

Features

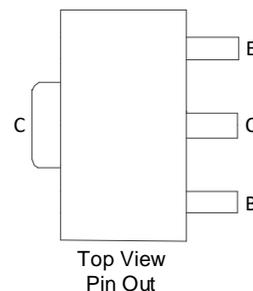
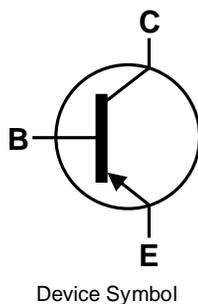
- $V_{CE0} > -60V$
- $I_C = -4.3A$ High Continuous Current
- $R_{SAT} = 32m\Omega$ for a Low Equivalent On-Resistance
- Low Saturation Voltage $V_{CE(sat)} < -65mV @ I_C = -1A$
- h_{FE} Specified Up to $-10A$ for High Current Gain Hold Up
- Complementary NPN Type: DIODES™ ZXTN2010Z
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **An Automotive-Compliant Part is Available Under Separate Datasheet (ZXTP2012ZQ)**

Mechanical Data

- Package: SOT89
- Package Material: Molded Plastic. "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish—Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.05 grams (Approximate)

Application

- Emergency Lighting Circuits
- Motor Driving (Including DC Fans)
- Backlight Inverters
- Power Switches
- Gate Driving MOSFETs and IGBTs

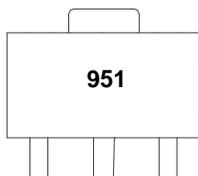


Ordering Information (Note 4)

Part Number	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
ZXTP2012ZTA	951	7	12	1,000
ZXTP2012Z-13R	951	13	12	4,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>

Marking Information



951 = Product Type Marking Code

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

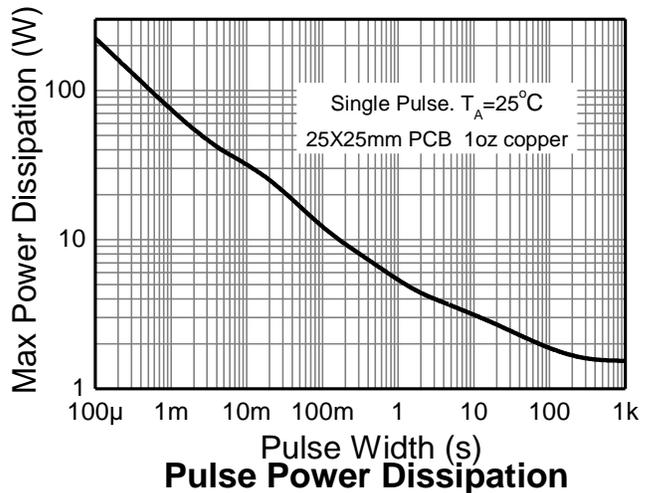
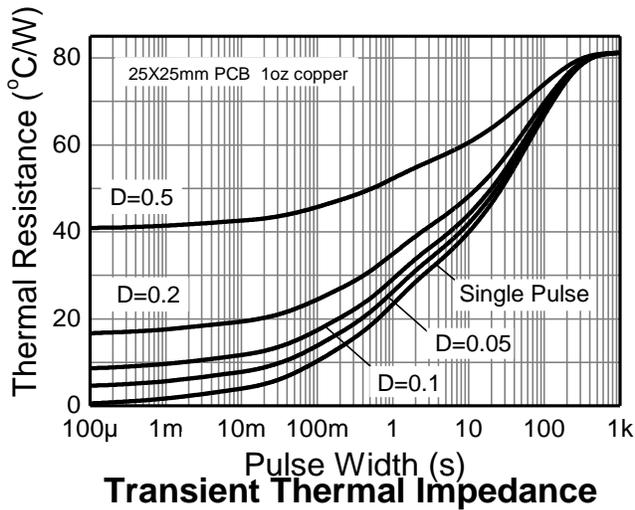
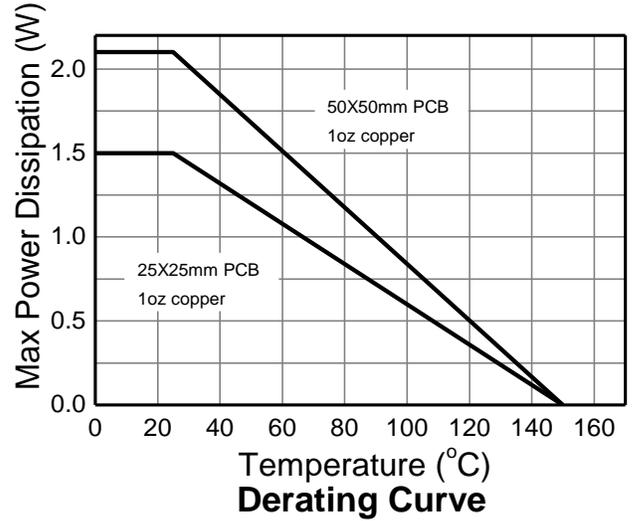
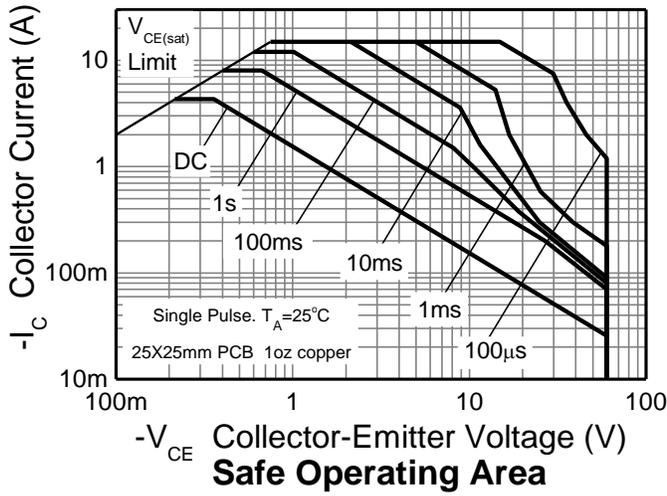
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-100	V
Collector-Emitter Voltage	V_{CEO}	-60	V
Emitter-Base Voltage	V_{EBO}	-7	V
Base Current	I_B	-2	A
Continuous Collector Current	I_C	-4.3	A
Peak Pulse Current	I_{CM}	-15	A

Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	1	W
Linear Derating Factor		8	mW/ $^\circ\text{C}$
Power Dissipation (Note 6)	P_D	1.5	W
Linear Derating Factor		12	mW/ $^\circ\text{C}$
Power Dissipation (Note 7)	P_D	2.1	W
Linear Derating Factor		16.8	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	125	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	83	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Ambient (Note 7)	$R_{\theta JA}$	60	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case (Note 5)	$R_{\theta JC}$	21	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Leads (Note 8)	$R_{\theta JL}$	3.23	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- Notes:
5. Minimum recommended pad layout
 6. For a device surface mounted on 25mm x 25mm x 1.6mm FR-4 PCB with high coverage of single sided 1oz copper, in still air conditions; device measured when operating in steady state condition.
 7. Same as note (6), except the device is mounted on 50mm x 50mm single sided 1oz weight copper.
 8. Thermal resistance from junction to solder-point (on the exposed collector pad).

Thermal Characteristics and Derating Information

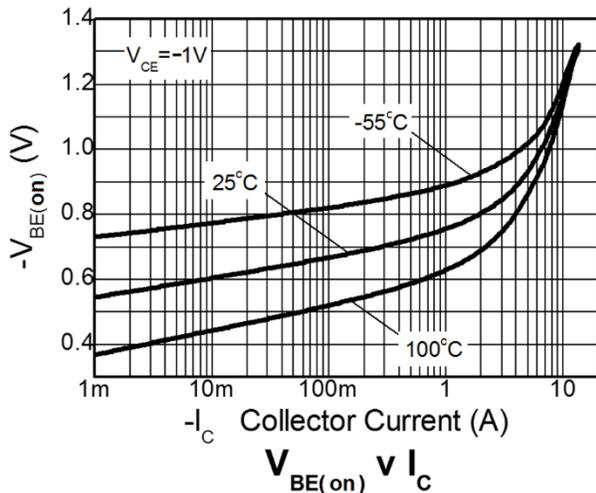
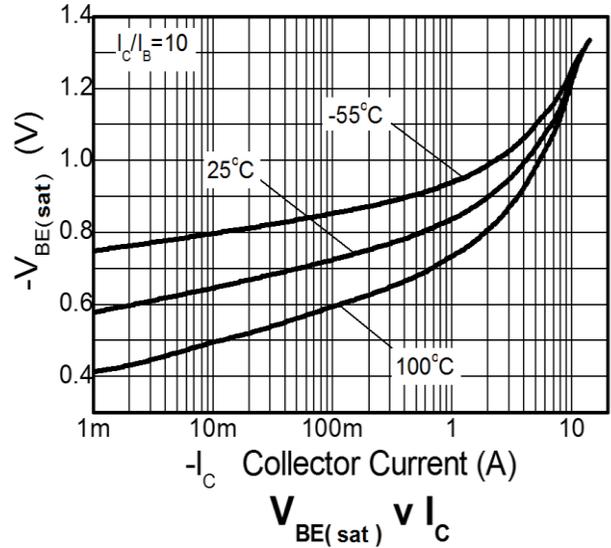
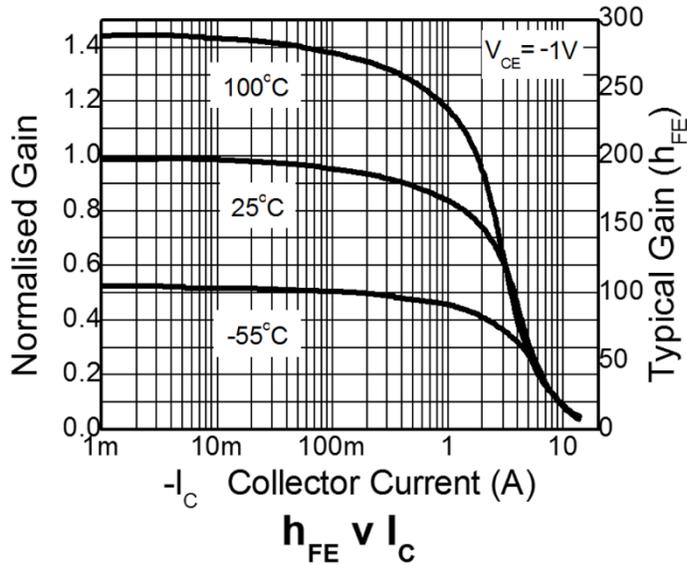
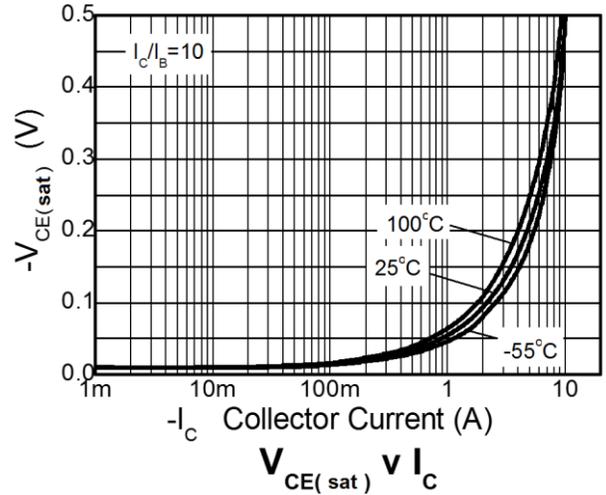
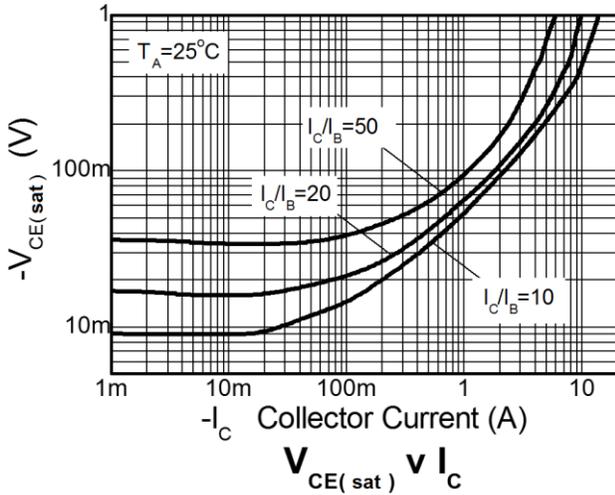


Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-100	-120	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CER}	-100	-120	—	V	$I_C = -1\mu\text{A}$, $R_B \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	-60	-80	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.1	—	V	$I_E = -100\mu\text{A}$
Collector Cutoff Current	I_{CBO}	—	-1	-20 -500	nA nA	$V_{CB} = -80\text{V}$ $V_{CB} = -80\text{V}$, $T_A = +100^\circ\text{C}$
Collector Cutoff Current	I_{CER} $R \leq 1\text{k}\Omega$	—	-1	-20 -500	nA nA	$V_{CB} = -80\text{V}$ $V_{CB} = -80\text{V}$, $T_A = +100^\circ\text{C}$
Emitter Cutoff Current	I_{EBO}	—	-1	-10	nA	$V_{EB} = -6\text{V}$
DC Current Transfer Static Ratio (Note 9)	h_{FE}	100 100 45 10	250 200 90 25	— 300 — —	—	$I_C = -10\text{mA}$, $V_{CE} = -1\text{V}$ $I_C = -2\text{A}$, $V_{CE} = -1\text{V}$ $I_C = -5\text{A}$, $V_{CE} = -1\text{V}$ $I_C = -10\text{A}$, $V_{CE} = -1\text{V}$
Collector-Emitter Saturation Voltage (Note 9)	$V_{CE(sat)}$	—	-14 -50 -75 -160	-20 -65 -110 -215	mV	$I_C = -100\text{mA}$, $I_B = -10\text{mA}$ $I_C = -1\text{A}$, $I_B = -100\text{mA}$ $I_C = -2\text{A}$, $I_B = -200\text{mA}$ $I_C = -5\text{A}$, $I_B = -500\text{mA}$
Base-Emitter Saturation Voltage (Note 9)	$V_{BE(sat)}$	—	-950	-1050	mV	$I_C = -5\text{A}$, $I_B = -500\text{mA}$
Base-Emitter Turn-on Voltage (Note 9)	$V_{BE(on)}$	—	-840	-950	mV	$I_C = -5\text{A}$, $V_{CE} = -1\text{V}$
Transitional Frequency (Note 9)	f_T	—	120	—	MHz	$I_C = -100\text{mA}$, $V_{CE} = -10\text{V}$, $f = 50\text{MHz}$
Output Capacitance	C_{obo}	—	48	—	pF	$V_{CB} = -10\text{V}$, $f = 1\text{MHz}$
Switching Time	t_{on}	—	39	—	ns	$V_{CC} = -10\text{V}$, $I_C = -1\text{A}$, $I_{B1} = -I_{B2} = -100\text{mA}$
	t_{off}	—	370	—		

Note: 9. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

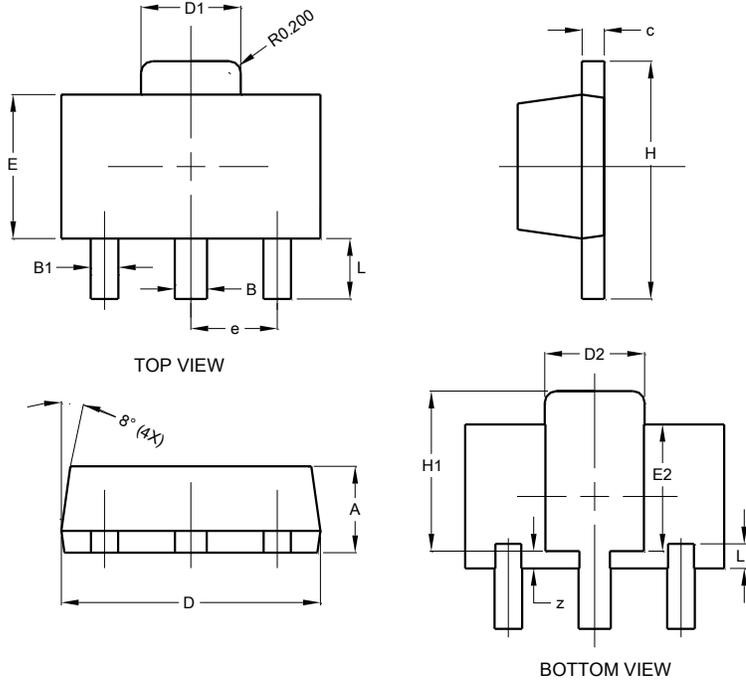
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimension

Please see <https://www.diodes.com/design/support/packaging/> for the latest version.

SOT89

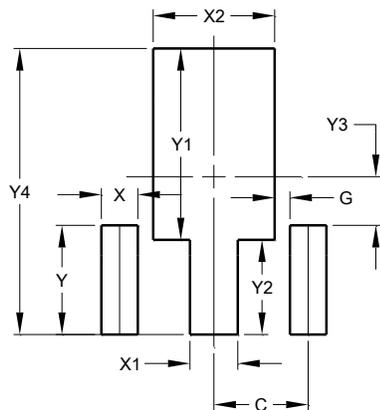


SOT89			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30
All Dimensions in mm			

Suggested Pad Layout

Please see <https://www.diodes.com/design/support/packaging/> for the latest version.

SOT89



Dimensions	Value (in mm)
C	1.500
G	0.244
X	0.580
X1	0.760
X2	1.933
Y	1.730
Y1	3.030
Y2	1.500
Y3	0.770
Y4	4.530

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