BT153B-1200T

SCR

Rev.02 - 21 January 2026 Product data sheet

1. General description

Planar passivated Silicon Controlled Rectifier (SCR) in a TO263 surface mountable plastic package intended for use in applications requiring very high inrush current capability and high bidirectional blocking voltage capability.

2. Features and benefits

- High junction operating temperature capability ($T_{j(max)}$ = 150 °C)
- AEC-Q101 compliant
- Planar passivated for voltage ruggedness and reliability
- High voltage capacity
- Very high current surge capability
- Surface mountable package

3. Applications

- Automotive battery charger, On Board Charger & Off Board Charger
- DC motor control
- Power converter
- Solid State Relay (SSR)
- Uninterruptible Power Supply (UPS)

4. Quick reference data

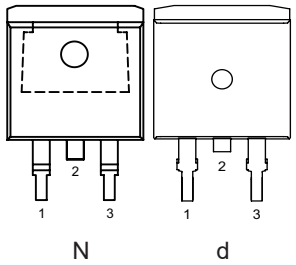
Table 1. Quick reference data

Symbol	Parameter	Conditions	Values	Unit
Absolute maximum rating				
V_{RRM}	repetitive peak reverse voltage		1200	V
$I_{T(RMS)}$	RMS on-state current	half sine wave; $T_{mb} \leq 119$ °C; Fig. 1; Fig. 2; Fig. 3	47	A
I_{TSM}	non-repetitive peak on-state current	half sine wave; $T_{j(init)}$ = 25 °C; t_p = 10 ms; Fig. 4; Fig. 5	350	A
		half sine wave; $T_{j(init)}$ = 25 °C; t_p = 8.3 ms	385	A
T_j	junction temperature		150	°C

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
I_{GT}	gate trigger current	V_D = 12 V; I_T = 0.1 A; T_j = 25 °C; Fig. 7; Fig. 8		-	-	50	mA
I_H	holding current	V_D = 12 V; T_j = 25 °C; Fig. 10		-	-	80	mA
V_T	on-state voltage	I_T = 30 A; T_j = 25 °C; Fig. 11		-	-	1.3	V
Dynamic characteristics							
dV_D/dt	rate of rise of off-state voltage	V_{DM} = 804 V; T_j = 150 °C; (V_{DM} = 67% of V_{DRM}); gate open; exponential waveform;		1000	-	-	V/µs

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode		
2	A	anode		
3	G	gate		
mb	A	mounting base; connected to anode		

6. Ordering information

Table 3. Ordering information

Type number	Package Name	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
BT153B-1200T	TO263	BT153B-1200TJ	Reel	800	TO263N (N)	26-Sep-2016
					TO263d (d)	17-Mar-2023

7. Marking

Table 4. Marking codes

Type number	Marking codes	
	Assembly factory: N	Assembly factory: d
BT153B-1200T	BT153B 1200T PJNxxxx xx	BT153B 1200T PJdxxxx xx

8. Limiting values

Table 5. Limiting values

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

Symbol	Parameter	Conditions	Values	Unit
V_{DRM}	repetitive peak off-state voltage		1200	V
V_{RRM}	repetitive peak reverse voltage		1200	V
$I_{T(AV)}$	average on-state current	half sine wave; $T_{mb} \leq 119$ °C;	30	A
$I_{T(RMS)}$	RMS on-state current	half sine wave; $T_{mb} \leq 119$ °C; Fig. 1; Fig. 2; Fig. 3	47	A
I_{TSM}	non-repetitive peak on-state current	half sine wave; $T_{j(init)}$ = 25 °C; t_p = 10 ms; Fig. 4; Fig. 5	350	A
		half sine wave; $T_{j(init)}$ = 25 °C; t_p = 8.3 ms	385	A
I^2t	I^2t for fusing	t_p = 10ms; sine wave	612.5	A^2s
dI_T/dt	rate of rise of on-state current	I_G = 100mA	150	A/µs
I_{GM}	peak gate current		5	A
V_{GM}	peak gate voltage		5	V
P_{GM}	peak gate power		20	W
$P_{G(AV)}$	average gate power	over any 20 ms period	0.5	W
T_{stg}	storage temperature		-40 to 150	°C
T_j	junction temperature		150	°C

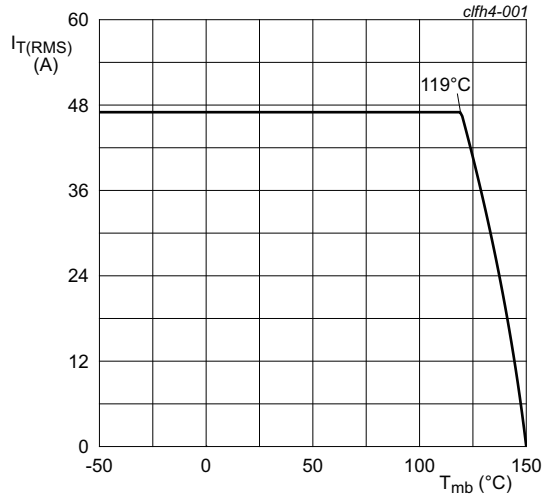
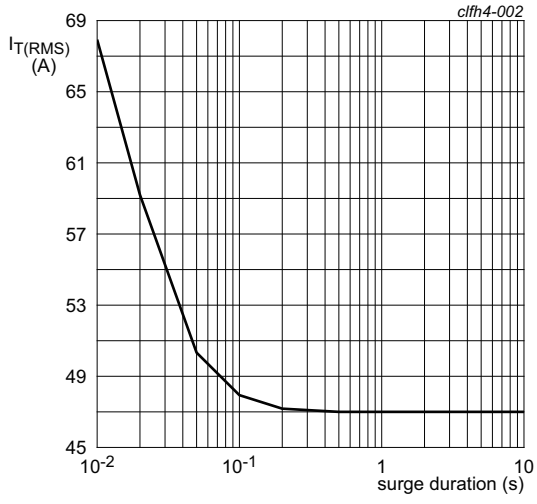
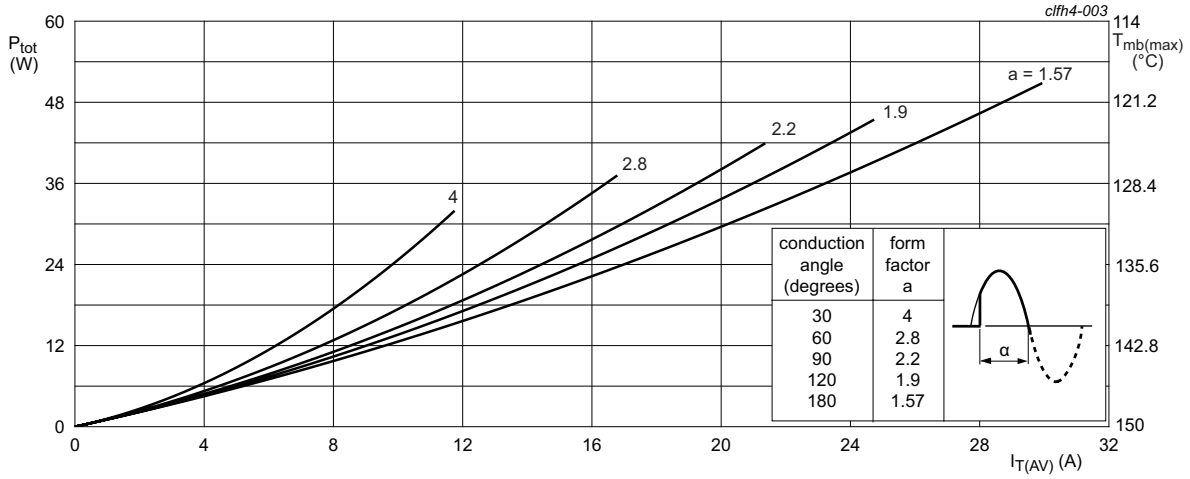


Fig. 1. RMS on-state current as a function of mounting base temperature; maximum values



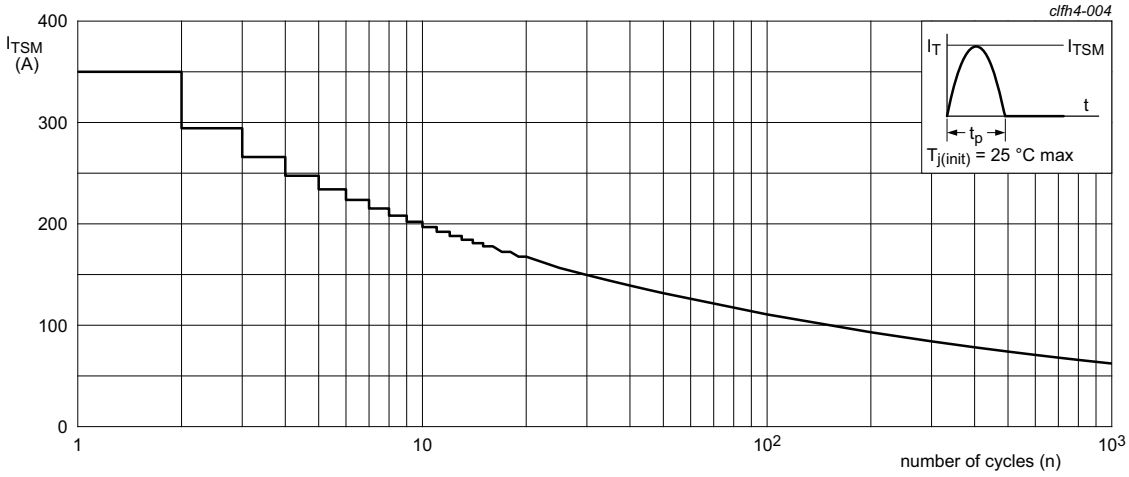
f = 50 Hz; T_{mb} = 119 °C

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



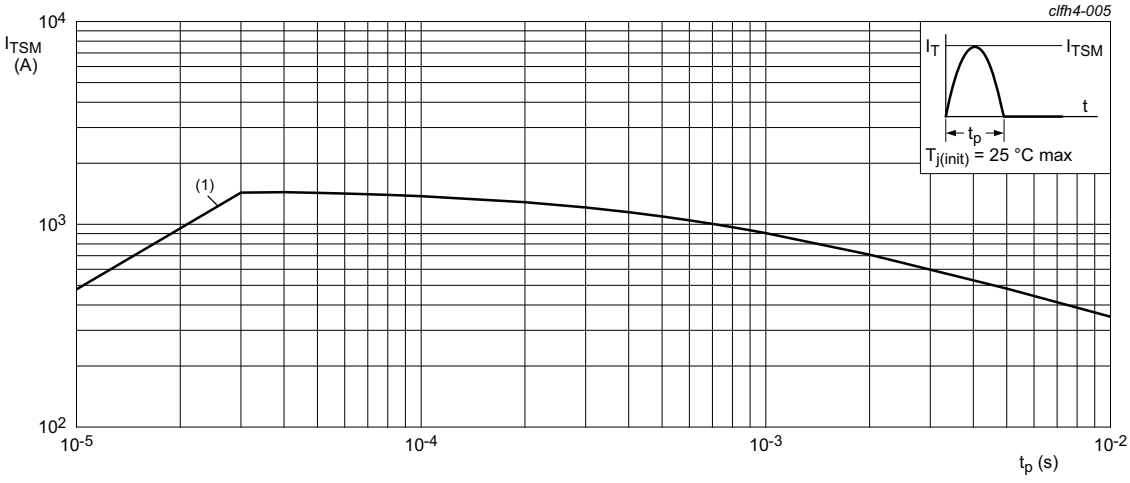
α = conduction angle
a = form factor = $I_{T(RMS)}$ / $I_{T(AV)}$

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



f = 50 Hz

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



$t_p \leq 10$ ms ;
(1) dI_T/dt limit

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

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-mb)}$	thermal resistance from junction to mounting base	Fig. 6		-	-	0.6	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air		-	55	-	K/W

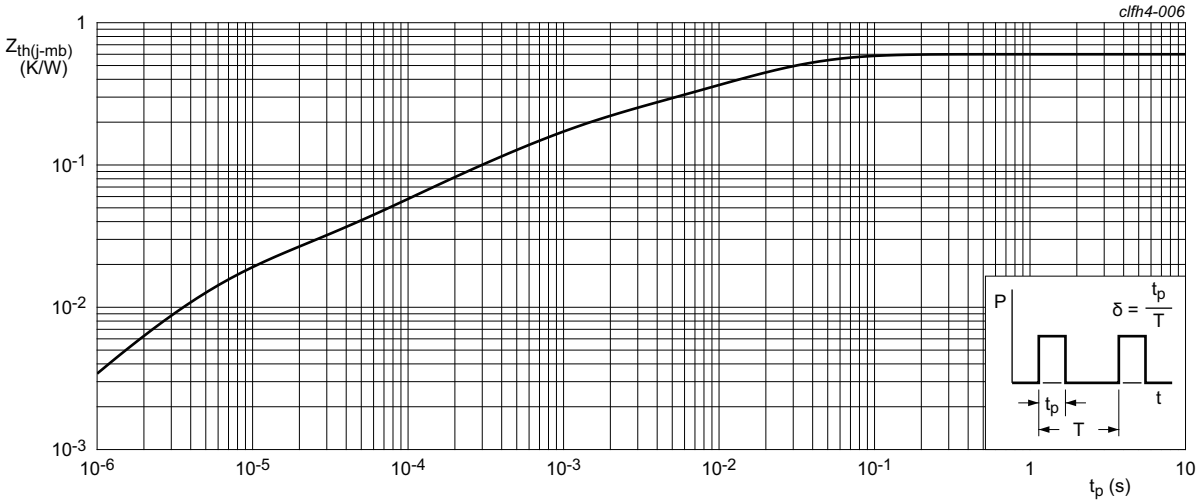


Fig. 6. Transient thermal impedance from junction to mounting base as a function of pulse duration

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
I_{GT}	gate trigger current	V_D = 12 V; I_T = 0.1 A; T_j = 25 °C; Fig.7; Fig. 8		-	-	50	mA
I_L	latching current	V_D = 12 V; I_T = 0.1 A; T_j = 25 °C; Fig. 9		-	-	100	mA
I_H	holding current	V_D = 12 V; T_j = 25 °C; Fig. 10		-	-	80	mA
V_T	on-state voltage	I_T = 30 A; T_j = 25 °C; Fig. 11		-	-	1.3	V
V_{GT}	gate trigger voltage	V_D = 12 V; I_T = 0.1 A; T_j = 25 °C; Fig. 12		-	0.75	1	V
		V_D = 1200 V; I_T = 0.1 A; T_j = 150 °C		0.2	0.45	-	V
I_D	off-state current	V_D = 1200 V; T_j = 25 °C		-	-	30	µA
		V_D = 1200 V; T_j = 125 °C		-	-	2	mA
I_R	reverse current	V_R = 1200 V; T_j = 25 °C		-	-	30	µA
		V_R = 1200 V; T_j = 125 °C		-	-	2	mA
Dynamic characteristics							
dV_D/dt	rate of rise of off-state voltage	V_{DM} = 804 V; T_j = 150 °C; (V_{DM} = 67% of V_{DRM}); gate open; exponential waveform		1000	-	-	V/µs
t_{gt}	gate-controlled turn-on time	I_{TM} = 30 A; V_D = 800 V; I_G = 100 mA; $(dI_G/dt)_M$ = 5 A/µs; T_j = 25 °C			2	-	µs
t_q	commutated turn-off time	V_{DM} = 804 V; T_j = 125 °C; I_{TM} = 30 A; V_R = 25 V; dV_D/dt = 50 V/µs; $(dI_T/dt)_M$ = 30 A/µs; (V_{DM} = 67% of V_{DRM})			70	-	µs

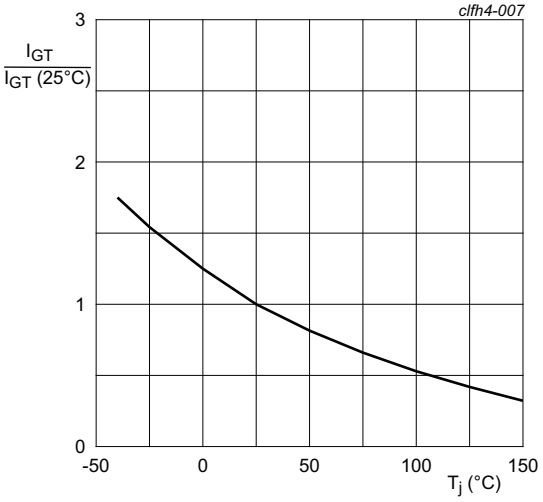


Fig. 7. Normalized gate trigger current as a function of junction temperature

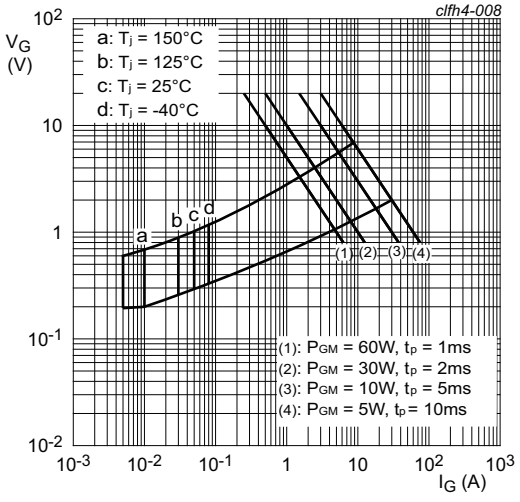


Fig. 8. Gate voltage as a function of gate current

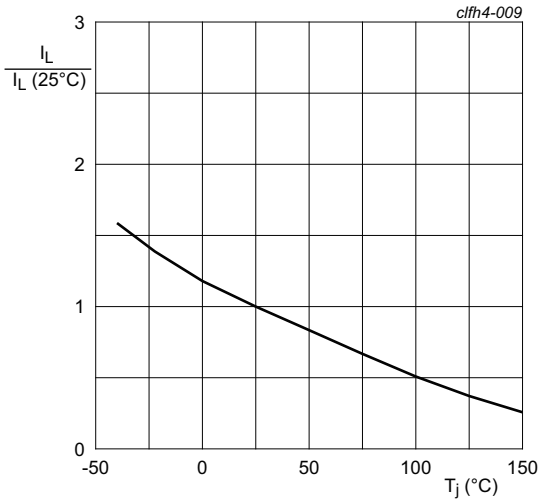


Fig. 9. Normalized latching current as a function of junction temperature

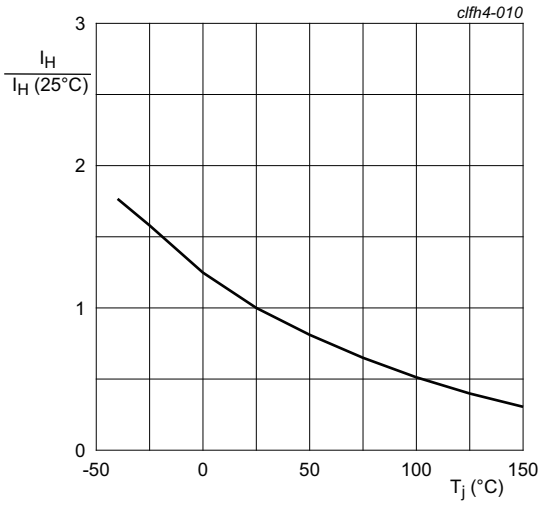
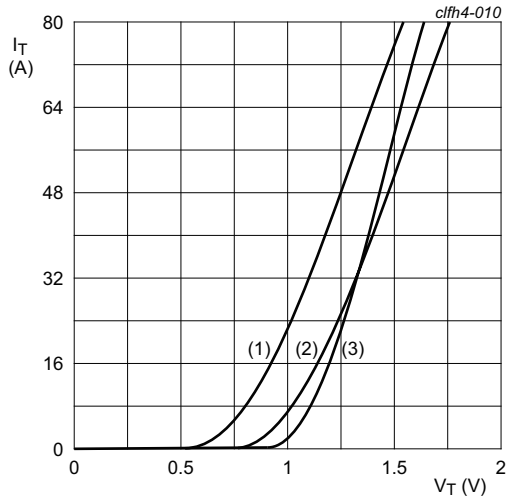


Fig. 10. Normalized holding current as a function of junction temperature



V_o = 1.039 V; R_s = 0.0089 Ω
(1) T_j = 150 °C; typical values
(2) T_j = 150 °C; maximum values
(3) T_j = 25 °C; maximum values

Fig. 11. On-state current as a function of on-state voltage

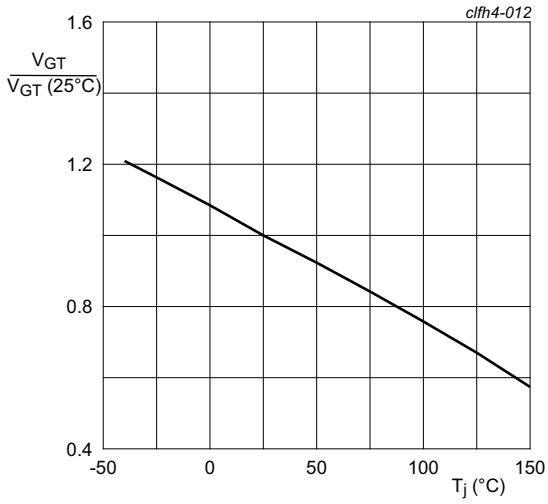
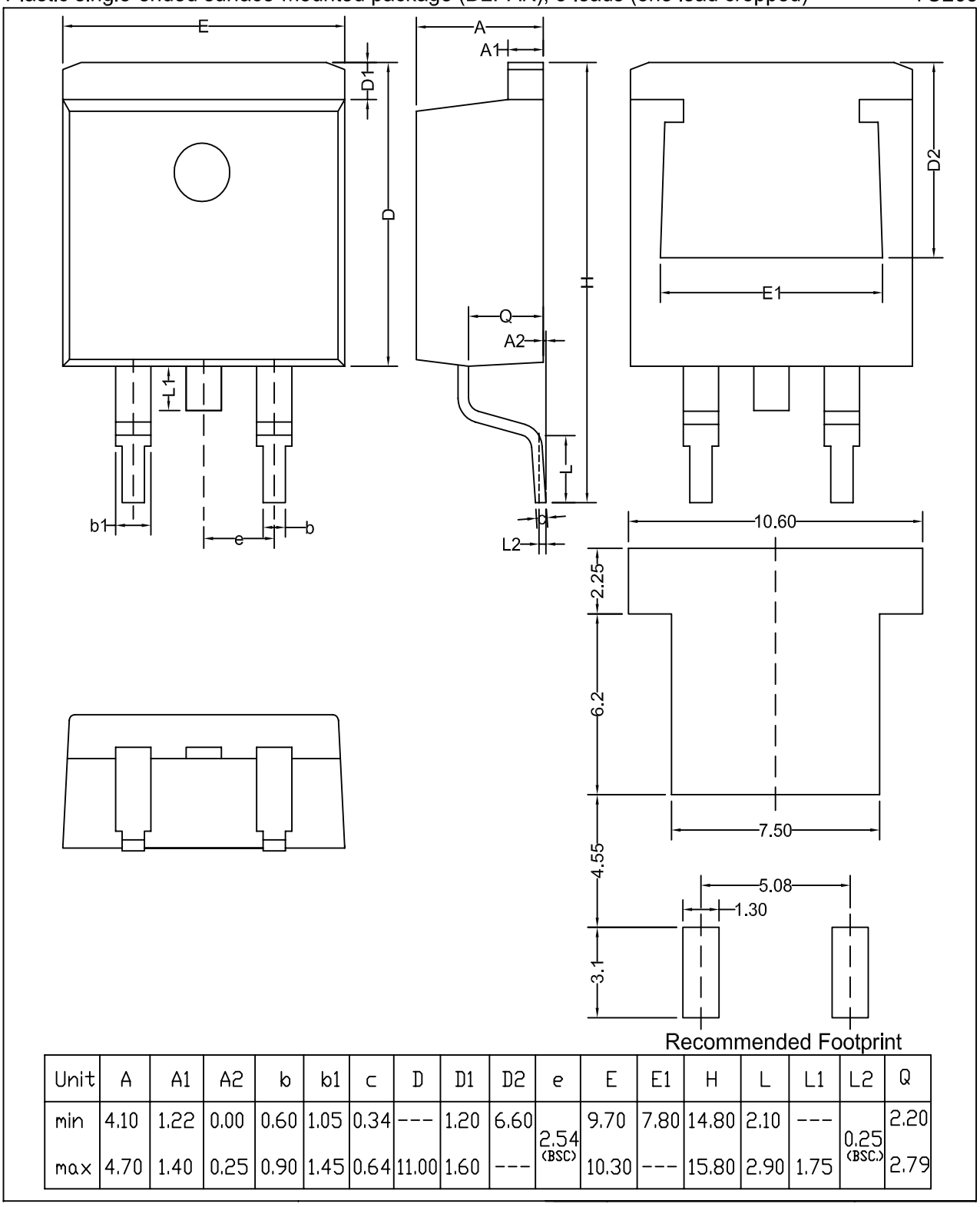


Fig. 12. Normalized gate trigger voltage as a function of junction temperature

11. Package outline

Assembly factory: N

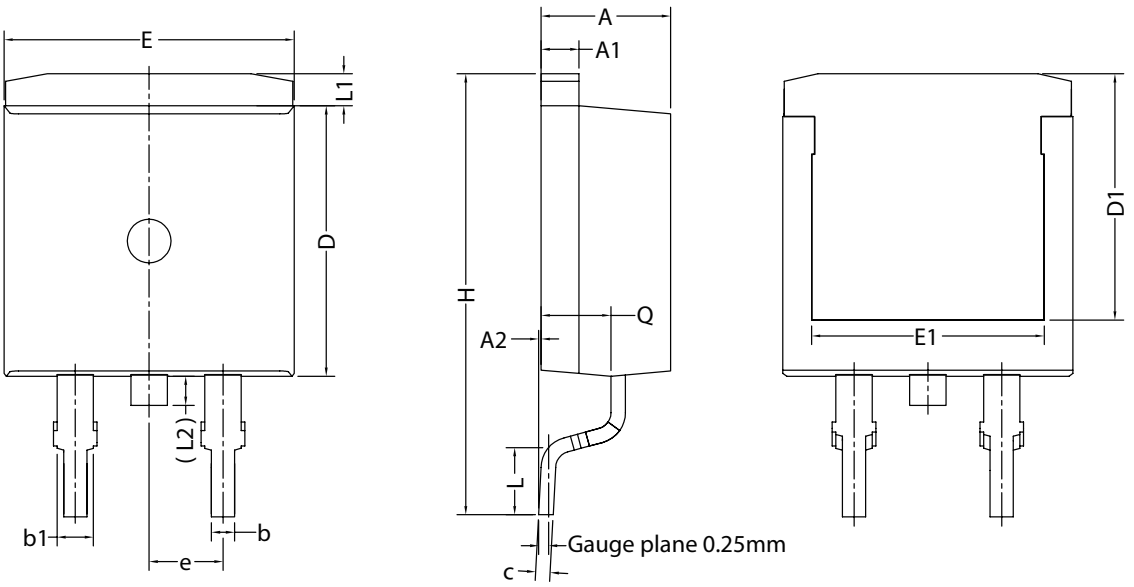
Plastic single-ended surface-mounted package (D2PAK); 3 leads (one lead cropped) TO263

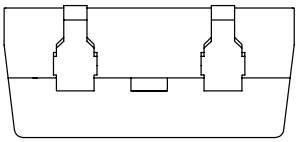


Unit	A	A1	A2	b	b1	c	D	D1	D2	e	E	E1	H	L	L1	L2	Q
min	4.10	1.22	0.00	0.60	1.05	0.34	---	1.20	6.60	2.54 (BSC)	9.70	7.80	14.80	2.10	---	0.25 (BSC.)	2.20
max	4.70	1.40	0.25	0.90	1.45	0.64	11.00	1.60	---		10.30	---	15.80	2.90	1.75		2.79

Assembly factory: d

Plastic single-ended surface-mounted package (D2PAK); TO263





Note:
All dimensions do not include mold flash or protrusion.

Unit		A	A1	A2	b	b1	c	D	D1	e	E	E1	H	L	L1	L2	Q
MM	min	4.30	1.27	0.00	0.75	1.20	0.45	9.00	7.65	2.54 (BSC)	9.85	7.80	14.84	1.90	0.90	--	2.20
	max	4.60	1.37	0.25	0.90	1.36	0.60	9.45	8.05		10.10	8.20	15.64	2.60	1.35	1.50	2.40

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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.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
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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13. Contents

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