


## Features

- $BV_{CEO} > 160V$
- $I_C = 600mA$  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)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

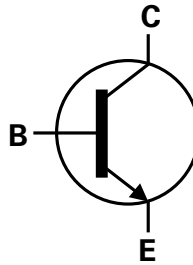
## Mechanical Data

- 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 
- Weight: 0.052 grams (Approximate)

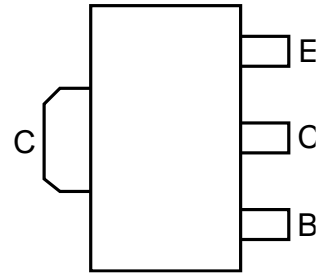
SOT89



Top View



Device Symbol



Top View  
Pinout

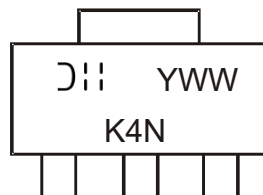
## Ordering Information (Note 4)


Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
DXT5551-13	SOT89	K4N	13	12	2,500	Reel

- 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

SOT89



 = Manufacturer's Marking  
 K4N = Product Type Marking Code  
 YWW = Date Code Marking  
 Y or  $\bar{Y}$  = Last Digit of Year (ex: 5 = 2025)  
 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>EB0</sub>	6	V
Collector Current	I <sub>C</sub>	600	mA

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

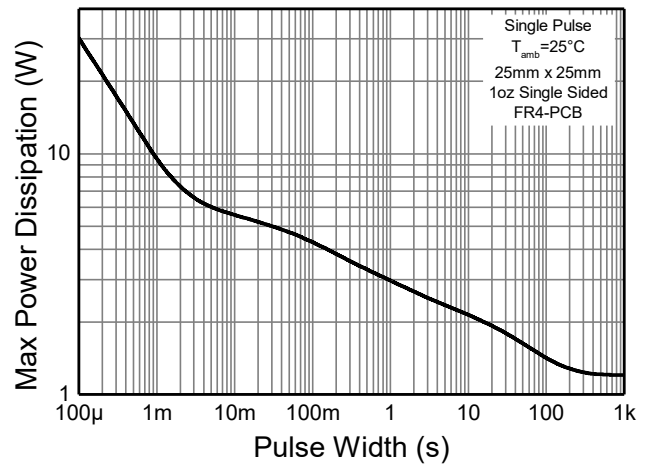
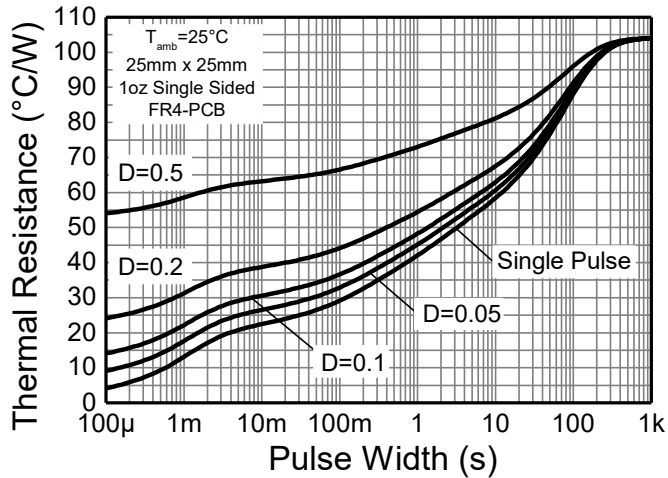
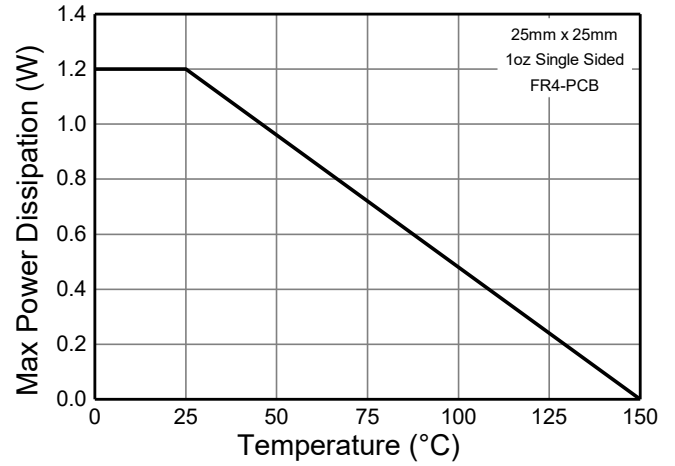
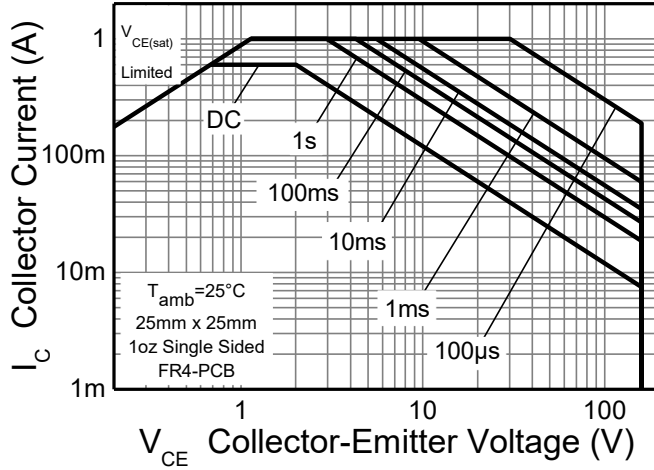
Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	0.75	W
		1.2	
Thermal Resistance, Junction to Ambient Air	R <sub>θJA</sub>	166	°C/W
		104	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

## 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
Electrostatic Discharge - Charged Device Model	ESD CDM	1,000	V	IV

- 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 and JESD22-C101.

## Thermal Characteristics and Derating Information



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

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

Note: 8. Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

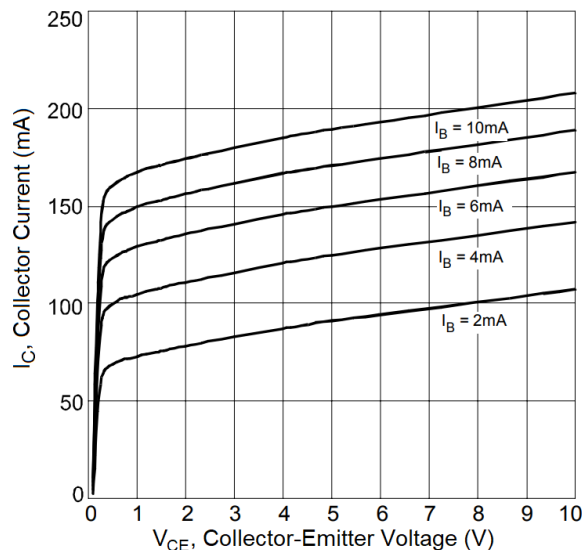
**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)


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

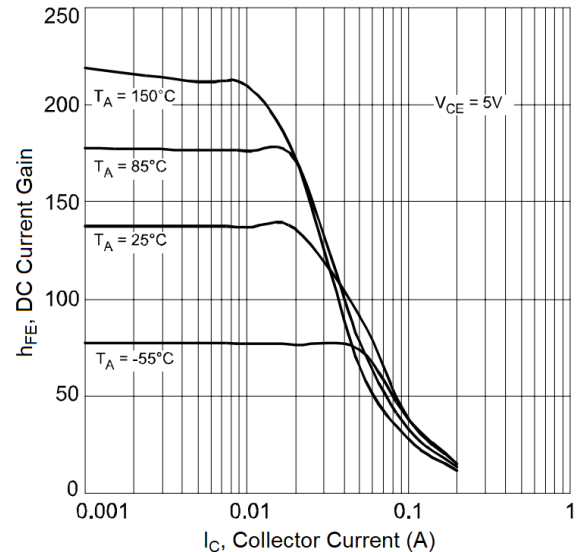


Fig 6. Typical DC Current Gain vs. Collector Current

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

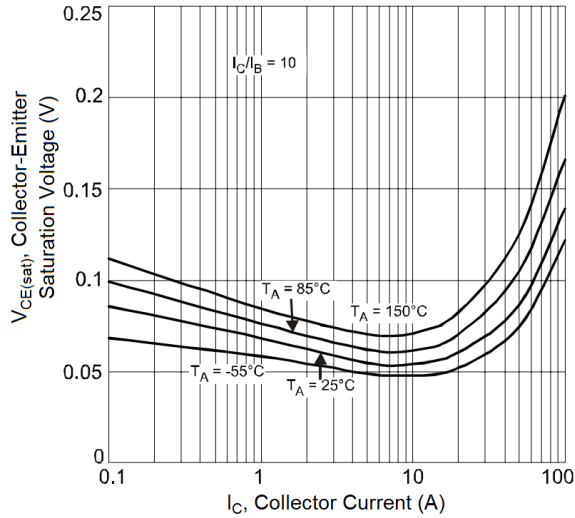


Fig 7. Typical Collector-Emitter Saturation Voltage vs. Collector Current

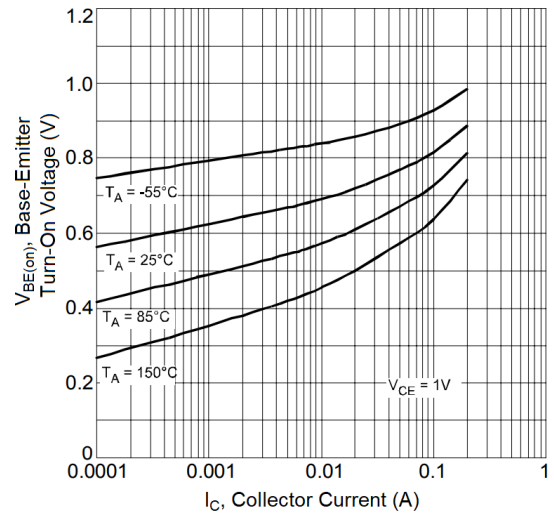


Fig 8. Typical Base-Emitter Turn-On Voltage vs. Collector Current

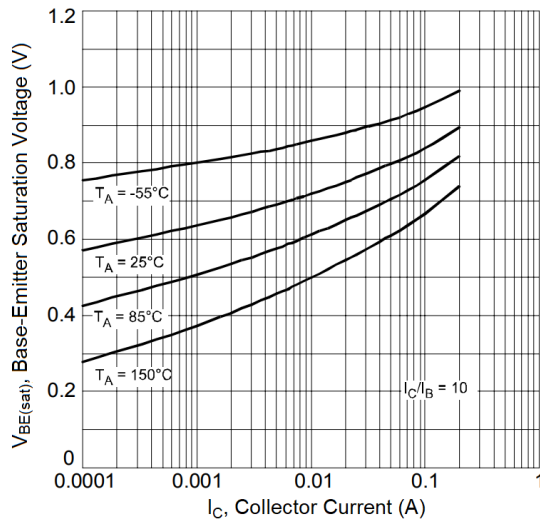


Fig 9. Typical Base-Emitter Saturation Voltage vs. Collector Current

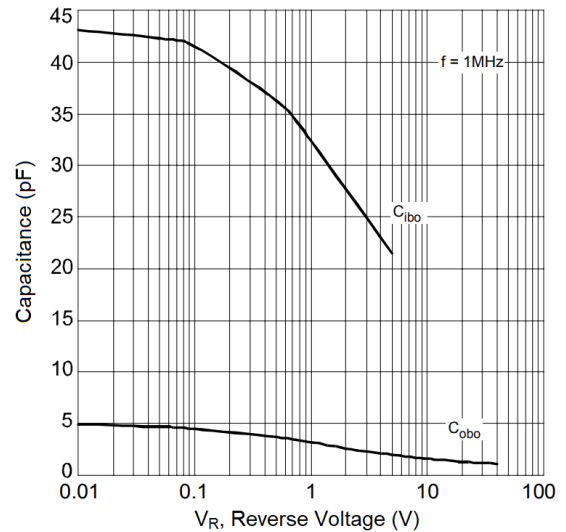


Fig 10. Typical Capacitance Characteristics

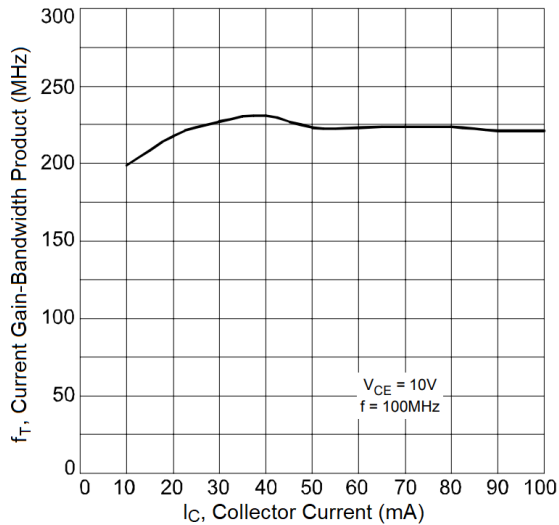
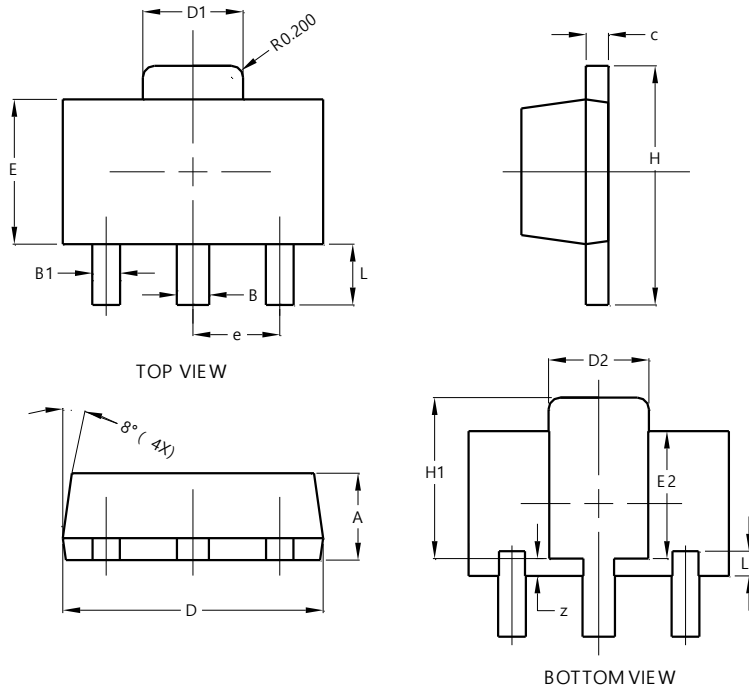


Fig 11. Typical Gain-Bandwidth Product vs. Collector Current

## Package Outline Dimensions

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

### SOT89

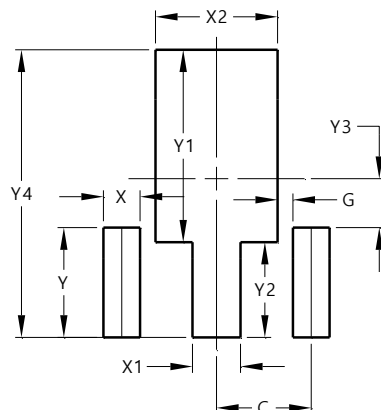


SOT89			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30
All Dimensions in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