	V
V_{F0}		T_j = 25 °C		1,3	1,5	V
		T_j = 150 °C		0,9	1,1	V
r_F		T_j = 25 °C		12	13,3	V
		T_j = 150 °C		16	17,3	V
I_{RRM}	I_F = 75 A	T_j = 150 °C		45		A
Q_{rr}	di/dt = 2000 A/µs			10		µC
E_{rr}	V_{CC} = 600V			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°C (R_{25}=5kΩ)			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.

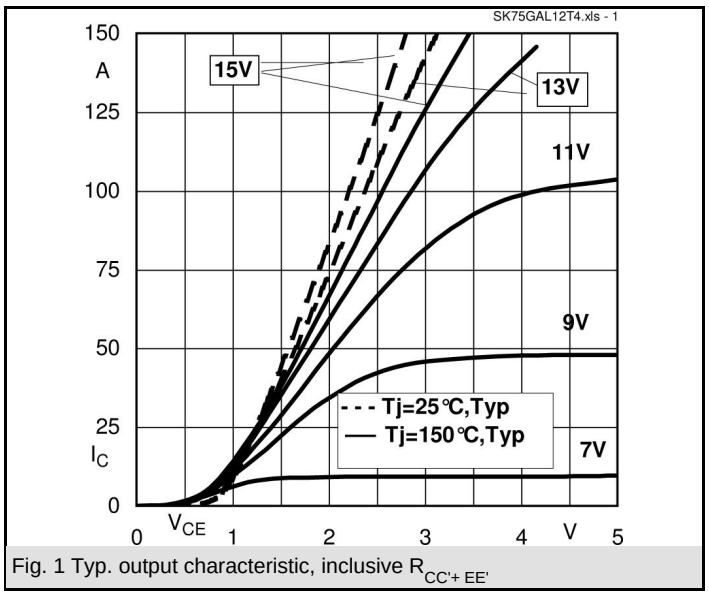


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

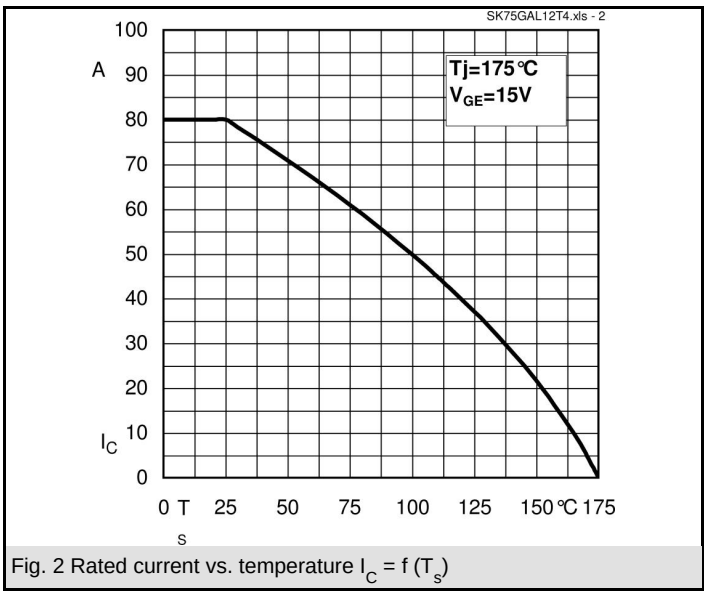


Fig. 2 Rated current vs. temperature $I_C = f(T_s)$

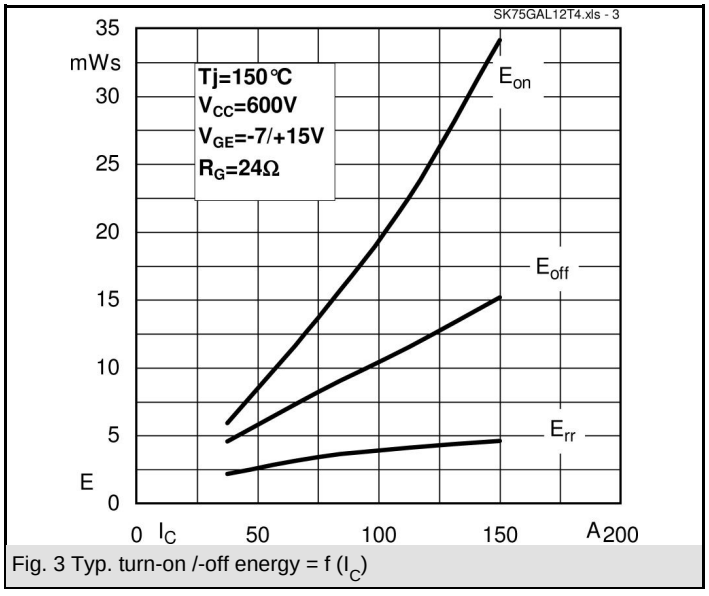


Fig. 3 Typ. turn-on /-off energy = f (I_C)

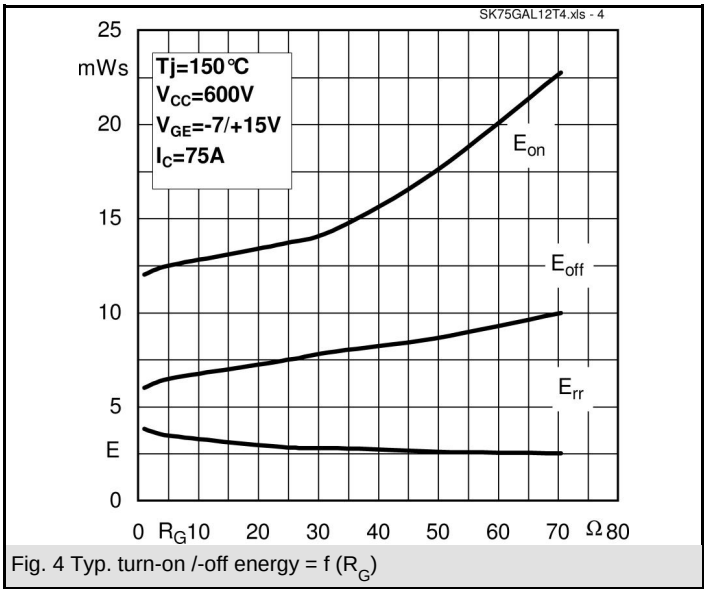


Fig. 4 Typ. turn-on /-off energy = f (R_G)

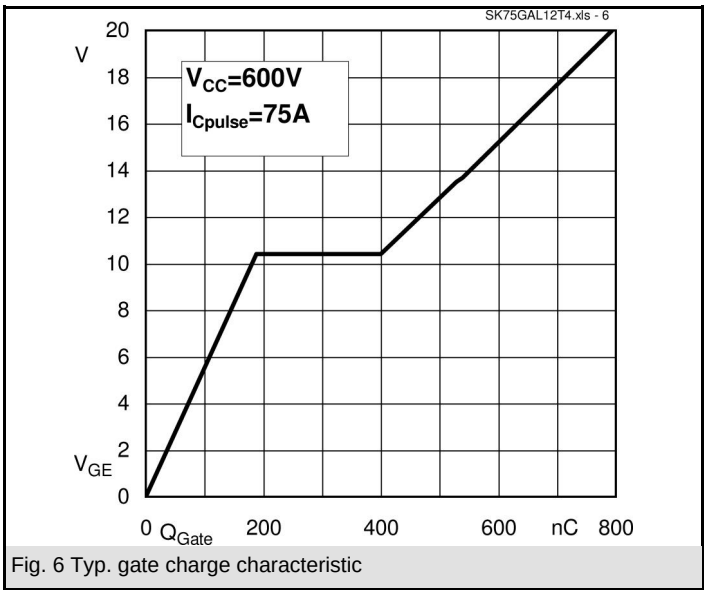


Fig. 6 Typ. gate charge characteristic

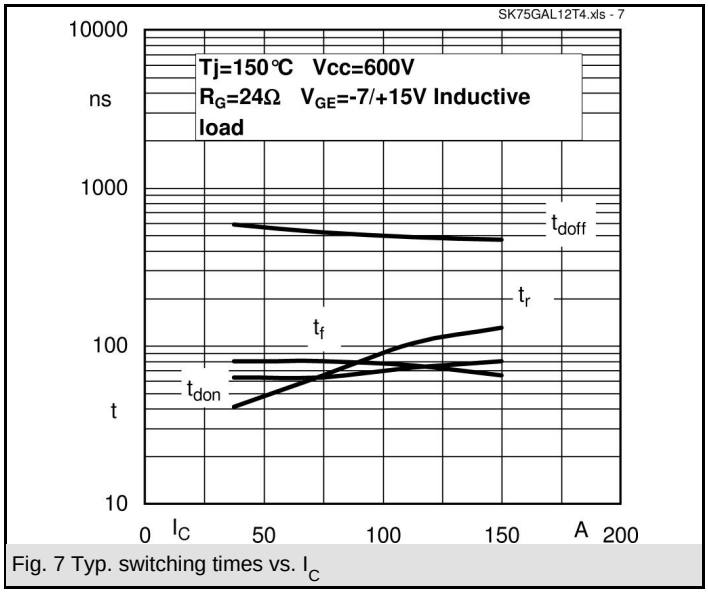


Fig. 7 Typ. switching times vs. I_C

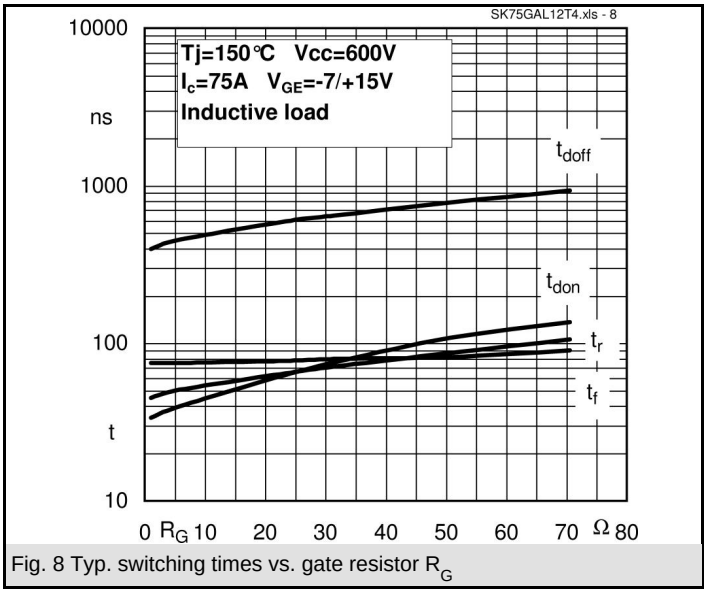


Fig. 8 Typ. switching times vs. gate resistor R_G

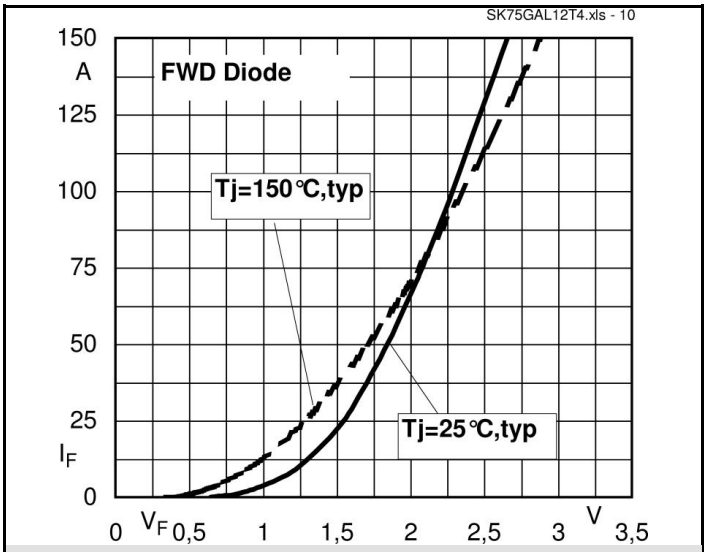
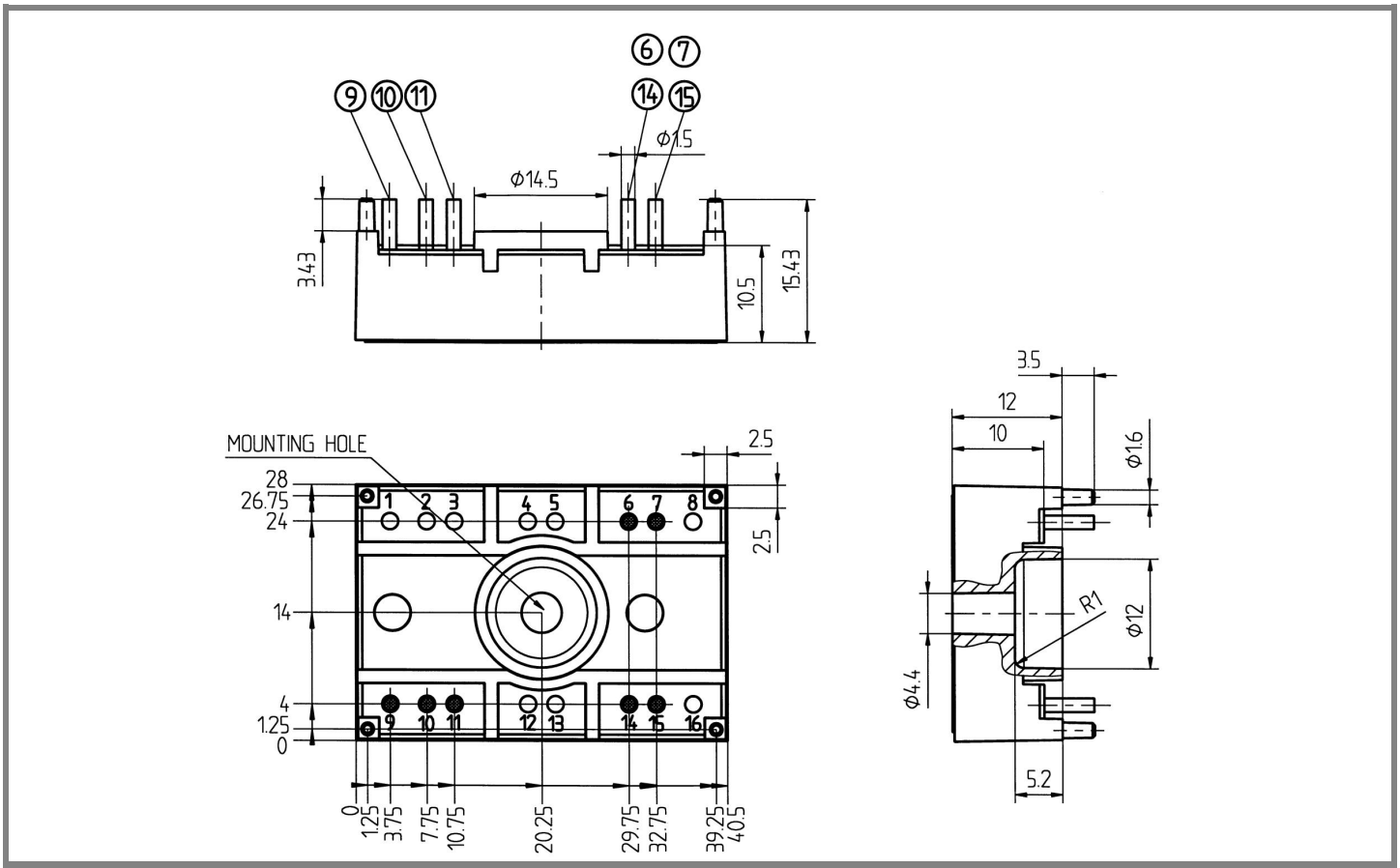
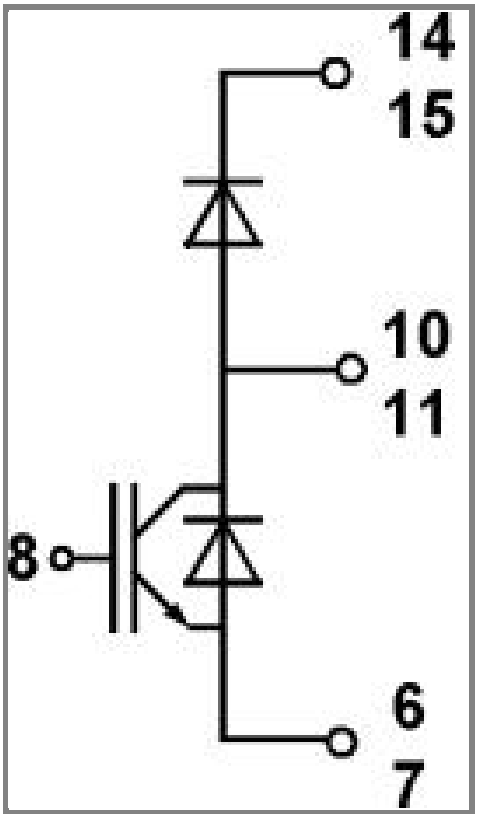


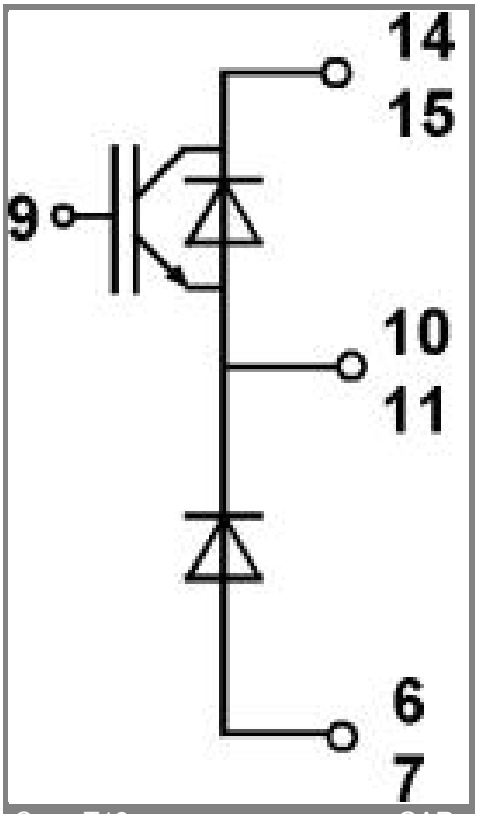
Fig. 10 CAL diode forward characteristic



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



Case T18 GAL



Case T18 GAR

