

ZXTN4004Z

150V NPN LED DRIVING TRANSISTOR IN SOT89

Features

- $BV_{CEO} > 150V$
- $h_{FE} > 100$ for $I_C = 150mA$, $V_{CE} = 0.25V$
- Maximum continuous current $I_C = 1A$
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

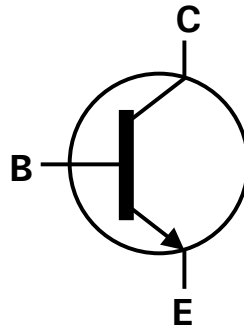
Applications

- LED TV backlight

Mechanical Data

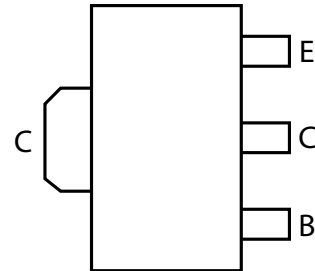
- Case: SOT89
- Case material: molded Plastic. "Green" molding Compound.
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.052 grams (Approximate)

SOT89



Top View

Device Symbol



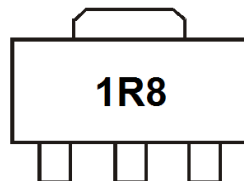
Top View
Pin-Out

Ordering Information

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTN4004ZTA	1R8	7	12	1000 units

Notes: 1. No purposefully added lead.
2. "Green" devices, Halogen and Antimony Free, Diodes Inc's "Green" Policy can be found on our website at <http://www.diodes.com>

Marking Information



1R8 = Product type Marking Code

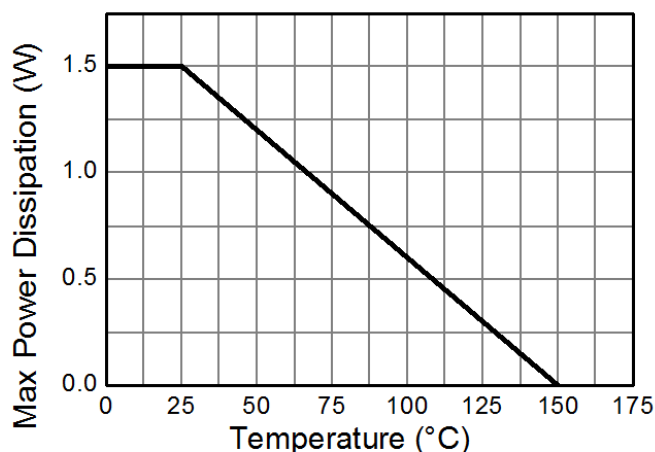
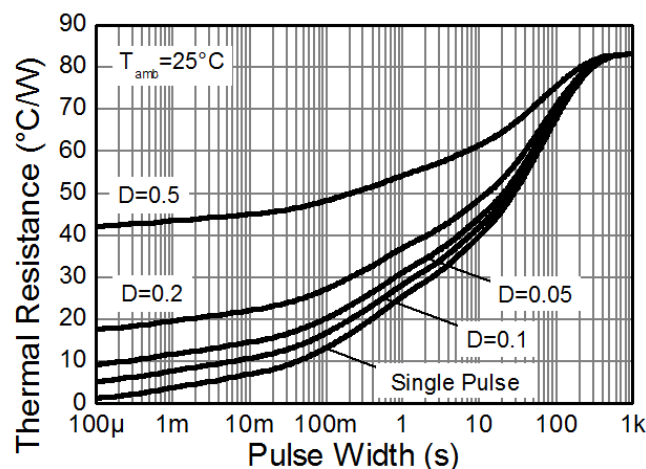
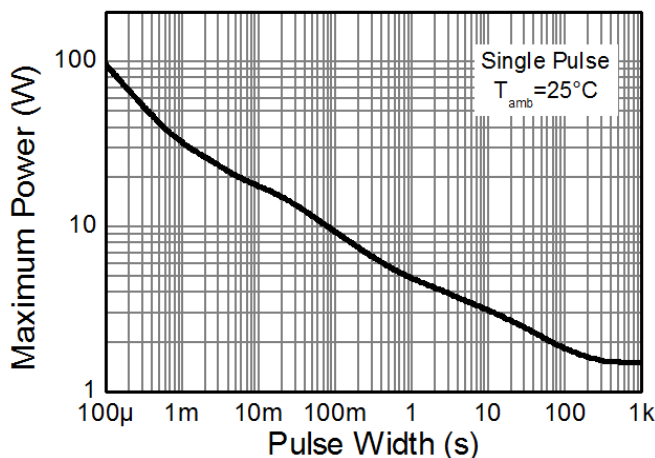
ZXTN4004Z
Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	150	V
Collector-Emitter Voltage	V_{CEO}	150	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	1	A
Peak Pulse Current (Note 4)	I_{CM}	3	A
Base Current	I_B	500	mA

Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3)	P_D	1.5	W
Thermal Resistance, Junction to Ambient (Note 3)	$R_{\theta JA}$	83	$^\circ\text{C/W}$
Thermal Resistance, Junction to Leads (Note 5)	$R_{\theta JL}$	16.2	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

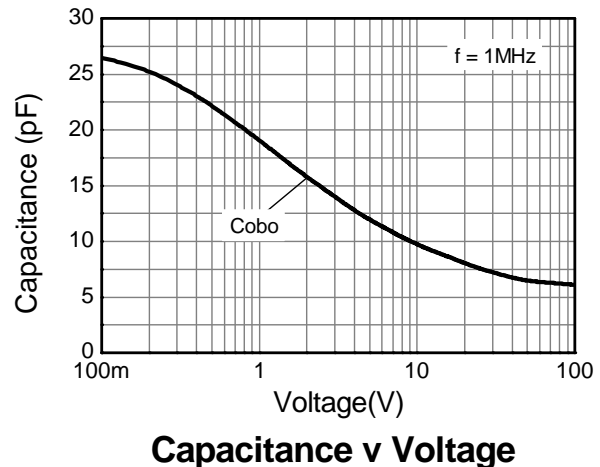
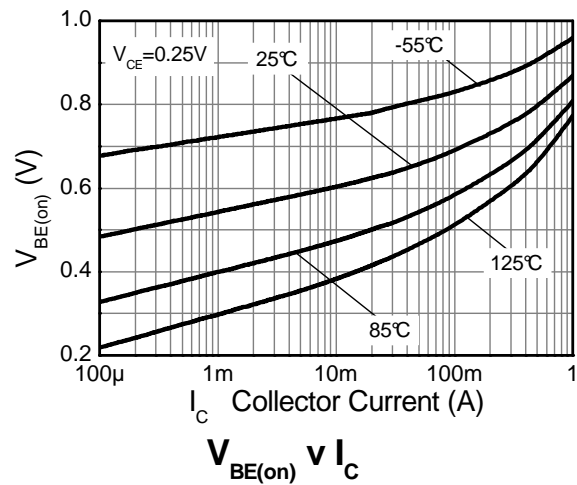
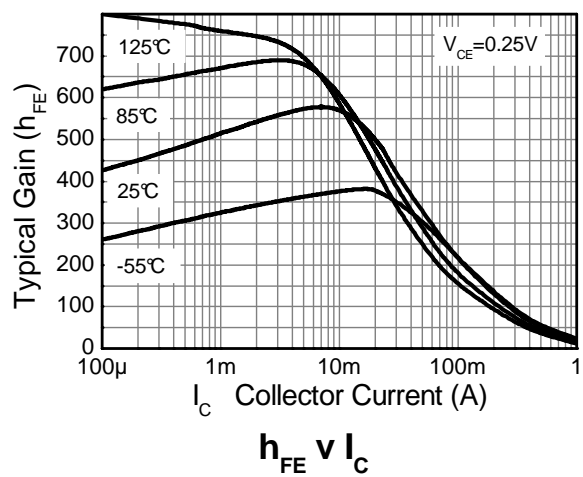
- Notes:
3. For a device surface mounted on 25mm X 25mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions
 4. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$.
 5. Thermal resistance from junction to solder-point (on the exposed collector pad).

Thermal Characteristics and Derating Information

Derating Curve

Transient Thermal Impedance

Pulse Power Dissipation

Electrical Characteristics @T_A = 25°C unless otherwise specified

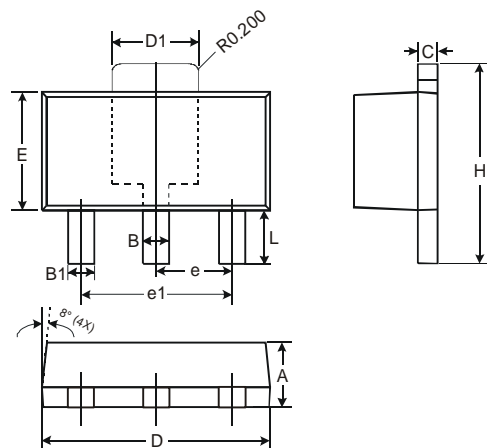
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Emitter Breakdown Voltage (Note 6)	BV _{CEO}	150	175	-	V	I _C = 10mA
Collector Cut-off Current	I _{CBO}	-	-	50	nA	V _{CB} = 150V
Emitter Cut-off Current	I _{EBO}	-	-	50	nA	V _{EB} = 7V
Static Forward Current Transfer Ratio (Note 6)	h _{FE}	60 100	- -	- -	-	I _C = 85mA, V _{CE} = 0.20V I _C = 150mA, V _{CE} = 0.25V
Base-Emitter Turn-On Voltage (Note 6)	V _{BE(on)}	-	0.71	0.95	V	I _C = 150mA, V _{CE} = 0.25V
Delay Time	t _d	-	512	-	ns	V _{CC} = 120V, I _C = 150mA, -I _{B2} = 1.5mA, V _{CE(ON)} = 0.25V
Rise Time	t _r	-	426	-	ns	
Storage Time	t _s	-	3413	-	ns	
Fall Time	t _f	-	321	-	ns	V _{CC} = 120V, I _C = 150mA, -I _{B2} = 1.5mA, V _{CE(ON)} = 4V
Storage Time	t _s	-	65	-	ns	
Fall Time	t _f	-	294	-	ns	

Notes: 6. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤ 2%

Electrical Characteristics @T_A = 25°C unless otherwise specified


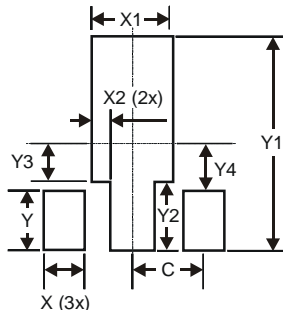
ZXTN4004Z

Package Outline Dimensions



SOT89		
Dim	Min	Max
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.43
D	4.40	4.60
D1	1.52	1.83
E	2.29	2.60
e	1.50 Typ	
e1	3.00 Typ	
H	3.94	4.25
L	0.89	1.20
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
X	0.900
X1	1.733
X2	0.416
Y	1.300
Y1	4.600
Y2	1.475
Y3	0.950
Y4	1.125
C	1.500

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