

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{RRM}	repetitive peak reverse voltage			-	-	800	V
$I_{T(AV)}$	average on-state current	half sine wave; $T_{mb} \leq 135\text{ °C}$; Fig. 1		-	-	5	A
$I_{T(RMS)}$	RMS on-state current	half sine wave; $T_{mb} \leq 135\text{ °C}$; Fig. 2 ; Fig. 3		-	-	8	A
I_{TSM}	non-repetitive peak on-state current	half sine wave; $T_{j(init)} = 25\text{ °C}$; $t_p = 10\text{ ms}$; Fig. 4 ; Fig. 5		-	-	75	A
		half sine wave; $T_{j(init)} = 25\text{ °C}$; $t_p = 8.3\text{ ms}$		-	-	82	A
T_j	junction temperature		[1]	-	-	150	°C

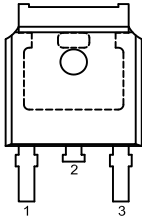
Static characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_{GT}	gate trigger current	$V_D = 12\text{ V}$; $I_T = 0.1\text{ A}$; $T_j = 25\text{ }^{\circ}\text{C}$; Fig. 8		20	-	50	μA
Dynamic characteristics							
dV_D/dt	rate of rise of off-state voltage	$V_{DM} = 536\text{ V}$; $T_j = 150\text{ }^{\circ}\text{C}$; $R_{GK} = 100\text{ }\Omega$; ($V_{DM} = 67\%$ of V_{DRM}); exponential waveform; Fig. 13		35	70	-	$\text{V}/\mu\text{s}$

[1] Operation above junction temperatures of 110 °C may require the use of a gate to cathode resistor of 1 kΩ or less.

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 DPAK (SOT428)	
2	A	anode		
3	G	gate		
mb	A	mounting base; connected to anode		

6. Ordering information

Table 3. Ordering information

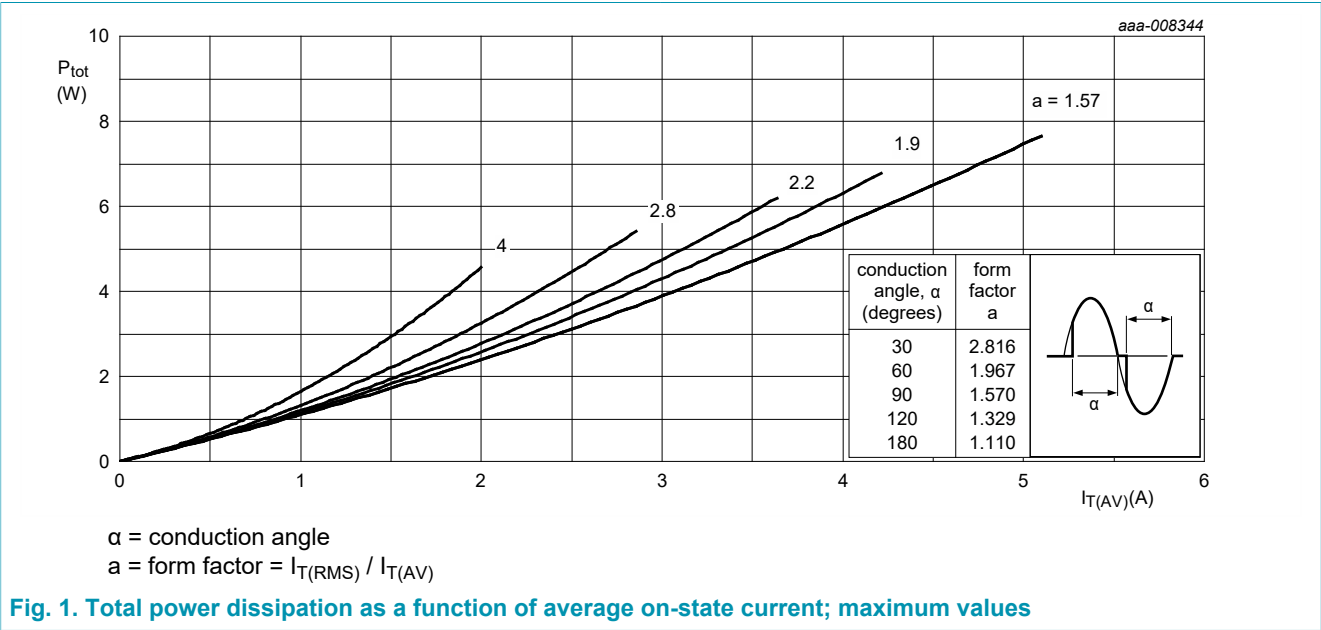
Type number	Package		
	Name	Description	Version
BT258S-800LT	DPAK	plastic single-ended surface-mounted package (DPAK); 3 leads (one lead cropped)	SOT428

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			-	800	V
V_{RRM}	repetitive peak reverse voltage			-	800	V
$I_{T(AV)}$	average on-state current	half sine wave; $T_{mb} \leq 135\text{ }^{\circ}\text{C}$; Fig. 1		-	5	A
$I_{T(RMS)}$	RMS on-state current	half sine wave; $T_{mb} \leq 135\text{ }^{\circ}\text{C}$; Fig. 2; Fig. 3		-	8	A
I_{TSM}	non-repetitive peak on-state current	half sine wave; $T_{j(\text{init})} = 25\text{ }^{\circ}\text{C}$; $t_p = 10\text{ ms}$; Fig. 4; Fig. 5		-	75	A
		half sine wave; $T_{j(\text{init})} = 25\text{ }^{\circ}\text{C}$; $t_p = 8.3\text{ ms}$		-	82	A
I^2t	I^2t for fusing	$t_p = 10\text{ ms}$; sine-wave pulse		-	28	A^2s
dl_T/dt	rate of rise of on-state current	$I_G = 50\text{ mA}$		-	50	$\text{A}/\mu\text{s}$
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	150	$^{\circ}\text{C}$
T_j	junction temperature		[1]	-	150	$^{\circ}\text{C}$

[1] Operation above junction temperatures of 110 °C may require the use of a gate to cathode resistor of 1 kΩ or less.



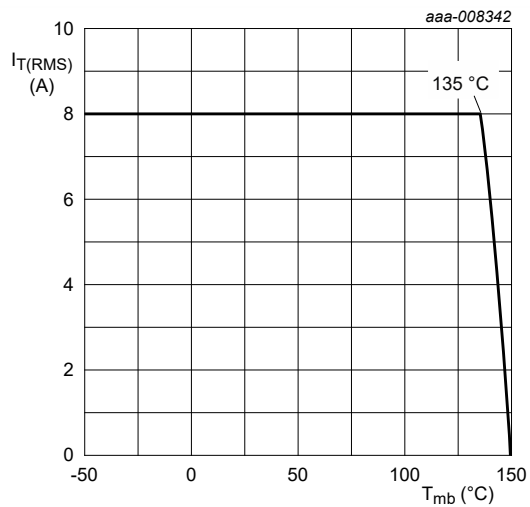
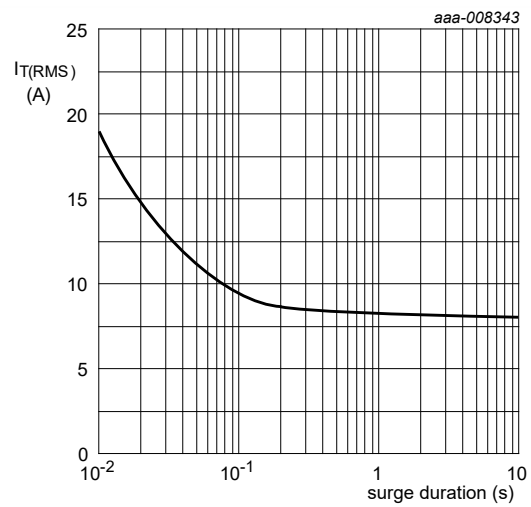
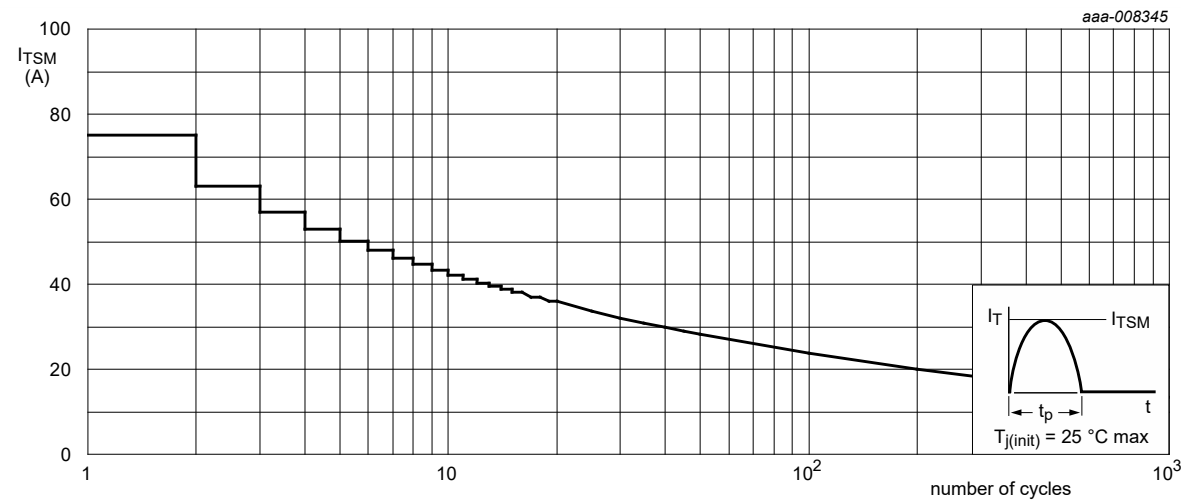


Fig. 2. RMS on-state current as a function of mounting base temperature; maximum values



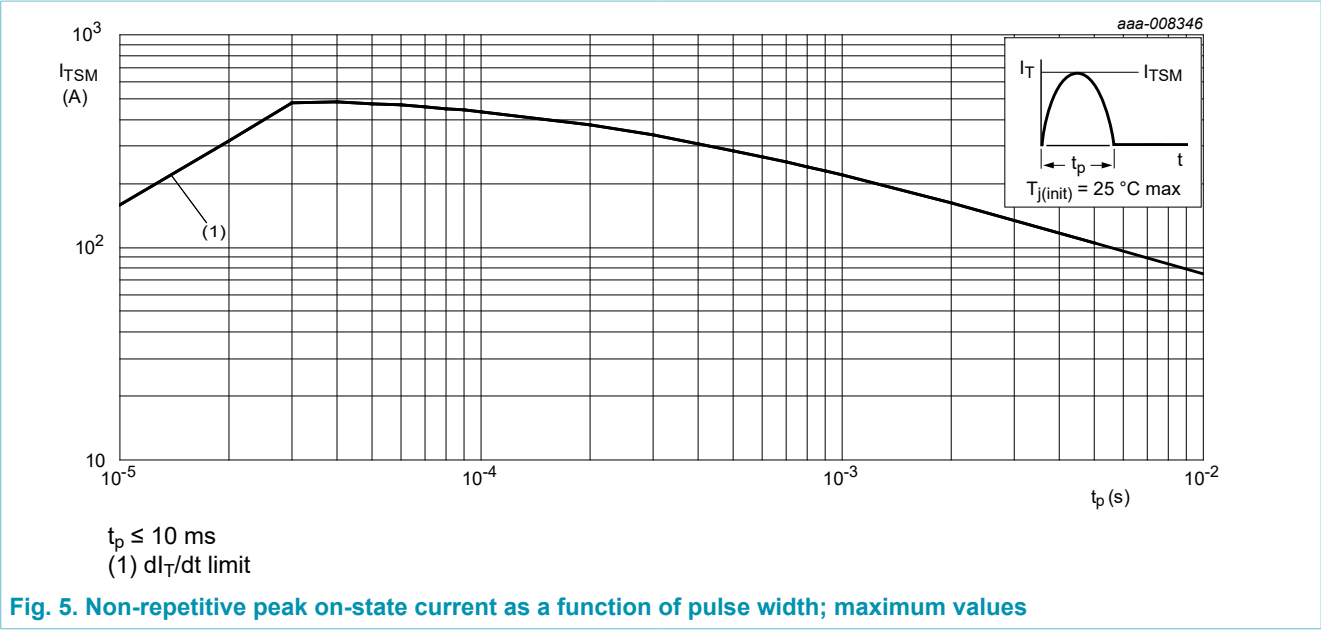
$f = 50 \text{ Hz}; T_{mb} = 135 \text{ °C}$

Fig. 3. RMS on-state current as a function of surge duration; maximum values



$f = 50 \text{ Hz}$

Fig. 4. Non-repetitive peak on-state current as a function of the number of sinusoidal current cycles; 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	Fig. 6		-	-	2	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	Device mounted on a FR4 printed-circuit board, single-sided copper, tin-plated and standard footprint; Fig. 7		-	75	-	K/W

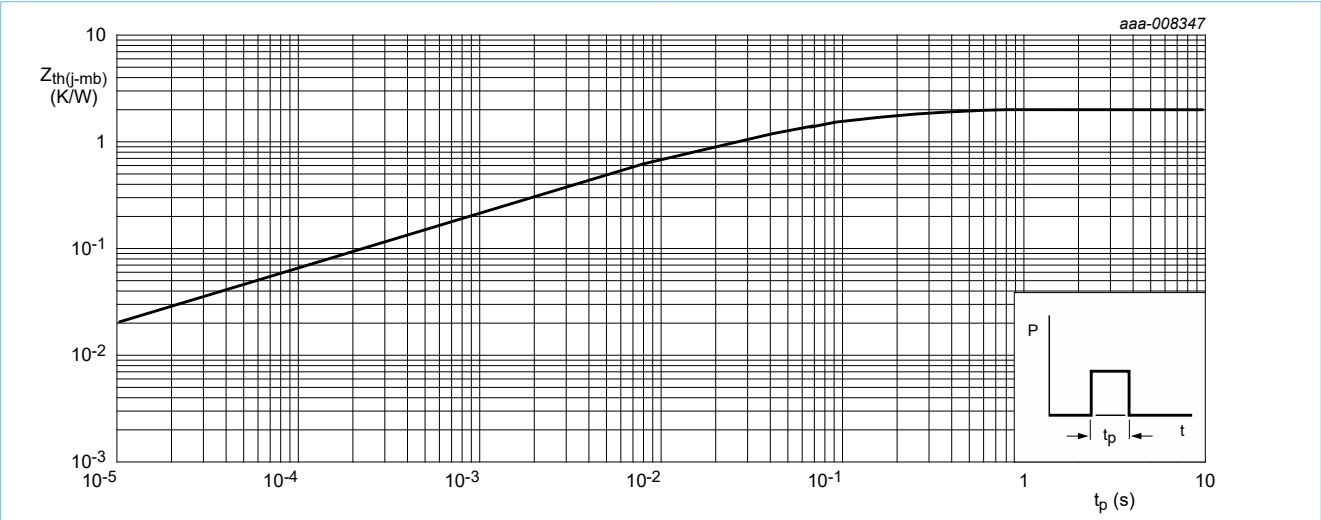


Fig. 6. Transient thermal impedance from junction to mounting base as a function of pulse width

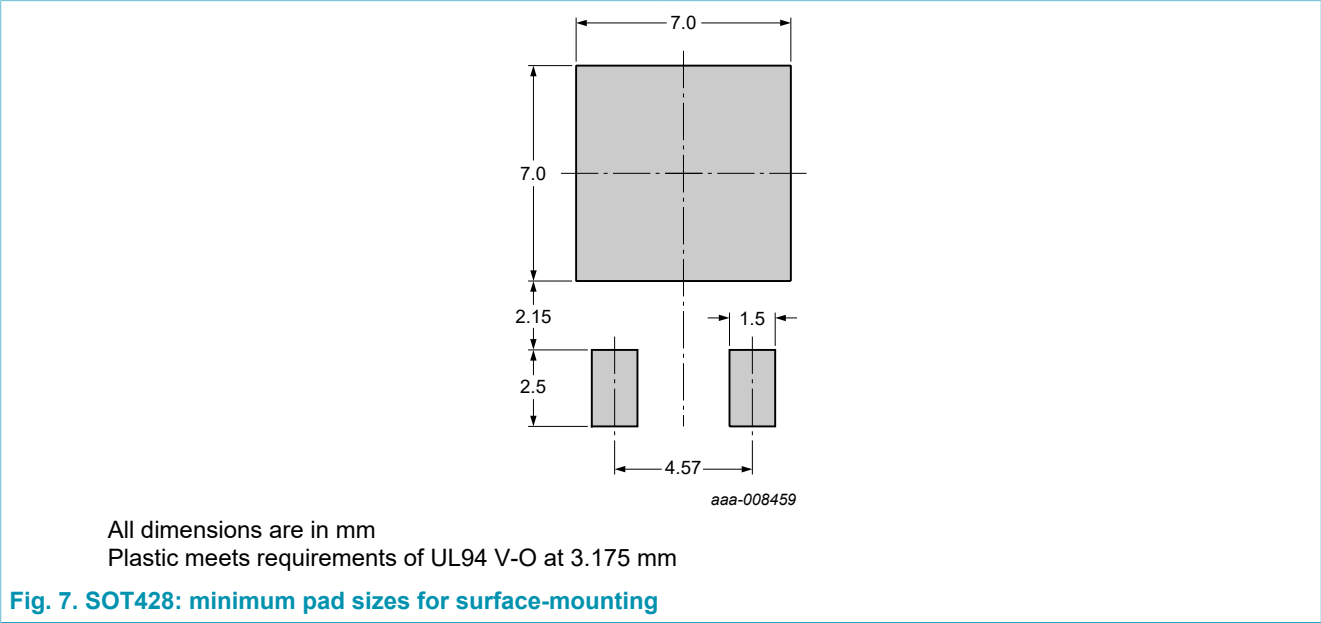


Fig. 7. SOT428: minimum pad sizes for surface-mounting

9. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
I_{GT}	gate trigger current	$V_D = 12\text{ V}$; $I_T = 0.1\text{ A}$; $T_j = 25\text{ }^\circ\text{C}$; Fig. 8	20	-	50	μA
I_L	latching current	$V_D = 12\text{ V}$; $I_G = 0.1\text{ A}$; $T_j = 25\text{ }^\circ\text{C}$; Fig. 9	-	0.4	10	mA
I_H	holding current	$V_D = 12\text{ V}$; $T_j = 25\text{ }^\circ\text{C}$; Fig. 10	-	0.3	6	mA
V_T	on-state voltage	$I_T = 16\text{ A}$; $T_j = 25\text{ }^\circ\text{C}$; Fig. 11	-	1.3	1.6	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. 12	-	0.4	1	V
		$V_D = 800\text{ V}$; $I_T = 0.1\text{ A}$; $T_j = 110\text{ }^\circ\text{C}$; Fig. 12	0.1	0.2	-	V
I_D	off-state current	$V_D = 800\text{ V}$; $T_j = 150\text{ }^\circ\text{C}$	-	0.5	2.5	mA
I_R	reverse current	$V_R = 800\text{ V}$; $T_j = 150\text{ }^\circ\text{C}$	-	0.5	2.5	mA
Dynamic characteristics						
dV_D/dt	rate of rise of off-state voltage	$V_{DM} = 536\text{ V}$; $T_j = 150\text{ }^\circ\text{C}$; $R_{GK} = 100\text{ }\Omega$; ($V_{DM} = 67\%$ of V_{DRM}); exponential waveform; Fig. 13	35	70	-	V/ μs
t_{gt}	gate-controlled turn-on time	$I_{TM} = 10\text{ A}$; $V_D = 800\text{ V}$; $I_G = 5\text{ mA}$; $dI_G/dt = 0.2\text{ A}/\mu\text{s}$; $T_j = 25\text{ }^\circ\text{C}$	-	2	-	μs

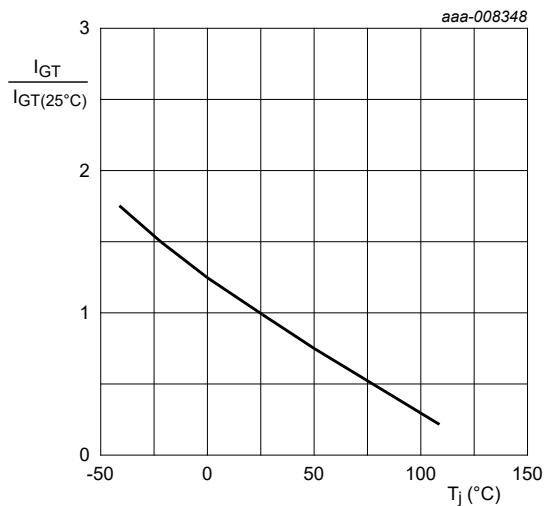


Fig. 8. Normalized gate trigger current as a function of junction temperature

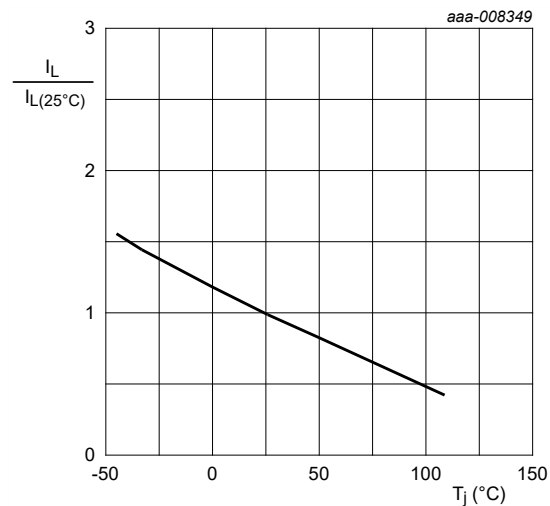
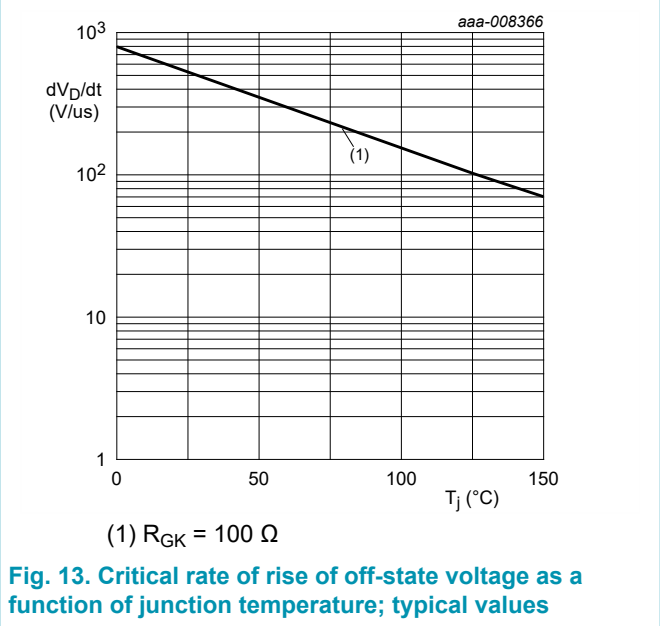
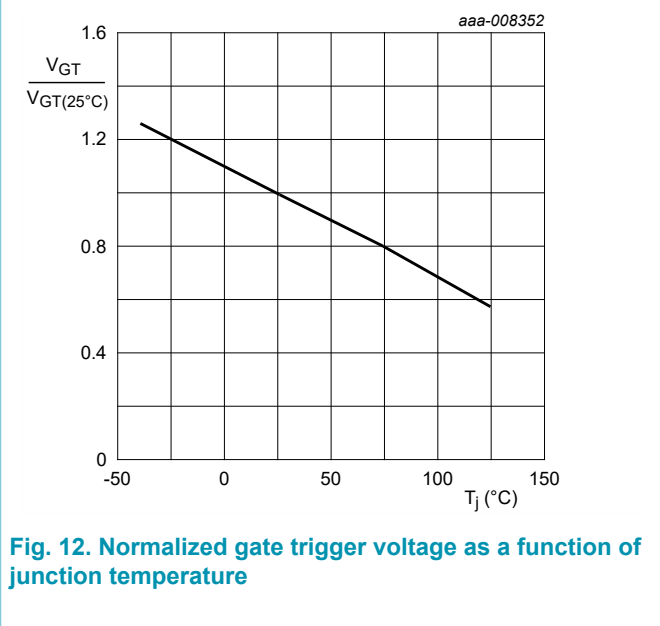
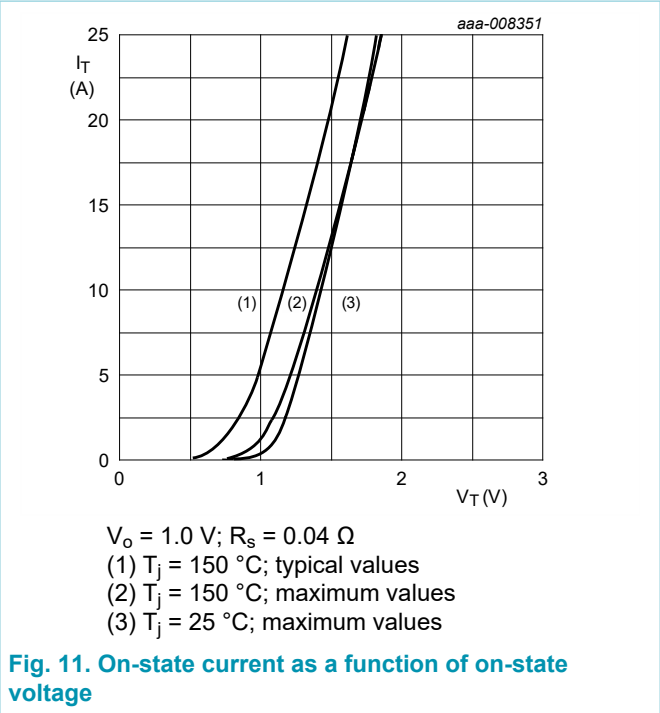
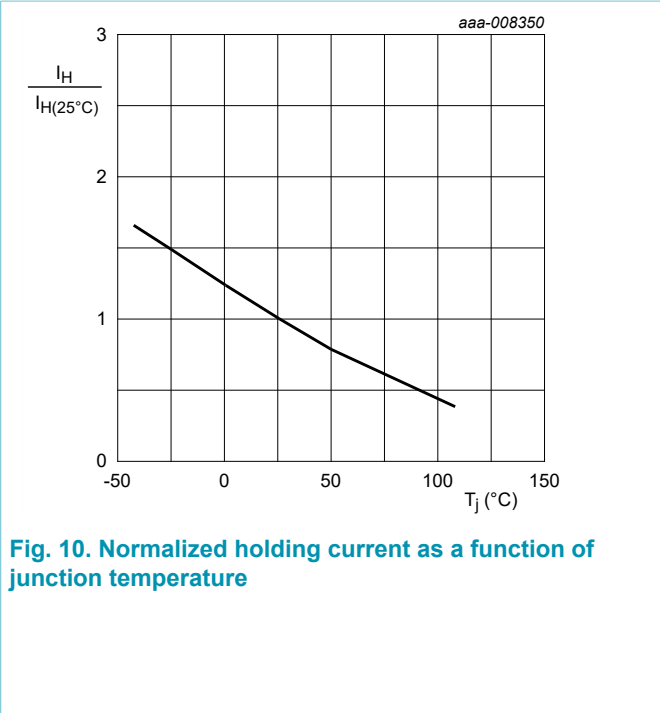


Fig. 9. Normalized latching current as a function of junction temperature



10. Package outline

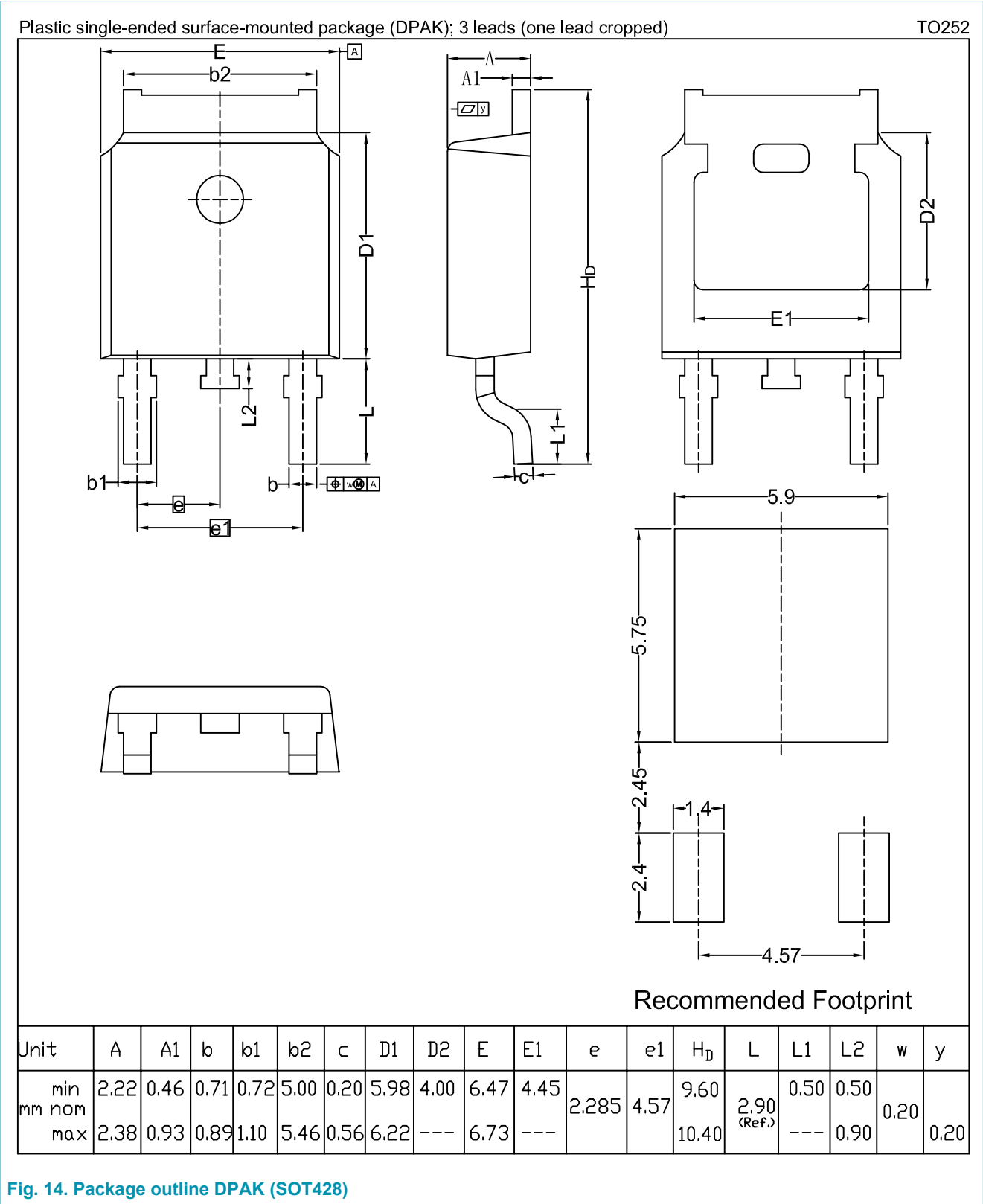


Fig. 14. Package outline DPAK (SOT428)

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Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
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