



BT134-600G

4Q Triac

21 November 2013

Product data sheet

1. General description

Planar passivated four quadrant triac in a SOT82 plastic package intended for use in general purpose bidirectional switching and phase control applications.

2. Features and benefits

- Compact package
- High blocking voltage capability
- Least sensitive gate for highest noise immunity
- Planar passivated for voltage ruggedness and reliability
- Triggering in all four quadrants

3. Applications

- General purpose low power motor control
- Home appliances
- Industrial process control

4. Quick reference data

Table 1. Quick reference data

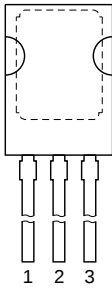
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{DRM}	repetitive peak off-state voltage		-	-	600	V
I_{TSM}	non-repetitive peak on-state current	full sine wave; $T_{\text{J}(\text{init})} = 25\text{ }^{\circ}\text{C}$; $t_{\text{p}} = 20\text{ ms}$; Fig. 4 ; Fig. 5	-	-	25	A
$I_{\text{T(RMS)}}$	RMS on-state current	full sine wave; $T_{\text{mb}} \leq 107\text{ }^{\circ}\text{C}$; Fig. 1 ; Fig. 2 ; Fig. 3	-	-	4	A
Static characteristics						
I_{GT}	gate trigger current	$V_{\text{D}} = 12\text{ V}$; $I_{\text{T}} = 0.1\text{ A}$; T2+ G+; $T_{\text{J}} = 25\text{ }^{\circ}\text{C}$; Fig. 7	-	5	50	mA
		$V_{\text{D}} = 12\text{ V}$; $I_{\text{T}} = 0.1\text{ A}$; T2+ G-; $T_{\text{J}} = 25\text{ }^{\circ}\text{C}$; Fig. 7	-	8	50	mA
		$V_{\text{D}} = 12\text{ V}$; $I_{\text{T}} = 0.1\text{ A}$; T2- G-; $T_{\text{J}} = 25\text{ }^{\circ}\text{C}$; Fig. 7	-	11	50	mA



Symbol	Parameter	Conditions		Min	Typ	Max	Unit
		$V_D = 12\text{ V}$; $I_T = 0.1\text{ A}$; T2- G+; $T_j = 25\text{ }^\circ\text{C}$; Fig. 7		-	30	100	mA

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	T1	main terminal 1	 SIP3 (SOT82)	
2	T2	main terminal 2		
3	G	gate		
mb	T2	mounting base; main terminal 2		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BT134-600G	SIP3	plastic single-ended package; 3 leads (in-line)	SOT82

7. Limiting values

Table 4. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions		Min	Max	Unit
V_{DRM}	repetitive peak off-state voltage			-	600	V
$I_{\text{T(RMS)}}$	RMS on-state current	full sine wave; $T_{\text{mb}} \leq 107\text{ }^{\circ}\text{C}$; Fig. 1 ; Fig. 2 ; Fig. 3		-	4	A
I_{TSM}	non-repetitive peak on-state current	full sine wave; $T_{\text{j(init)}} = 25\text{ }^{\circ}\text{C}$; $t_{\text{p}} = 20\text{ ms}$; Fig. 4 ; Fig. 5		-	25	A
		full sine wave; $T_{\text{j(init)}} = 25\text{ }^{\circ}\text{C}$; $t_{\text{p}} = 16.7\text{ ms}$		-	27	A
I^2t	I^2t for fusing	$t_{\text{p}} = 10\text{ ms}$; SIN		-	3.1	A^2s
dl_{T}/dt	rate of rise of on-state current	$I_{\text{T}} = 6\text{ A}$; $I_{\text{G}} = 0.2\text{ A}$; $dl_{\text{G}}/dt = 0.2\text{ A}/\mu\text{s}$; T2+ G+		-	50	$\text{A}/\mu\text{s}$
		$I_{\text{T}} = 6\text{ A}$; $I_{\text{G}} = 0.2\text{ A}$; $dl_{\text{G}}/dt = 0.2\text{ A}/\mu\text{s}$; T2+ G-		-	50	$\text{A}/\mu\text{s}$
		$I_{\text{T}} = 6\text{ A}$; $I_{\text{G}} = 0.2\text{ A}$; $dl_{\text{G}}/dt = 0.2\text{ A}/\mu\text{s}$; T2- G-		-	50	$\text{A}/\mu\text{s}$
		$I_{\text{T}} = 6\text{ A}$; $I_{\text{G}} = 0.2\text{ A}$; $dl_{\text{G}}/dt = 0.2\text{ A}/\mu\text{s}$; T2- G+		-	10	$\text{A}/\mu\text{s}$
I_{GM}	peak gate current			-	2	A
P_{GM}	peak gate power			-	5	W
$P_{\text{G(AV)}}$	average gate power	over any 20 ms period		-	0.5	W
T_{stg}	storage temperature			-40	150	$^{\circ}\text{C}$
T_{j}	junction temperature			-	125	$^{\circ}\text{C}$

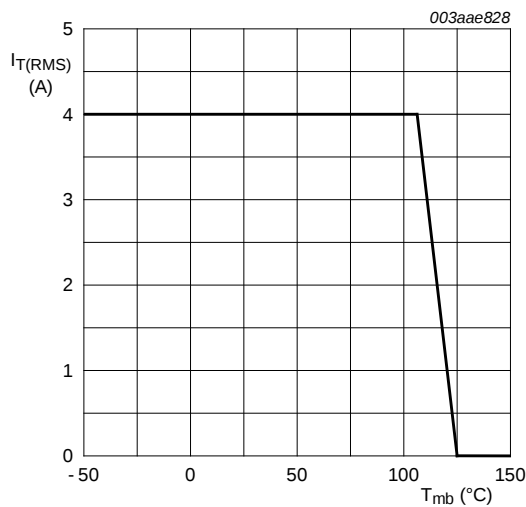
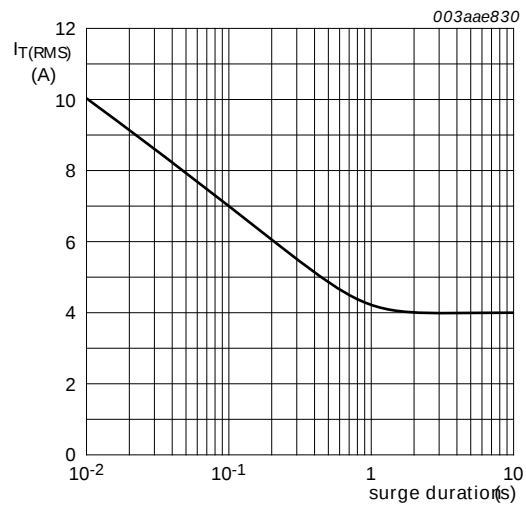


Fig. 1. RMS on-state current as a function of mounting base temperature; maximum values



f = 50 Hz
T_{mb} ≤ 107 °C

Fig. 2. RMS on-state current as a function of surge duration; maximum values

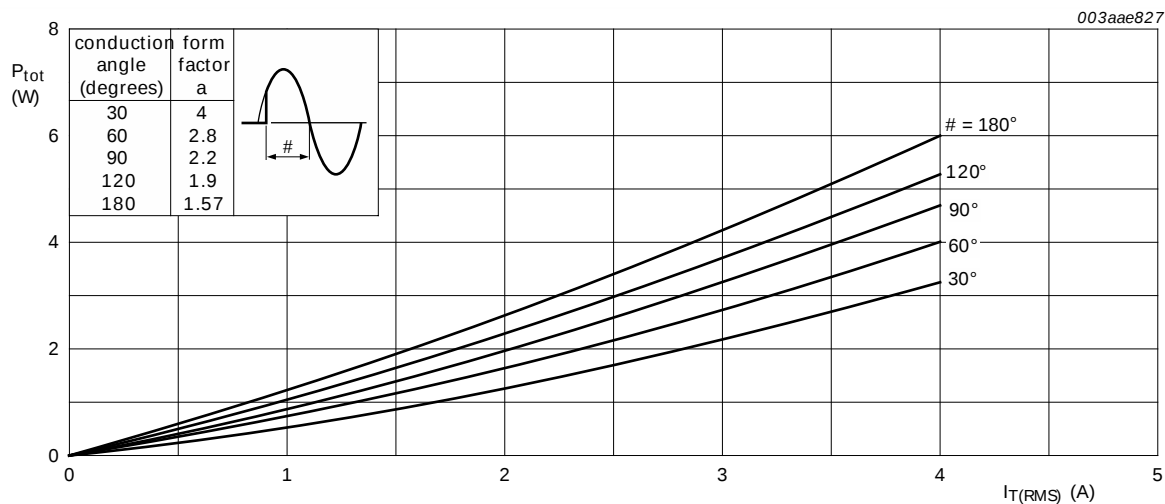


Fig. 3. Total power dissipation as a function of RMS on-state current; maximum values

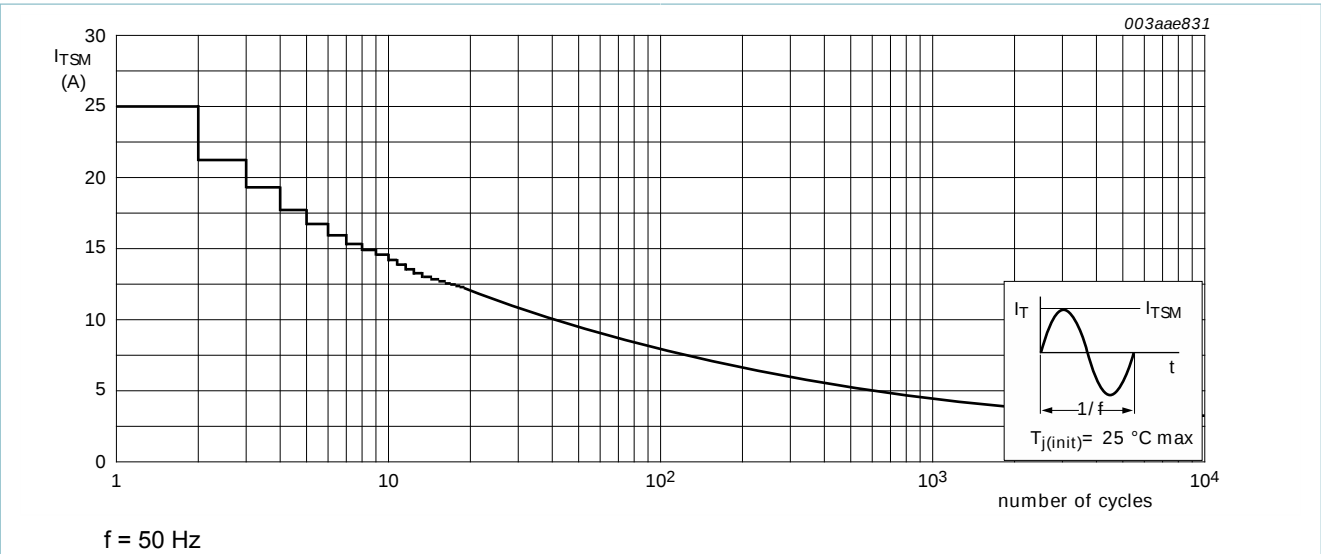


Fig. 4. Non-repetitive peak on-state current as a function of the number of sinusoidal current cycles; maximum values

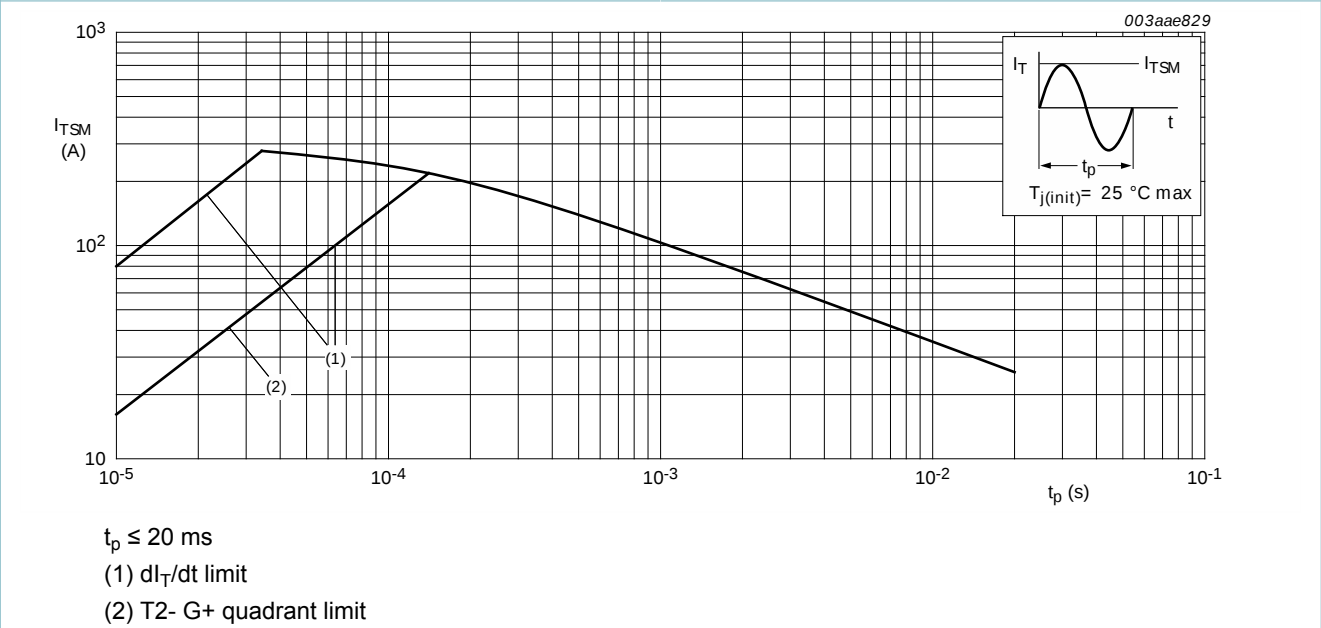


Fig. 5. Non-repetitive peak on-state current as a function of pulse width; maximum values

8. Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-mb)}$	thermal resistance from junction to mounting base	half cycle; Fig. 6	-	-	3.7	K/W
		full cycle; Fig. 6	-	-	3	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	-	100	-	K/W

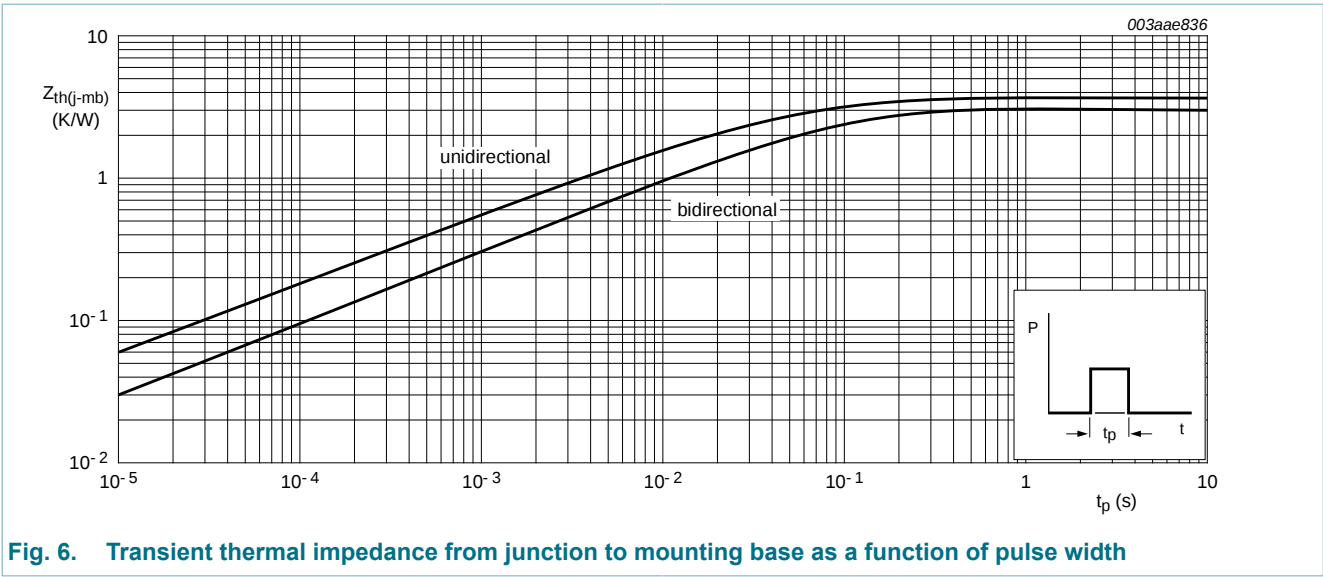
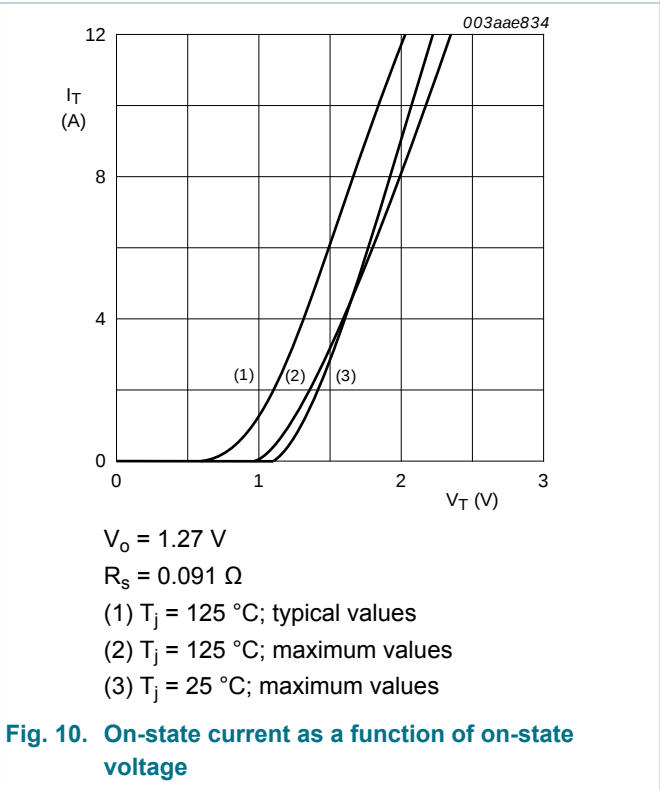
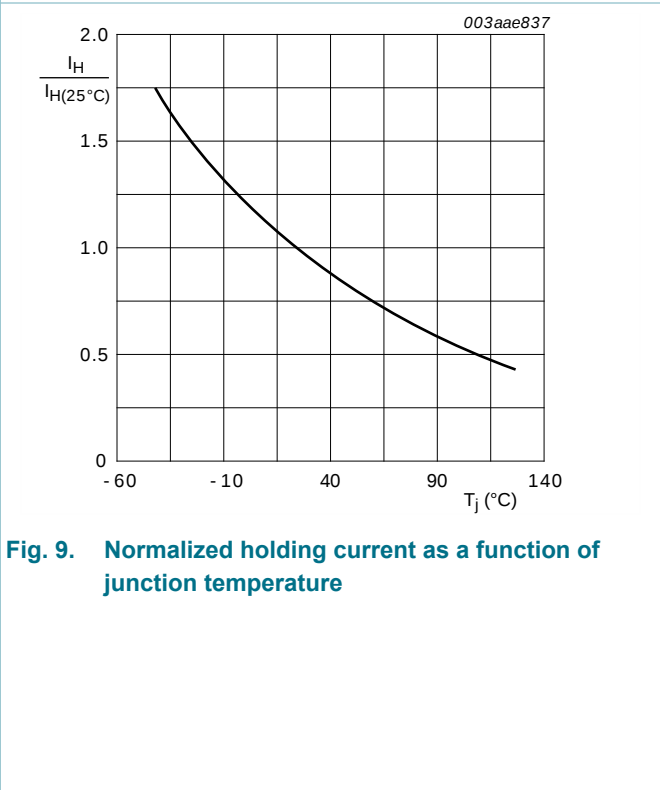
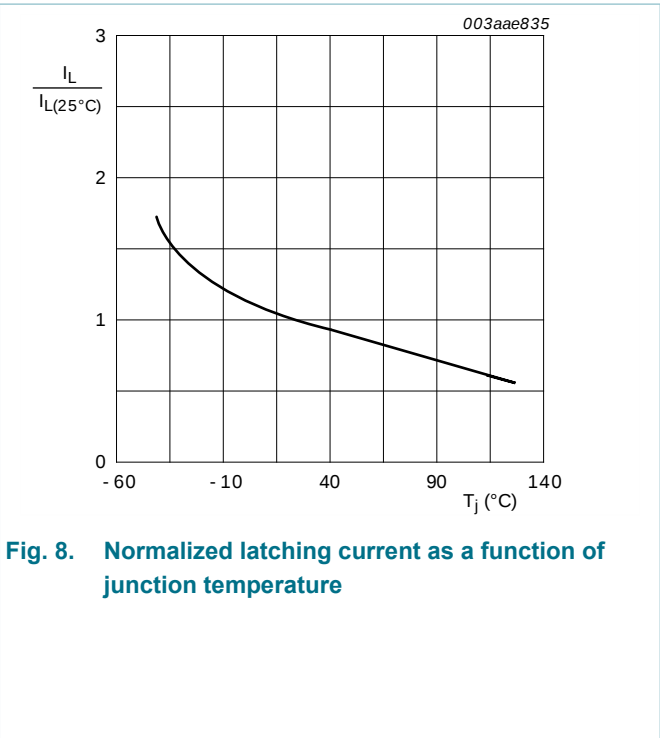
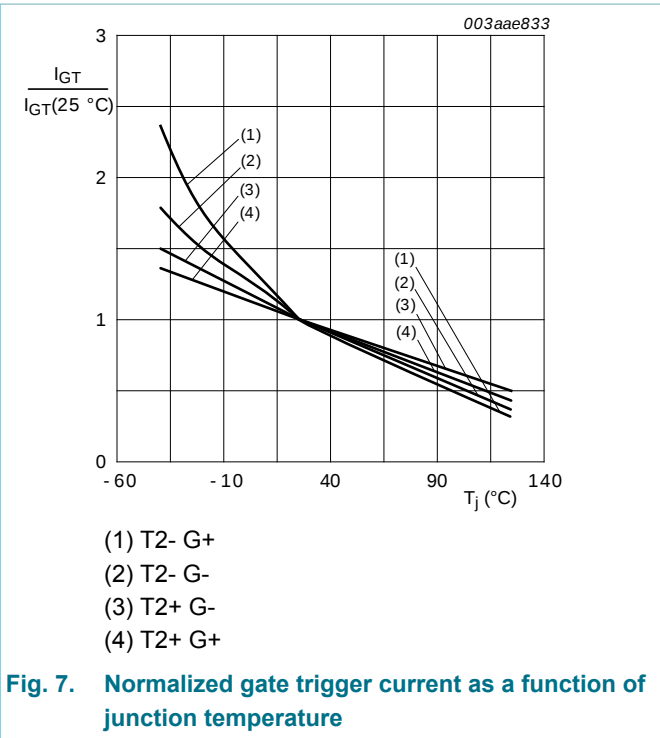


Fig. 6. Transient thermal impedance from junction to mounting base as a function of pulse width

9. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
I_{GT}	gate trigger current	$V_D = 12\text{ V}$; $I_T = 0.1\text{ A}$; T2+ G+; $T_j = 25\text{ }^\circ\text{C}$; Fig. 7		-	5	50	mA
		$V_D = 12\text{ V}$; $I_T = 0.1\text{ A}$; T2+ G-; $T_j = 25\text{ }^\circ\text{C}$; Fig. 7		-	8	50	mA
		$V_D = 12\text{ V}$; $I_T = 0.1\text{ A}$; T2- G-; $T_j = 25\text{ }^\circ\text{C}$; Fig. 7		-	11	50	mA
		$V_D = 12\text{ V}$; $I_T = 0.1\text{ A}$; T2- G+; $T_j = 25\text{ }^\circ\text{C}$; Fig. 7		-	30	100	mA
I_L	latching current	$V_D = 12\text{ V}$; $I_G = 0.1\text{ A}$; T2+ G+; $T_j = 25\text{ }^\circ\text{C}$; Fig. 8		-	7	30	mA
		$V_D = 12\text{ V}$; $I_G = 0.1\text{ A}$; T2+ G-; $T_j = 25\text{ }^\circ\text{C}$; Fig. 8		-	16	45	mA
		$V_D = 12\text{ V}$; $I_G = 0.1\text{ A}$; T2- G-; $T_j = 25\text{ }^\circ\text{C}$; Fig. 8		-	5	30	mA
		$V_D = 12\text{ V}$; $I_G = 0.1\text{ A}$; T2- G+; $T_j = 25\text{ }^\circ\text{C}$; Fig. 8		-	7	45	mA
I_H	holding current	$V_D = 12\text{ V}$; $T_j = 25\text{ }^\circ\text{C}$; Fig. 9		-	5	30	mA
V_T	on-state voltage	$I_T = 5\text{ A}$; $T_j = 25\text{ }^\circ\text{C}$; Fig. 10		-	1.4	1.7	V
V_{GT}	gate trigger voltage	$V_D = 12\text{ V}$; $I_T = 0.1\text{ A}$; $T_j = 25\text{ }^\circ\text{C}$; Fig. 11		-	0.7	1.5	V
		$V_D = 400\text{ V}$; $I_T = 0.1\text{ A}$; $T_j = 125\text{ }^\circ\text{C}$; Fig. 11		0.25	0.4	-	V
I_D	off-state current	$V_D = 600\text{ V}$; $T_j = 125\text{ }^\circ\text{C}$		-	0.1	0.5	mA
Dynamic characteristics							
dV_D/dt	rate of rise of off-state voltage	$V_{DM} = 402\text{ V}$; $T_j = 125\text{ }^\circ\text{C}$; ($V_{DM} = 67\%$ of V_{DRM}); exponential waveform; gate open circuit		200	250	-	V/ μs
t_{gt}	gate-controlled turn-on time	$I_{TM} = 6\text{ A}$; $V_D = 600\text{ V}$; $I_G = 0.1\text{ A}$; $dI_G/dt = 5\text{ A}/\mu\text{s}$		-	2	-	μs



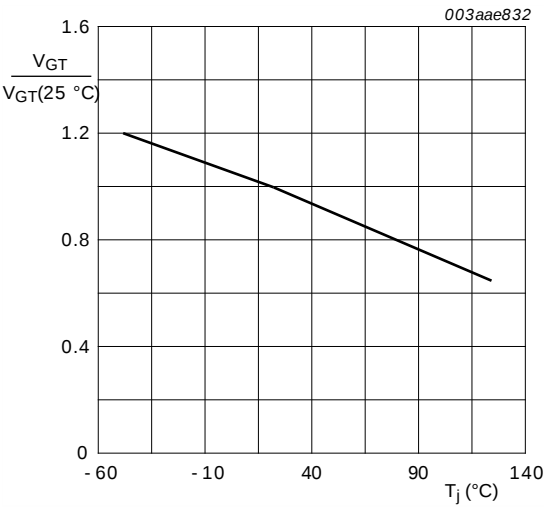
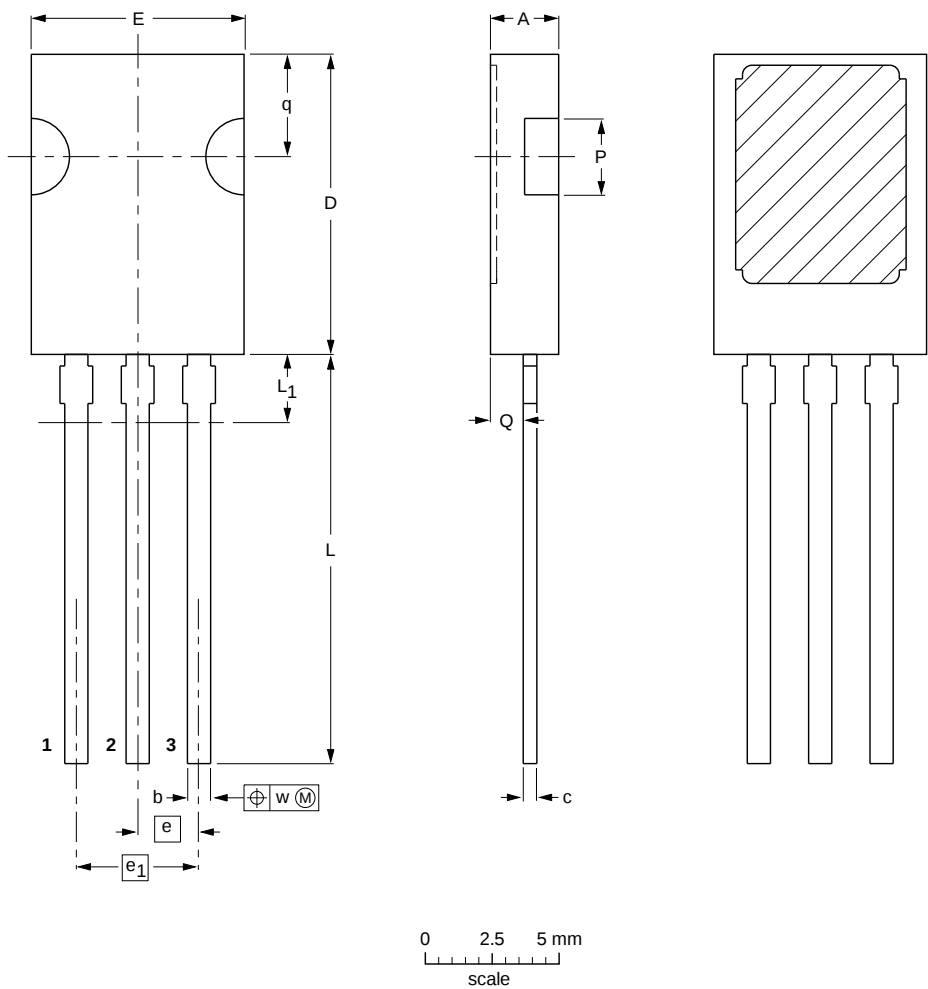


Fig. 11. Normalized gate trigger voltage as a function of junction temperature

10. Package outline

Plastic single-ended package; 3 leads (in-line)

SOT82



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	c	D	E	e	e ₁	L	L ₁ ⁽¹⁾ max.	P	Q	q	w
mm	2.8 2.3	0.88 0.65	0.58 0.47	11.1 10.5	7.8 7.2	2.29	4.58	16.5 15.3	2.54	3.1 2.5	1.5 0.9	3.9 3.5	0.254

Note

1. Terminal dimensions within this zone are uncontrolled to allow for body and terminal irregularities.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT82						97-06-11

Fig. 12. Package outline SIP3 (SOT82)

11. Legal information

11.1 Data sheet status

Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
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