

60V NPN LED DRIVING TRANSISTOR IN SOT89

Features

- $BV_{CEO} > 60V$
- Max continuous current $I_C = 1A$
- $h_{FE} > 100 @ I_C = 150mA, V_{CE} = 150mV$
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

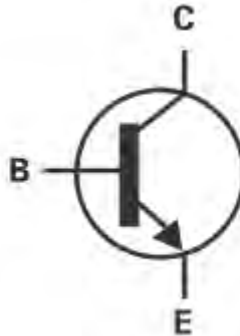
- Case: SOT89
- Case material: molded Plastic. "Green" molding Compound.
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.052 grams (Approximate)

Applications

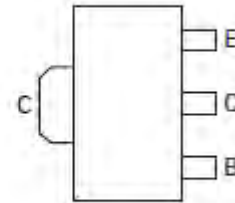
- LED TV backlight



Top View



Device symbol



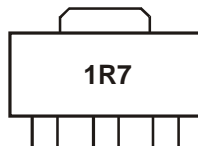
Top View
Pin Out

Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTN4000ZTA	1S7	7	12	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



1R7 = Product Type Marking Code

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

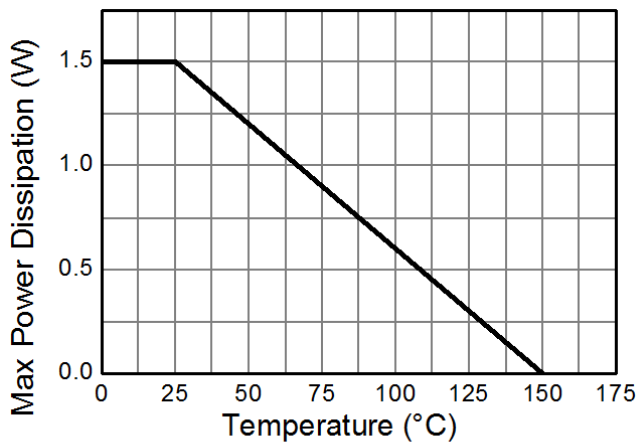
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	1	A
Peak Pulse Current (Note 4)	I_{CM}	3	A
Base Current	I_B	500	mA

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

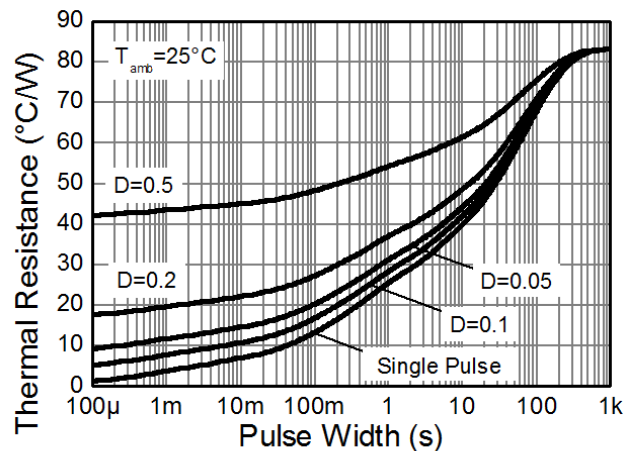
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	1.5	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	83	$^\circ\text{C/W}$
Thermal Resistance, Junction to Leads (Note 6)	$R_{\theta JL}$	28	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- Notes:
4. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$.
 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).

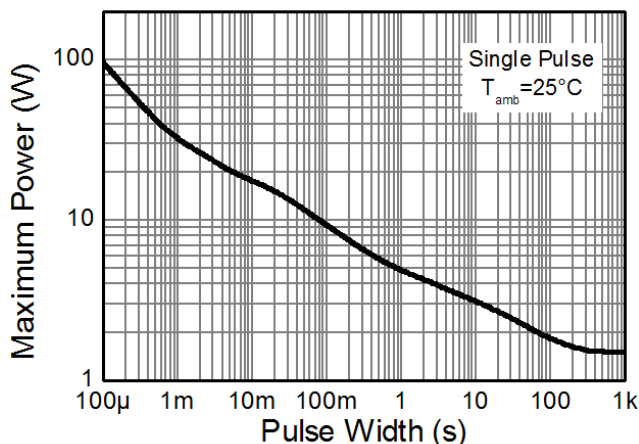
Thermal Characteristics and Derating information



Derating Curve



Transient Thermal Impedance



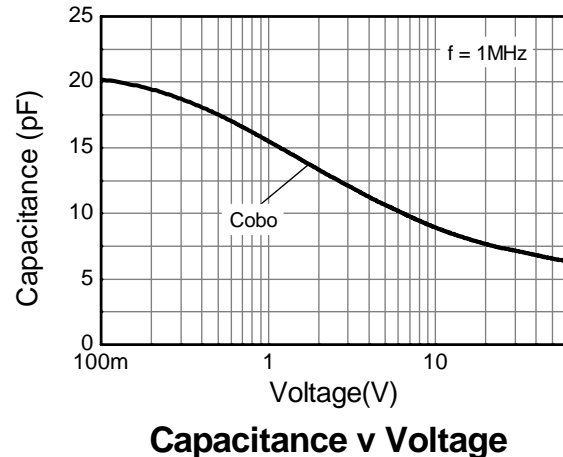
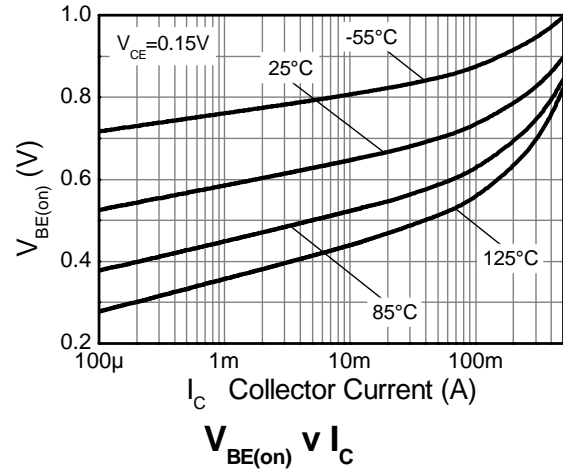
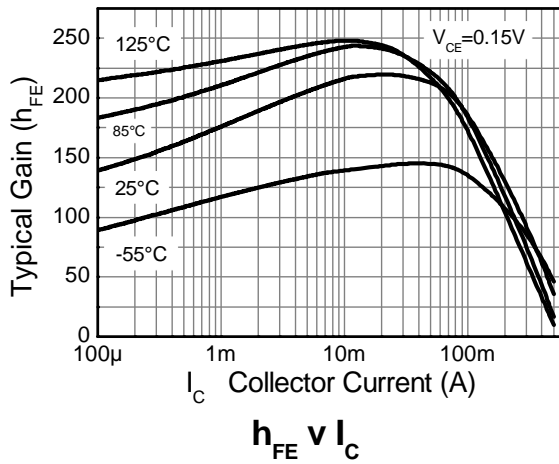
Pulse Power Dissipation

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

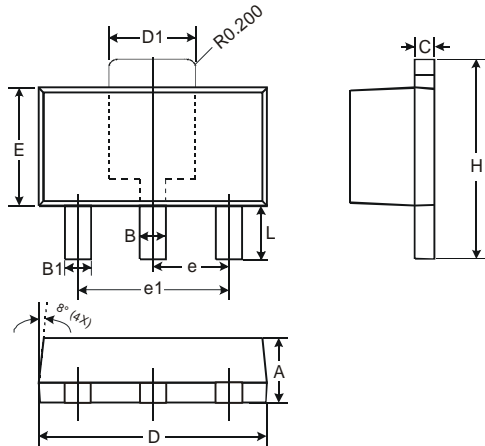
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	60		-	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 7)	BV_{CEO}	60		-	V	$I_C = 10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	7	8.3	-	V	$I_E = 100\mu\text{A}$
Collector Cut-off Current	I_{CBO}	-	-	50	nA	$V_{CB} = 60\text{V}$
Emitter Cut-off Current	I_{EBO}	-	-	50	nA	$V_{EB} = 7\text{V}$
Static Forward Current Transfer Ratio (Note 7)	h_{FE}	60 100	- -	- -	-	$I_C = 85\text{mA}, V_{CE} = 0.1\text{V}$ $I_C = 150\text{mA}, V_{CE} = 0.15\text{V}$
Base-Emitter Turn-On Voltage (Note 7)	$V_{BE(on)}$	-	0.76	0.95	V	$I_C = 150\text{mA}, V_{CE} = 0.15\text{V}$
Delay Time	$t(d)$	-	300	-	ns	$V_{CC} = 48\text{V}, I_C = 150\text{mA},$ $-I_{B2} = 1.5\text{mA}, V_{CE(ON)} = 0.15\text{V}$
Rise Time	$t(r)$	-	292	-	ns	
Storage Time	$t(s)$	-	805	-	ns	
Fall Time	$t(f)$	-	226	-	ns	$V_{CC} = 48\text{V}, I_C = 150\text{mA},$ $-I_{B2} = 1.5\text{mA}, V_{CE(ON)} = 4\text{V}$
Storage Time	$t(s)$	-	25	-	ns	
Fall Time	$t(f)$	-	202	-	ns	

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

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

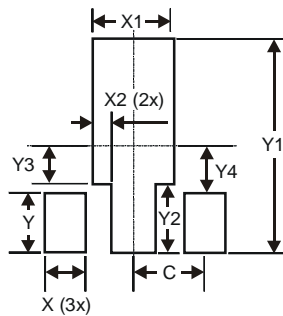


Package Outline Dimensions



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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