

## Features

- $BV_{CE0} > 160V$
- $I_C = 600mA$  High Collector Current
- Complementary PNP Type: DXT5401
- Ideal for Medium Power Switching or Amplification Applications
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

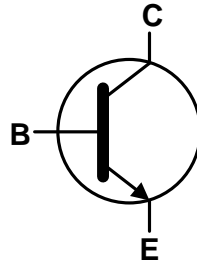
## Mechanical Data

- Case: SOT89
- Case 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 (B3)
- Weight: 0.052 grams (Approximate)

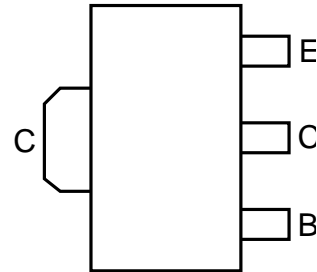


SOT89

Top View



Device Symbol



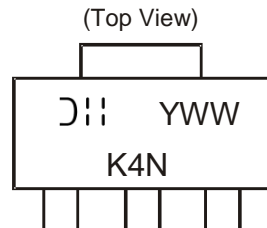
Top View  
Pin-Out

## Ordering Information (Note 4)

Part Number	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DXT5551-13	K4N	13	12	2,500

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) 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 <http://www.diodes.com/products/packages.html>.

## Marking Information



⌋|| = Manufacturer's Marking  
 K4N = Product Type Marking Code  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 7 = 2017)  
 WW = Week Code (01 to 52)

**Absolute Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	180	V
Collector-Emitter Voltage	V <sub>CEO</sub>	160	V
Emitter-Base Voltage	V <sub>EBO</sub>	6	V
Collector Current	I <sub>C</sub>	600	mA

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P <sub>D</sub>	0.75	W
	(Note 6)		1.2	
Thermal Resistance, Junction to Ambient Air	(Note 5)	R <sub>θJA</sub>	166	°C/W
	(Note 6)		104	
Operating and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**ESD Ratings** (Note 7)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
- 5. For a device mounted with the exposed collector pad on minimum recommended pad layout 1oz copper that is on a single-sided 1.6mm FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.
  - 6. Same as note 5, except the device is mounted with the exposed collector pad on 25mm x 25mm 1oz copper.
  - 7. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Collector-Base Breakdown Voltage	$BV_{CBO}$	180	—	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 8)	$BV_{CEO}$	160	—	—	V	$I_C = 10\text{mA}$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	6.0	—	—	V	$I_E = 100\mu\text{A}$
Collector Cut-off Current	$I_{CBO}$	—	—	50	nA	$V_{CB} = 120\text{V}$
				50	$\mu\text{A}$	$V_{CB} = 120\text{V}, T_A = +100^\circ\text{C}$
Emitter Cut-off Current	$I_{EBO}$	—	—	50	nA	$V_{EB} = 4\text{V}$
<b>ON CHARACTERISTICS (Note 8)</b>						
Static Forward Current Transfer Ratio	$h_{FE}$	80	—	—	—	$I_C = 1\text{mA}, V_{CE} = 5\text{V}$
		80		250		$I_C = 10\text{mA}, V_{CE} = 5\text{V}$
		30		—		$I_C = 50\text{mA}, V_{CE} = 5\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	—	0.15	V	$I_C = 10\text{mA}, I_B = 1\text{mA}$
				0.20		$I_C = 50\text{mA}, I_B = 5\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	—	1.0	V	$I_C = 10\text{mA}, I_B = 1\text{mA}$
						$I_C = 50\text{mA}, I_B = 5\text{mA}$
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Transition Frequency	$f_T$	100	—	300	MHz	$I_C = 10\text{mA}, V_{CE} = 10\text{V}, f = 100\text{MHz}$
Output Capacitance	$C_{obo}$	—	—	6	pF	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$
Small Signal Current Gain	$h_{fe}$	50	—	200	—	$V_{CB} = 10\text{V}, I_C = 1\text{mA}, f = 1\text{kHz}$
Noise Figure	NF	—	—	8	dB	$V_{CB} = 5\text{V}, I_C = 200\mu\text{A}, R_S = 1\text{k}\Omega, f = 1\text{kHz}$

Note: 8. 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.)

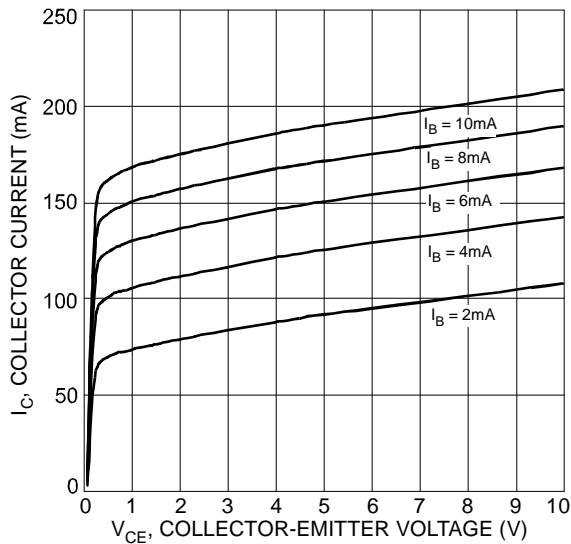


Fig.1 Typical Collector Current vs. Collector-Emitter Voltage

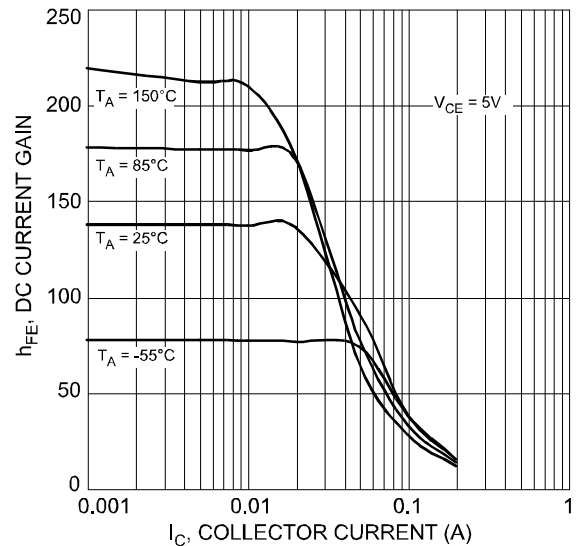


Fig.2 Typical DC Current Gain vs. Collector Current

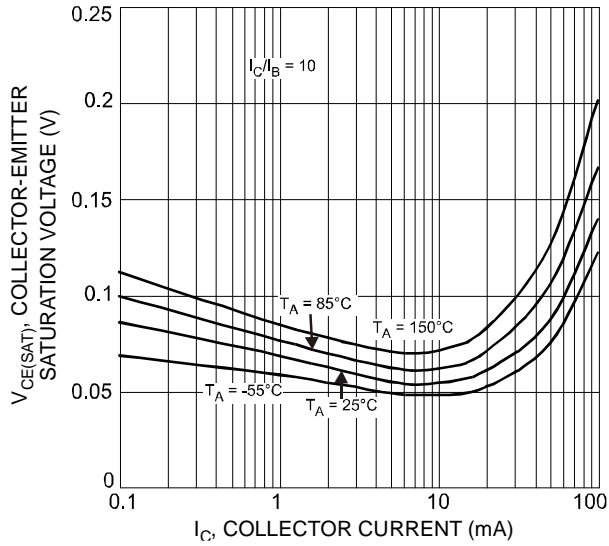


Fig.3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

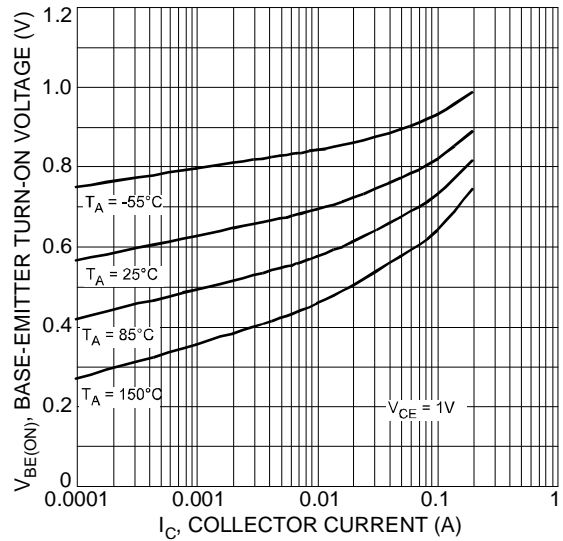


Fig.4 Typical Base-Emitter Turn-On Voltage vs. Collector Current

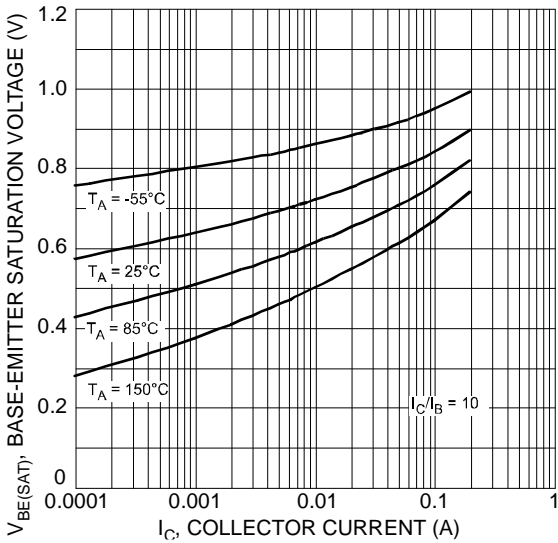


Fig.5 Typical Base-Emitter Saturation Voltage vs. Collector Current

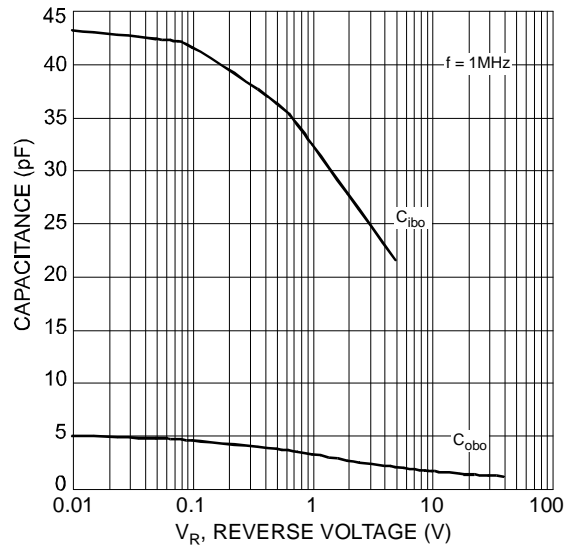


Fig.6 Typical Capacitance Characteristics

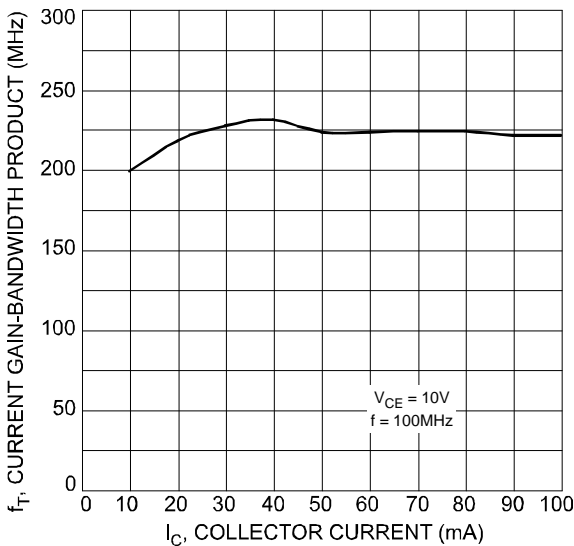
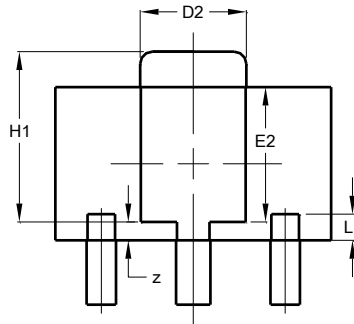
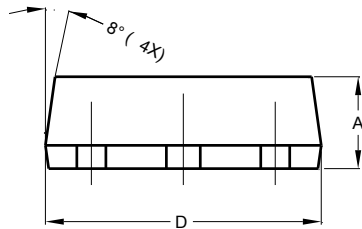
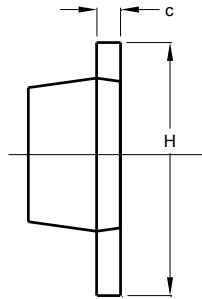
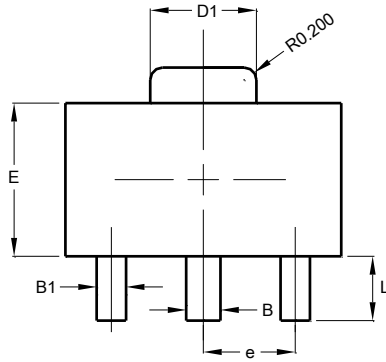


Fig.7 Typical Gain-Bandwidth Product vs. Collector Current

**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT89**

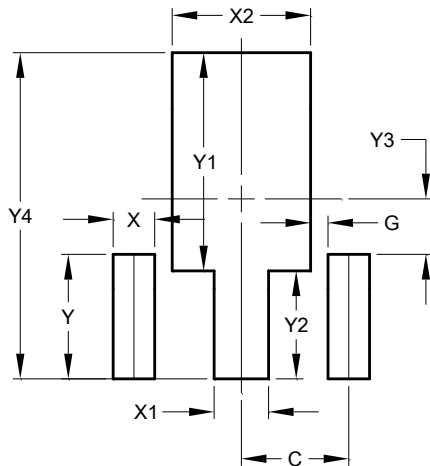


SOT89			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30
All Dimensions in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

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> 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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