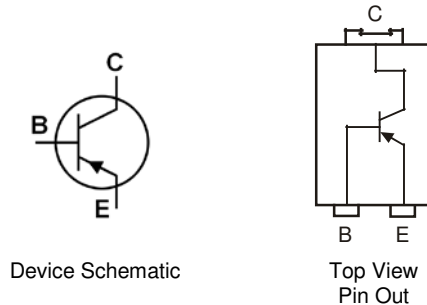
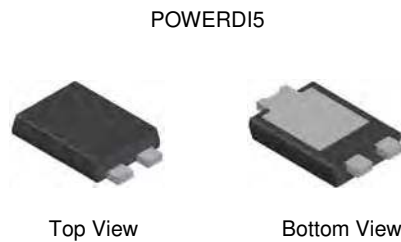


**Features**

- $BV_{CEO} > -40V$
- $I_C = -3A$  high Continuous Collector Current
- $I_{CM} = -6A$  Peak Pulse Current
- 43% smaller than SOT223; 60% smaller than TO252
- Maximum Height Just 1.1mm
- Rated up to 3.2W
- Low Saturation, High Gain Transistor,
- **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: POWERDI5
- 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)

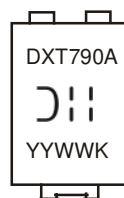



**Ordering Information** (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DXT790AP5-13	DXT790A	13	16	5,000

- 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](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**



- DXT790A = 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 to 53)

**Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

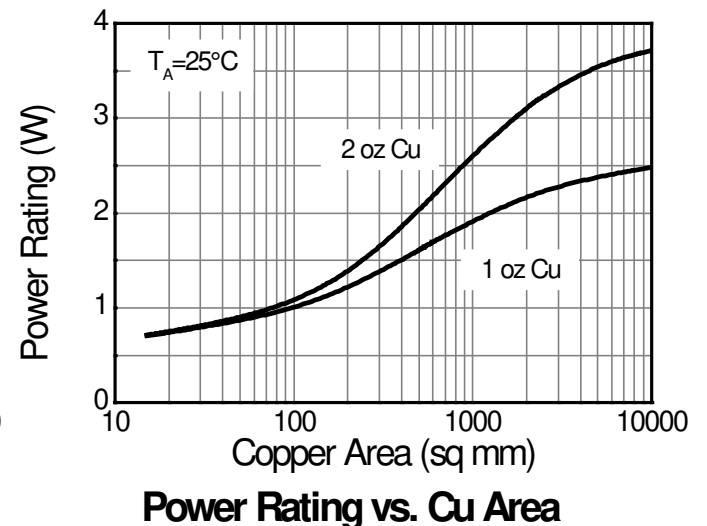
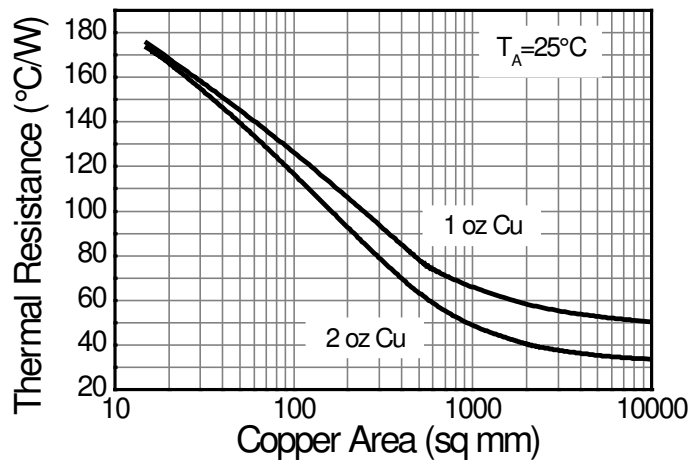
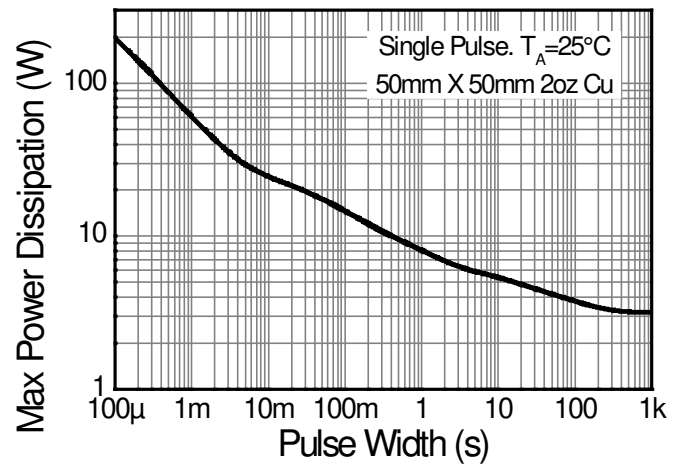
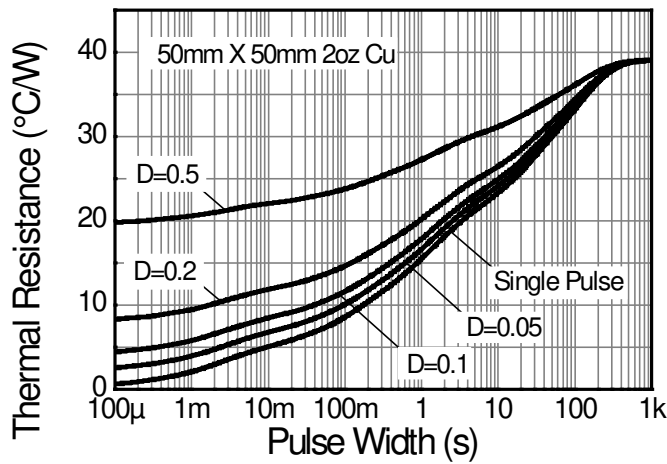
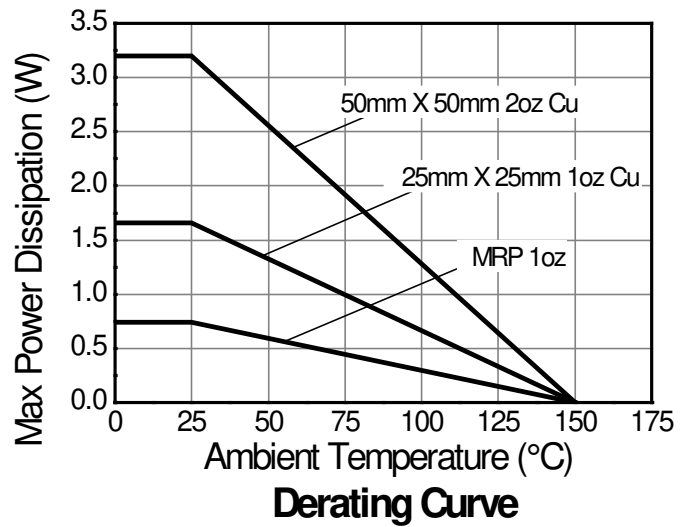
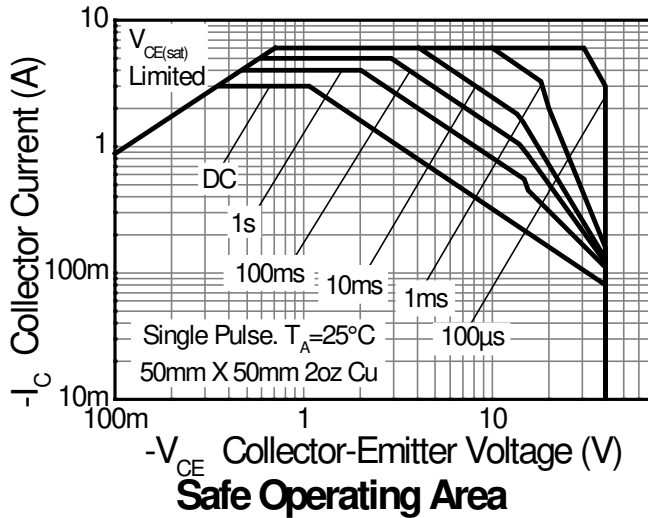
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	-50	V
Collector-Emitter Voltage	$V_{CEO}$	-40	V
Emitter-Base Voltage	$V_{EBO}$	-6	V
Continuous Collector Current	$I_C$	-3	A
Peak Pulse Current	$I_{CM}$	-6	A
Base Current	$I_B$	-0.5	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation	$P_D$	(Note 5)	3.2
		(Note 6)	1.7
		(Note 7)	0.74
Thermal Resistance, Junction to Ambient Air	$R_{\theta JA}$	(Note 5)	39
		(Note 6)	75
		(Note 7)	169
Thermal Resistance, Junction to Lead	$R_{\theta JL}$	8.9	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

- Notes:
5. For a device mounted with the exposed collector pad on 50mm x 50mm 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
  6. Same as note (5), except the device is mounted on 25mm x 25mm 1oz copper.
  7. Same as note (5), except the device is mounted on minimum recommended pad (MRP) layout 1oz copper.
  8. Thermal resistance from junction to solder-point (on the exposed collector pad).

**Thermal Characteristics and Derating Information**

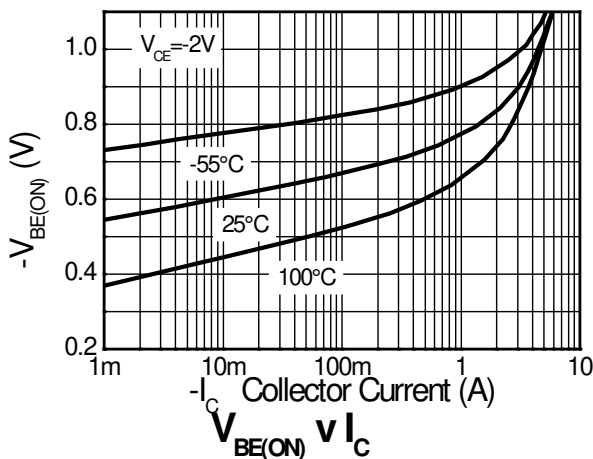
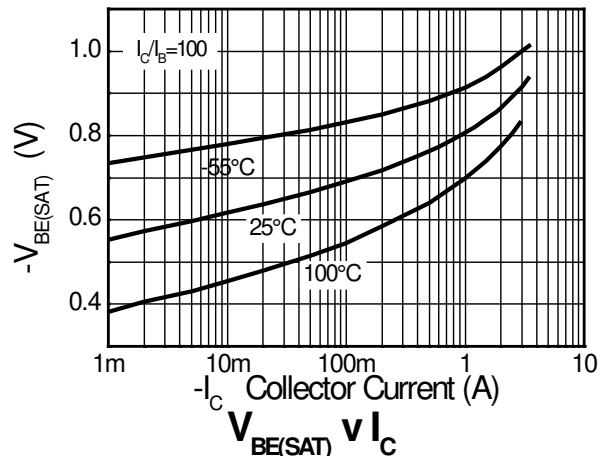
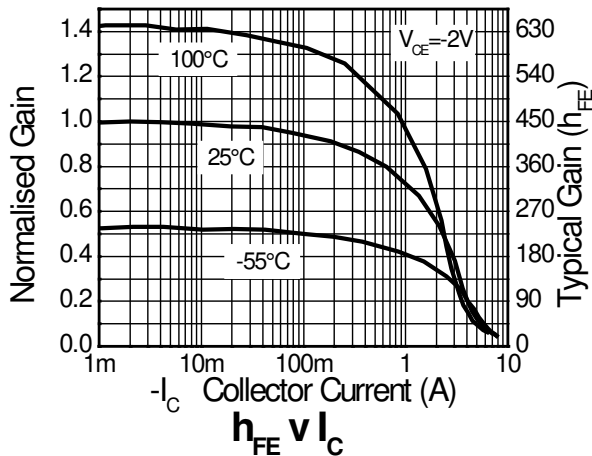
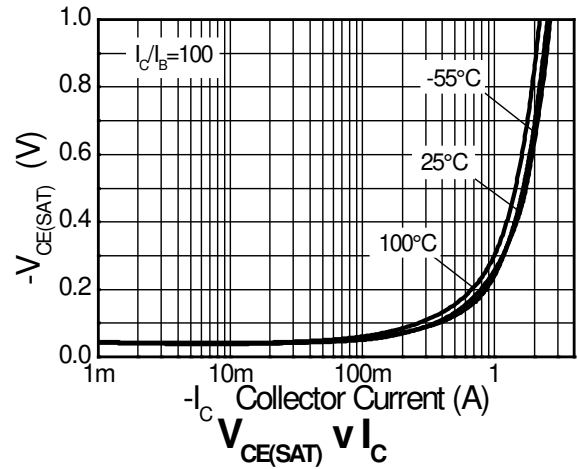
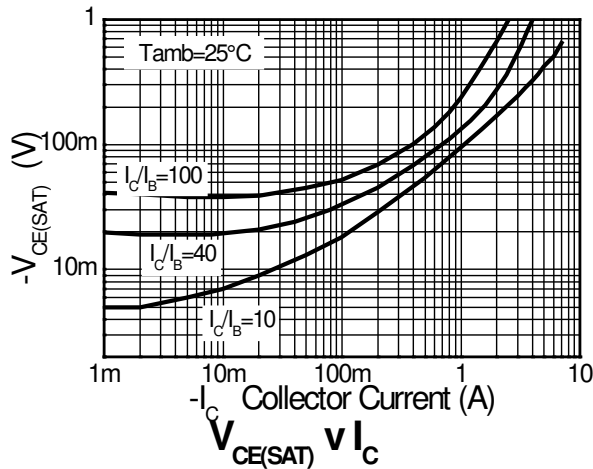


**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Collector-Base Breakdown Voltage	$BV_{CBO}$	-50	—	—	V	$I_C = -100\mu\text{A}$ , $I_E = 0$
Collector-Emitter Breakdown Voltage (Note 8)	$BV_{CEO}$	-40	—	—	V	$I_C = -10\text{mA}$ , $I_B = 0$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	-6	—	—	V	$I_E = -100\mu\text{A}$ , $I_C = 0$
Collector Cutoff Current	$I_{CBO}$	—	—	-20	nA	$V_{CB} = -30\text{V}$ , $I_E = 0$
Collector Cutoff Current	$I_{CES}$	—	—	-20	nA	$V_{CB} = -30\text{V}$ , $V_{BE} = 0$
Emitter Cutoff Current	$I_{EBO}$	—	—	-20	nA	$V_{EB} = -4\text{V}$ , $I_C = 0$
<b>ON CHARACTERISTICS (Note 8)</b>						
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	-170	mV	$I_C = -0.5\text{A}$ , $I_B = -5\text{mA}$
		—	—	-350		$I_C = -1\text{A}$ , $I_B = -10\text{mA}$
		—	—	-450		$I_C = -2\text{A}$ , $I_B = -50\text{mA}$
		—	—	-450		$I_C = -3\text{A}$ , $I_B = -300\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	-1.15	V	$I_C = -3\text{A}$ , $I_B = -300\text{mA}$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$	—	—	-1.0	V	$I_C = -3\text{A}$ , $V_{CE} = -2\text{V}$
DC Current Gain	$h_{FE}$	300	—	800	—	$I_C = -10\text{mA}$ , $V_{CE} = -2\text{V}$
		250	—	—		$I_C = -500\text{mA}$ , $V_{CE} = -2\text{V}$
		200	—	—		$I_C = -1\text{A}$ , $V_{CE} = -2\text{V}$
		150	—	—		$I_C = -2\text{A}$ , $V_{CE} = -2\text{V}$
		80	—	—		$I_C = -3\text{A}$ , $V_{CE} = -2\text{V}$
<b>AC CHARACTERISTICS</b>						
Transition Frequency	$f_T$	100	—	—	MHz	$I_C = -50\text{mA}$ , $V_{CE} = -5\text{V}$ , $f = 50\text{MHz}$
Output Capacitance	$C_{obo}$	—	24	—	pF	$V_{CB} = -10\text{V}$ , $f = 1\text{MHz}$
Switching Times	$t_{on}$	—	35	—	ns	$I_C = -500\text{mA}$ , $V_{CC} = -10\text{V}$ ,
	$t_{off}$	—	600	—	ns	$I_{B1} = -I_{B2} = -50\text{mA}$

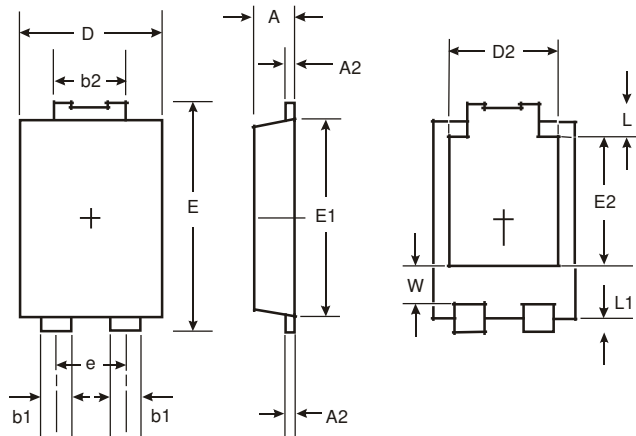
Notes: 8. Measured under pulsed conditions. Pulse width • 300 $\mu\text{s}$ . Duty cycle • 2%.

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



## Package Outline Dimensions

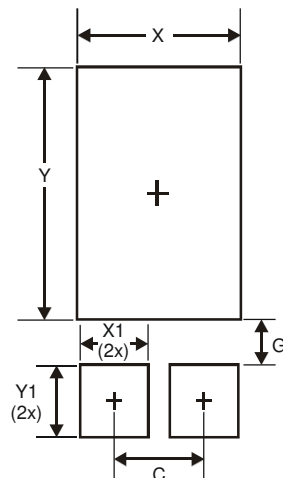
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



POWERDI5		
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
<b>All Dimensions in mm</b>		

## Suggested Pad Layout

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



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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