



DXT2907A

#### **60V PNP TRANSISTOR IN SOT89**

### **Features**

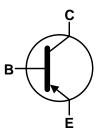
- BV<sub>CEO</sub> > -60V
- Ideal for Medium Power Switching or Amplification Applications
- Ideally Suited for Automated Assembly Processes
- Complementary NPN Type Available (DXT2222A)
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

### **Mechanical Data**

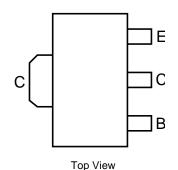
- Case: SOT89
- Case Material: Molded Plastic, "Green" Molding Compound UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 <a>®</a>
- Weight: 0.072 grams (Approximate)







Device Symbol



Pin-Out

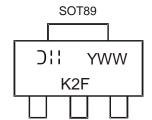
## **Ordering Information** (Note 4)

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.
- See 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 (@TA = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	-60	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-60	V
Emitter-Base Voltage	V <sub>EBO</sub>	-5	V
Collector Current	Ic	-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	(Note 5)	D-	0.75	- w	
Power Dissipation	(Note 6)	P <sub>D</sub>	1.2		
Thermal Resistance, Junction to Ambient Air	(Note 5)	D	166	°C/W	
Thermal Resistance, Junction to Ambient All	(Note 6)	$R_{ hetaJA}$	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	С

#### 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.



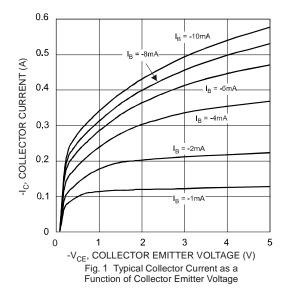
# Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

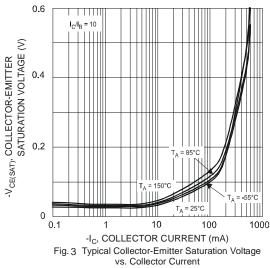
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
OFF CHARACTERISTICS						•
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-60	-120	_	V	I <sub>C</sub> = -100μA
Collector-Emitter Breakdown Voltage (Note 8)	BV <sub>CEO</sub>	-60	-80	_	V	I <sub>C</sub> = -10mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-5	-8.8	_	V	I <sub>E</sub> = -100μA
0.11		_	-1	-50	nA	V <sub>CB</sub> = -50V
Collector Cut-off Current	I <sub>CBO</sub>	_	_	-50	μΑ	V <sub>CB</sub> = -50V, T <sub>A</sub> = +100°C
Collector Cutoff Current	I <sub>CEX</sub>	_	_	-50	nA	$V_{CE} = -30V, V_{EB(OFF)} = -0.5V$
Emitter Cut-off Current	I <sub>EBO</sub>	_	_	-50	nA	V <sub>EB</sub> = -5V
ON CHARACTERISTICS (Note 8)			I	I	I	
, ,		75	208	_	_	I <sub>C</sub> = -100μA, V <sub>CE</sub> = -10V
		100	207	_	_	I <sub>C</sub> = -1mA, V <sub>CE</sub> = -10V
Static Forward Current Transfer Ratio	h <sub>FE</sub>	100	202	_	_	$I_{C} = -10 \text{mA}, V_{CE} = -10 \text{V}$
		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
			-130	-400	mV	I <sub>C</sub> = -150mA, I <sub>B</sub> = -15mA
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>		-0.4	-1.6	V	$I_C = -500 \text{mA}, I_B = -50 \text{mA}$
	V <sub>BE(SAT))</sub>		-0.86	-1.3	V	$I_{\rm C} = -150  \rm mA$ , $I_{\rm B} = -15  \rm mA$
Base-Emitter Saturation Voltage		_	-1	-2.6	V	$I_C = -500 \text{mA}, I_B = -50 \text{mA}$
SMALL SIGNAL CHARACTERISTICS				1	1	10 CCC1111 (1 ID CC11111 )
Output Capacitance	Cobo	_	_	8	pF	V <sub>CB</sub> = -10V, I <sub>E</sub> = 0, f = 1MHz
Input Capacitance	C <sub>ibo</sub>	_	_	30	pF	$V_{EB} = -2V, f = 1MHz, I_{C} = 0$
Current Gain-Bandwidth Product	f <sub>T</sub>	200	_	_	MHz	V <sub>CE</sub> = -20V, I <sub>C</sub> = -50mA, f = 100MHz
SWITCHING CHARACTERISTICS				ı	1	1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1
Turn-On Time	ton		_	45	ns	V 20V I- 150mA
Delay Time	t <sub>D</sub>		_	10	ns	$V_{CC} = -30V, I_{C} = -150mA,$ $I_{B1} = -15mA$
Rise Time	t <sub>R</sub>		_	40	ns	IB1 — - ISHIA
Turn-Off Time	toff		_	100	ns	$V_{CC} = -6V, I_{C} = -150mA,$
Storage Time	t <sub>S</sub>	_	_	80	ns	$V_{CC} = -6V, I_C = -150MA,$ $I_{B1} = I_{B2} = -15MA$
Fall Time	t <sub>F</sub>	_	_	30	ns	101 -102 - 101117

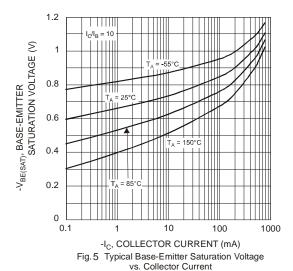
Note: 8. Measured under pulsed conditions. Pulse width  $\leq$  300 $\mu$ s. Duty cycle  $\leq$  2%.



### Typical Electrical Characteristics (@TA = +25°C, unless otherwise specified.)







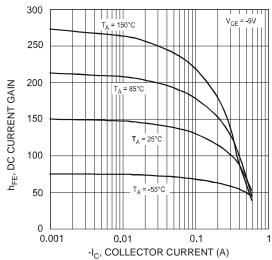
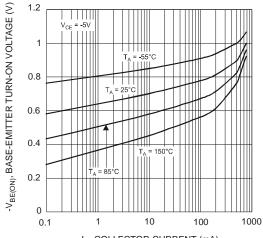


Fig. 2 Typical DC Current Gain vs. Collector Current



-I<sub>C</sub>, COLLECTOR CURRENT (mA) Fig. 4 Typical Base-Emitter Turn-On Voltage vs. Collector Current

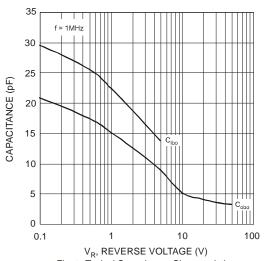
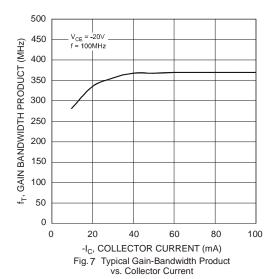
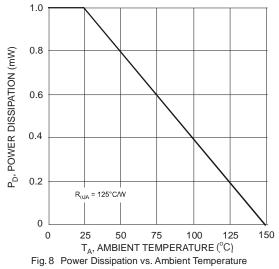


Fig. 6 Typical Capacitance Characteristics



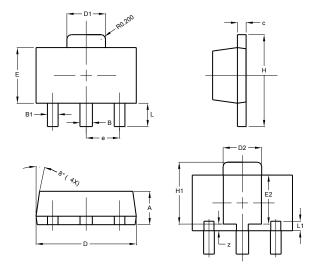






## **Package Outline Dimensions**

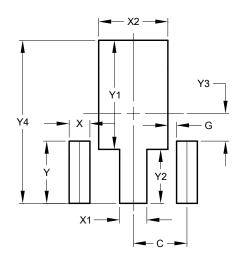
Please see AP02001 at http://www.diodes.com/\_files/datasheets/ap02001.pdf for the latest version.



SOT89					
Dim	Min	Max	Тур		
Α	1.40	1.60	1.50		
В	0.50	0.62	0.56		
B1	0.42	0.54	0.48		
С	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		
Е	2.40	2.60	2.50		
E2	2.05	2.35	2.20		
е	-	-	1.50		
Н	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 AP02001 at http://www.diodes.com/\_files/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
С	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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