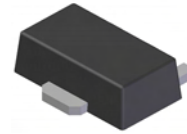


**Features**

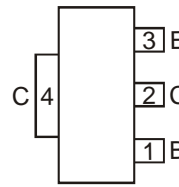
- Epitaxial Planar Die Construction
- Complementary NPN Type Available (DXT2222A)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Lead Free by Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**



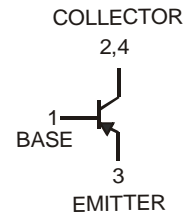
SOT89-3L

**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



TOP VIEW



Schematic and Pin Configuration

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

Characteristic	Symbol	Value	Unit
Collector-Emitter Voltage	V <sub>CEO</sub>	-60	V
Collector-Base Voltage	V <sub>CB0</sub>	-60	V
Emitter-Base Voltage	V <sub>EBO</sub>	-5	V
Collector Current	I <sub>C</sub>	-600	mA
Peak Collector Current	I <sub>CM</sub>	-800	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 Condition
<b>OFF CHARACTERISTICS (Note 4)</b>					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-60	—	V	$I_C = -10\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-60	—	V	$I_C = -10\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5.0	—	V	$I_E = -10\mu\text{A}, I_C = 0$
Collector Cutoff Current	$I_{CBO}$	—	-10	nA $\mu\text{A}$	$V_{CB} = -50\text{V}, I_E = 0$ $V_{CB} = -50\text{V}, I_E = 0, T_A = 150^\circ\text{C}$
Collector Cutoff Current	$I_{CEX}$	—	-50	nA	$V_{CE} = -30\text{V}, V_{EB(OFF)} = -0.5\text{V}$
Emitter Cutoff Current	$I_{EBO}$	—	-50	nA	$V_{EB} = -5\text{V}, I_C = 0$
Base Cutoff Current	$I_{BL}$	—	-50	nA	$V_{CE} = -30\text{V}, V_{EB(OFF)} = -0.5\text{V}$
<b>ON CHARACTERISTICS (Note 4)</b>					
DC Current Gain	$h_{FE}$	75 100 100 100 50	— — — 300 —	—	$I_C = -100\mu\text{A}, V_{CE} = -10\text{V}$ $I_C = -1.0\text{mA}, V_{CE} = -10\text{V}$ $I_C = -10\text{mA}, V_{CE} = -10\text{V}$ $I_C = -150\text{mA}, V_{CE} = -10\text{V}$ $I_C = -500\text{mA}, V_{CE} = -10\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	-0.4 -1.6	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	$V_{BE(SAT)}$	—	-1.3 -2.6	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	$C_{obo}$	—	8.0	pF	$V_{CB} = -10\text{V}, f = 1.0\text{MHz}, I_E = 0$
Input Capacitance	$C_{ibo}$	—	30	pF	$V_{EB} = -2.0\text{V}, f = 1.0\text{MHz}, I_C = 0$
Current Gain-Bandwidth Product	$f_T$	200	—	MHz	$V_{CE} = -20\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$
<b>SWITCHING CHARACTERISTICS</b>					
Turn-On Time	$t_{on}$	—	45	ns	$V_{CC} = -30\text{V}, I_C = -150\text{mA}, I_{B1} = -15\text{mA}$
Delay Time	$t_d$	—	10	ns	
Rise Time	$t_r$	—	40	ns	
Turn-Off Time	$t_{off}$	—	100	ns	$V_{CC} = -6.0\text{V}, I_C = -150\text{mA}, I_{B1} = I_{B2} = -15\text{mA}$
Storage Time	$t_s$	—	80	ns	
Fall Time	$t_f$	—	30	ns	

Notes: 4. Short duration pulse test used to minimize self-heating effect.

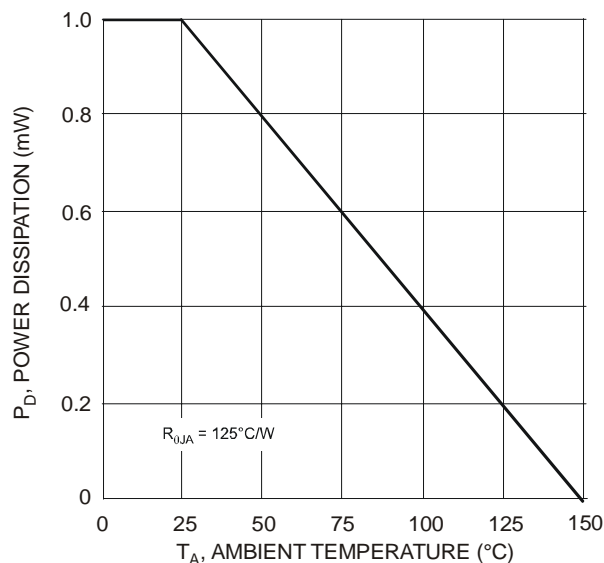


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

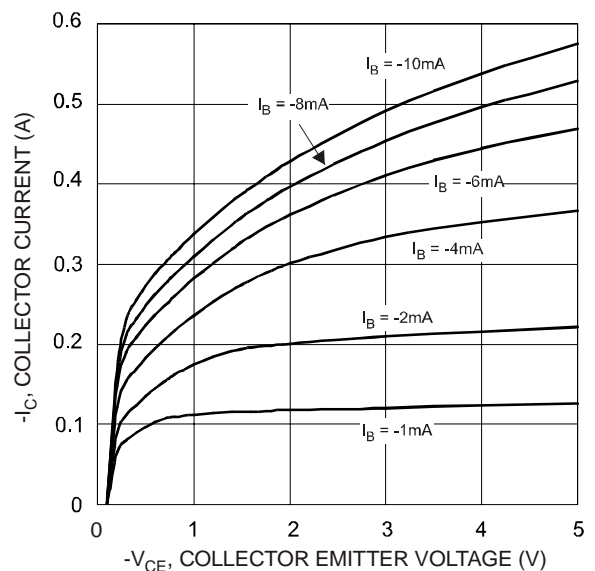


Fig. 2 Typical Collector Current as a Function of Collector Emitter Voltage

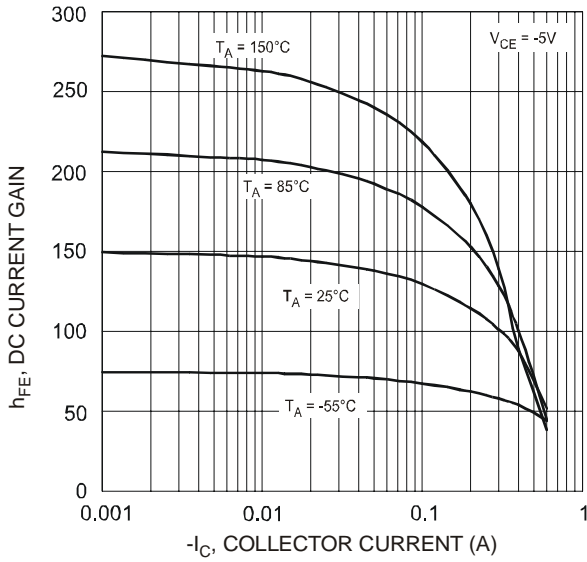


Fig. 3 Typical DC Current Gain vs. Collector Current

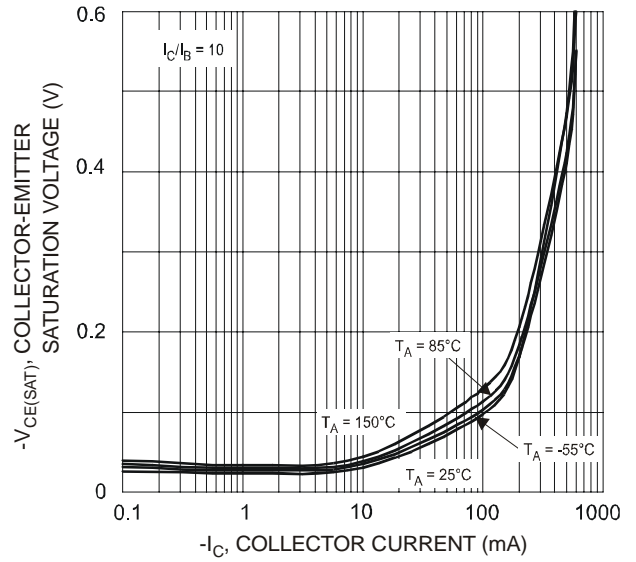


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

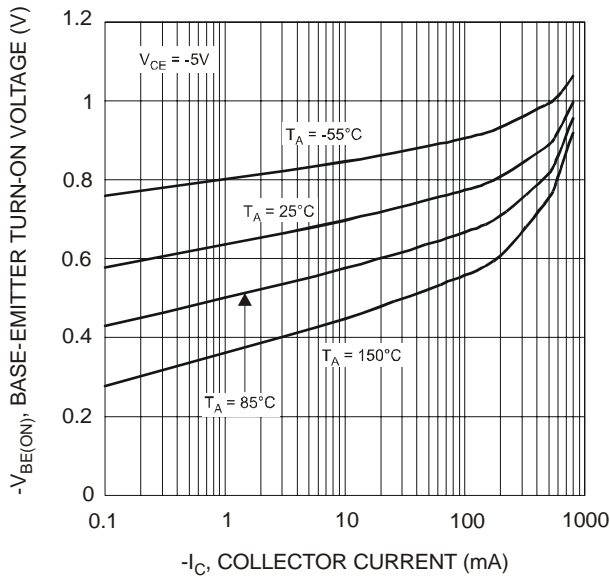


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

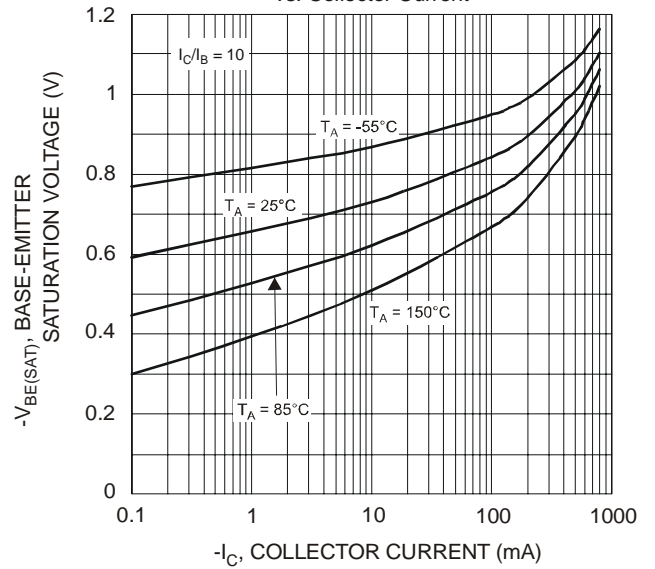


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

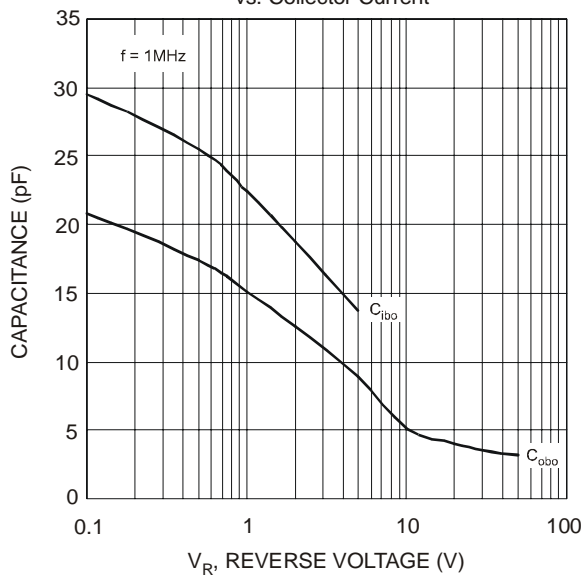


Fig. 7 Typical Capacitance Characteristics

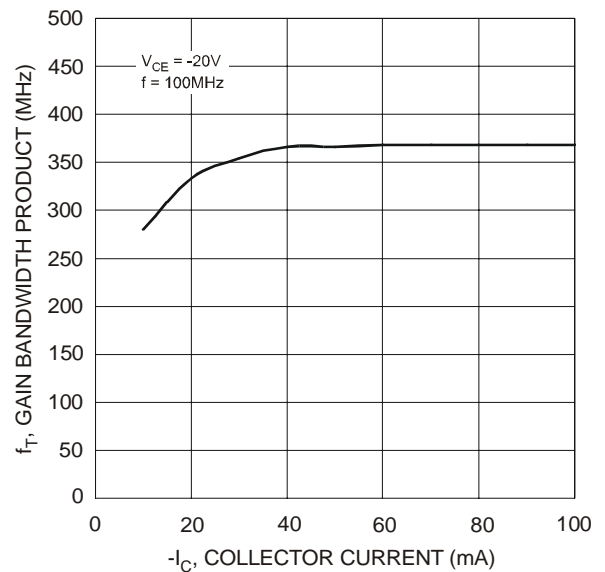


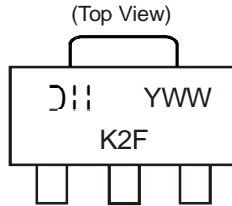
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

## Ordering Information (Note 5)

Device	Packaging	Shipping
DXT2907A-13	SOT89-3L	2500/Tape & Reel

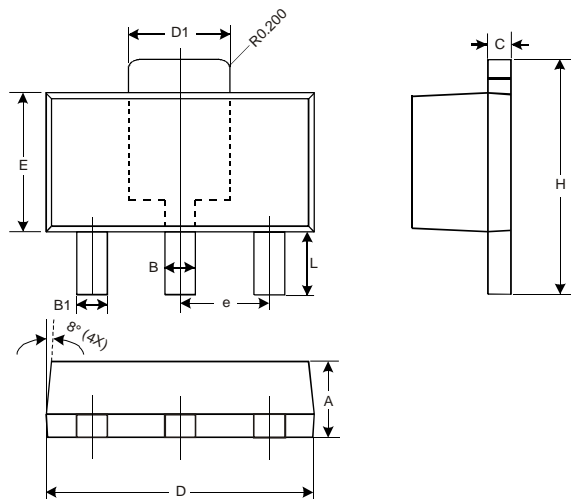
Notes: 5. For packaging details go to our website at <http://www.diodes.com/ap2007.pdf>.

## Marking Information



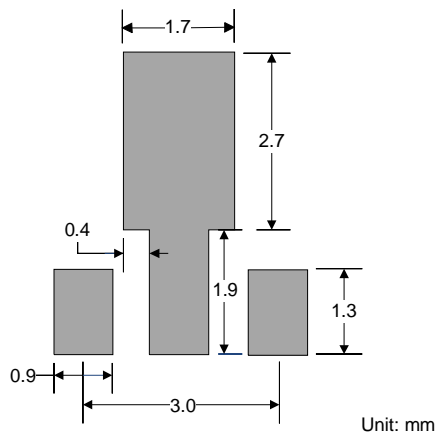
☺ = Manufacturer's code marking  
 K2F = Product Type Marking Code  
 YWW = Date Code Marking  
 Y = Last digit of year ex: 7 = 2007  
 WW = Week code 01 - 52

## Package Outline Dimensions



SOT89-3L			
Dim	Min	Max	Typ
A	1.40	0.160	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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