


## Features

- $BV_{CE0} > -60V$
- Ideal for Medium Power Switching or Amplification Applications
- Ideally Suited for Automated Assembly Processes
- Complementary NPN Type Available (DXT2222A)
- **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**

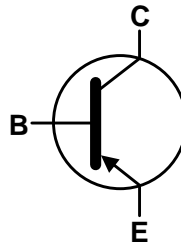
## Mechanical Data

- 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 
- Weight: 0.072 grams (Approximate)

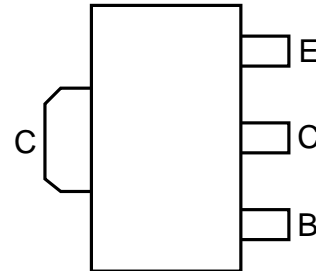


SOT89

Top View



Device Symbol



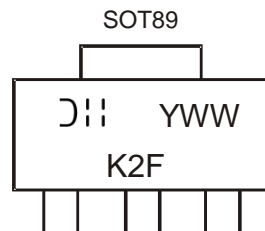
Top View  
Pin-Out

## Ordering Information (Note 4)

Part Number	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
DXT2907A-13	K2F	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



K2F = Product Type Marking Code  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 5 = 2015)  
 WW = Week Code (01 to 53)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-60	V
Collector-Emitter Voltage	V <sub>CEO</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 (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	(Note 5) 0.75	W
		(Note 6) 1.2	
Thermal Resistance, Junction to Ambient Air	R <sub>θJA</sub>	(Note 5) 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<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-60	-120	—	V	I <sub>C</sub> = -100μA
Collector-Emitter Breakdown Voltage (Note 8)	BV <sub>CEO</sub>	-60	-80	—	V	I <sub>C</sub> = -10mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-5	-8.8	—	V	I <sub>E</sub> = -100μA
Collector Cut-off Current	I <sub>CBO</sub>	—	-1	-50	nA	V <sub>CB</sub> = -50V
		—	—	-50	μA	V <sub>CB</sub> = -50V, T <sub>A</sub> = +100°C
Collector Cutoff Current	I <sub>CEX</sub>	—	—	-50	nA	V <sub>CE</sub> = -30V, V <sub>EB(OFF)</sub> = -0.5V
Emitter Cut-off Current	I <sub>EBO</sub>	—	—	-50	nA	V <sub>EB</sub> = -5V
<b>ON CHARACTERISTICS (Note 8)</b>						
Static Forward Current Transfer Ratio	h <sub>FE</sub>	75	208	—	—	I <sub>C</sub> = -100μA, V <sub>CE</sub> = -10V
		100	207	—	—	I <sub>C</sub> = -1mA, V <sub>CE</sub> = -10V
		100	202	—	—	I <sub>C</sub> = -10mA, V <sub>CE</sub> = -10V
		100	169	300	—	I <sub>C</sub> = -150mA, V <sub>CE</sub> = -10V
		50	103	—	—	I <sub>C</sub> = -500mA, V <sub>CE</sub> = -10V
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	—	-130	-400	mV	I <sub>C</sub> = -150mA, I <sub>B</sub> = -15mA
		—	-0.4	-1.6	V	I <sub>C</sub> = -500mA, I <sub>B</sub> = -50mA
Base-Emitter Saturation Voltage	V <sub>BE(SAT)</sub>	—	-0.86	-1.3	V	I <sub>C</sub> = -150mA, I <sub>B</sub> = -15mA
		—	-1	-2.6	V	I <sub>C</sub> = -500mA, I <sub>B</sub> = -50mA
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Output Capacitance	C <sub>obo</sub>	—	—	8	pF	V <sub>CB</sub> = -10V, I <sub>E</sub> = 0, f = 1MHz
Input Capacitance	C <sub>ibo</sub>	—	—	30	pF	V <sub>EB</sub> = -2V, f = 1MHz, I <sub>C</sub> = 0
Current Gain-Bandwidth Product	f <sub>T</sub>	200	—	—	MHz	V <sub>CE</sub> = -20V, I <sub>C</sub> = -50mA, f = 100MHz
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Time	t <sub>ON</sub>	—	—	45	ns	V <sub>CC</sub> = -30V, I <sub>C</sub> = -150mA, I <sub>B1</sub> = -15mA
Delay Time	t <sub>D</sub>	—	—	10	ns	
Rise Time	t <sub>R</sub>	—	—	40	ns	
Turn-Off Time	t <sub>OFF</sub>	—	—	100	ns	V <sub>CC</sub> = -6V, I <sub>C</sub> = -150mA, I <sub>B1</sub> = I <sub>B2</sub> = -15mA
Storage Time	t <sub>S</sub>	—	—	80	ns	
Fall Time	t <sub>F</sub>	—	—	30	ns	

Note: 8. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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

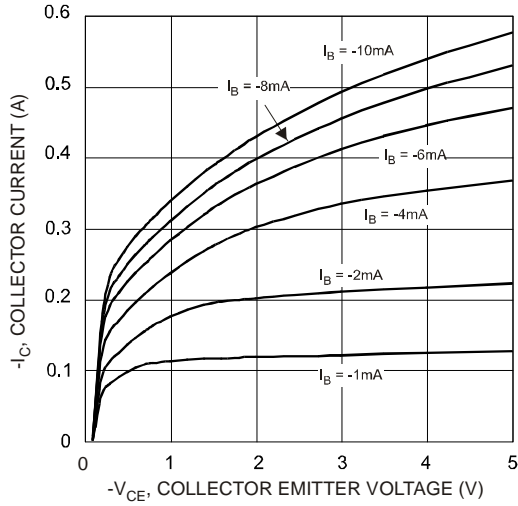


Fig. 1 Typical Collector Current as a Function of Collector Emitter Voltage

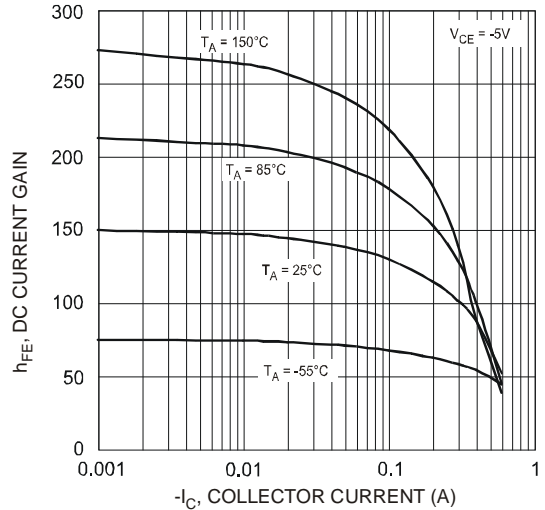


Fig. 2 Typical DC Current Gain vs. Collector Current

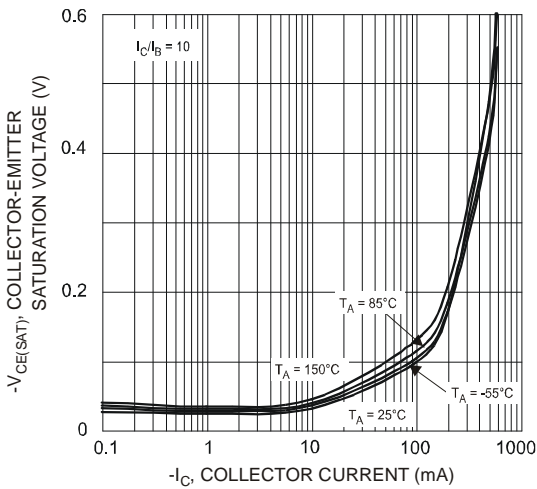


Fig. 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

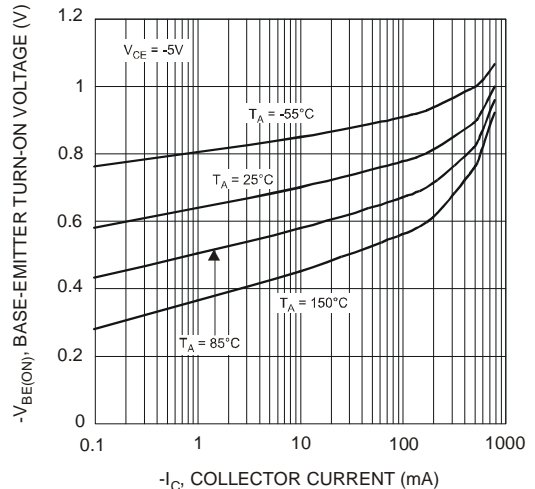


Fig. 4 Typical Base-Emitter Turn-On Voltage vs. Collector Current

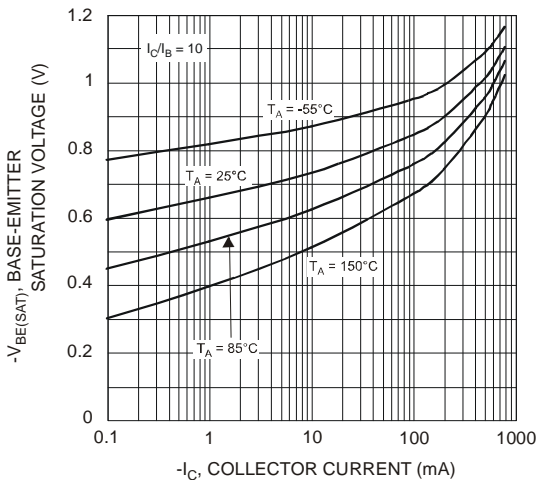


Fig. 5 Typical Base-Emitter Saturation Voltage vs. Collector Current

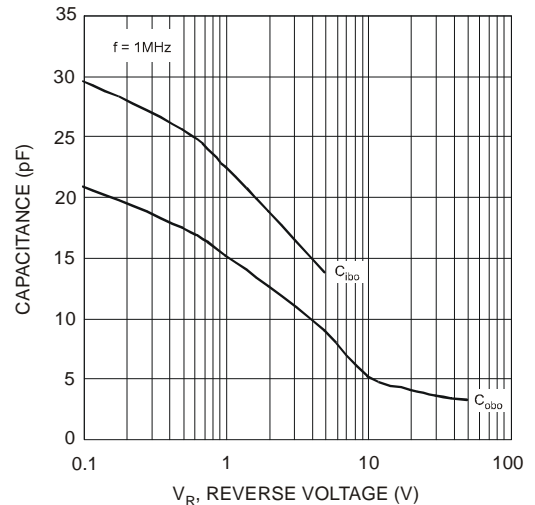


Fig. 6 Typical Capacitance Characteristics

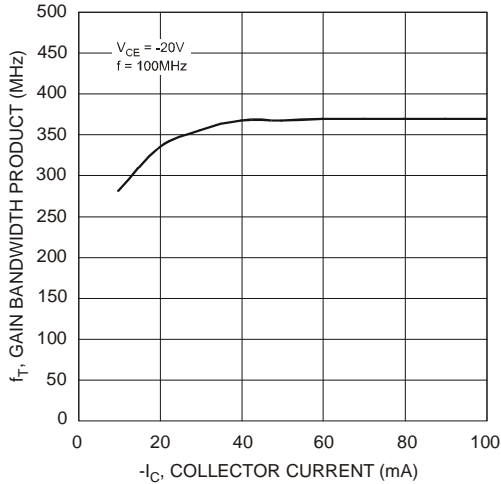


Fig. 7 Typical Gain-Bandwidth Product vs. Collector Current

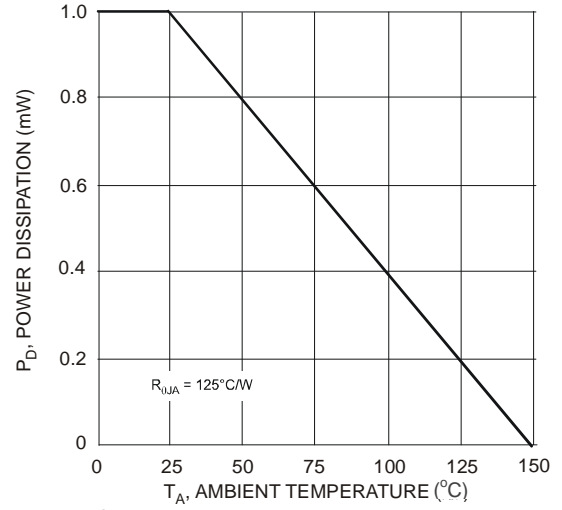
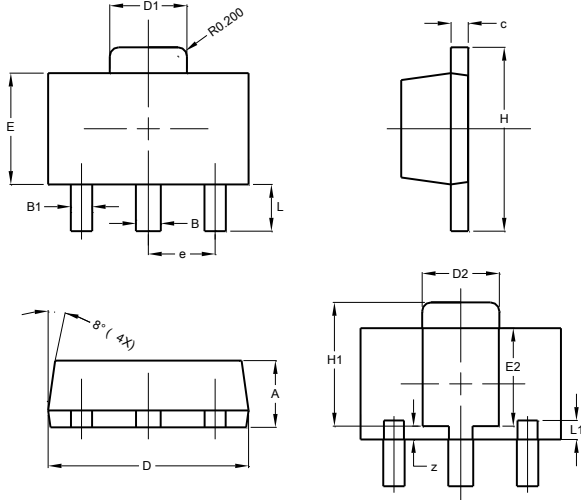


Fig. 8 Power Dissipation vs. Ambient Temperature

**Package Outline Dimensions**

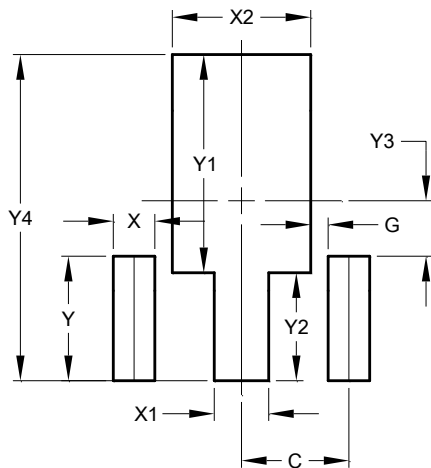
Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.



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
<b>All Dimensions in mm</b>			

**Suggested Pad Layout**

Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.



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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