



**DXT5551P5**

**160V NPN HIGH VOLTAGE TRANSISTOR  
PowerDI<sup>®</sup>5**

**Features and Benefits**

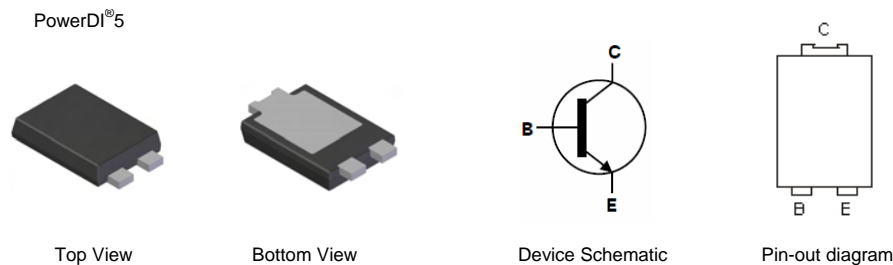
- 43% smaller than SOT223; 60% smaller than TO252
- Maximum height just 1.1mm
- Rated up to 2.25W
- $BV_{CEO} > 160V$
- $I_{C(cont)} = 0.6A$
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free, "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**Applications**

- Telecom line driver

**Mechanical Data**

- Case: PowerDI<sup>®</sup>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 ③
- Weight: 0.093 grams (approximate)

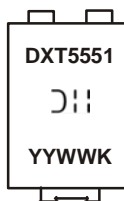


**Ordering Information** (Note 3)

| 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** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

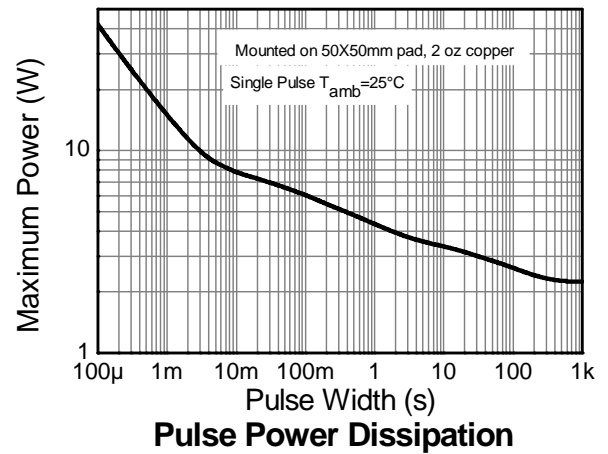
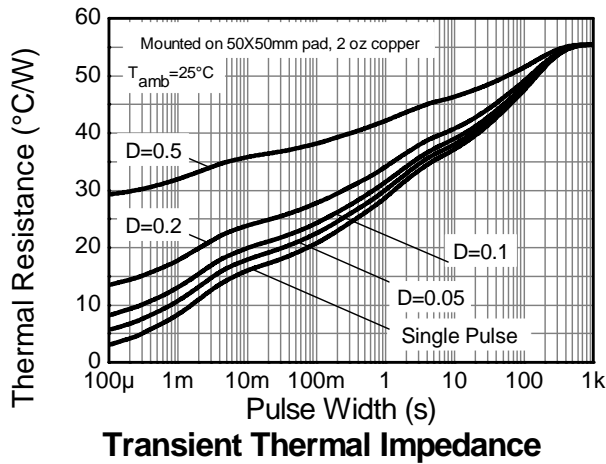
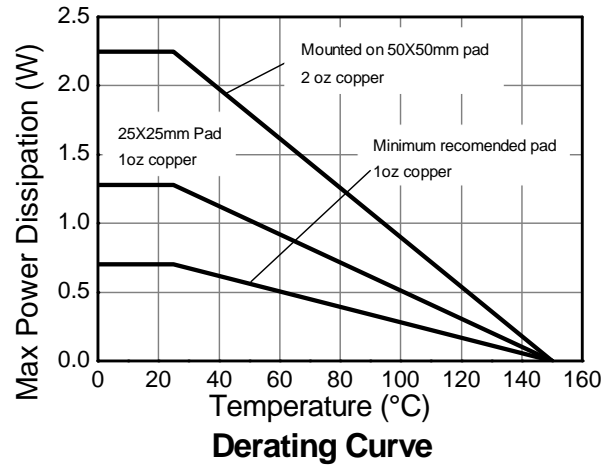
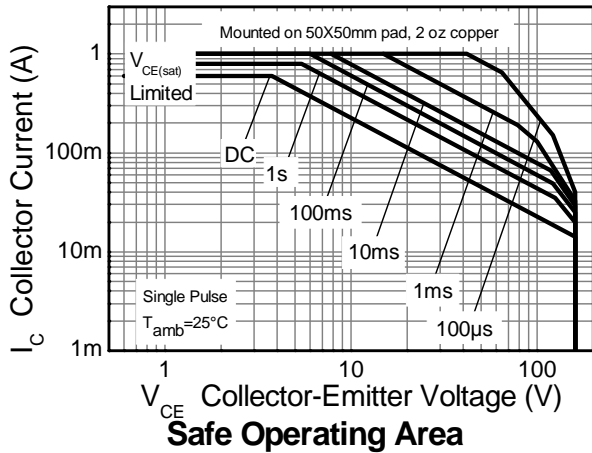
| Characteristic               | Symbol    | Value | Unit |
|------------------------------|-----------|-------|------|
| Collector-Base Voltage       | $V_{CB0}$ | 180   | V    |
| Collector-Emitter Voltage    | $V_{CEO}$ | 160   | V    |
| Emitter-Base Voltage         | $V_{EBO}$ | 6     | V    |
| Continuous Collector Current | $I_C$     | 600   | mA   |

**Thermal Characteristics** @ $T_A = 25^\circ\text{C}$  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        | $^\circ\text{C/W}$ |
| Power Dissipation (Note 5)                           | $P_D$           | 1.28        | W                  |
| Thermal Resistance, Junction to Ambient Air (Note 5) | $R_{\theta JA}$ | 97.4        | $^\circ\text{C/W}$ |
| Power Dissipation (Note 6)                           | $P_D$           | 0.7         | W                  |
| Thermal Resistance, Junction to Ambient Air (Note 6) | $R_{\theta JA}$ | 179         | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction to Collector Terminal   | $R_{\theta JT}$ | 30          | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range              | $T_J, T_{STG}$  | -55 to +150 | $^\circ\text{C}$   |

- 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**

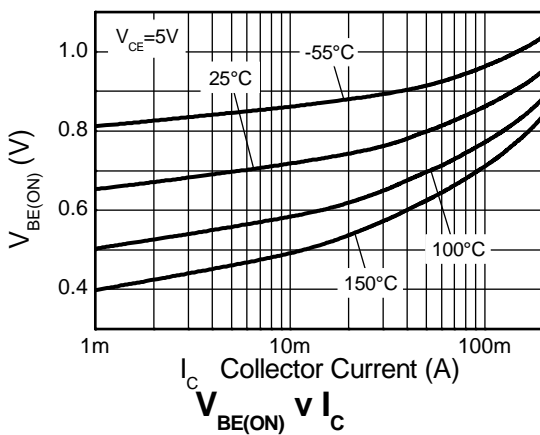
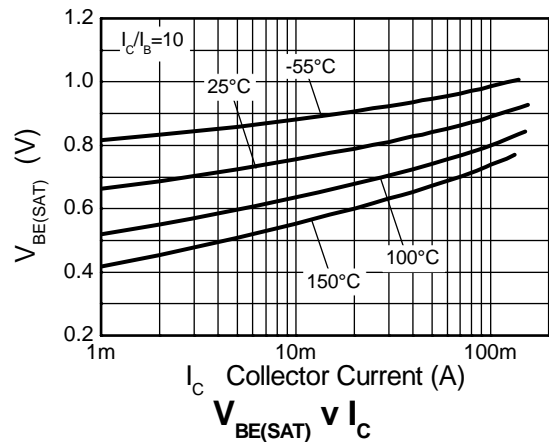
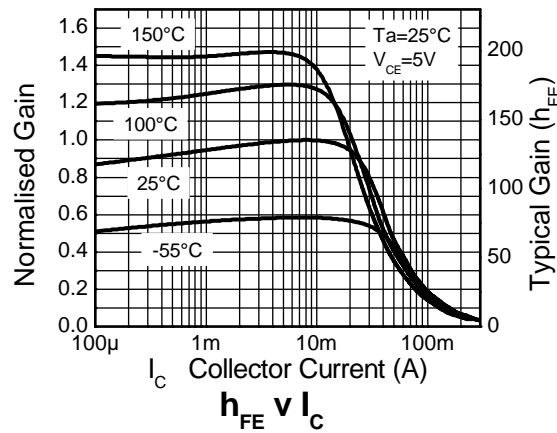
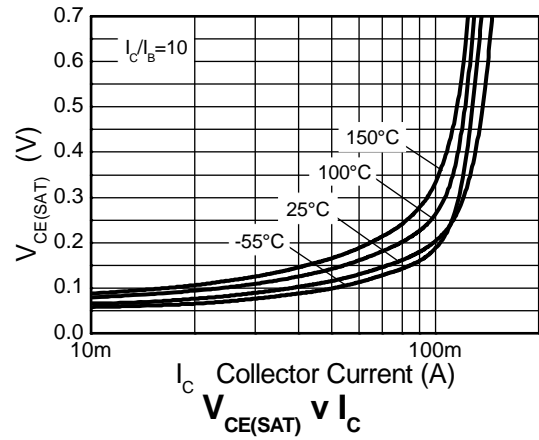
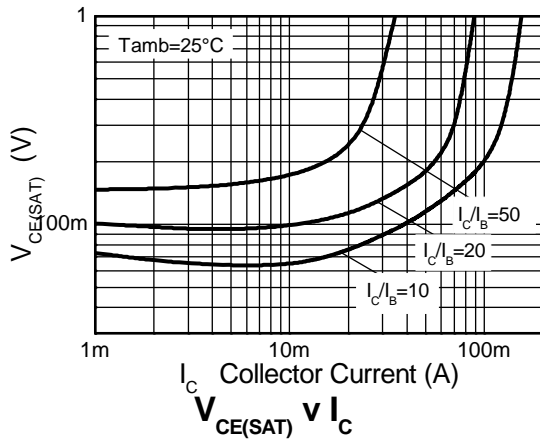


**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

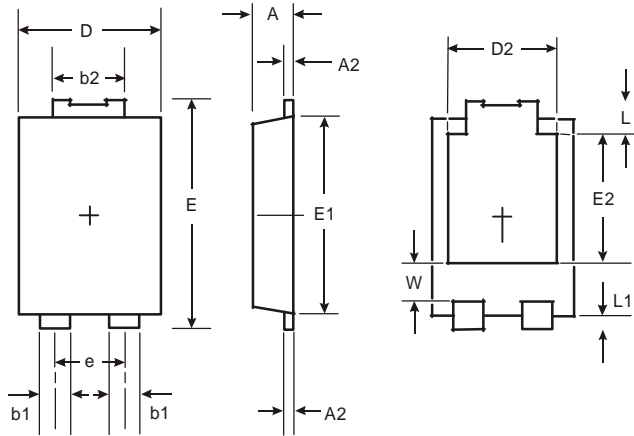
| Characteristic                                | Symbol               | Min | Typ  | Max  | Unit | Test Condition  |
|---|----------------------|-----|------|------|------|---|
| Collector-Base Breakdown Voltage              | BV <sub>CBO</sub>    | 180 | 270  | –    | V    | I <sub>C</sub> = 100μA  |
| Collector-Emitter Breakdown Voltage (Note 7)  | BV <sub>CEO</sub>    | 160 | 200  | –    | V    | I <sub>C</sub> = 1mA  |
| Emitter-Base Breakdown Voltage                | BV <sub>EBO</sub>    | 6.0 | 7.85 | –    | V    | I <sub>E</sub> = 10μA   |
| Collector Cutoff Current                      | I <sub>CBO</sub>     | –   | <1   | 50   | nA   | V <sub>CB</sub> = 120V  |
|   |                      | –   | –    | 50   | μA   | V <sub>CB</sub> = 120V, T <sub>A</sub> = 100°C  |
| Collector-Emitter Saturation Voltage (Note 7) | V <sub>CE(sat)</sub> | –   | 65   | 150  | mV   | I <sub>C</sub> = 10mA, I <sub>B</sub> = 1mA   |
|   |                      | –   | 115  | 200  | mV   | I <sub>C</sub> = 50mA, I <sub>B</sub> = 5mA   |
| Base-Emitter Saturation Voltage (Note 7)      | V <sub>BE(sat)</sub> | –   | 760  | 1000 | mV   | I <sub>C</sub> = 10mA, I <sub>B</sub> = 1mA   |
|   |                      | –   | 840  | 1200 | mV   | I <sub>C</sub> = 50mA, I <sub>B</sub> = 5mA   |
| DC Current Gain (Note 7)                      | h <sub>FE</sub>      | 80  | 130  | –    | –    | V <sub>CE</sub> = 5V, I <sub>C</sub> = 1mA  |
|   |                      | 80  | 145  | 250  | –    | V <sub>CE</sub> = 5V, I <sub>C</sub> = 10mA   |
|   |                      | 30  | 65   | –    | –    | V <sub>CE</sub> = 5V, I <sub>C</sub> = 50mA   |
| Transition Frequency                          | f <sub>T</sub>       | –   | 130  | –    | MHz  | V <sub>CE</sub> = 10V, I <sub>C</sub> = 10mA,<br>f = 100MHz                               |
| Output Capacitance (Note 7)                   | C <sub>obo</sub>     | –   | –    | 6    | pF   | V <sub>CB</sub> = 10V, f = 1MHz   |
| Delay Time                                    | t <sub>(d)</sub>     | –   | 95   | –    | ns   | V <sub>CC</sub> = 510V, I <sub>C</sub> = 10mA,<br>I <sub>B1</sub> = I <sub>B2</sub> = 1mA |
| Rise Time                                     | t <sub>(r)</sub>     | –   | 64   | –    | ns   |   |
| Storage Time                                  | t <sub>(s)</sub>     | –   | 1256 | –    | ns   |   |
| Delay Time                                    | t <sub>(f)</sub>     | –   | 140  | –    | ns   |   |

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

**Typical Characteristics**

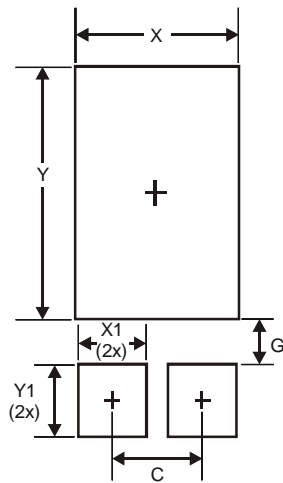


**Package Outline Dimensions**



| PowerDI <sup>®</sup> 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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