

ZXTN4002Z

100V NPN LED DRIVING TRANSISTOR IN SOT89

Features

- $BV_{CEO} > 100V$
- Max continuous current $I_C (cont) = 1A$
- $h_{FE} > 100 @ I_C = 150mA, V_{CE} = 200mV$
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

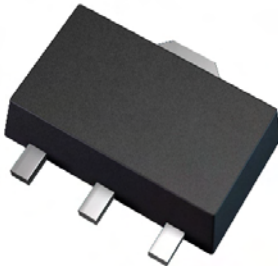
Applications

LED TV backlight

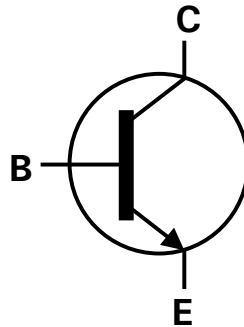
Mechanical Data

- 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)

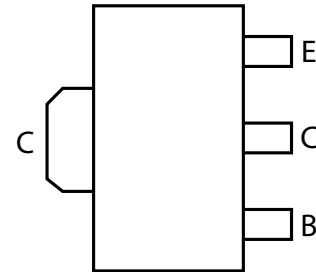
SOT89



Top View



Device symbol



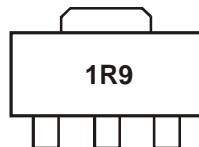
Top View
Pin Out

Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTN4002ZTA	1R9	7	12mm embossed	1000 units

- Notes:
1. No purposefully added lead.
 2. Diodes Inc's "Green" Policy can be found on our website at <http://www.diodes.com>
 3. For Packaging Details, go to our website at <http://www.diodes.com>.

Marking Information



1R9 = Product type Marking Code

Maximum Ratings @T_A = 25°C unless otherwise specified

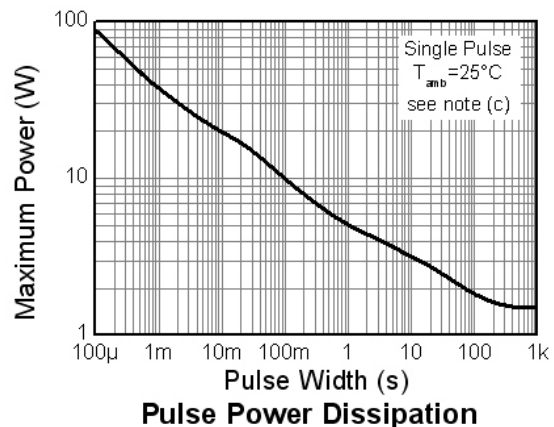
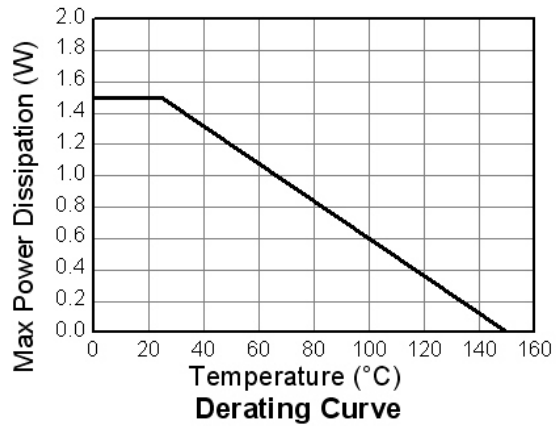
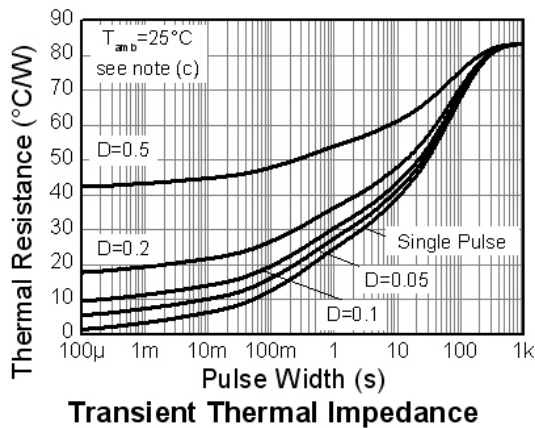
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	100	V
Collector-Emitter Voltage	V _{CEO}	100	V
Emitter-Base Voltage	V _{EBO}	7	V
Continuous Collector Current	I _C	1	A
Peak Pulse Current (Note 4)	I _{CM}	3	A
Base Current	I _B	500	mA

Thermal Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	1.5	W
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	83	°C/W
Thermal Resistance, Junction to Leads (Note 6)	R _{θJL}	22.44	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

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

Thermal Characteristics and Derating information

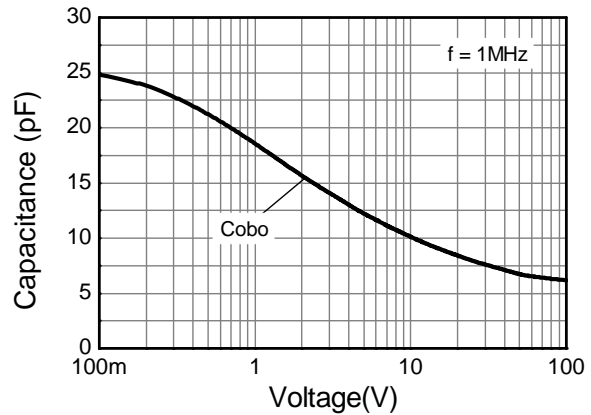
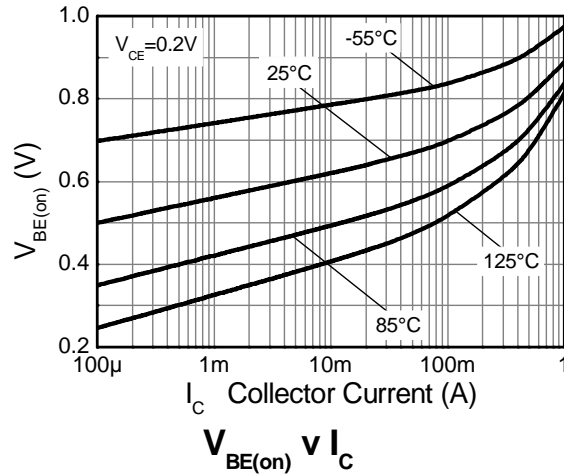
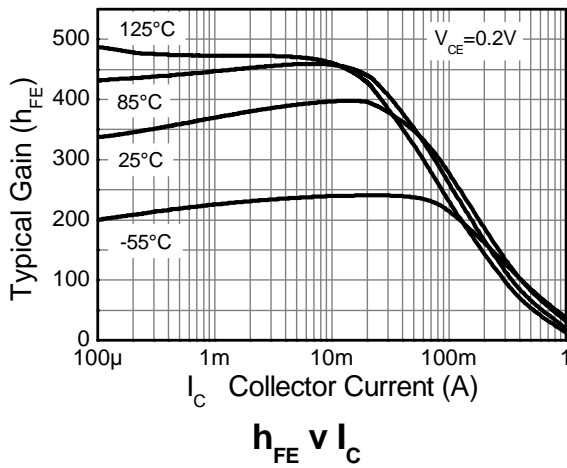


Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	100	-	-	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 7)	BV _{CEO}	100	-	-	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7	8.3	-	V	I _E = 100μA
Collector Cut-off Current	I _{CBO}	-	-	50	nA	V _{CB} = 100V
Emitter Cut-off Current	I _{EBO}	-	-	50	nA	V _{EB} = 7V
Static Forward Current Transfer Ratio (Note 7)	h _{FE}	60	-	-	-	I _C = 85mA, V _{CE} = 0.15V
		100	-	-	-	I _C = 150mA, V _{CE} = 0.2V
Base-Emitter Turn-On Voltage (Note 7)	V _{BE(on)}	-	0.72	0.95	V	I _C = 150mA, V _{CE} = 0.2V
Delay Time	t _(d)	-	468	-	ns	V _{CC} = 80V, I _C = 150mA, -I _{B2} = 1.5mA, V _{CE(ON)} = 0.2V
Rise Time	t _(r)	-	441	-	ns	
Storage Time	t _(s)	-	1540	-	ns	
Fall Time	t _(f)	-	251	-	ns	V _{CC} = 80V, I _C = 150mA, -I _{B2} = 1.5mA, V _{CE(ON)} = 4V
Storage Time	t _(s)	-	22	-	ns	
Fall Time	t _(f)	-	204	-	ns	

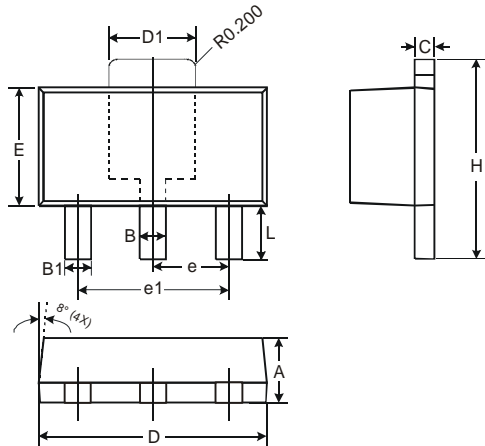
Notes: 7. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤ 2%

Electrical Characteristics @T_A = 25°C unless otherwise specified



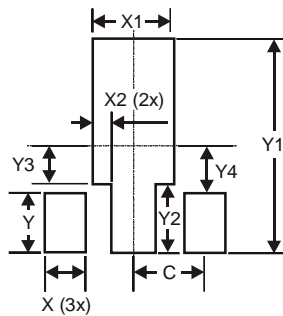
Capacitance v Voltage

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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