60V NPN LOW VCE(sat) TRANSISTOR IN SOT89

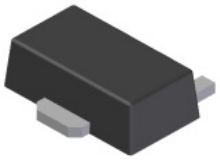
Features

- BV_{CEO} > 60V
- I_C = 3A high Continuous Current
- Low saturation voltage $V_{CE(sat)}$ < 300mV @ 1A
- Complementary PNP Type: DXT751
- **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**

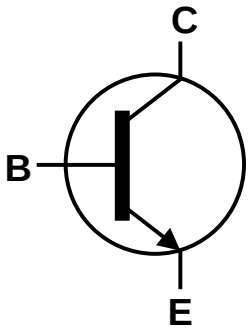
Mechanical Data

- 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 e3
- Weight: 0.052 grams (Approximate)

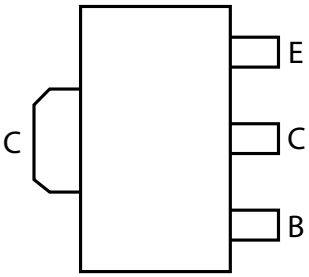
SOT89



Top View



Device Symbol



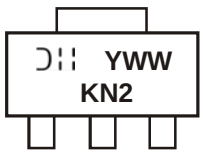
Top View
Pinout

Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DXT651-13	KN2	13	12	2,500
DXT651-13R	KN2	13	12	4,000

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



KN2 = Product Type Marking Code
= Manufacturer's Marking Code
YWW = Date Code Marking
Y = Last digit of year (ex: 7 = 2007)
WW = Week code (01 – 53)

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Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

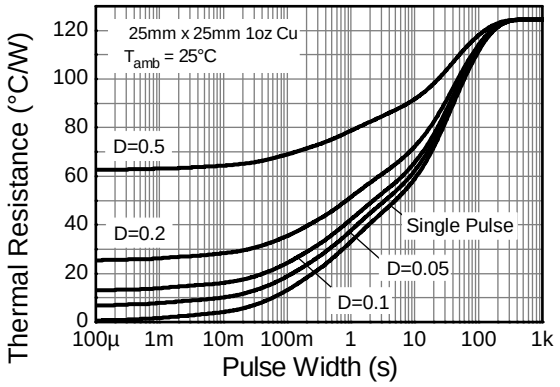
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	3	A
Peak Pulse Collector Current	I_{CM}	6	A
Base Current	I_B	500	mA

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

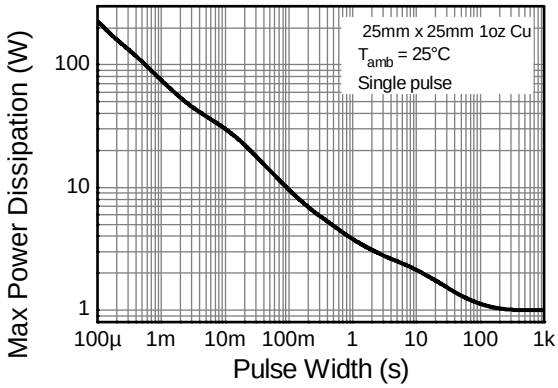
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	1	W
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	125	°C/W
Thermal Resistance, Junction to Leads (Note 6)	$R_{\theta JL}$	18.2	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 5. For a device surface mounted on 25mm X 25mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
6. Thermal resistance from junction to solder-point (on the exposed collector pad).

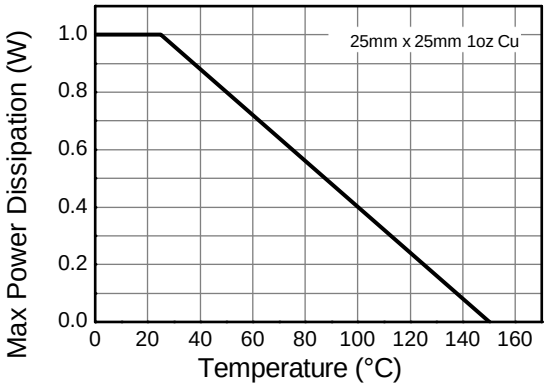
Thermal Characteristics and Derating Information



Transient Thermal Impedance



Pulse Power Dissipation



Derating Curve

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Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
OFF CHARACTERISTICS (Note 7)						
Collector-Base Breakdown Voltage	BV_{CBO}	80	—	—	V	I_C = 100μA, I_E = 0
Collector-Emitter Breakdown Voltage	BV_{CEO}	60	—	—	V	I_C = 10mA, I_B = 0
Emitter-Base Breakdown Voltage	BV_{EBO}	5	—	—	V	I_E = 100μA, I_C = 0
Collector-Base Cutoff Current	I_{CBO}	—	—	0.1 10	μA	V_{CB} = 60V, I_E = 0 V_{CB} = 60V, I_E = 0, T_A = +100°C
Emitter-Base Cutoff Current	I_{EBO}	—	—	0.1	μA	V_{EB} = 4V, I_C = 0
ON CHARACTERISTICS (Note 7)						
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	0.08 0.23	0.3 0.6	V V	I_C = 1A, I_B = 100mA I_C = 3A, I_B = 300mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	0.85	1.25	V	I_C = 1A, I_B = 100mA
Base-Emitter Turn-On Voltage	$V_{BE(on)}$	—	0.8	1	V	V_{CE} = 2V, I_C = 1A
DC Current Gain	h_{FE}	70 100 80 40	200 200 185 120	— 300 — —	—	V_{CE} = 2V, I_C = 50mA V_{CE} = 2V, I_C = 500mA V_{CE} = 2V, I_C = 1A V_{CE} = 2V, I_C = 2A
AC CHARACTERISTICS						
Transition Frequency	f_T	140	200	—	MHz	V_{CE} = 5V, I_C = 100mA, f = 100MHz
Output Capacitance	C_{obo}	—	—	30	pF	V_{CB} = 10V, f = 1MHz
Switching Times	t_{on} t_{off}	— —	35 230	— —	ns ns	V_{CC} = 10V. I_C = 500mA, I_{B1} = I_{B2} = 50mA

Notes: 7. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

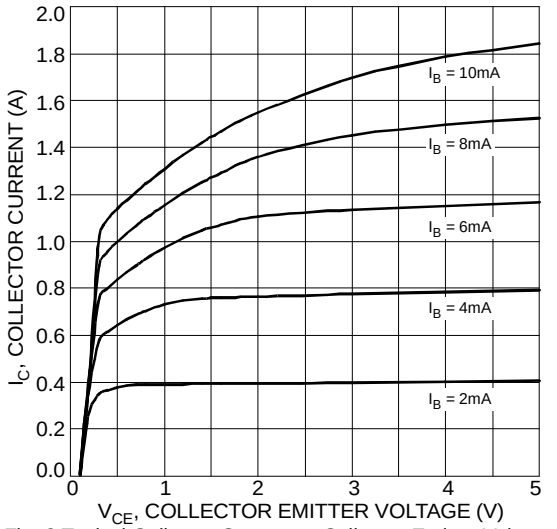

Fig. 2 Typical Collector Current vs.Collector-Emitter Voltage

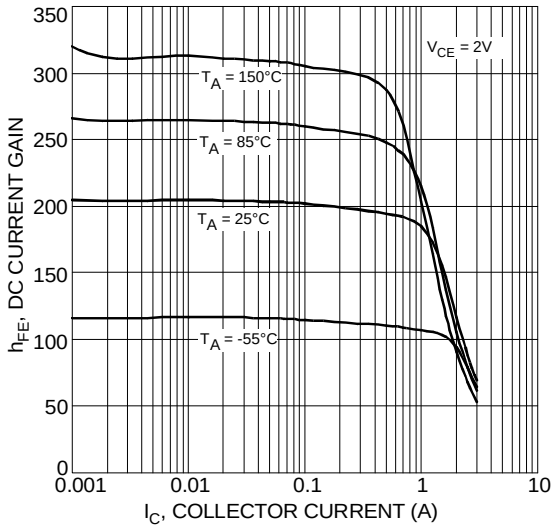

Fig. 3 Typical DC Current Gain vs. Collector Current

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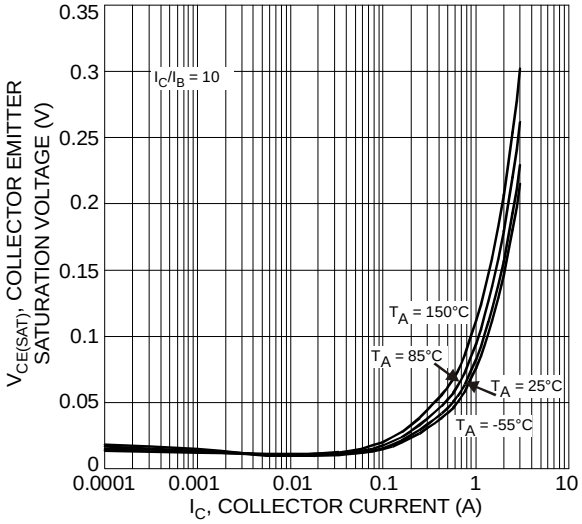

Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

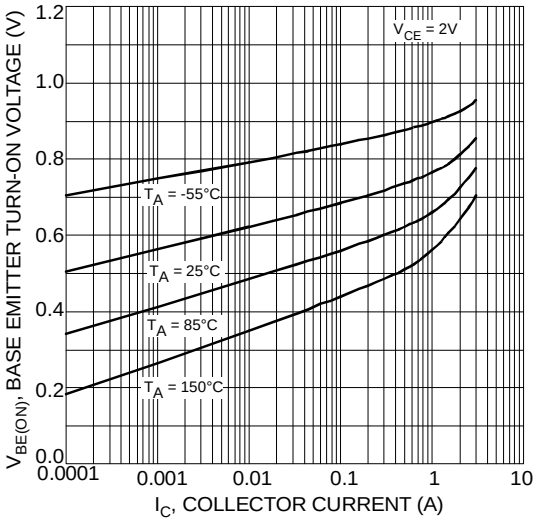

Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

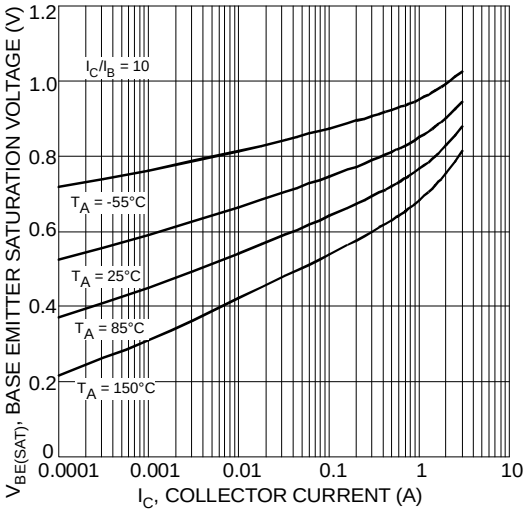

Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

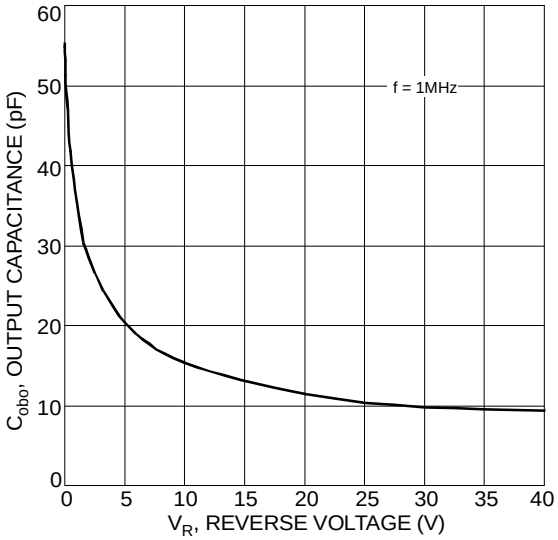

Fig. 7 Typical Output Capacitance Characteristics

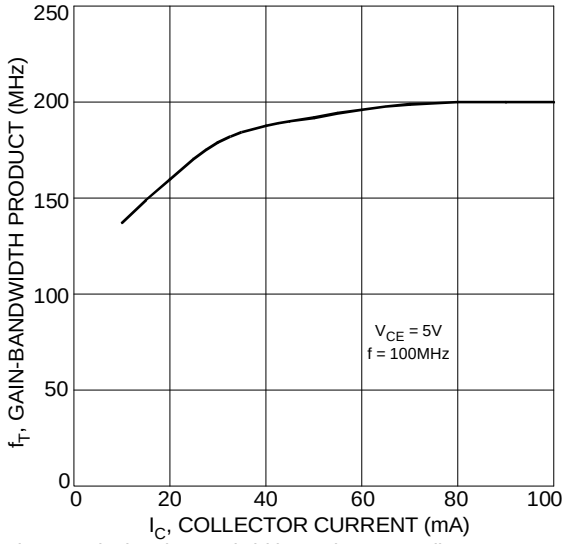

Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

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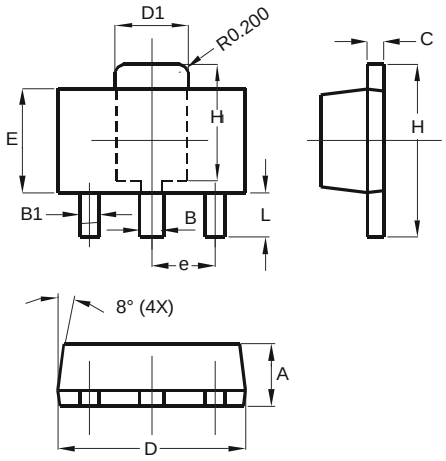
Package Outline Dimensions

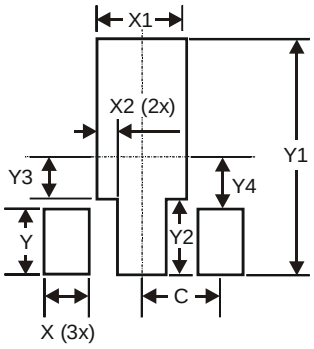
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT89		
Dim	**Min**	**Max**
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.44
D	4.40	4.60
D1	1.62	1.83
E	2.29	2.60
e	1.50 Typ	
H	3.94	4.25
H1	2.63	2.93
L	0.89	1.20
All Dimensions in mm		

Suggested Pad Layout

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



Dimensions	Value (in mm)
X	0.900
X1	1.733
X2	0.416
Y	1.300
Y1	4.600
Y2	1.475
Y3	0.950
Y4	1.125
C	1.500

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