Lead-free Green

ZXTN10150DZ

150V NPN LED DRIVING TRANSISTOR IN SOT89

Features

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

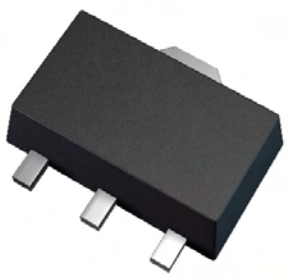
Mechanical Data

- Case: SOT-89
- 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: 0.008 grams (Approximate)

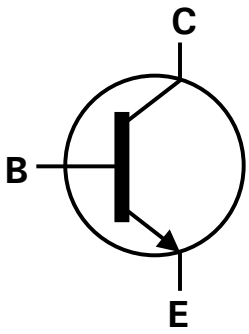
Applications

- LED TV backlight

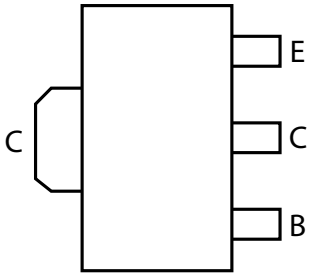
SOT89



Top View



Device symbol



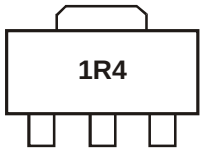
Pinout – top view

Ordering Information

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTN10150DZTA	1R4	7	12	1000

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



1R4 - Product Type Marking Code

Maximum Ratings @T_A = 25°C unless otherwise specified

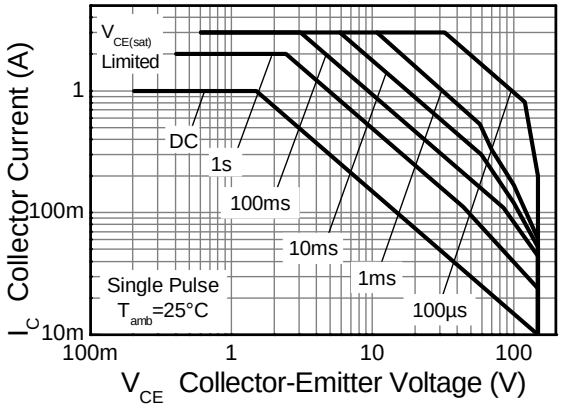
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	150	V
Collector-Emitter Voltage	V_{CEO}	150	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	1	A
Peak Pulse Current (Note 4)	I_{CM}	3	A
Base Current	I_B	500	mA

Thermal Characteristics @T_A = 25°C unless otherwise specified

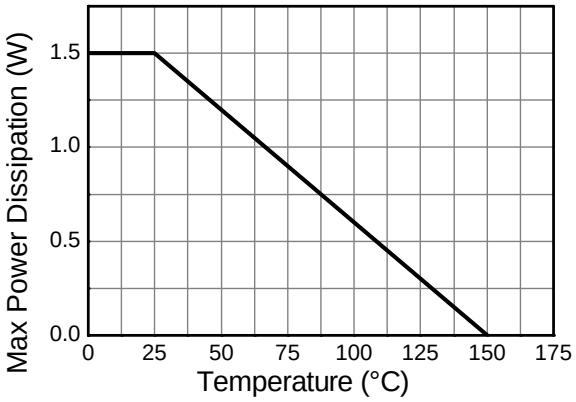
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3)	P_D	1.5	W
Thermal Resistance, Junction to Ambient (Note 3)	$R_{\theta JA}$	83	°C/W
Thermal Resistance, Junction to Leads	$R_{\theta JL}$	6.36	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

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 = 300µs. Duty cycle ≤ 2%.

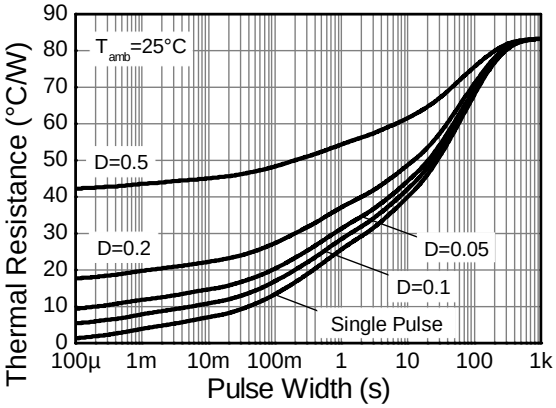
Thermal Characteristics and Derating information



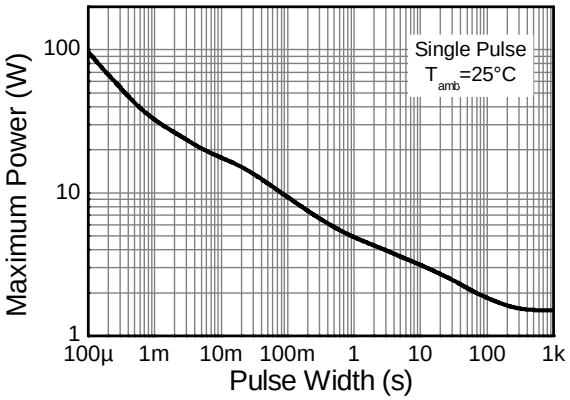
Safe Operating Area



Derating Curve



Transient Thermal Impedance



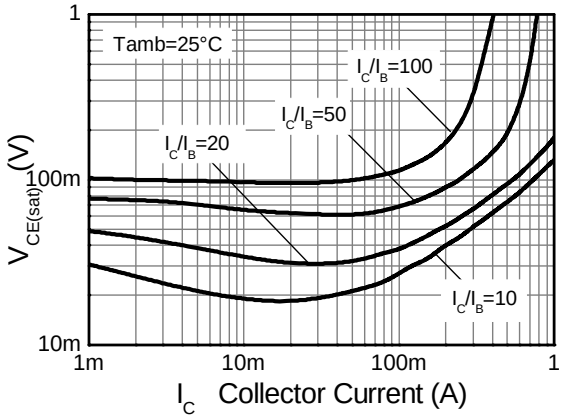
Pulse Power Dissipation

Electrical Characteristics @T_A = 25°C unless otherwise specified

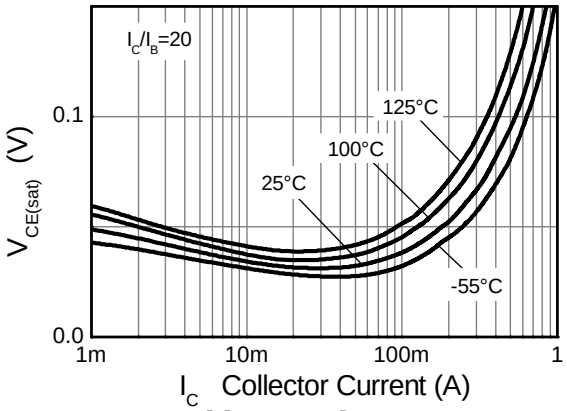
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	150	300	-	V	I_C = 100µA
Collector-Emitter Breakdown Voltage (Note 5)	BV_{CEO}	150	175	-	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	7	8.3	-	V	I_E = 100µA
Collector Cut-off Current	I_{CBO}	-	-	50	nA	V_{CB} = 150V
Emitter Cut-off Current	I_{EBO}	-	-	50	nA	V_{EB} = 7V
Static Forward Current Transfer Ratio (Note 5)	h_{FE}	200 60 100	450 180 150	- - -	-	I_C = 30mA, V_{CE} = 5V I_C = 85mA, V_{CE} = 0.20V I_C = 150mA, V_{CE} = 0.25V
Base-Emitter Turn-On Voltage (Note 5)	$V_{BE(on)}$	-	0.701	0.95	V	I_C = 150mA, V_{CE} = 0.25V
Output Capacitance	C_{OBO}	-	10	-	pF	V_{CB} = 10V, f = 1MHz
Current Gain-Bandwidth Product	f_t	-	135	-	MHz	V_{CB} = 10V, Ic = 10mA, f = 100MHz
Delay Time	$t_{(d)}$	-	625	-	ns	V_{CC} = 110V, I_C = 150mA, $-I_{B2}$ = 1.5mA, $V_{CE(ON)}$ = 0.25V
Rise Time	$t_{(r)}$	-	562	-	ns	
Storage Time	$t_{(s)}$	-	2465	-	ns	
Fall Time	$t_{(f)}$	-	289	-	ns	
Storage Time	$t_{(s)}$	-	461	-	ns	V_{CC} = 110V, I_C = 150mA, $-I_{B2}$ = 1.5mA, $V_{CE(ON)}$ = 4V
Fall Time	$t_{(f)}$	-	52	-	ns	

Notes: 5. Measured under pulsed conditions. Pulse width = 300µs. Duty cycle ≤ 2%

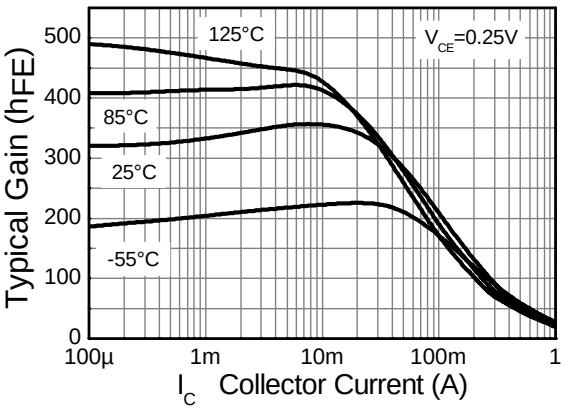
Typical Characteristics



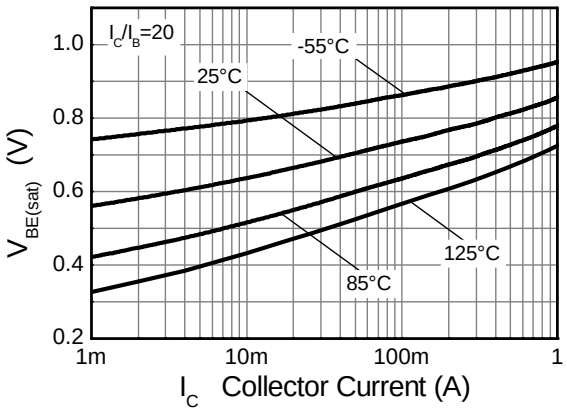
$V_{CE(sat)}$ v I_C



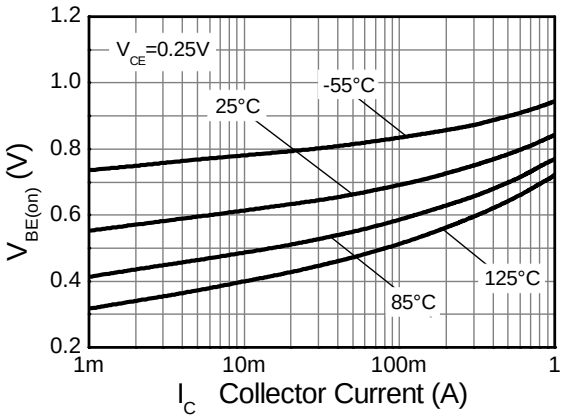
$V_{CE(sat)}$ v I_C



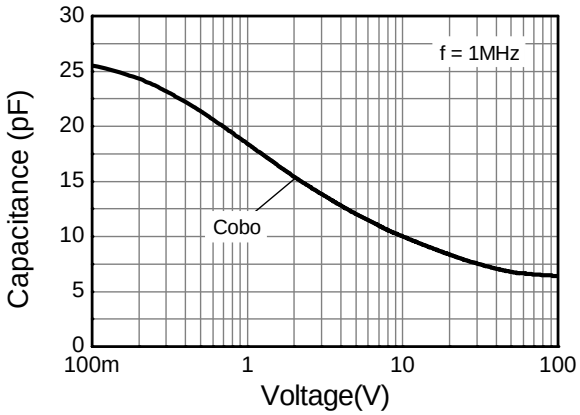
h_{FE} v I_C



$V_{BE(sat)}$ v I_C

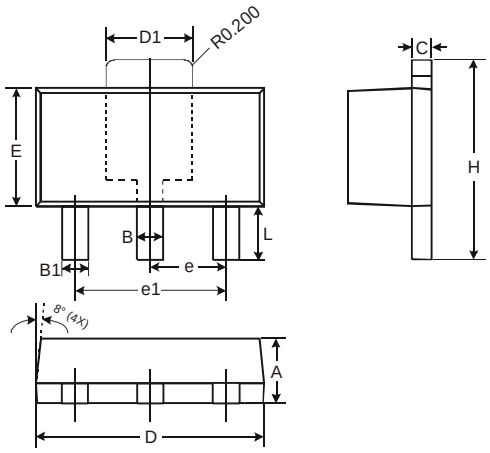


$V_{BE(on)}$ v I_C



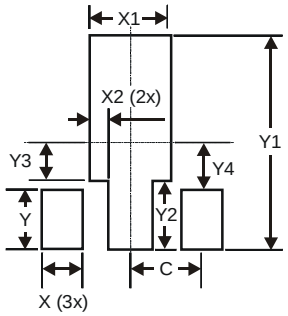
Capacitance v Voltage

Package Outline Dimensions



SOT89-3L		
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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