Lead-free Green

DXT5551P5

160V NPN HIGH VOLTAGE TRANSISTOR
PowerDI®5

Features and Benefits

- 43% smaller than SOT223; 60% smaller than TO252
- Maximum height just 1.1mm
- Rated up to 2.25W
- BV_{CEO} > 160V
- $I_{C(cont)}$ = 0.6A
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free, "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

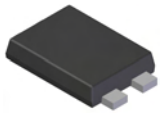
Mechanical Data

- 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 annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.093 grams (approximate)

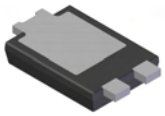
Applications

- Telecom line driver

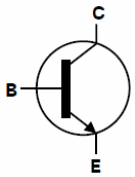
PowerDI®5



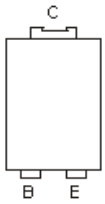
Top View



Bottom View



Device Schematic



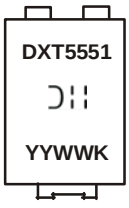
Pin-out diagram

Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DXT5551P5-13	DXT5551	13	16	5,000

Notes:
1. No purposefully added lead.
2. Halogen and Antimony Free. Diodes Inc's "Green" Policy can be found on our website at http://www.diodes.com
3. For packaging details, go to our website at http://www.diodes.com

Marking Information



DXT5551 = Product Type Marking Code
= Manufacturers' Code Marking
K = Factory Designator
YYWW = Date Code Marking
YY = Last Two Digits of Year (ex: 09 for 2009)
WW = Week code (01 - 53)

Maximum Ratings @T_A = 25°C unless otherwise specified

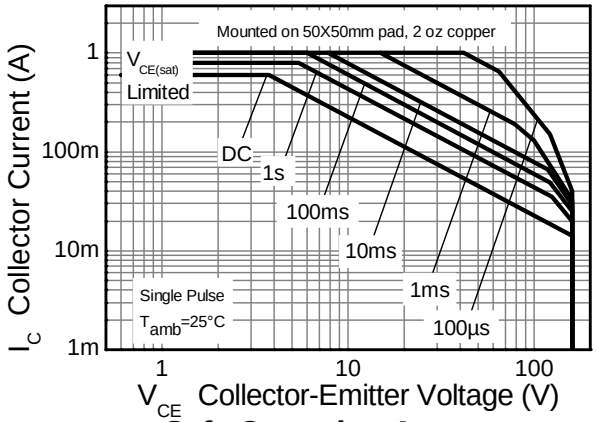
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	180	V
Collector-Emitter Voltage	V_{CEO}	160	V
Emitter-Base Voltage	V_{EBO}	6	V
Continuous Collector Current	I_C	600	mA

Thermal Characteristics @T_A = 25°C unless otherwise specified

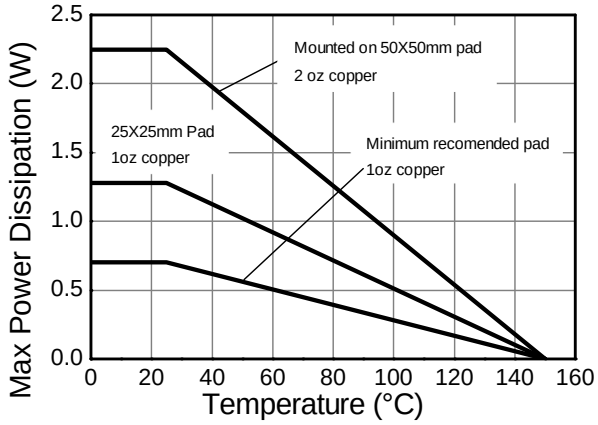
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	P_D	2.25	W
Thermal Resistance, Junction to Ambient Air (Note 4)	$R_{\theta JA}$	55.5	°C/W
Power Dissipation (Note 5)	P_D	1.28	W
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	97.4	°C/W
Power Dissipation (Note 6)	P_D	0.7	W
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	179	°C/W
Thermal Resistance, Junction to Collector Terminal	$R_{\theta JT}$	30	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 4. Device mounted on 1.6mm FR-4 PCB, single sided 2 oz. copper, collector pad dimensions 50mm x 50mm.
5. Device mounted on 1.6mm FR-4 PCB, single sided 1 oz. copper, collector pad dimensions 25mm x 25mm.
6. Device mounted on 1.6mm FR-4 PCB, single sided 1 oz. copper, minimum recommended pad layout.

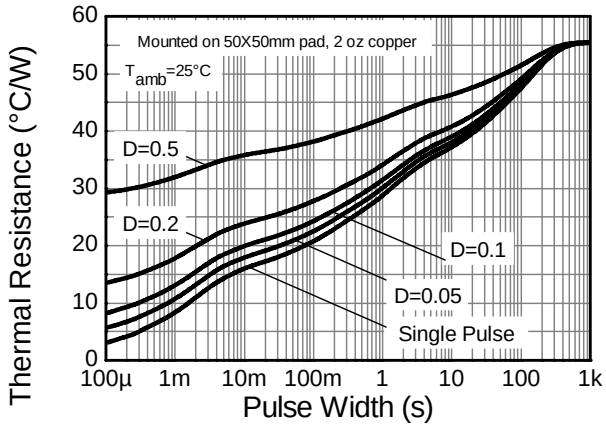
Thermal Characteristics



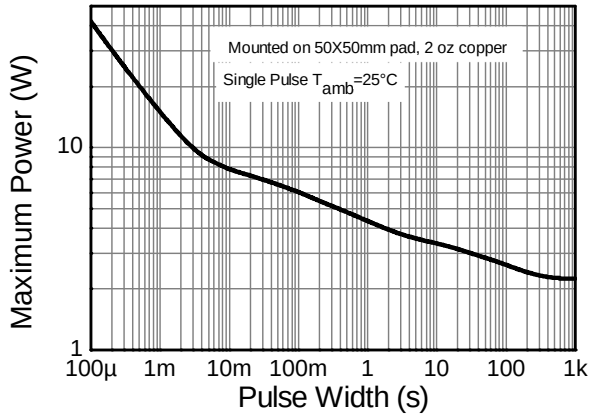
Safe Operating Area



Derating Curve



Transient Thermal Impedance



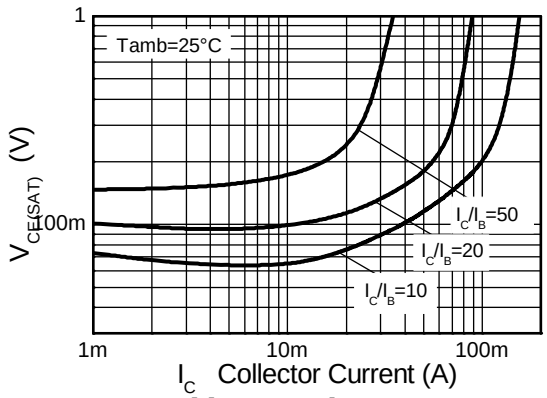
Pulse Power Dissipation

Electrical Characteristics @T_A = 25°C unless otherwise specified

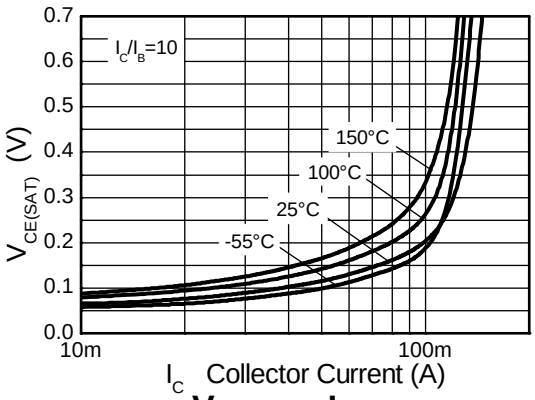
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	180	270	–	V	I_C = 100μA
Collector-Emitter Breakdown Voltage (Note 7)	BV_{CEO}	160	200	–	V	I_C = 1mA
Emitter-Base Breakdown Voltage	BV_{EBO}	6.0	7.85	–	V	I_E = 10μA
Collector Cutoff Current	I_{CBO}	– –	<1 –	50 50	nA μA	V_{CB} = 120V V_{CB} = 120V, T_A = 100°C
Collector-Emitter Saturation Voltage (Note 7)	$V_{CE(sat)}$	– –	65 115	150 200	mV mV	I_C = 10mA, I_B = 1mA I_C = 50mA, I_B = 5mA
Base-Emitter Saturation Voltage (Note 7)	$V_{BE(sat)}$	– –	760 840	1000 1200	mV mV	I_C = 10mA, I_B = 1mA I_C = 50mA, I_B = 5mA
DC Current Gain (Note 7)	h_{FE}	80 80 30	130 145 65	– 250 –	–	V_{CE} = 5V, I_C = 1mA V_{CE} = 5V, I_C = 10mA V_{CE} = 5V, I_C = 50mA
Transition Frequency	f_T	–	130	–	MHz	V_{CE} = 10V, I_C = 10mA, f = 100MHz
Output Capacitance (Note 7)	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	$t_{(s)}$	–	1256	–	ns	
Delay Time	$t_{(f)}$	–	140	–	ns	

Notes: 7. Pulse Test: Pulse width ≤300μs. Duty cycle ≤2.0%.

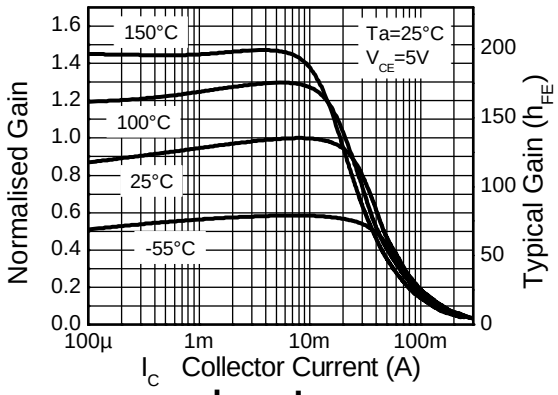
Typical Characteristics



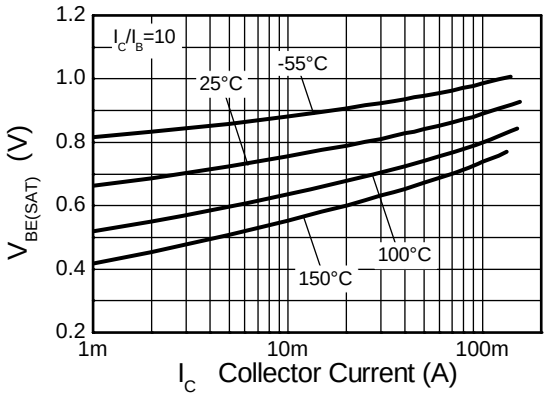
$V_{CE(SAT)}$ v I_C



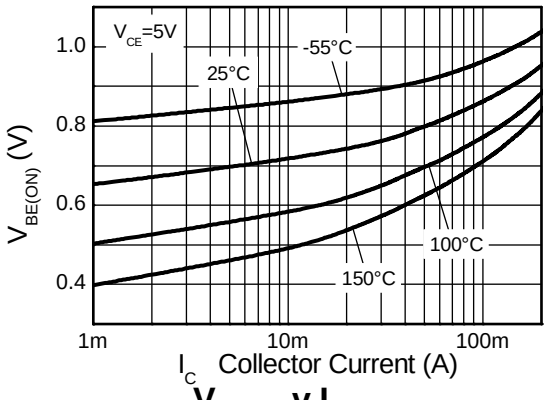
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C

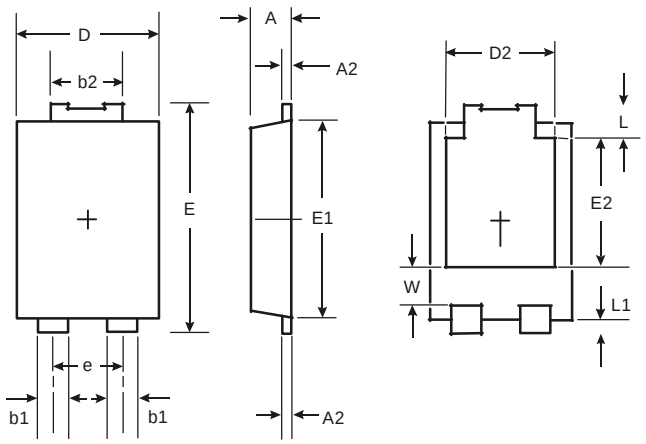


$V_{BE(SAT)}$ v I_C



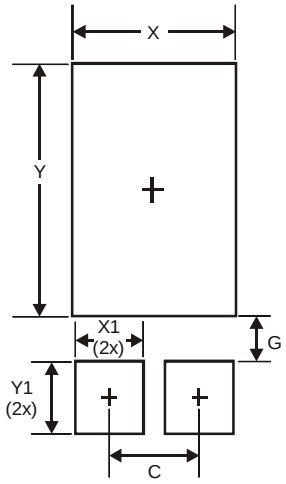
$V_{BE(ON)}$ v I_C

Package Outline Dimensions



PowerDI®5		
Dim	**Min**	**Max**
A	1.05	1.15
A2	0.33	0.43
b1	0.80	0.99
b2	1.70	1.88
D	3.90	4.05
D2	3.054 Typ	
E	6.40	6.60
e	1.84 Typ	
E1	5.30	5.45
E2	3.549 Typ	
L	0.75	0.95
L1	0.50	0.65
W	1.10	1.41
All Dimensions in mm		

Suggested Pad Layout



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

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