

1. General description

Planar passivated very sensitive gate four quadrant triac in a SOT223-2L surface-mountable plastic package intended for applications requiring direct interfacing to logic level ICs and low power gate drivers package intended for applications requiring direct interfacing to logic level ICs and low power gate drivers.

2. Features and benefits

- Direct interfacing to logic level ICs
- Direct interfacing to low power gate drive circuits
- High blocking voltage capability
- Planar passivated for voltage ruggedness and reliability
- Surface-mountable package
- Triggering in all four quadrants
- Very sensitive gate

3. Applications

- General purpose low power motor control
- Home appliances
- Industrial process control
- Low power AC Fan controllers

4. Quick reference data

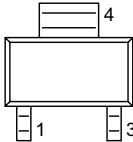
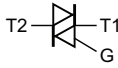
Table 1. Quick reference data

Symbol	Parameter	Conditions	Notes	Values			Unit
Absolute maximum rating							
V _{DRM}	repetitive peak off-state voltage			800			V
I _{T(RMS)}	RMS on-state current	full sine wave; T _{sp} ≤ 65 °C; Fig. 1 ; Fig. 2 ; Fig. 3		4			A
I _{TSM}	non-repetitive peak on-state current	full sine wave; T _{j(init)} = 25 °C; t _p = 20 ms; Fig. 4 ; Fig. 5		25			A
		full sine wave; T _{j(init)} = 25 °C; t _p = 16.7 ms		27			A
T _j	operating junction temperature			-40 to 150			°C
Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
Static characteristics							
I _{GT}	gate trigger current	V _D = 12 V; I _T = 0.1 A; T2+ G+; T _j = 25 °C; Fig. 7		-	-	10	mA
		V _D = 12 V; I _T = 0.1 A; T2+ G-; T _j = 25 °C; Fig. 7		-	-	10	mA
		V _D = 12 V; I _T = 0.1 A; T2- G-; T _j = 25 °C; Fig. 7		-	-	10	mA
		V _D = 12 V; I _T = 0.1 A; T2- G+; T _j = 25 °C; Fig. 7		-	-	25	mA

Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
Static characteristics							
I_H	holding current	$V_D = 12\text{ V}$; $T_j = 25\text{ }^\circ\text{C}$; Fig. 9		-	-	15	mA
V_T	on-state voltage	$I_T = 4\text{ A}$; $T_j = 25\text{ }^\circ\text{C}$; Fig. 10		-	1.4	1.6	V
Dynamic characteristics							
dV_D/dt	rate of rise of off-state voltage	$V_{DM} = 536\text{ V}$; $T_j = 125\text{ }^\circ\text{C}$; ($V_{DM} = 67\%$ of V_{DRM}); exponential waveform; gate open circuit		150	-	-	V/ μs
dV_{com}/dt	rate of change of commutating voltage	$V_D = 400\text{ V}$; $T_j = 125\text{ }^\circ\text{C}$; $dI_{com}/dt = 2\text{ A/ms}$		2	-	-	V/ μs

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	T1	main terminal 1		 sym051
3	G	gate		
4	T2	main terminal 2		

6. Ordering information

Table 3. Ordering information

Type number	Package Name	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
BT234V-800ET	SOT223	BT234V-800ETF	Reel	4000	SOT223d-2L	02-Apr-2025

7. Marking

Table 4. Marking codes

Type number	Marking codes
BT234V-800ET	234V8E

8. Limiting values

Table 5. Limiting values

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

Symbol	Parameter	Conditions	Notes	Values	Unit
V_{DRM}	repetitive peak off-state voltage			800	V
V_{RRM}	repetitive peak reverse voltage			800	V
$I_{T(RMS)}$	RMS on-state current	full sine wave; $T_{sp} \leq 65\text{ }^{\circ}\text{C}$; Fig 1 ; Fig 2 ; Fig 3		4	A
I_{TSM}	non-repetitive peak on-state current	full sine wave; $T_{j(init)} = 25\text{ }^{\circ}\text{C}$; $t_p = 20\text{ ms}$; Fig 4 ; Fig 5		25	A
		full sine wave; $T_{j(init)} = 25\text{ }^{\circ}\text{C}$; $t_p = 16.7\text{ ms}$		27	A
I^2t	I^2t for fusing	$t_p = 10\text{ ms}$; SIN		3.1	A^2s
di_T/dt	rate of rise of on-state current	$I_G = 20\text{ mA}$; T2+ G+		50	$\text{A}/\mu\text{s}$
		$I_G = 20\text{ mA}$; T2+ G-		50	$\text{A}/\mu\text{s}$
		$I_G = 20\text{ mA}$; T2- G-		50	$\text{A}/\mu\text{s}$
		$I_G = 50\text{ mA}$; T2- G+		10	$\text{A}/\mu\text{s}$
I_{GM}	peak gate current			2	A
P_{GM}	peak gate power			5	W
$P_{G(AV)}$	average gate power	over any 20 ms period		0.5	W
T_{stg}	storage temperature			-40 to 150	$^{\circ}\text{C}$
T_j	operating junction temperature			-40 to 150	$^{\circ}\text{C}$

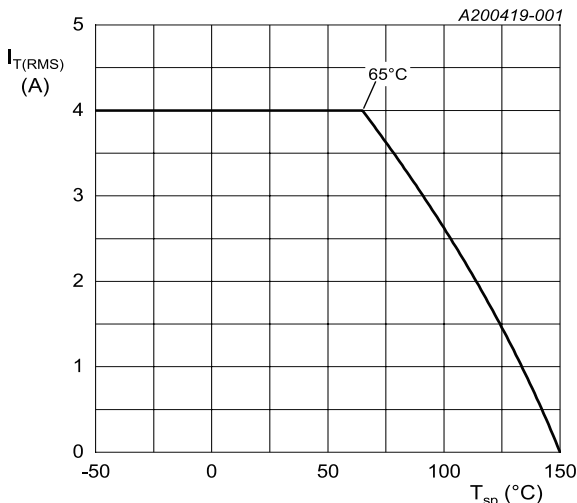
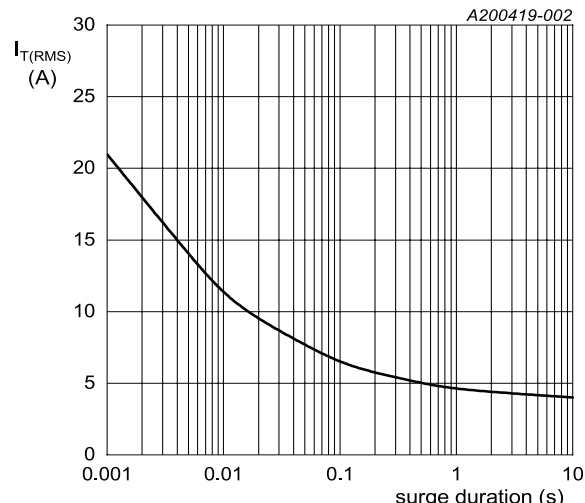


Fig. 1. RMS on-state current as a function of solder point temperature; maximum values



$f = 50\text{ Hz}$; $T_{sp} = 65\text{ }^{\circ}\text{C}$

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

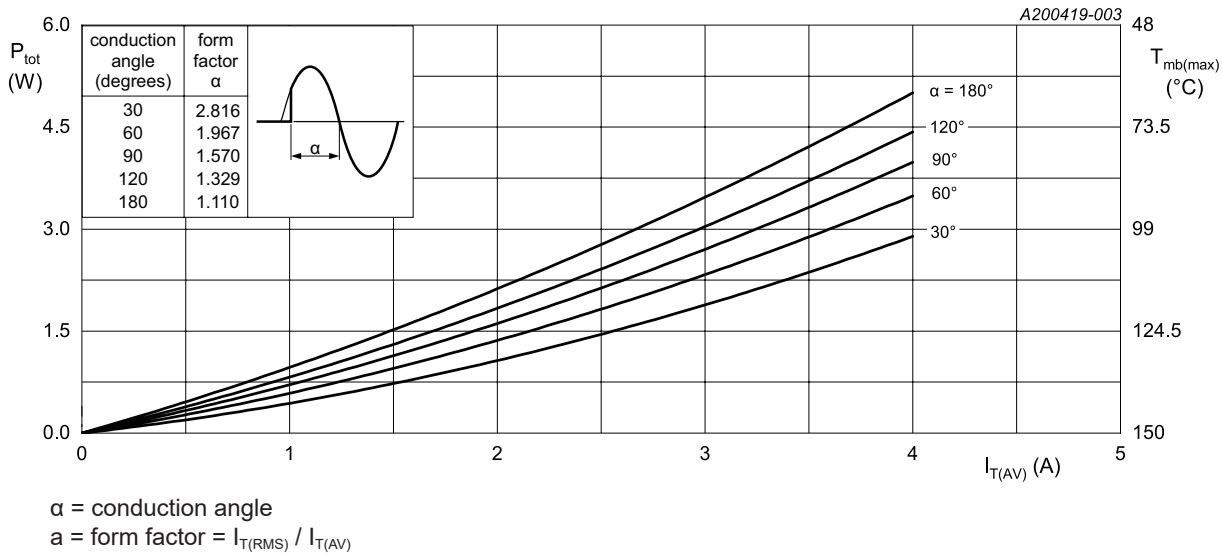


Fig. 3. Total power dissipation as a function of RMS on-state current; maximum values

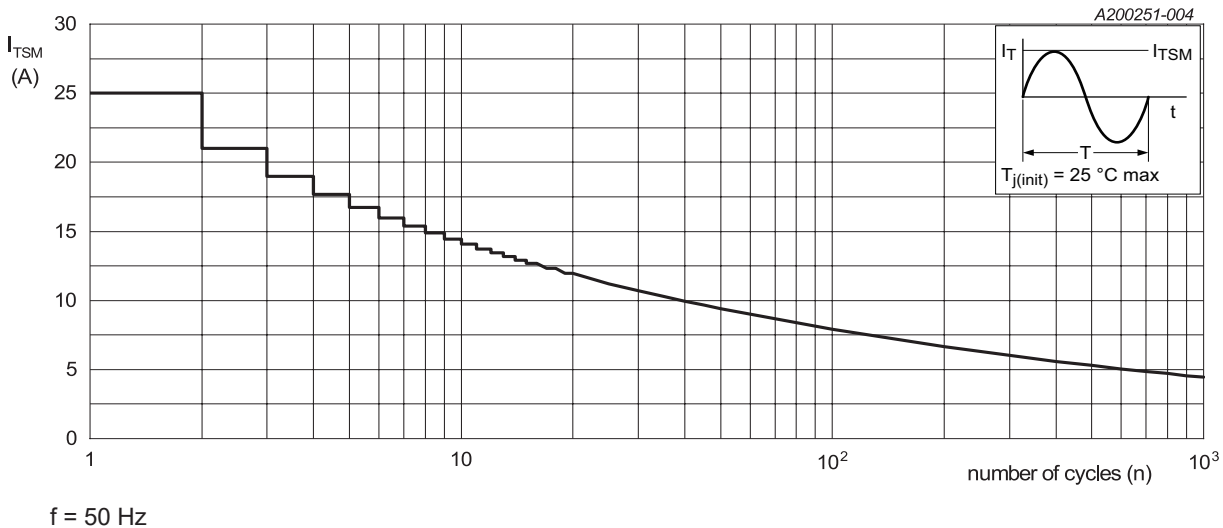


Fig. 4. Non-repetitive peak on-state current as a function of the number of sinusoidal current cycles; maximum values

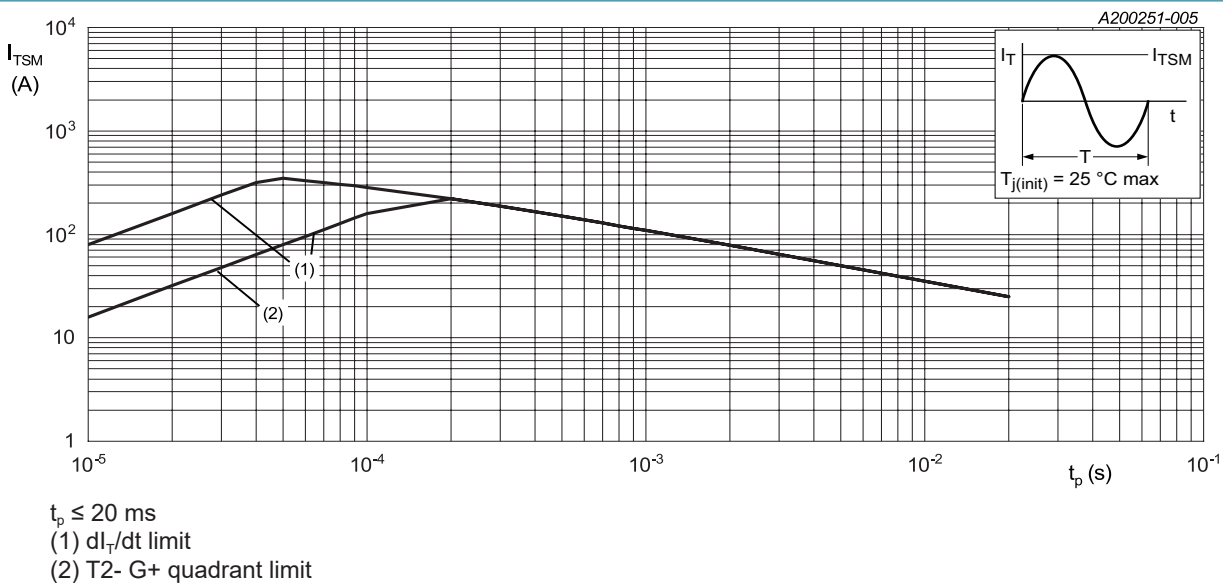
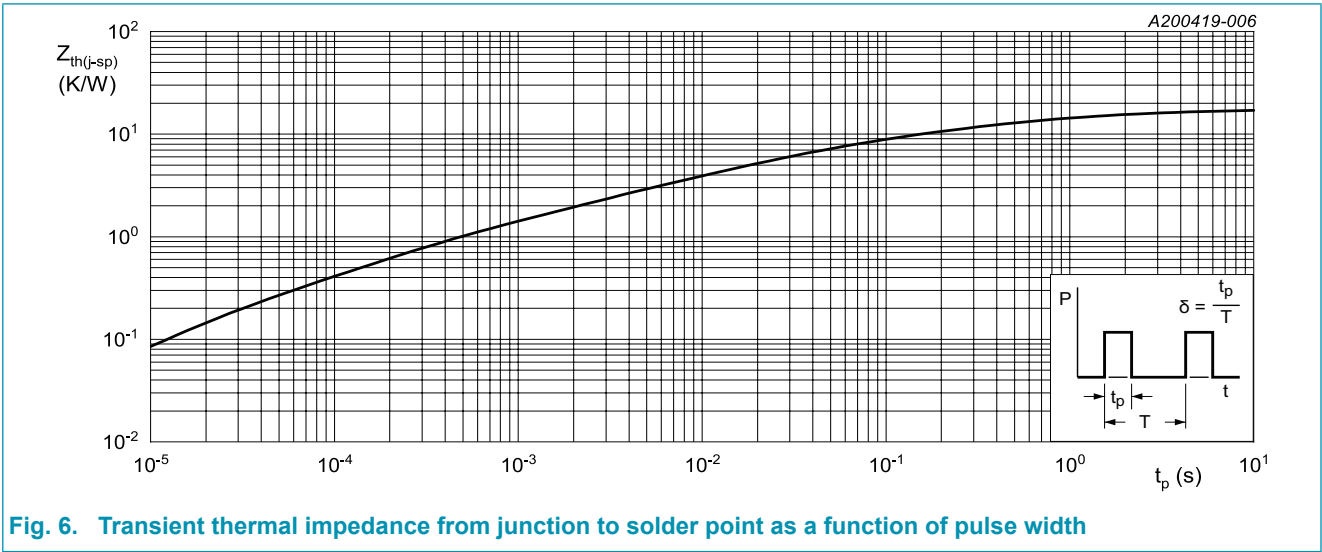


Fig. 5. Non-repetitive peak on-state current as a function of pulse width; maximum values

9. Thermal characteristics

Table 6. Thermal characteristics

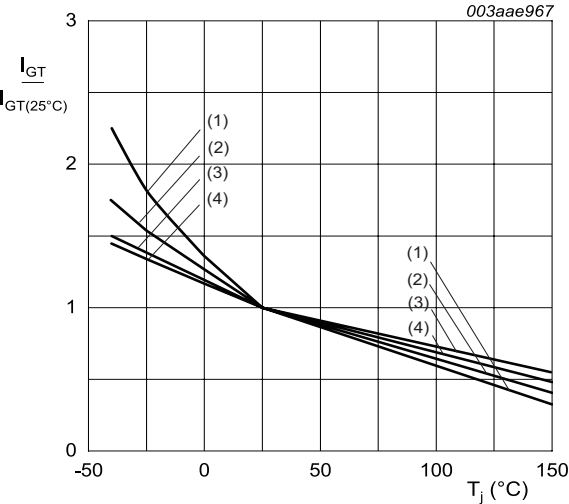
Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
$R_{th(j-sp)}$	thermal resistance from junction to solder point	full cycle; Fig 6		-	-	17	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air; printed-circuit board mounted; pad area		-	65	-	K/W



10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
Static characteristics							
I _{GT}	gate trigger current	V _D = 12 V; I _T = 0.1 A; T2+ G+; T _j = 25 °C; Fig. 7		-	-	10	mA
		V _D = 12 V; I _T = 0.1 A; T2+ G-; T _j = 25 °C; Fig. 7		-	-	10	mA
		V _D = 12 V; I _T = 0.1 A; T2- G-; T _j = 25 °C; Fig. 7		-	-	10	mA
		V _D = 12 V; I _T = 0.1 A; T2- G+; T _j = 25 °C; Fig. 7		-	-	25	mA
I _L	latching current	V _D = 12 V; I _G = 0.1 A; T2+ G+; T _j = 25 °C; Fig. 8		-	-	15	mA
		V _D = 12 V; I _G = 0.1 A; T2+ G-; T _j = 25 °C; Fig. 8		-	-	20	mA
		V _D = 12 V; I _G = 0.1 A; T2- G-; T _j = 25 °C; Fig. 8		-	-	15	mA
		V _D = 12 V; I _G = 0.1 A; T2- G+; T _j = 25 °C; Fig. 8		-	-	20	mA
I _H	holding current	V _D = 12 V; T _j = 25 °C; Fig. 9		-	-	15	mA
V _T	on-state voltage	I _T = 4 A; T _j = 25 °C; Fig. 10		-	1.4	1.6	V
V _{GT}	gate trigger voltage	V _D = 12 V; I _T = 0.1 A; T _j = 25 °C; Fig. 11		-	-	1	V
		V _D = 400 V; I _T = 0.1 A; T _j = 150 °C; Fig. 11		0.2	-	-	V
I _D	off-state current	V _D = 800 V; T _j = 25 °C		-	-	10	μA
		V _D = 800 V; T _j = 150 °C		-	-	1	mA
I _R	reverse current	V _R = 800 V; T _j = 25 °C		-	-	10	μA
		V _R = 800 V; T _j = 150 °C		-	-	1	mA
Dynamic characteristics							
dV _D /dt	rate of rise of off-state voltage	V _{DM} = 536 V; T _j = 125 °C; (V _{DM} = 67% of V _{DRM}); exponential waveform; gate open circuit		150	-	-	V/μs
dV _{com} /dt	rate of change of commutating voltage	V _D = 400 V; T _j = 125 °C; dI _{com} /dt = 2 A/ms		2	-	-	V/μs



- (1) T2- G+
- (2) T2- G-
- (3) T2+ G-
- (4) T2+ G+

Fig. 7. Normalized gate trigger current as a function of junction temperature

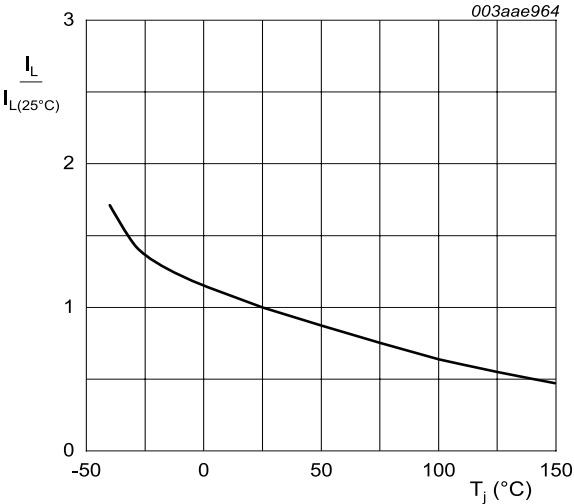


Fig. 8. Normalized latching current as a function of junction temperature

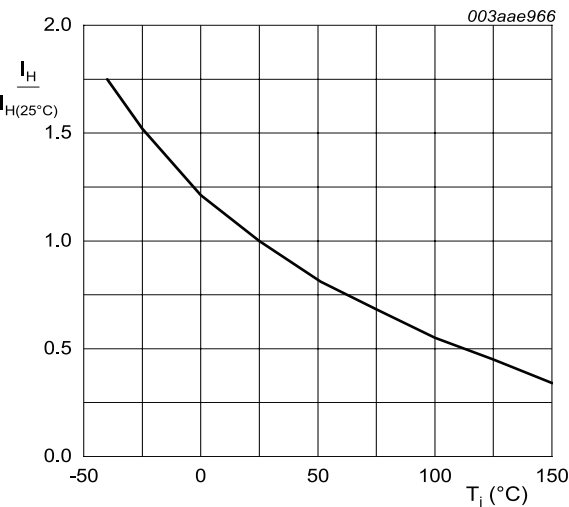
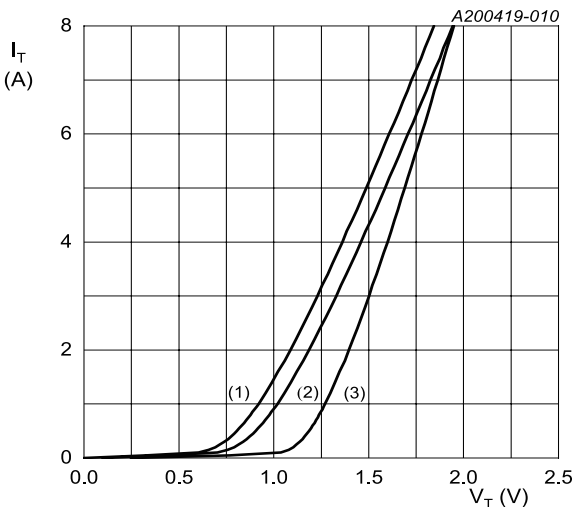


Fig. 9. Normalized holding current as a function of junction temperature



- $V_o = 0.967\text{ V}; R_s = 0.0950\ \Omega$
- (1) $T_j = 150\ ^{\circ}C$; typical values
 - (2) $T_j = 150\ ^{\circ}C$; maximum values
 - (3) $T_j = 25\ ^{\circ}C$; maximum values

Fig. 10. On-state current as a function of on-state voltage

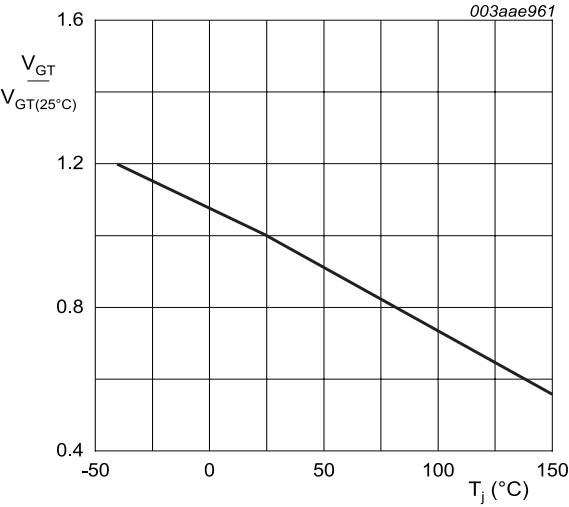
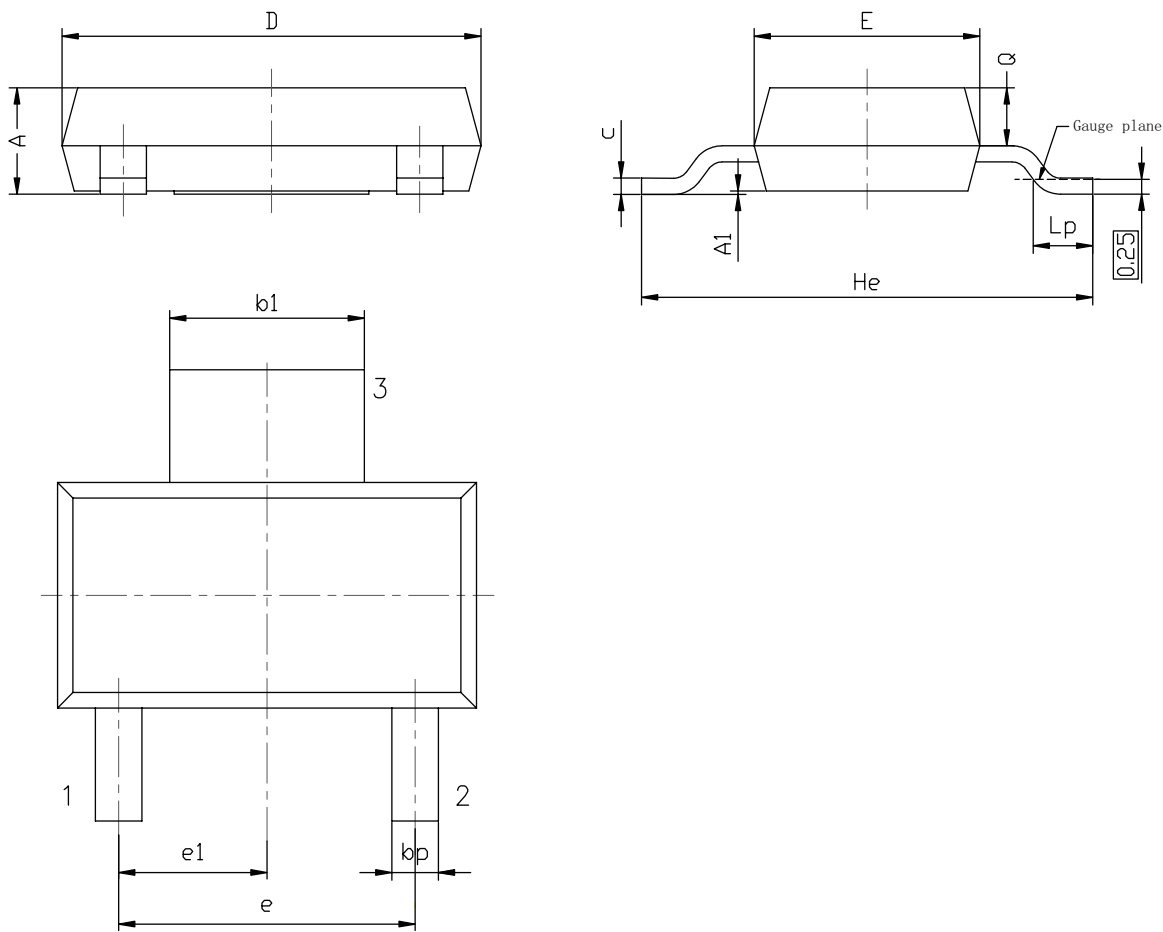


Fig. 11. Normalized gate trigger voltage as a function of junction temperature

11. Package outline



Unit	A	A1	bp	b1	c	D	E	e	e1	He	Lp	Q	
mm	Min	1.50	0.01	0.66	2.90	0.23	6.30	3.30	4.50	2.20	6.70	0.75	0.82
	Max	1.81	0.12	0.85	3.13	0.35	6.70	3.70	4.70	2.40	7.30	1.20	0.93

12. Legal information

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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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Product [short] data sheet	Production	This document contains the product specification.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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