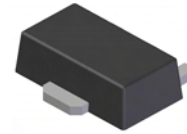


**Features**

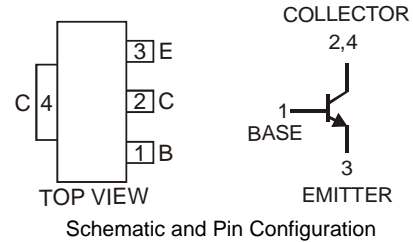
- Epitaxial Planar Die Construction
- Complementary PNP Type Available (DXT2907A)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**



SOT89-3L

**Mechanical Data**

- Case: SOT89-3L
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish — Matte Tin annealed over Copper leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Marking & Type Code Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.072 grams (approximate)



**Maximum Ratings** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	75	V
Collector-Emitter Voltage	V <sub>CEO</sub>	40	V
Emitter-Base Voltage	V <sub>EBO</sub>	6	V
Peak Pulse Current	I <sub>CM</sub>	800	mA
Continuous Collector Current	I <sub>C</sub>	600	mA

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3) @ T <sub>A</sub> = 25°C	P <sub>D</sub>	1	W
Thermal Resistance, Junction to Ambient Air (Note 3) @T <sub>A</sub> = 25°C	R <sub>θJA</sub>	125	°C/W
Operating and Storage Temperature Range	T <sub>j</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes:
1. No purposefully added lead.
  2. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).
  3. Device mounted on FR-4 PCB; pad layout as shown on page 4 or in Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.

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

Characteristic	Symbol	Min	Max	Unit	Test Conditions
<b>OFF CHARACTERISTICS (Note 4)</b>					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	75	—	V	$I_C = 10\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40	—	V	$I_C = 10\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6.0	—	V	$I_E = 10\mu\text{A}, I_C = 0$
Collector Cutoff Current	$I_{CBO}$	—	10	nA $\mu\text{A}$	$V_{CB} = 60\text{V}, I_E = 0$ $V_{CB} = 60\text{V}, I_E = 0, T_A = 150^\circ\text{C}$
Collector Cutoff Current	$I_{CEX}$	—	10	nA	$V_{CE} = 60\text{V}, V_{EB(OFF)} = 3.0\text{V}$
Emitter Cutoff Current	$I_{EBO}$	—	10	nA	$V_{EB} = 3.0\text{V}, I_C = 0$
Base Cutoff Current	$I_{BL}$	—	20	nA	$V_{CE} = 60\text{V}, V_{EB(OFF)} = 3.0\text{V}$
<b>ON CHARACTERISTICS (Note 4)</b>					
DC Current Gain	$h_{FE}$	35	—	—	$I_C = 100\mu\text{A}, V_{CE} = 10\text{V}$
		50	—		$I_C = 1.0\text{mA}, V_{CE} = 10\text{V}$
		75	—		$I_C = 10\text{mA}, V_{CE} = 10\text{V}$
		100	300		$I_C = 150\text{mA}, V_{CE} = 10\text{V}$
		40	—		$I_C = 500\text{mA}, V_{CE} = 10\text{V}$
		35	—		$I_C = 10\text{mA}, V_{CE} = 10\text{V}, T_A = -55^\circ\text{C}$
50	—	$I_C = 150\text{mA}, V_{CE} = 1.0\text{V}$			
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	0.3 1.0	V	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	0.6	1.2 2.0	V	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$
<b>SMALL SIGNAL CHARACTERISTICS</b>					
Output Capacitance	$C_{obo}$	—	8	pF	$V_{CB} = 10\text{V}, f = 1.0\text{MHz}, I_E = 0$
Input Capacitance	$C_{ibo}$	—	25	pF	$V_{EB} = 0.5\text{V}, f = 1.0\text{MHz}, I_C = 0$
Current Gain-Bandwidth Product	$f_T$	300	—	MHz	$V_{CE} = 20\text{V}, I_C = 20\text{mA}, f = 100\text{MHz}$
Noise Figure	NF	—	4.0	dB	$V_{CE} = 10\text{V}, I_C = 150\mu\text{A}, R_S = 1.0\text{k}\Omega, f = 1.0\text{kHz}$
<b>SWITCHING CHARACTERISTICS</b>					
Delay Time	$t_d$	—	10	ns	$V_{CC} = 30\text{V}, I_C = 150\text{mA},$
Rise Time	$t_r$	—	25	ns	$V_{EB(off)} = 0.5\text{V}, I_{B1} = 15\text{mA}$
Storage Time	$t_s$	—	225	ns	$V_{CC} = 30\text{V}, I_C = 150\text{mA},$
Fall Time	$t_f$	—	60	ns	$I_{B1} = I_{B2} = 15\text{mA}$

Notes: 4. Measured under pulsed conditions. Pulse width = 300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

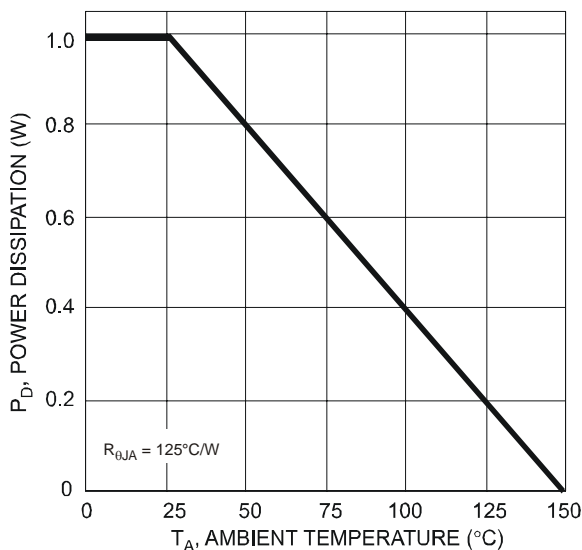


Fig. 1 Power Dissipation vs. Ambient Temperature

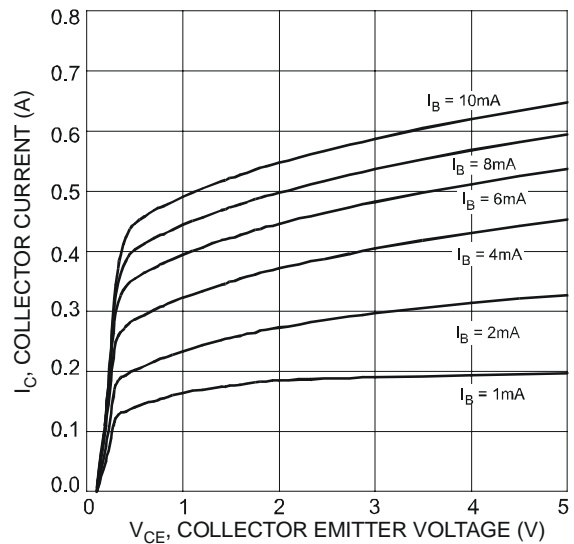


Fig. 2 Typical Collector Current vs. Collector Emitter Voltage

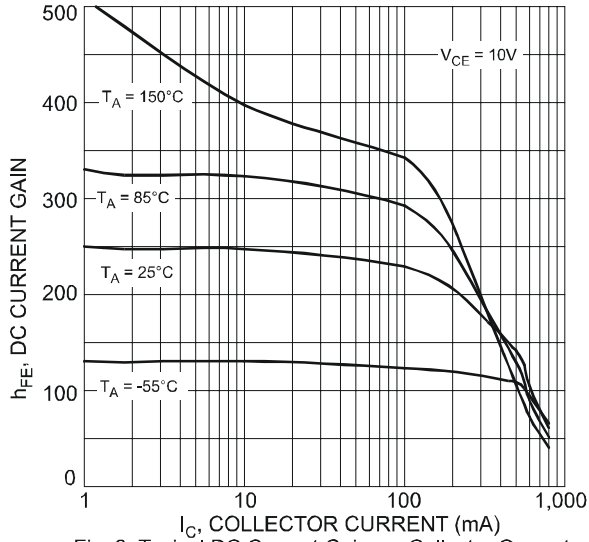


Fig. 3 Typical DC Current Gain vs. Collector Current

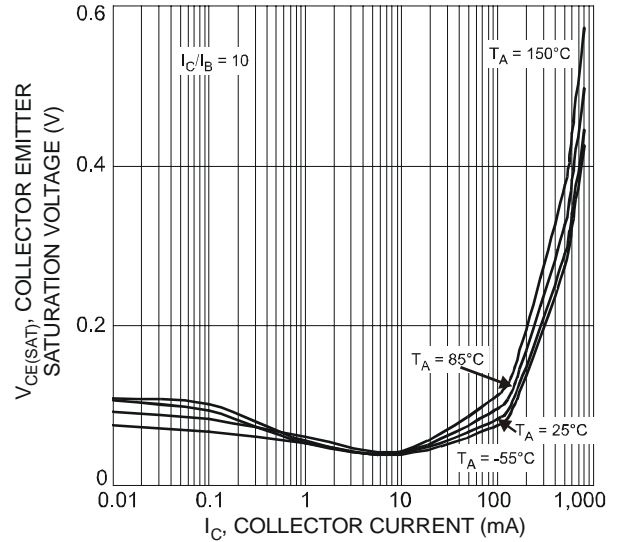


Fig. 4 Typical Collector Emitter Saturation Voltage vs. Collector Current

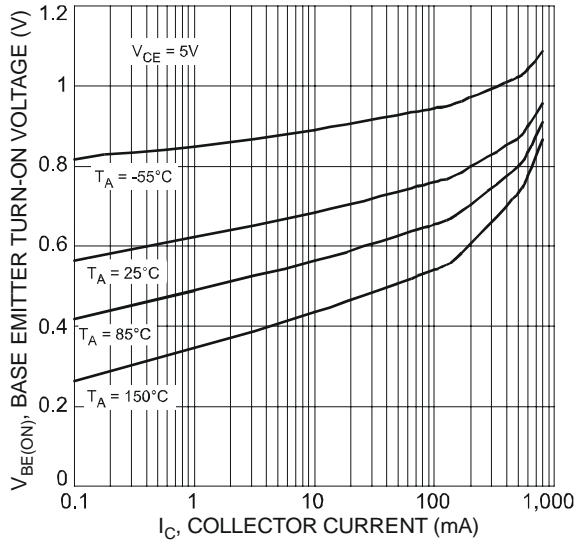


Fig. 5 Typical Base Emitter Turn-On Voltage vs. Collector Current

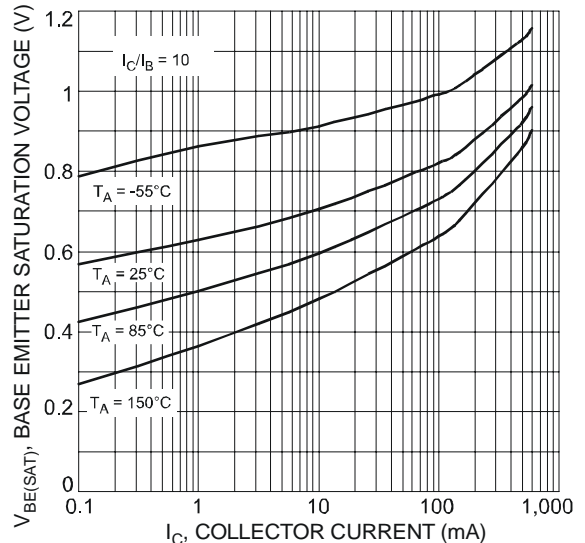


Fig. 6 Typical Base Emitter Saturation Voltage vs. Collector Current

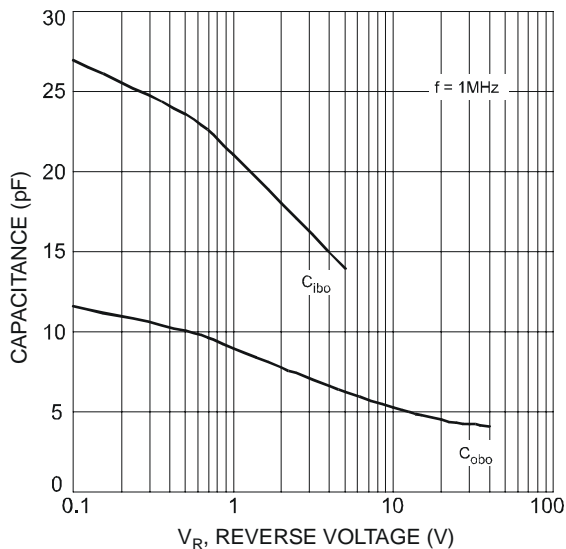


Fig. 7 Typical Capacitance Characteristics

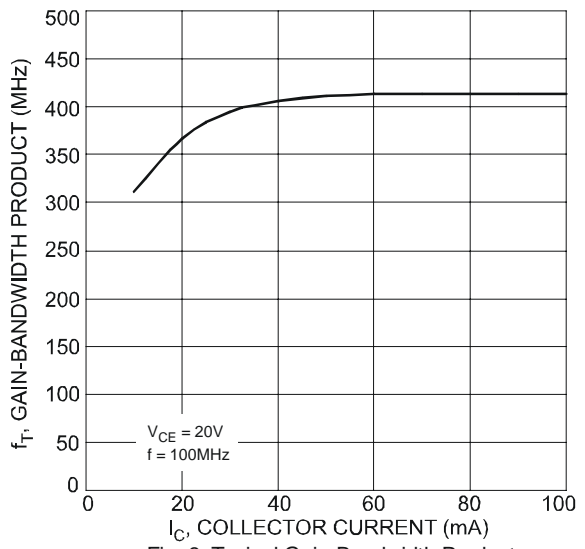


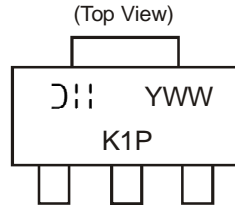
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

## Ordering Information (Note 5)

Device	Packaging	Shipping
DXT222A-13	SOT89-3L	2500/Tape & Reel

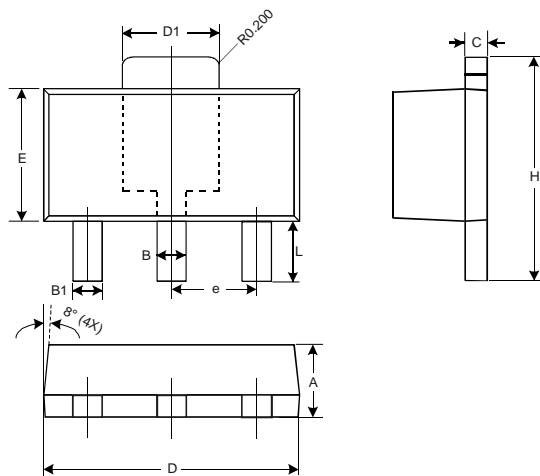
Notes: 5. For packaging details, go to our website at <http://www.diodes.com/ap02007.pdf>.

## Marking Information



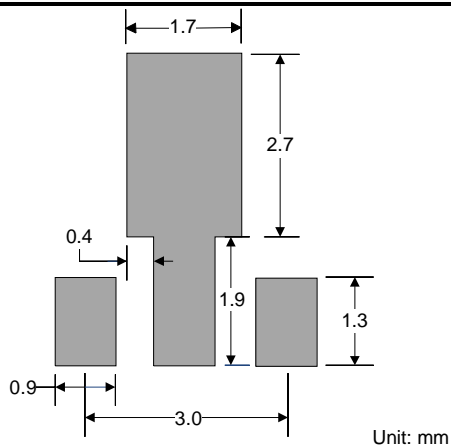
JII = Manufacturer's code marking  
 K1P = Product Type Marking Code  
 YWW = Date Code Marking  
 Y = Last digit of year ex: 7 = 2007  
 WW = Week code 01 - 52

## Package Outline Dimensions



SOT89-3L			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.45	0.55	0.50
B1	0.37	0.47	0.42
C	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.50	1.70	1.60
E	2.40	2.60	2.50
e	—	—	1.50
H	3.95	4.25	4.10
L	0.90	1.20	1.05
All Dimensions in mm			

## Suggested Pad Layout



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