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## Features

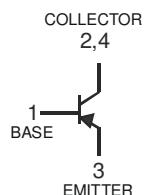
- Epitaxial Planar Die Construction
- Complementary NPN Type Available (DXT5551)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- Lead Free By Design/RoHS Compliant (Note 1)**
- "Green" Device (Note 2)

## Mechanical Data

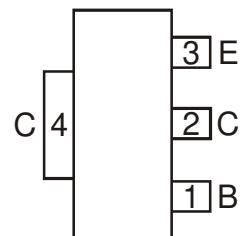
- Case: SOT89-3L
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin annealed over Copper Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.055 grams (approximate)



Top View



Device Schematic



Pin Out Configuration

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	-160	V
Collector-Emitter Voltage	$V_{CEO}$	-150	V
Emitter-Base Voltage	$V_{EBO}$	-5.0	V
Collector Current	$I_C$	-600	mA

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation @ $T_A = 25^\circ\text{C}$ (Note 3)	$P_D$	1	W
Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ\text{C}$ (Note 3)	$R_{\theta JA}$	125	°C/W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	°C

Notes:

- No purposefully added lead.
- 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).
- 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	$V_{(\text{BR})\text{CBO}}$	-160	—	V	$I_C = -100\mu\text{A}$ , $I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(\text{BR})\text{CEO}}$	-150	—	V	$I_C = -1.0\text{mA}$ , $I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(\text{BR})\text{EBO}}$	-5.0	—	V	$I_E = -10\mu\text{A}$ , $I_C = 0$
Collector Cutoff Current	$I_{\text{CBO}}$	—	-50	$\text{nA}$ $\mu\text{A}$	$V_{\text{CB}} = -120\text{V}$ , $I_E = 0$ $V_{\text{CB}} = -120\text{V}$ , $I_E = 0$ , $T_A = 100^\circ\text{C}$
Emitter Cutoff Current	$I_{\text{EBO}}$	—	-50	nA	$V_{\text{EB}} = -3.0\text{V}$ , $I_C = 0$
<b>ON CHARACTERISTICS (Note 4)</b>					
DC Current Gain	$h_{\text{FE}}$	50 60 50	240	—	$V_{\text{CE}} = -5.0\text{V}$ , $I_C = -1.0\text{mA}$ $V_{\text{CE}} = -5.0\text{V}$ , $I_C = -10\text{mA}$ $V_{\text{CE}} = -5.0\text{V}$ , $I_C = -50\text{mA}$
Collector-Emitter Saturation Voltage	$V_{\text{CE}(\text{SAT})}$	—	-0.2 -0.5	V	$I_C = -10\text{mA}$ , $I_B = -1.0\text{mA}$ $I_C = -50\text{mA}$ , $I_B = -5.0\text{mA}$
Base-Emitter Saturation Voltage	$V_{\text{BE}(\text{SAT})}$	—	-1.0	V	$I_C = -10\text{mA}$ , $I_B = -1.0\text{mA}$ $I_C = -50\text{mA}$ , $I_B = -5.0\text{mA}$
<b>SMALL SIGNAL CHARACTERISTICS</b>					
Output Capacitance	$C_{\text{obo}}$	—	6.0	pF	$V_{\text{CB}} = -10\text{V}$ , $f = 1.0\text{MHz}$ , $I_E = 0$
Small Signal Current Gain	$h_{\text{fe}}$	40	200	—	$V_{\text{CE}} = -10\text{V}$ , $I_C = -1.0\text{mA}$ , $f = 1.0\text{kHz}$
Current Gain-Bandwidth Product	$f_T$	100	300	MHz	$V_{\text{CE}} = -10\text{V}$ , $I_C = -10\text{mA}$ , $f = 100\text{MHz}$
Noise Figure	NF	—	8.0	dB	$V_{\text{CE}} = -5.0\text{V}$ , $I_C = -200\mu\text{A}$ , $R_S = 10\Omega$ , $f = 1.0\text{kHz}$

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

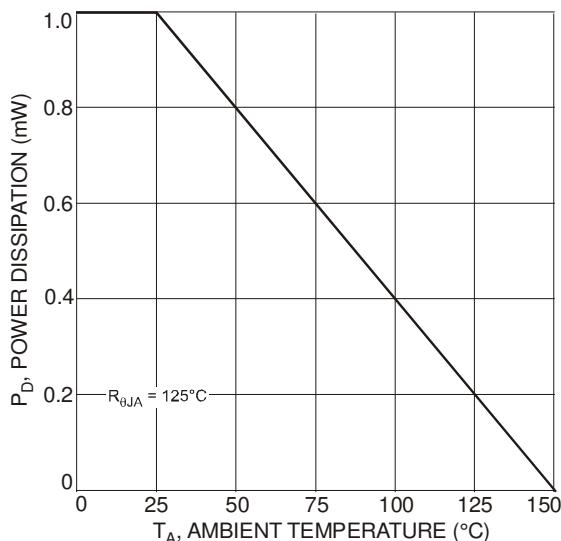


Fig. 1 Power Dissipation  
vs. Ambient Temperature (Note 3)

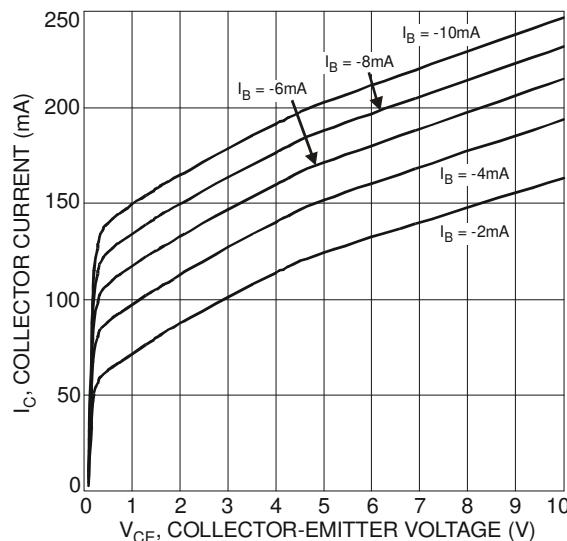


Fig. 2 Typical Collector Current  
vs. Collector-Emitter Voltage

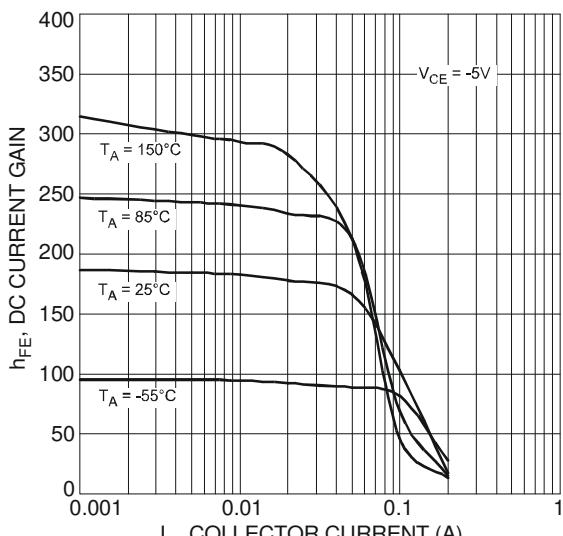


Fig. 3 Typical DC Current Gain vs. Collector Current

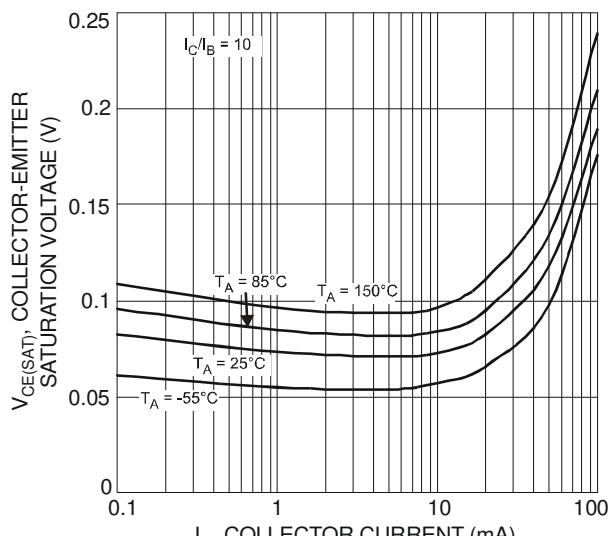


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

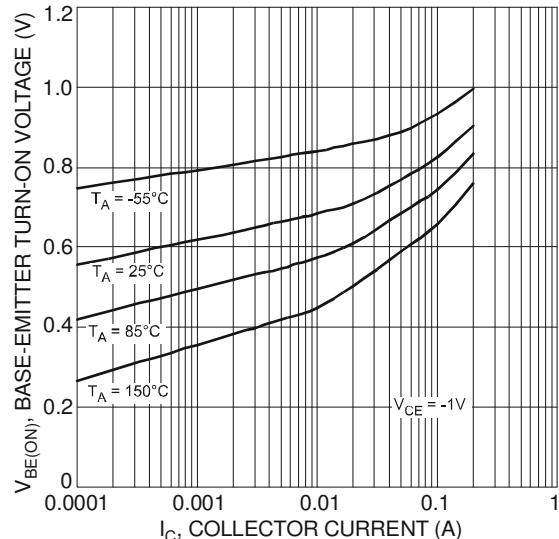


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

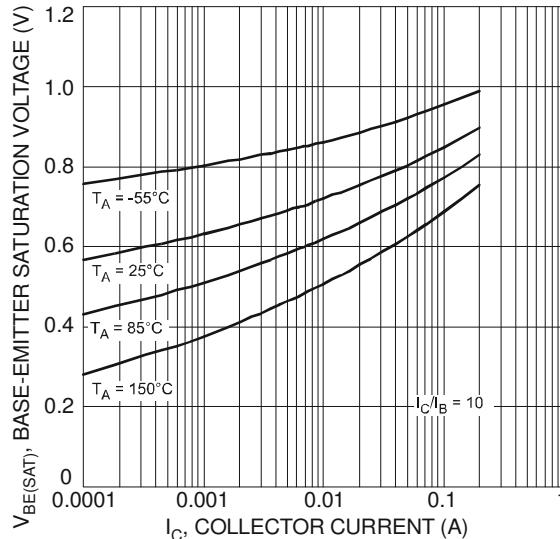


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

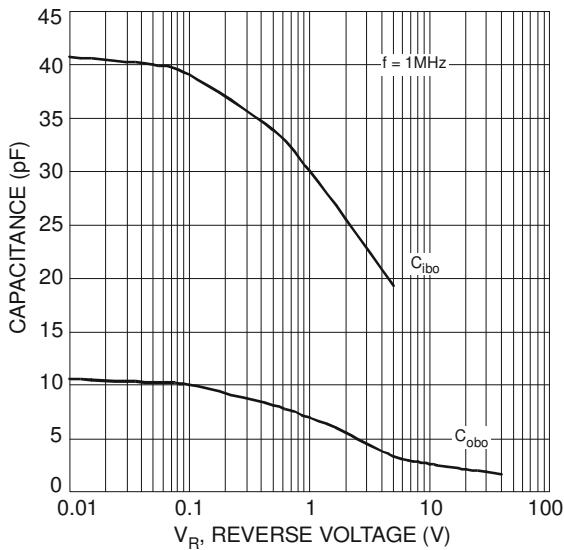


Fig. 7 Typical Capacitance Characteristics

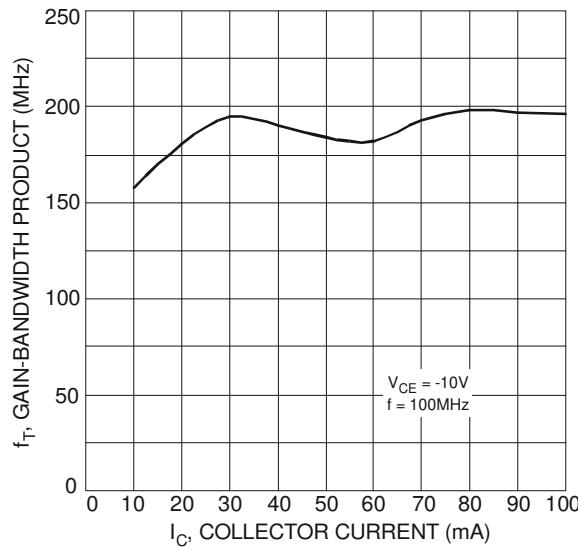


Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

## Ordering Information (Note 5)

Part Number	Case	Packaging
DXT5401-13	SOT89-3L	2500/Tape & Reel

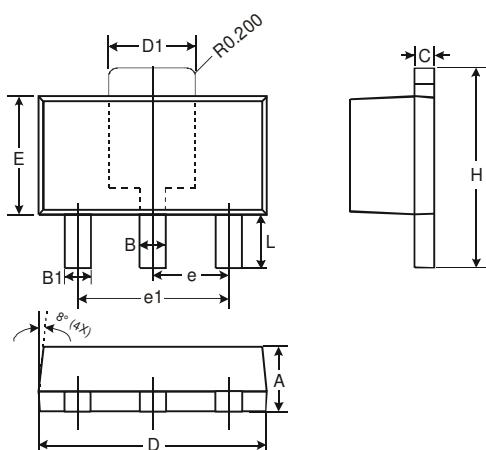
Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



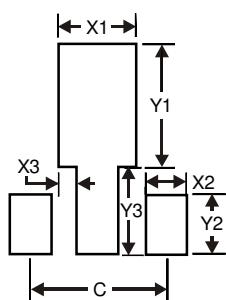
K4M = Product type marking code  
 DII = Manufacturer's code marking  
 YWW = Date code marking  
 Y = Last digit of year (ex: 7 = 2007)  
 WW = Week code (01 – 53)

## Package Outline Dimensions



SOT89-3L		
Dim	Min	Max
<b>A</b>	1.40	1.60
<b>B</b>	0.44	0.62
<b>B1</b>	0.35	0.54
<b>C</b>	0.35	0.43
<b>D</b>	4.40	4.60
<b>D1</b>	1.52	1.83
<b>E</b>	2.29	2.60
<b>e</b>	1.50 Typ	
<b>e1</b>	3.00 Typ	
<b>H</b>	3.94	4.25
<b>L</b>	0.89	1.20
All Dimensions in mm		

## Suggested Pad Layout



Dimensions	Value (in mm)
X1	1.7
X2	0.9
X3	0.4
Y1	2.7
Y2	1.3
Y3	1.9
C	3.0

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