80V NPN MEDIUM POWER TRANSISTOR IN TO126

Features

- BV_{CEO} > 80V
- I_C = 1A Continuous Collector Current
- I_{CM} = 2A Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)}$ < 500mV @ 0.5A
- **Lead-Free Finish; 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-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

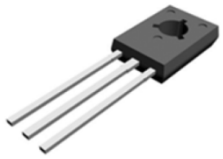
Mechanical Data

- Case: TO126
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish; Solderable per MIL-STD-202, Method 208 e3
- Weight: TO126: 400mg (Approximate)

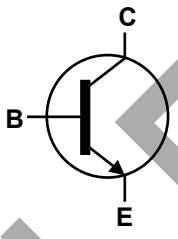
Applications

- Medium Power Switching or Amplification Applications
- AF driver and output stages

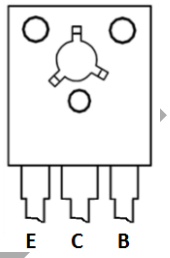
TO126



Top View



Equivalent Circuit



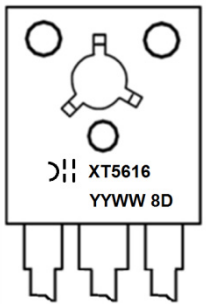
Front Face View
Pin-Out

Ordering Information (Note 4)

Product	Package	Marking	Quantity
DXT5616U	TO126	XT5616	1690 per Box in Tubes (65 per tube)

Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
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 http://www.diodes.com/products/packages.html.

Marking Information



XT5616 = Product Type Marking Code
Date Code Format = YYWW
YY = Last Two Digits of Year (ex 20 = 2020)
WW = Week (01-53)
8D = Assembly and Foundry Code

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	100	V
Collector-Emitter Voltage	V_{CEO}	80	V
Emitter-Base Voltage	V_{EBO}	5	V
Continuous Collector Current	I_C	1	A
Peak Pulse Collector Current	I_{CM}	2	
Continuous Base Current	I_B	100	mA
Peak Pulse Base Current	I_{BM}	200	

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

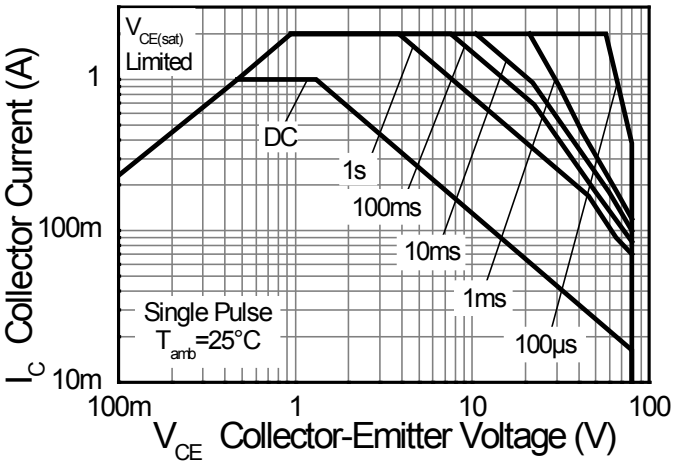
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	1.3	W
	(Note 6) T_L = +25°C		20	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	96	°C/W
Thermal Resistance, Junction to Lead	(Note 6)	$R_{\theta JL}$	6.25	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-65 to +150	°C

ESD Ratings (Note 7)

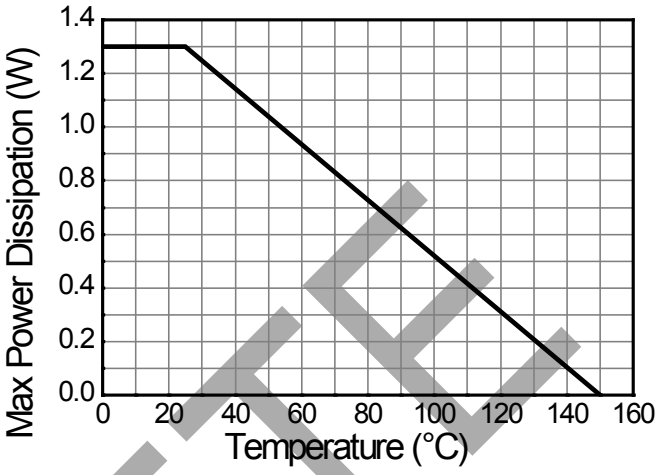
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

Notes:
5. For a through-hole device mounted on minimum recommended pad layout with 10mm lead length from the bottom of package to the board that is on a single-sided FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
6. Thermal resistance from junction to solder-point at the seating plane (2.5mm from the bottom of package along the collector lead).
7. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

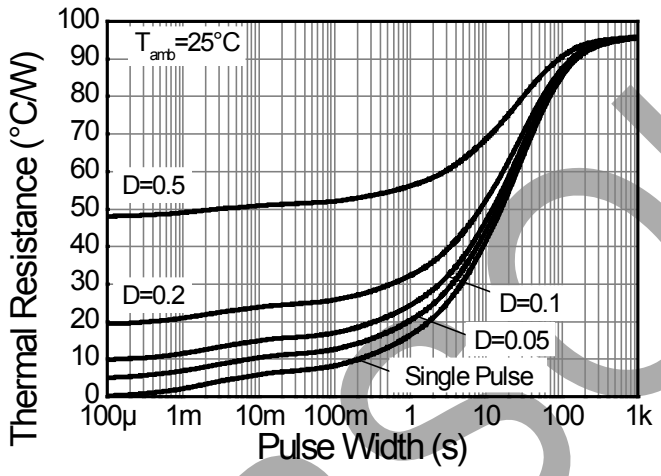
Thermal Characteristics and Derating Information



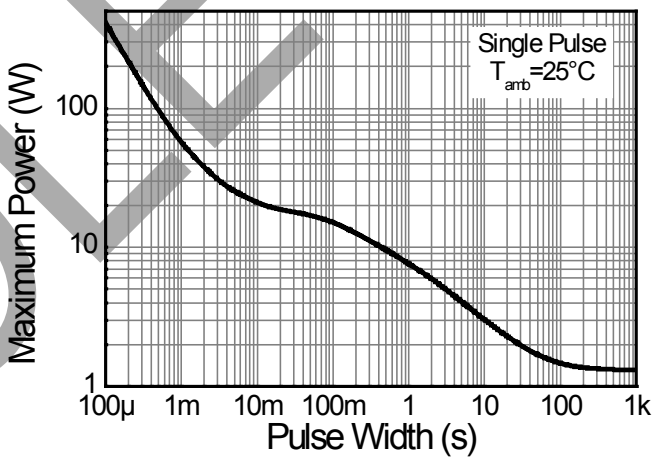
Safe Operating Area



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	100	—	—	V	I_C = 100µA
Collector-Emitter Breakdown Voltage (Note 6)	BV_{CEO}	80	—	—	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	7	—	—	V	I_E = 100µA
Collector Cut-off Current	I_{CBO}	—	—	0.1 20	µA	V_{CB} = 80V V_{CB} = 80V, T_A = +150°C
Emitter Cut-off Current	I_{EBO}	—	—	20	nA	V_{EB} = 6V
Static Forward Current Transfer Ratio (Note 6)	h_{FE}	25 100 25	— — —	— 250 —		I_C = 5mA, V_{CE} = 2V I_C = 150mA, V_{CE} = 2V I_C = 500mA, V_{CE} = 2V
Collector-Emitter Saturation Voltage (Note 6)	$V_{CE(sat)}$	—	—	0.5	V	I_C = 500mA, I_B = 50mA
Base-Emitter Turn-On Voltage (Note 6)	$V_{BE(on)}$	—	—	1.0	V	I_C = 500mA, V_{CE} = 2V
Transition Frequency	f_T	150	—	—	MHz	I_C = 50mA, V_{CE} = 10V f = 100MHz
Output Capacitance	C_{obo}	—	—	25	pF	V_{CB} = 10V, f = 1MHz
Delay Time	t_d	—	21	—	ns	I_C = 400mA, V_{CC} = 40V, I_{B1} = 20mA, I_{B2} = -20mA
Rise Time	t_r	—	33	—		
Storage Time with Resistive Load	t_s	—	708	—		
Fall Time with Resistive Load	t_f	—	95	—		

Notes: 6. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

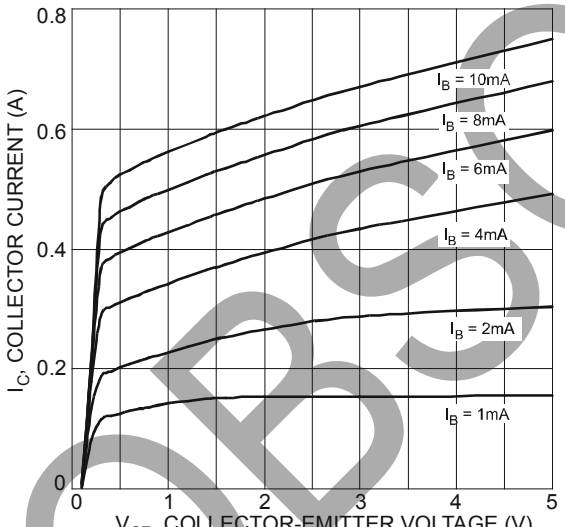


Fig. 1 Typical Collector Current vs. Collector-Emitter Voltage

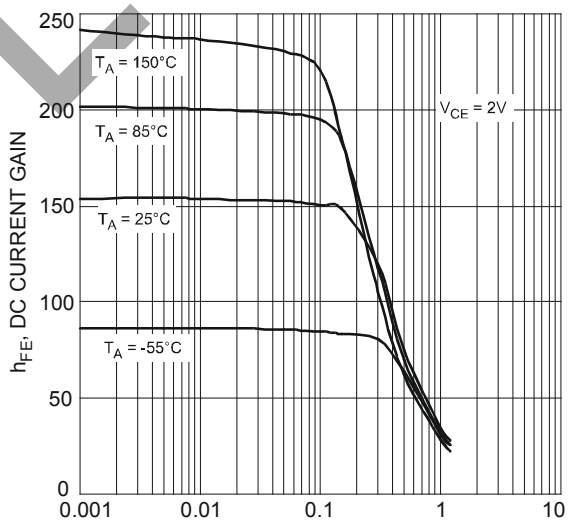


Fig. 2 Typical DC Current Gain vs. Collector Current

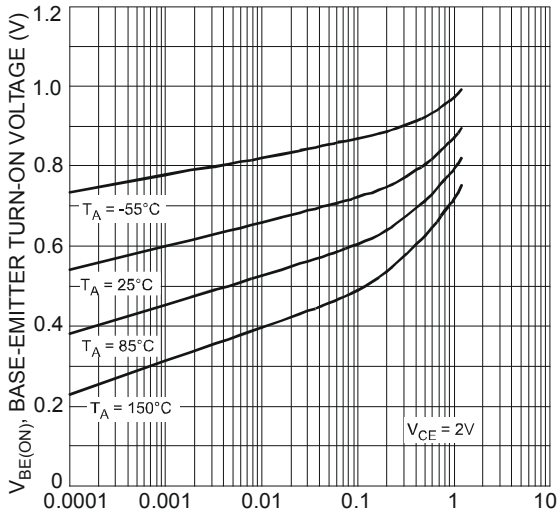


Fig. 3 Typical Base-Emitter Turn-On Voltage vs. Collector Current

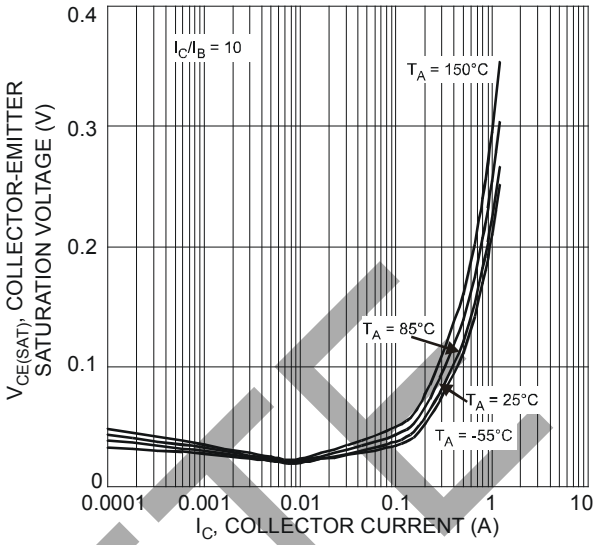


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

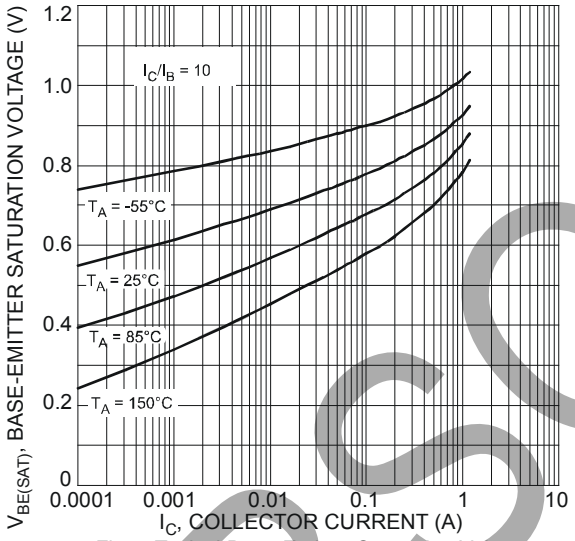


Fig. 5 Typical Base-Emitter Saturation Voltage vs. Collector Current

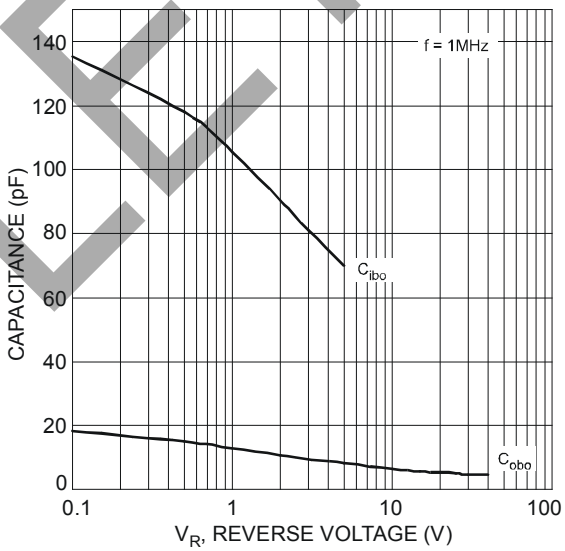


Fig. 6 Typical Capacitance Characteristics

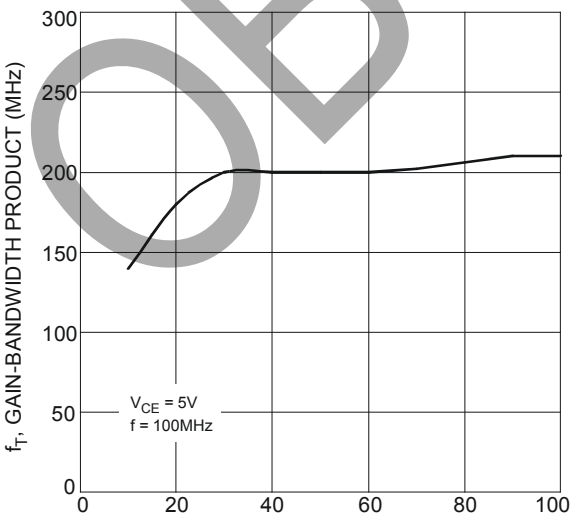
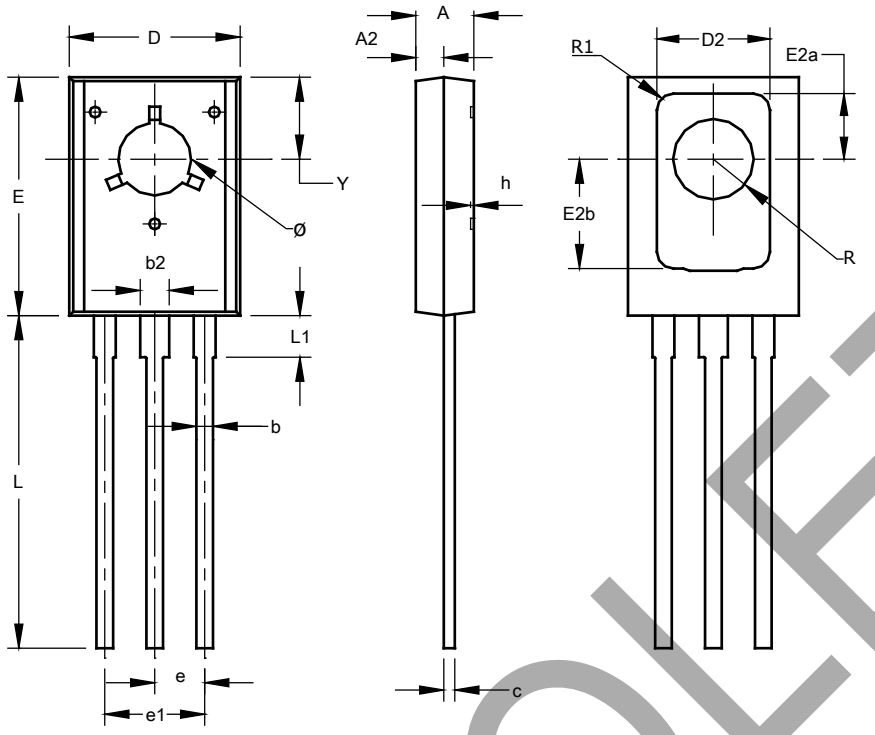


Fig. 7 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

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

TO126



TO126			
Dim	**Min**	**Max**	**Typ**
A	2.400	2.900	-
A2	1.060	1.500	-
b	0.660	0.860	-
b2	1.170	1.470	-
c	0.400	0.600	-
D	7.400	8.200	-
D2	5.010	5.310	-
E	10.60	11.20	-
E2a	2.850	3.150	-
E2b	4.850	5.150	-
e	-	-	2.280
e1	-	-	4.560
h	0.00	0.30	-
L	14.50	15.90	-
L1	1.700	2.100	-
R	-	-	1.840
R1	-	-	0.760
Y	3.600	3.900	-
Ø	3.100	3.550	-
All Dimensions in mm			

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