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**

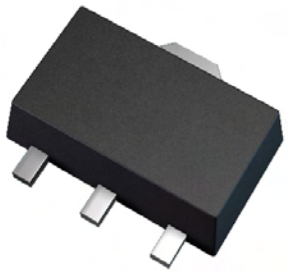
Mechanical Data

- 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)

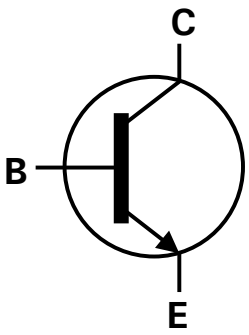
Applications

LED TV backlight

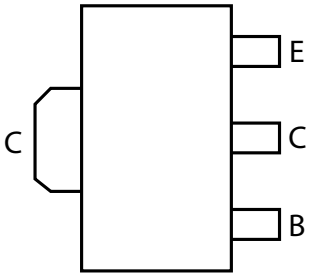
SOT89



Top View



Device symbol



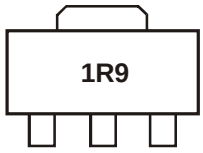
Top View
Pin Out

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

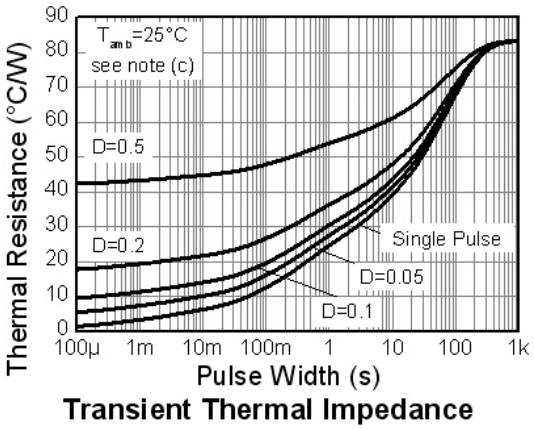
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	100	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	1	A
Peak Pulse Current (Note 4)	I_{CM}	3	A
Base Current	I_B	500	mA

Thermal Characteristics @T_A = 25°C unless otherwise specified

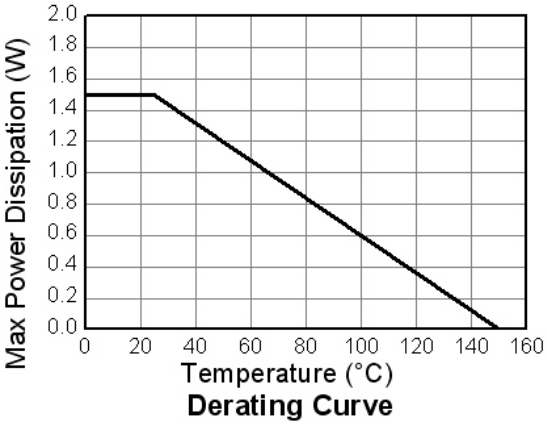
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	1.5	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	83	°C/W
Thermal Resistance, Junction to Leads (Note 6)	$R_{\theta JL}$	22.44	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

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).

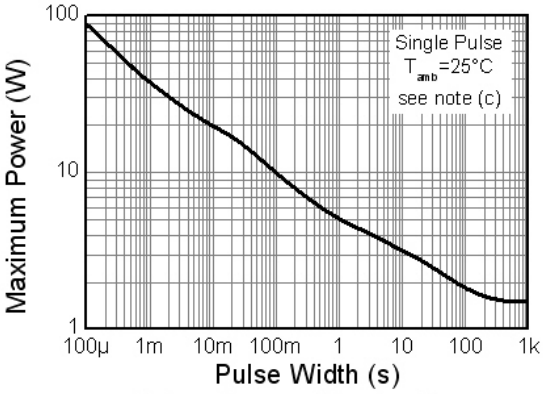
Thermal Characteristics and Derating information



Transient Thermal Impedance



Derating Curve



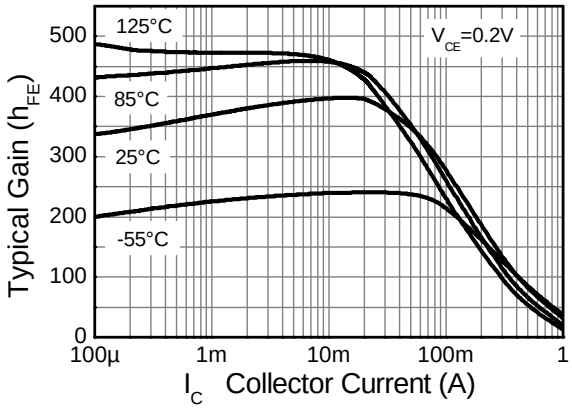
Pulse Power Dissipation

Electrical Characteristics @T_A = 25°C unless otherwise specified

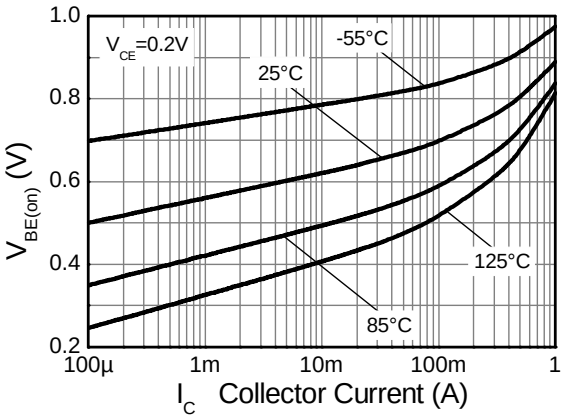
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	100	-	-	V	I_C = 100µA
Collector-Emitter Breakdown Voltage (Note 7)	BV_{CEO}	100	-	-	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	7	8.3	-	V	I_E = 100µA
Collector Cut-off Current	I_{CBO}	-	-	50	nA	V_{CB} = 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	
Storage Time	$t_{(s)}$	-	22	-	ns	V_{CC} = 80V, I_C = 150mA, $-I_{B2}$ = 1.5mA, $V_{CE(ON)}$ = 4V
Fall Time	$t_{(f)}$	-	204	-	ns	

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

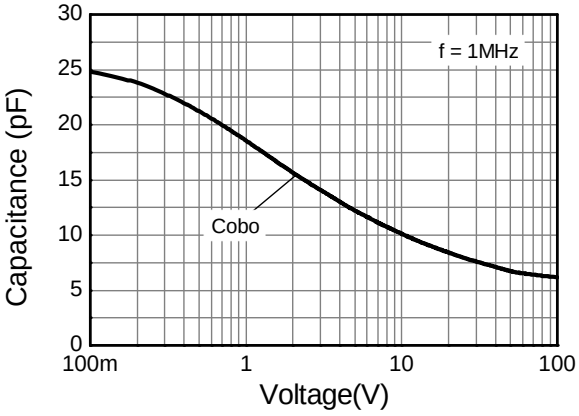
Electrical Characteristics @T_A = 25°C unless otherwise specified



h_{FE} v I_C

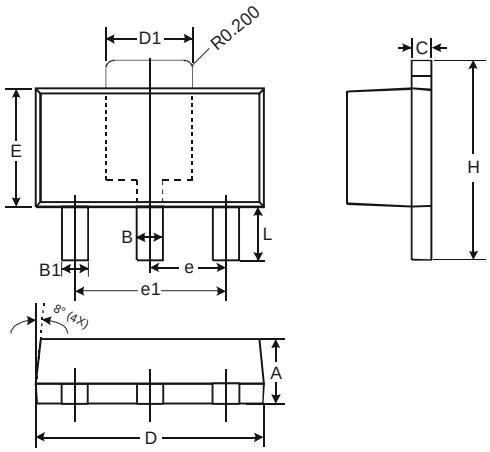


$V_{BE(on)}$ v I_C



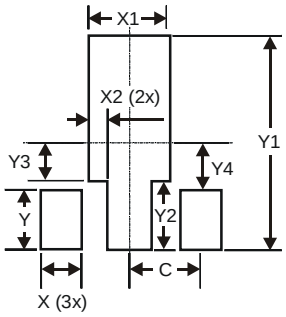
Capacitance v Voltage

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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Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9