

Description

This Bipolar Junction Transistor (BJT) is designed to meet the stringent requirement of Automotive Applications.

Features

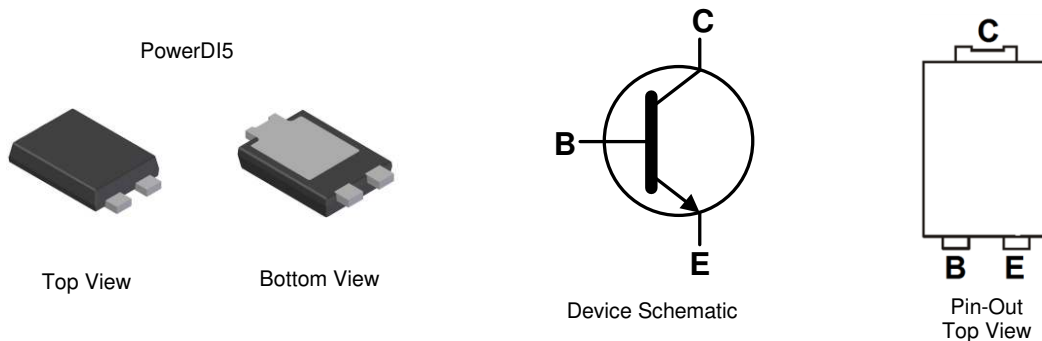
- $BV_{CEO} > 160V$
- $I_C = 0.6A$ High Continuous Collector Current
- P_D up to 2.25W
- 43% Smaller Than SOT223; 60% Smaller Than TO252
- Maximum Height just 1.1mm
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Mechanical Data

- Case: PowerDI[®]5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification 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: 0.093 grams (Approximate)

Applications

- Telecom Line Driver

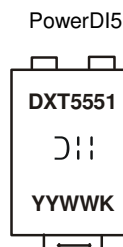


Ordering Information (Note 5)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DXT5551P5Q-13	Automotive	DXT5551	13	16	5,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.
 5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



DXT5551 = Product Type Marking Code
 DII = Manufacturers' Code Marking
 K = Factory Designator
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 18 for 2018)
 WW = Week Code (01 to 53)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	180	V
Collector-Emitter Voltage	V _{CEO}	160	V
Emitter-Base Voltage	V _{EBO}	6	V
Continuous Collector Current	I _C	600	mA

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

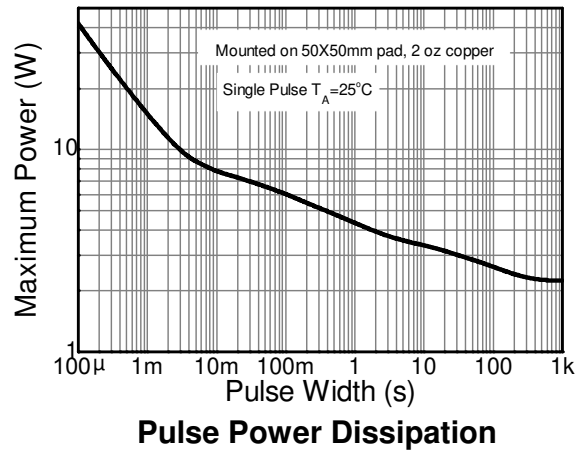
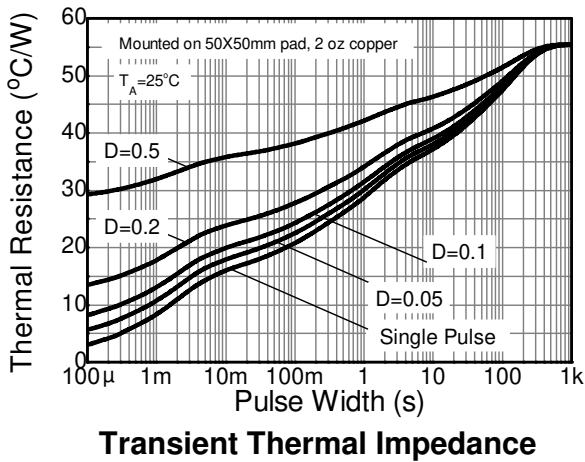
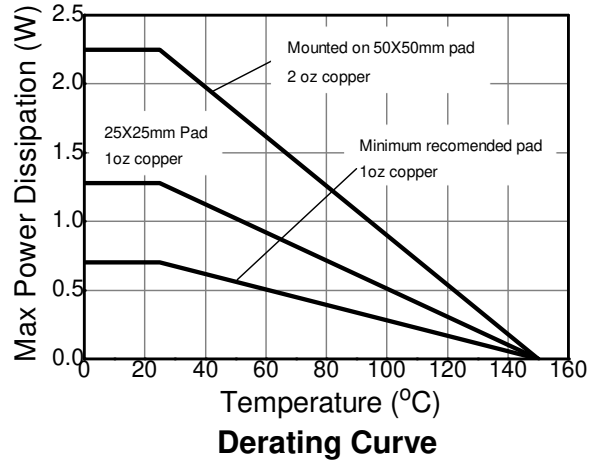
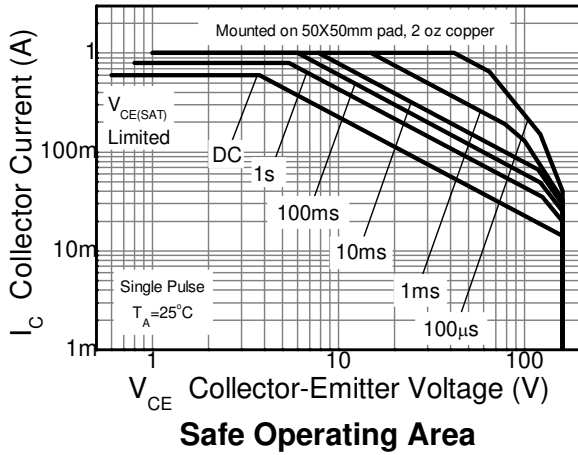
Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	(Note 6)	2.25
		(Note 7)	1.28
		(Note 8)	0.7
Thermal Resistance, Junction to Ambient Air	R _{θJA}	(Note 6)	55.5
		(Note 7)	97.4
		(Note 8)	179
Thermal Resistance, Junction to Collector Terminal	R _{θJT}	30	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 10)

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:
6. For a device mounted with the exposed collector pad on 50mm x 50mm 2oz 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.
 7. Same as note (6), except mounted on 25mm x 25mm 1oz copper.
 8. Same as note (6), except mounted on minimum recommended pad (MRP) layout.
 9. Thermal resistance from junction to solder-point (on the exposed collector pad).
 10. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information

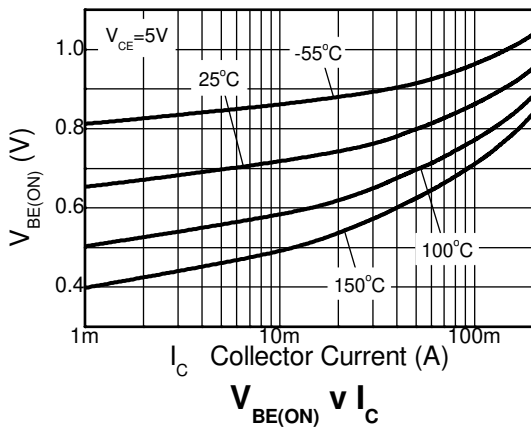
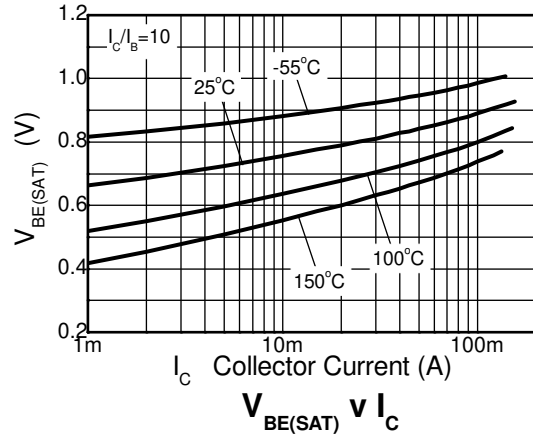
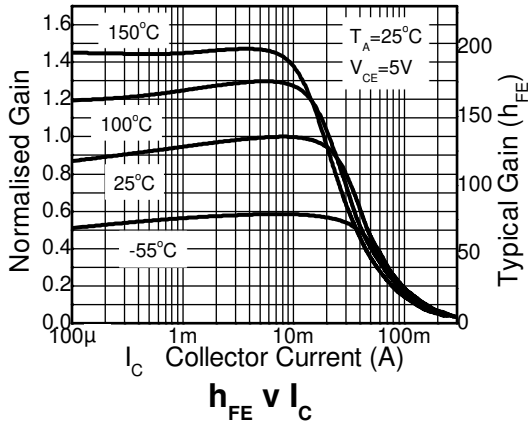
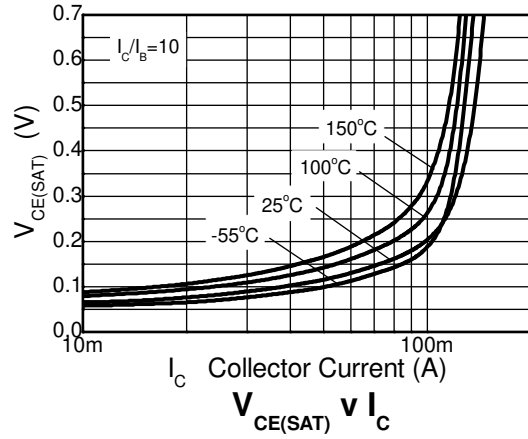
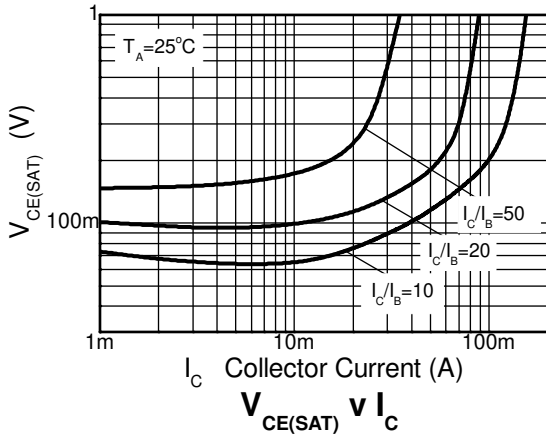


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	180	270	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage	BV _{CEO}	160	200	—	V	I _C = 1mA
Emitter-Base Breakdown Voltage	BV _{EBO}	6.0	7.85	—	V	I _E = 100μA
Collector Cutoff Current	I _{CBO}	—	<1	50	nA	V _{CB} = 120V
			—	50	μA	V _{CB} = 120V, T _A = +100°C
Collector-Emitter Saturation Voltage (Note 11)	V _{CE(SAT)}	—	65	150	mV	I _C = 10mA, I _B = 1mA
			115	200	mV	I _C = 50mA, I _B = 5mA
Base-Emitter Saturation Voltage (Note 11)	V _{BE(SAT)}	—	760	1,000	mV	I _C = 10mA, I _B = 1mA
			840	1,200	mV	I _C = 50mA, I _B = 5mA
DC Current Gain (Note 11)	h _{FE}	80	130	—	—	V _{CE} = 5V, I _C = 1mA
		80	145	250	—	V _{CE} = 5V, I _C = 10mA
		30	65	—	—	V _{CE} = 5V, I _C = 50mA
Transition Frequency	f _T	—	130	—	MHz	V _{CE} = 10V, I _C = 10mA, f = 100MHz
Output Capacitance	C _{OBO}	—	—	6	pF	V _{CB} = 10V, f = 1MHz
Delay Time	t _D	—	95	—	ns	V _{CC} = 510V, I _C = 10mA, I _{B1} = -I _{B2} = 1mA
Rise Time	t _R	—	64	—	ns	
Storage Time	t _S	—	1,256	—	ns	
Fall Time	t _F	—	140	—	ns	

Note: 11. Pulse Test: Pulse width ≤ 300μs. Duty cycle ≤ 2.0%.

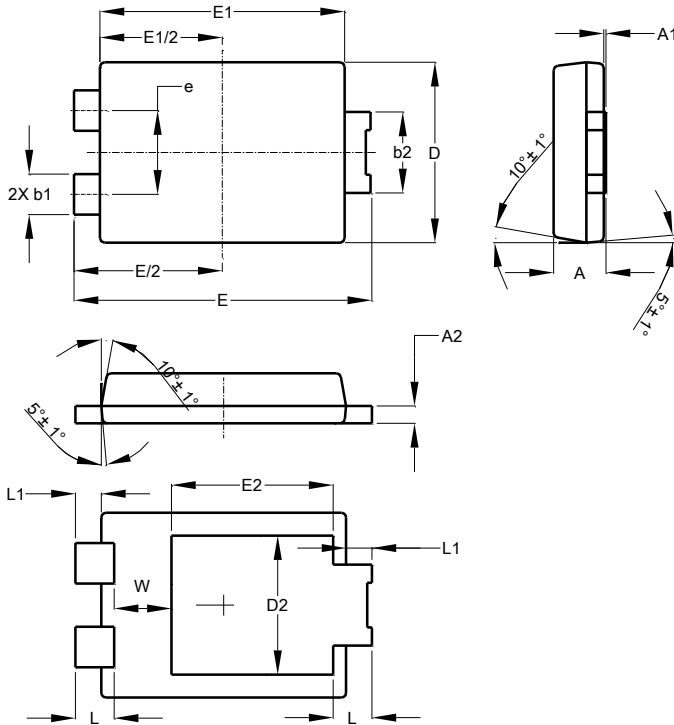
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

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

PowerDI5

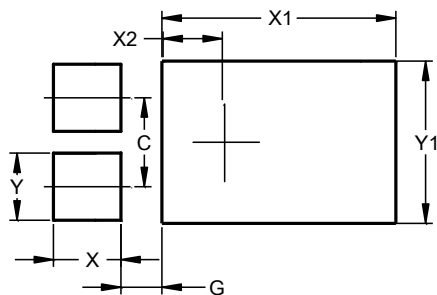


PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

Suggested Pad Layout

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

PowerDI5



Dimensions	Value (in mm)
C	1.840
G	0.852
X	1.400
X1	4.860
X2	1.310
Y	1.390
Y1	3.360

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device Terminals and PCB tracking.

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