

Features

- $BV_{CEO} > -60V$
- 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

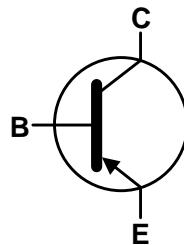
Mechanical Data

- 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 ③
- Weight: 0.072 grams (Approximate)

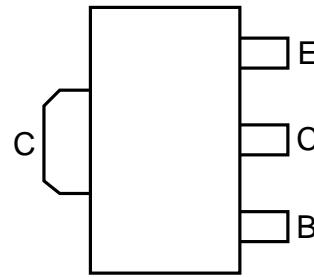
SOT89



Top View



Device Symbol

Top View
Pin-Out

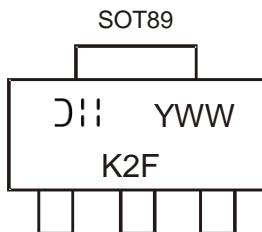
Ordering Information (Note 4)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-60	V
Collector-Emitter Voltage	V_{CEO}	-60	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_C	-600	mA
Peak Collector Current	I_{CM}	-800	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation	P_D	0.75	W
		1.2	
Thermal Resistance, Junction to Ambient Air	$R_{\theta JA}$	166	°C/W
		104	
Operating and Storage Temperature Range	T_J, T_{STG}	-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
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	-60	-120	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 8)	BV_{CEO}	-60	-80	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	-8.8	—	V	$I_E = -100\mu\text{A}$
Collector Cut-off Current	I_{CBO}	—	-1	-50	nA	$V_{\text{CB}} = -50\text{V}$
		—	—	-50	μA	$V_{\text{CB}} = -50\text{V}, T_A = +100^\circ\text{C}$
Collector Cutoff Current	I_{CEX}	—	—	-50	nA	$V_{\text{CE}} = -30\text{V}, V_{\text{EB}(\text{OFF})} = -0.5\text{V}$
Emitter Cut-off Current	I_{EBO}	—	—	-50	nA	$V_{\text{EB}} = -5\text{V}$
ON CHARACTERISTICS (Note 8)						
Static Forward Current Transfer Ratio	h_{FE}	75	208	—	—	$I_C = -100\mu\text{A}, V_{\text{CE}} = -10\text{V}$
		100	207	—	—	$I_C = -1\text{mA}, V_{\text{CE}} = -10\text{V}$
		100	202	—	—	$I_C = -10\text{mA}, V_{\text{CE}} = -10\text{V}$
		100	169	300	—	$I_C = -150\text{mA}, V_{\text{CE}} = -10\text{V}$
		50	103	—	—	$I_C = -500\text{mA}, V_{\text{CE}} = -10\text{V}$
Collector-Emitter Saturation Voltage	$V_{\text{CE}(\text{SAT})}$	—	-130	-400	mV	$I_C = -150\text{mA}, I_B = -15\text{mA}$
		—	-0.4	-1.6	V	$I_C = -500\text{mA}, I_B = -50\text{mA}$
Base-Emitter Saturation Voltage	$V_{\text{BE}(\text{SAT})}$	—	-0.86	-1.3	V	$I_C = -150\text{mA}, I_B = -15\text{mA}$
		—	-1	-2.6	V	$I_C = -500\text{mA}, I_B = -50\text{mA}$
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C_{obo}	—	—	8	pF	$V_{\text{CB}} = -10\text{V}, I_E = 0, f = 1\text{MHz}$
Input Capacitance	C_{ibo}	—	—	30	pF	$V_{\text{EB}} = -2\text{V}, f = 1\text{MHz}, I_C = 0$
Current Gain-Bandwidth Product	f_T	200	—	—	MHz	$V_{\text{CE}} = -20\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$
SWITCHING CHARACTERISTICS						
Turn-On Time	t_{ON}	—	—	45	ns	$V_{\text{CC}} = -30\text{V}, I_C = -150\text{mA}, I_{B1} = -15\text{mA}$
Delay Time	t_{D}	—	—	10	ns	
Rise Time	t_{R}	—	—	40	ns	
Turn-Off Time	t_{OFF}	—	—	100	ns	
Storage Time	t_{S}	—	—	80	ns	
Fall Time	t_{F}	—	—	30	ns	$V_{\text{CC}} = -6\text{V}, I_C = -150\text{mA}, I_{B1} = I_{B2} = -15\text{mA}$

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.)

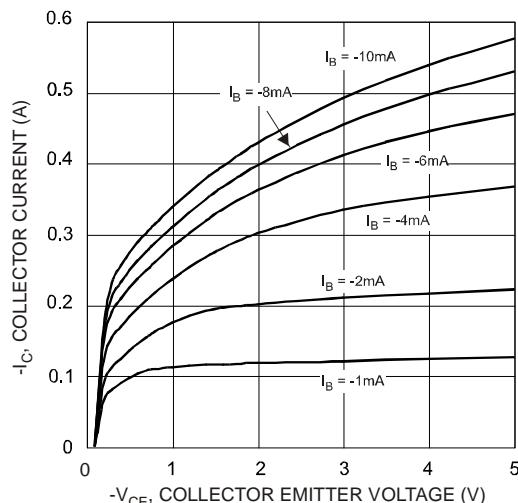


Fig. 1 Typical Collector Current as a Function of Collector Emitter Voltage

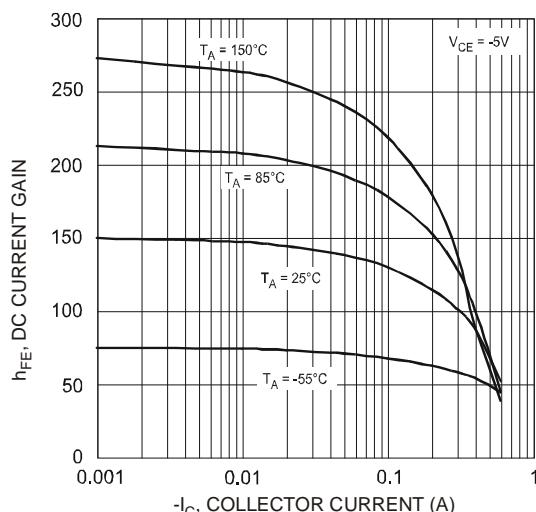


Fig. 2 Typical DC Current Gain vs. Collector Current

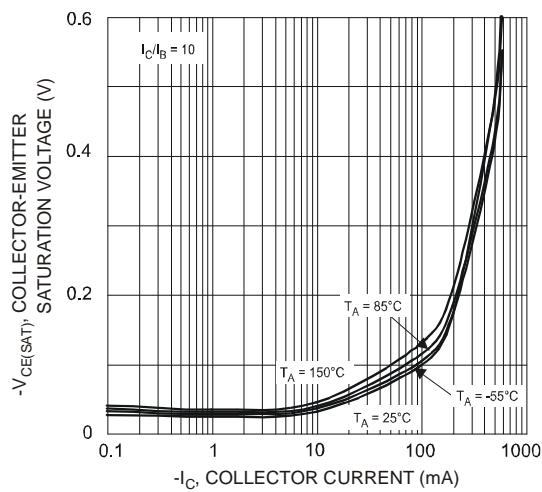


Fig. 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

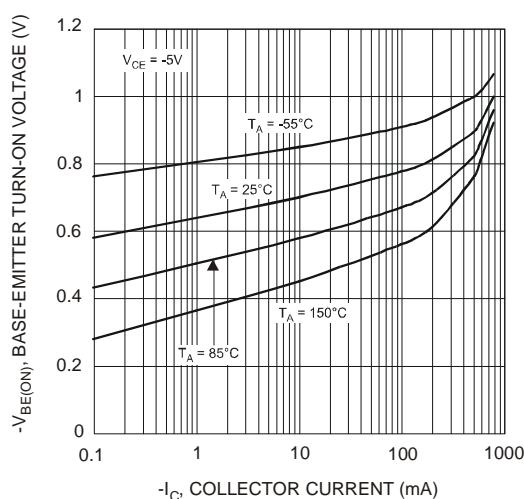


Fig. 4 Typical Base-Emitter Turn-On Voltage vs. Collector Current

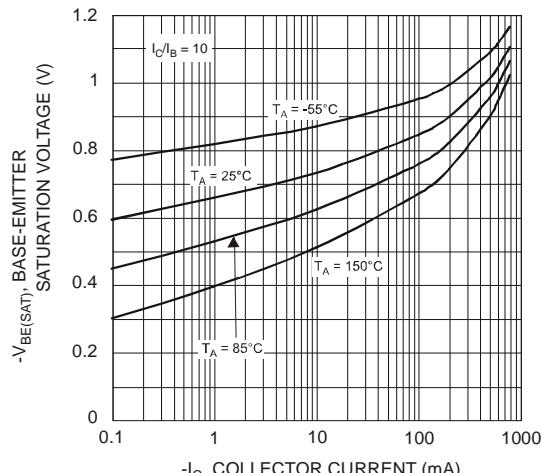


Fig. 5 Typical Base-Emitter Saturation Voltage vs. Collector Current

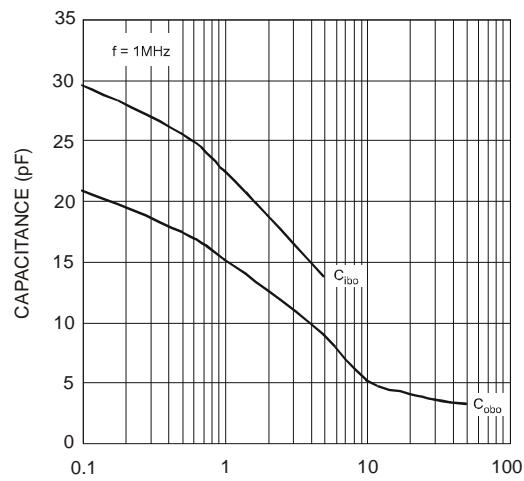


Fig. 6 Typical Capacitance Characteristics

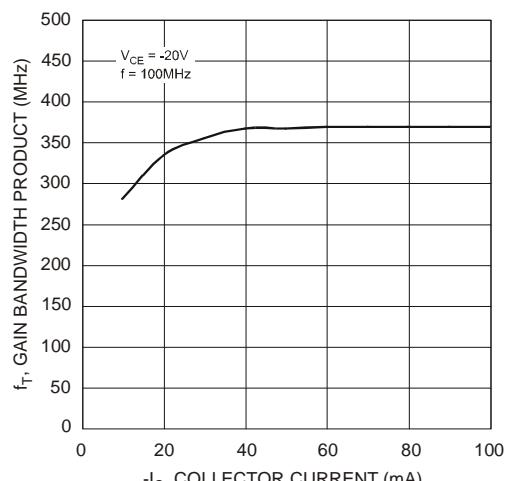


Fig. 7 Typical Gain-Bandwidth Product vs. Collector Current

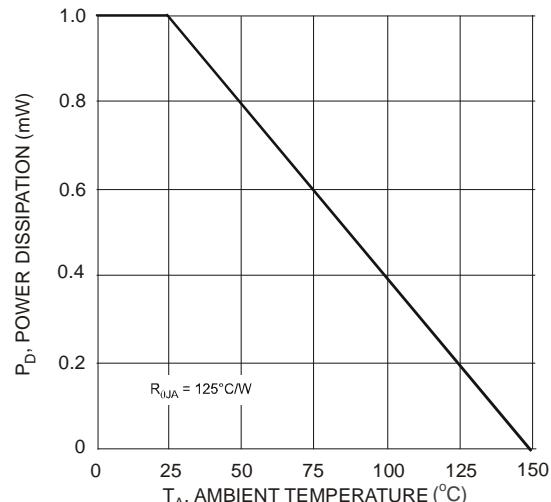
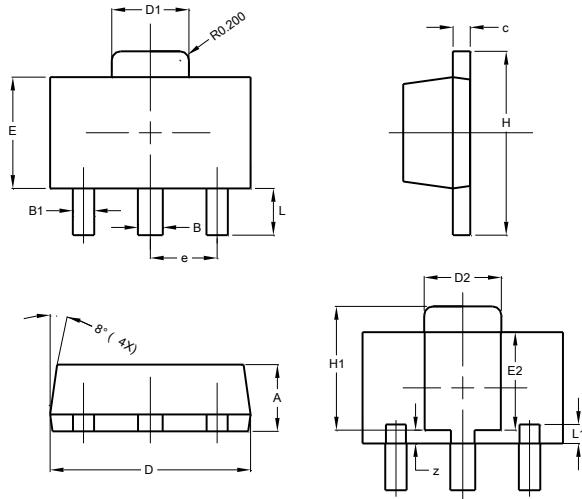


Fig. 8 Power Dissipation vs. Ambient Temperature

Package Outline Dimensions

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

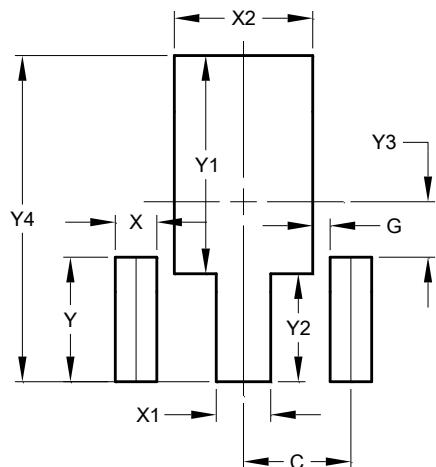


SOT89			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
C	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30

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)
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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