

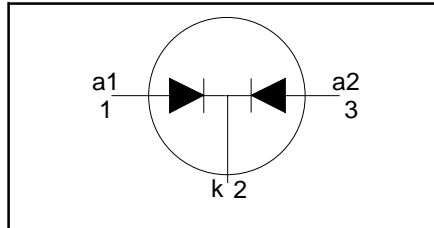
Rectifier diode ultrafast, low switching loss

BYC10-600CT

FEATURES

- Dual diode
- Extremely fast switching
- Low reverse recovery current
- Low thermal resistance
- Reduces switching losses in associated MOSFET

SYMBOL



QUICK REFERENCE DATA

$$V_R = 600 \text{ V}$$

$$V_F \leq 1.75 \text{ V}$$

$$I_{O(AV)} = 10 \text{ A}$$

$$t_{rr} = 19 \text{ ns (typ)}$$

APPLICATIONS

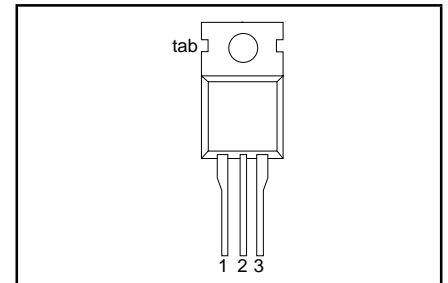
- Active power factor correction
- Half-bridge lighting ballasts
- Half-bridge/ full-bridge switched mode power supplies.

The BYC10-600CT is supplied in the SOT78 (TO220AB) conventional leaded package.

PINNING

PIN	DESCRIPTION
1	anode 1
2	cathode
3	anode 2
tab	cathode

SOT78 (TO220AB)



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RRM}	Peak repetitive reverse voltage	$T_{mb} \leq 110^\circ\text{C}$ $\delta = 0.5$; with reapplied $V_{RRM(max)}$; $T_{mb} \leq 50^\circ\text{C}^1$ $\delta = 0.5$; with reapplied $V_{RRM(max)}$; $T_{mb} \leq 50^\circ\text{C}^1$ $t = 10 \text{ ms}$ $t = 8.3 \text{ ms}$ sinusoidal; $T_j = 150^\circ\text{C}$ prior to surge with reapplied $V_{RWM(max)}$	-	600	V
V_{RWM}	Crest working reverse voltage		-	600	V
V_R	Continuous reverse voltage		-	500	V
$I_{O(AV)}$	Average output current (both diodes conducting)		-	10	A
I_{FRM}	Repetitive peak forward current per diode		-	10	A
I_{FSM}	Non-repetitive peak forward current per diode		-	40	A
T_{stg}	Storage temperature		-40	150	$^\circ\text{C}$
T_j	Operating junction temperature		-	150	$^\circ\text{C}$

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	2.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes	-	-	2.2	K/W
		in free air.	-	60	-	K/W

¹ $T_{mb(max)}$ limited by thermal runaway

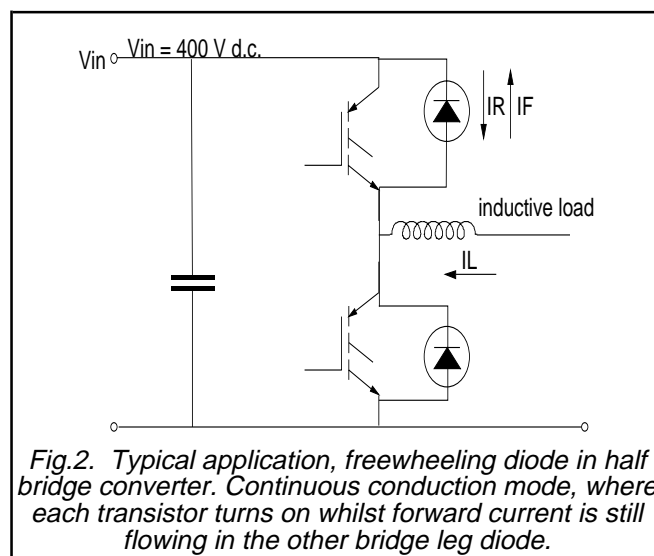
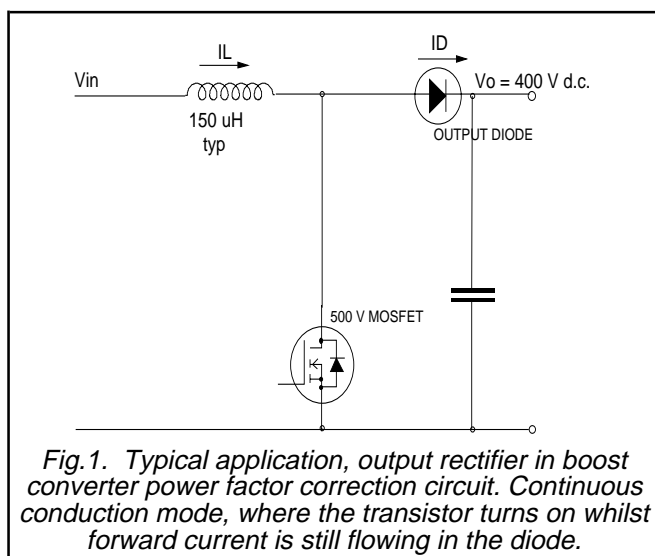
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ELECTRICAL CHARACTERISTICS

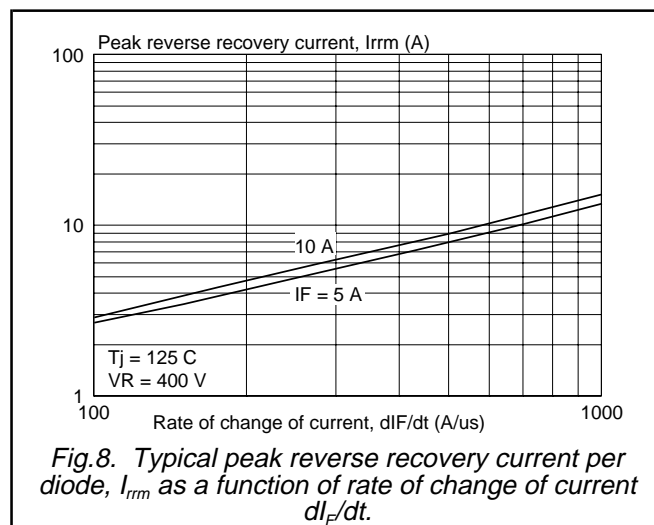
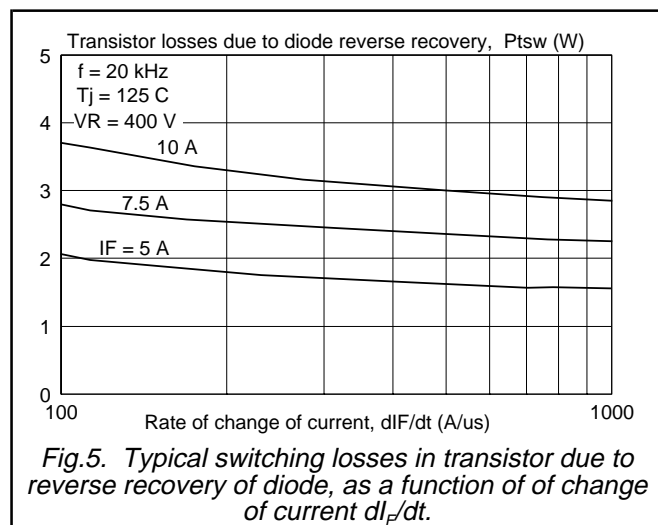
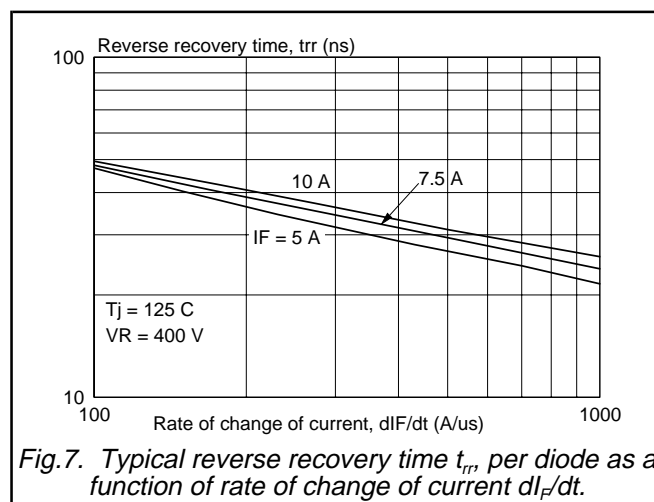
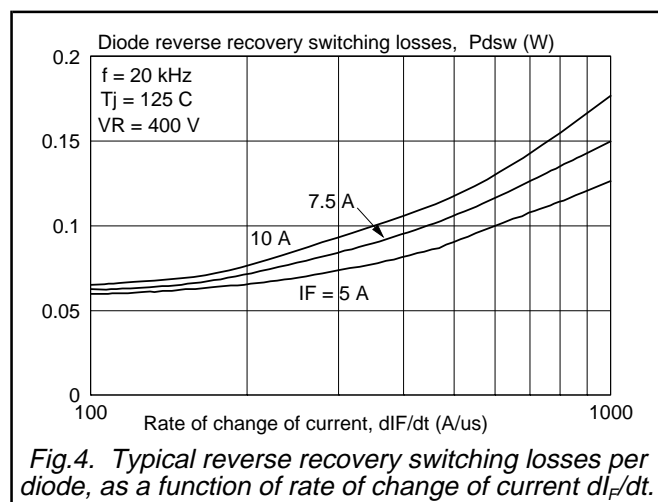
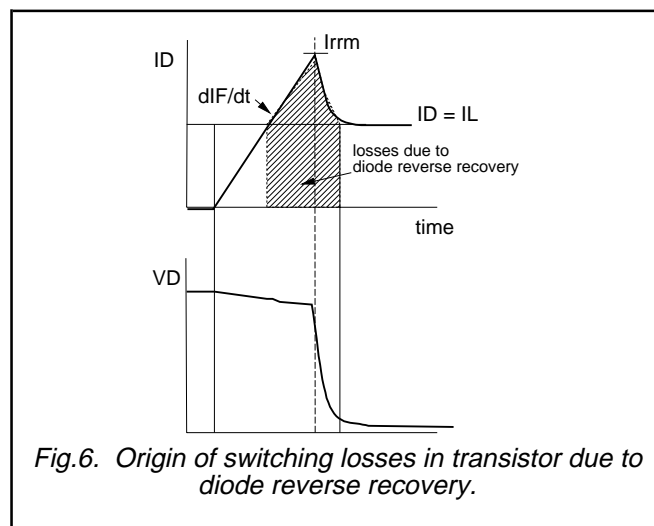
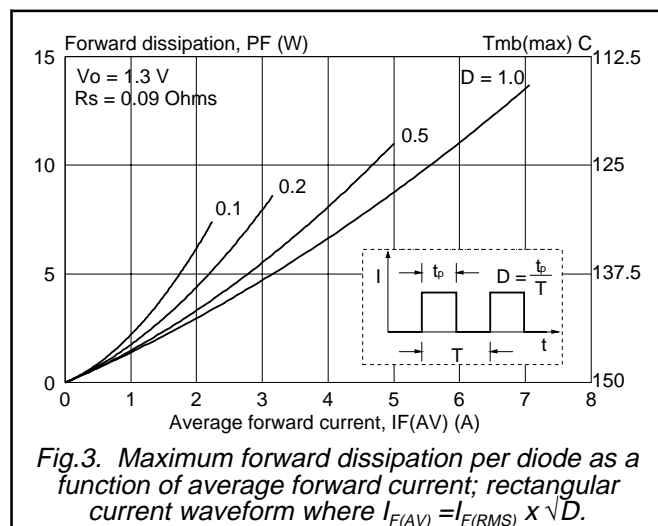
 $T_j = 25\text{ }^{\circ}\text{C}$, per diode unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 5\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	1.4	1.75	V
		$I_F = 10\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	1.75	2.2	V
I_R	Reverse current	$I_F = 5\text{ A}$; $V_R = 600\text{ V}$	-	2.0	2.8	V
		$V_R = 500\text{ V}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	9	100	μA
t_{rr}	Reverse recovery time	$I_F = 1\text{ A}$; $V_R = 30\text{ V}$; $di_F/dt = 50\text{ A}/\mu\text{s}$	-	30	50	ns
t_{rr}	Reverse recovery time	$I_F = 5\text{ A}$; $V_R = 400\text{ V}$; $di_F/dt = 500\text{ A}/\mu\text{s}$	-	19	-	ns
t_{rr}	Reverse recovery time	$I_F = 5\text{ A}$; $V_R = 400\text{ V}$; $di_F/dt = 500\text{ A}/\mu\text{s}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	25	30	ns
I_{rrm}	Peak reverse recovery current	$I_F = 5\text{ A}$; $V_R = 400\text{ V}$; $di_F/dt = 50\text{ A}/\mu\text{s}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.7	3	A
I_{rrm}	Peak reverse recovery current	$I_F = 5\text{ A}$; $V_R = 400\text{ V}$; $di_F/dt = 500\text{ A}/\mu\text{s}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	8	11	A
V_{fr}	Forward recovery voltage	$I_F = 10\text{ A}$; $di_F/dt = 100\text{ A}/\mu\text{s}$	-	9	11	V



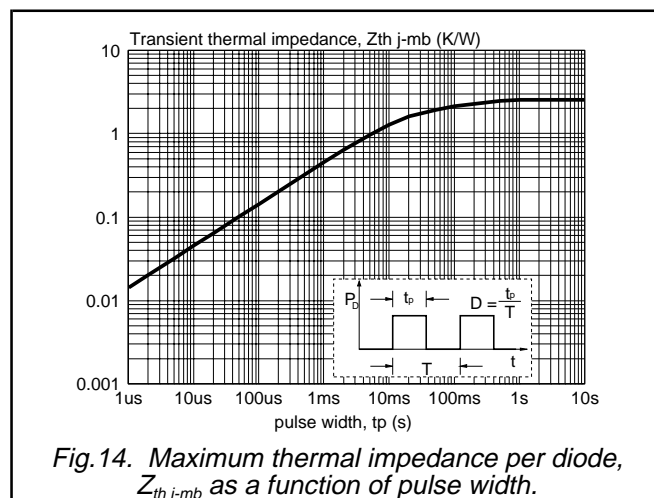
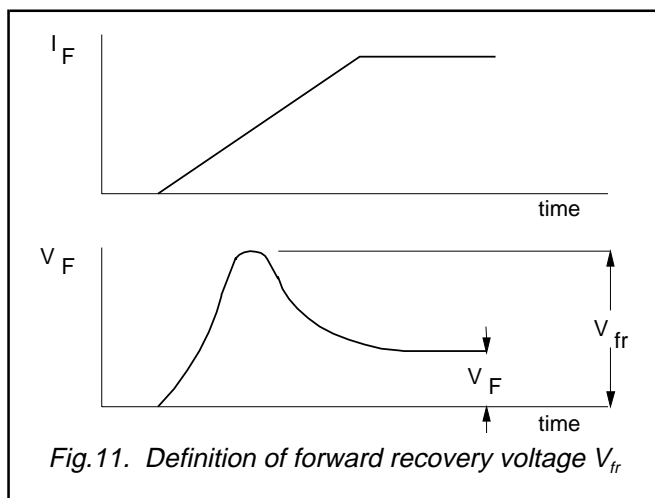
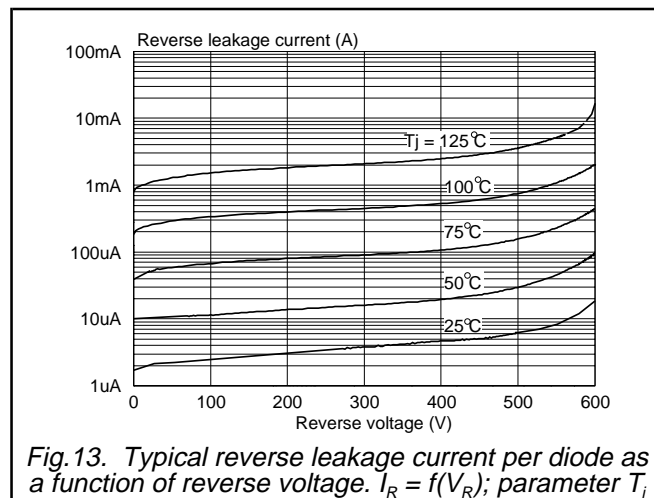
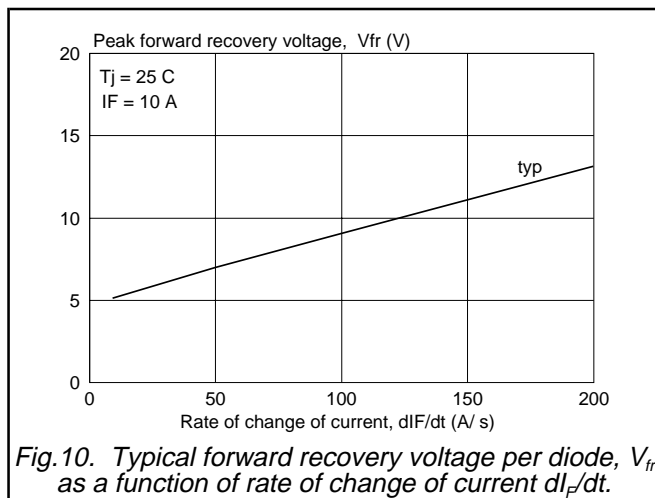
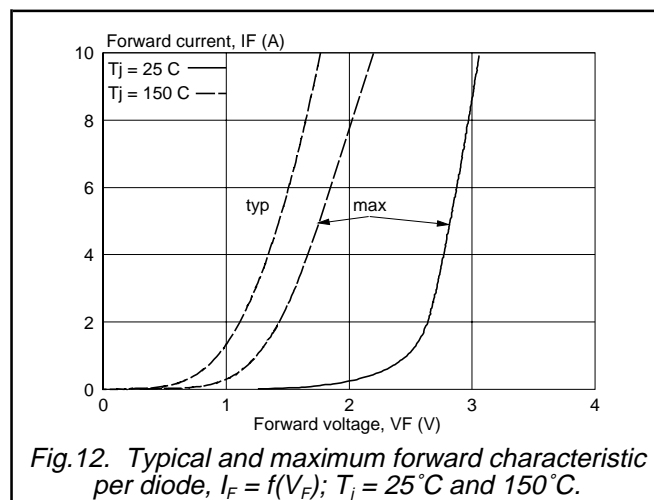
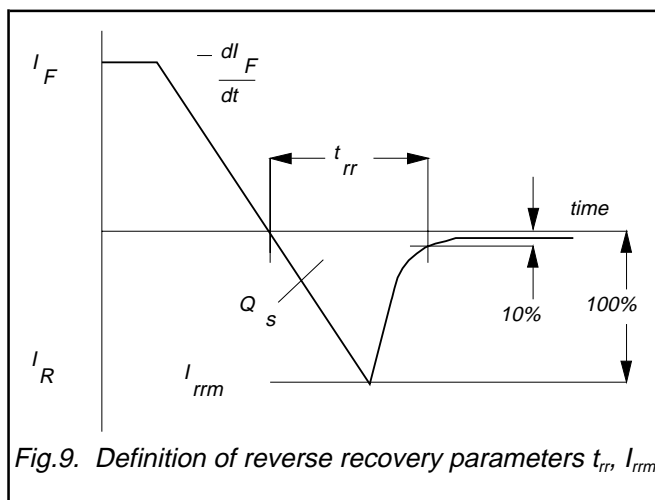
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MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

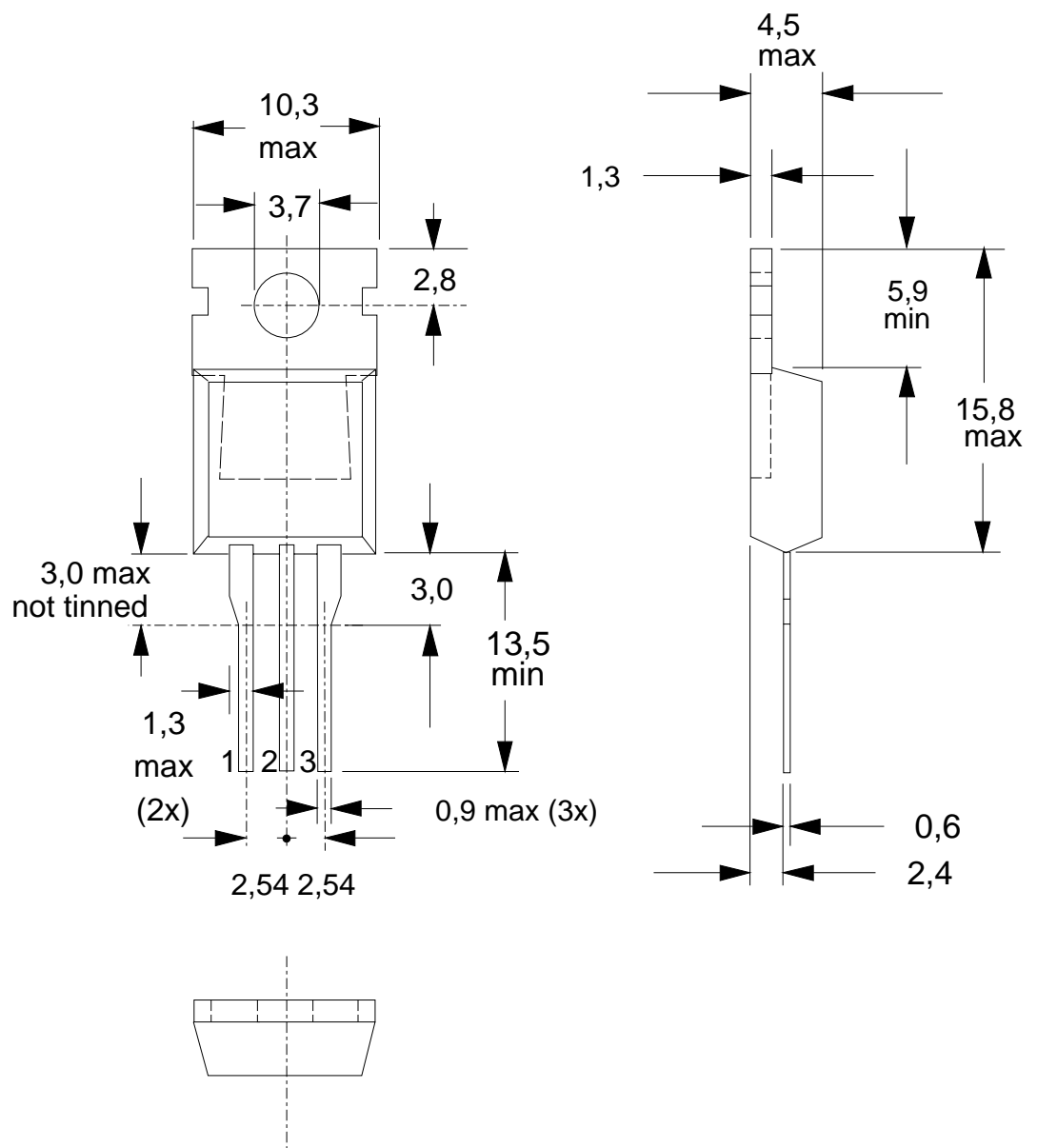


Fig.15. SOT78 (TO220AB); pin 2 connected to mounting base.

Notes

- Notes
1. Refer to mounting instructions for SOT78 (TO220) envelopes.
 2. Epoxy meets UL94 V0 at 1/8".

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DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values are given in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of this specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	
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