



**DXT790AP5**

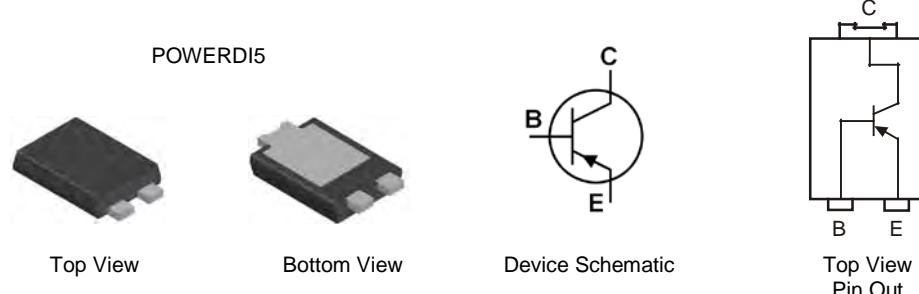
**40V PNP HIGH GAIN TRANSISTOR  
POWERDI<sup>®</sup>**

## 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  
 JII = 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	$P_D$	3.2	W
		1.7	
		0.74	
Thermal Resistance, Junction to Ambient Air	$R_{\theta JA}$	39	°C/W
		75	
		169	
Thermal Resistance, Junction to Lead	$R_{\theta JL}$	8.9	°C/W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	°C

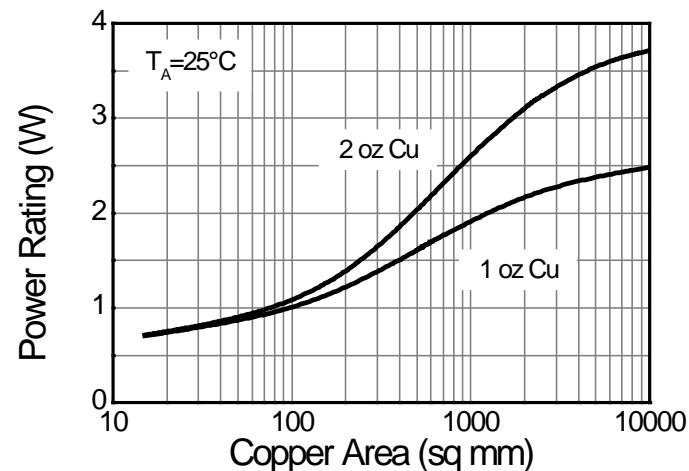
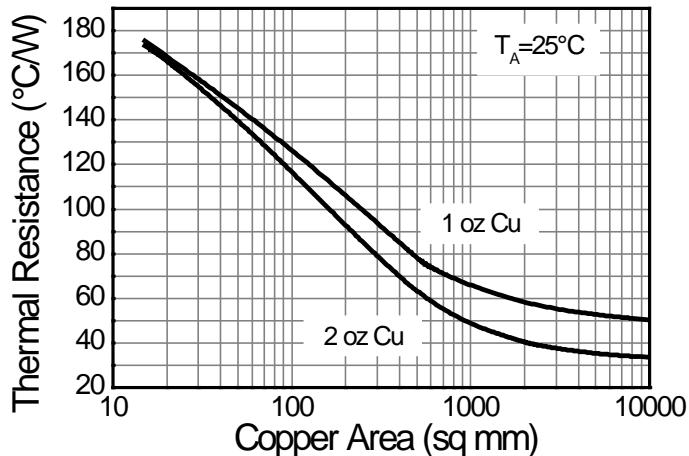
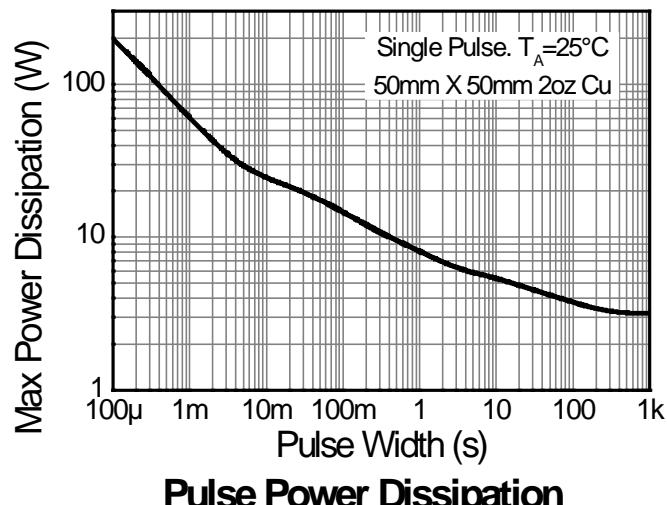
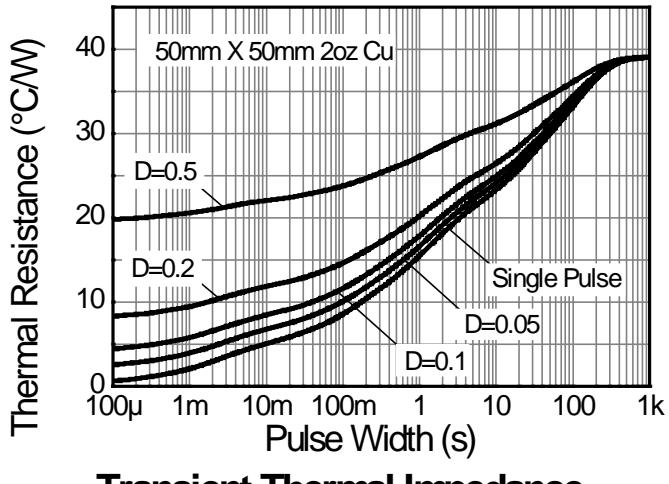
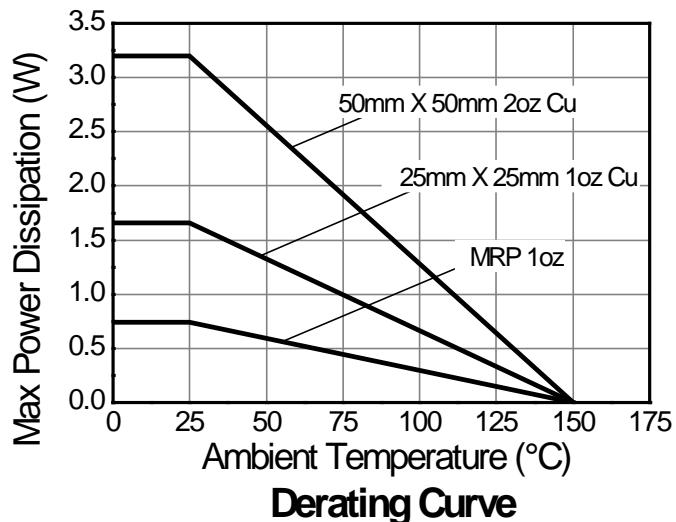
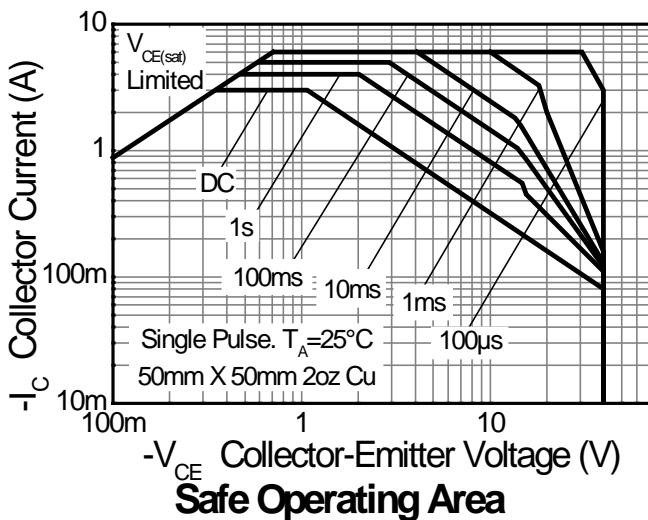
Notes: 5. For a device mounted with the exposed collector pad on 50mm x 50mm 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.

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

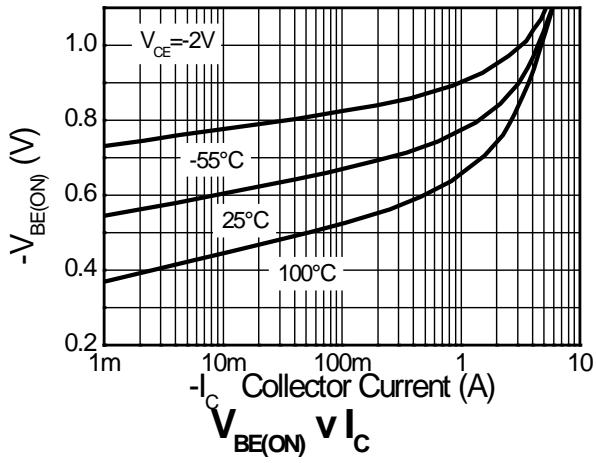
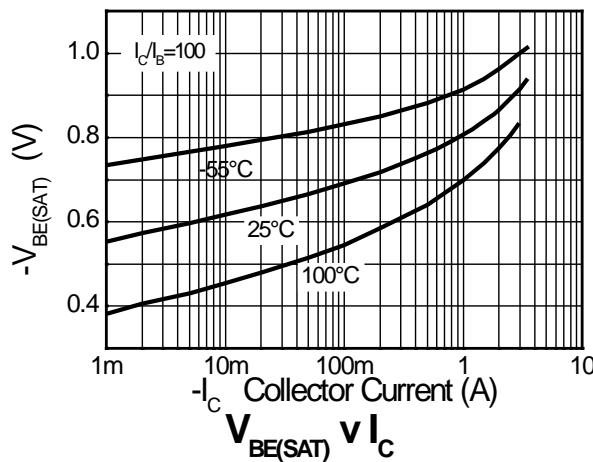
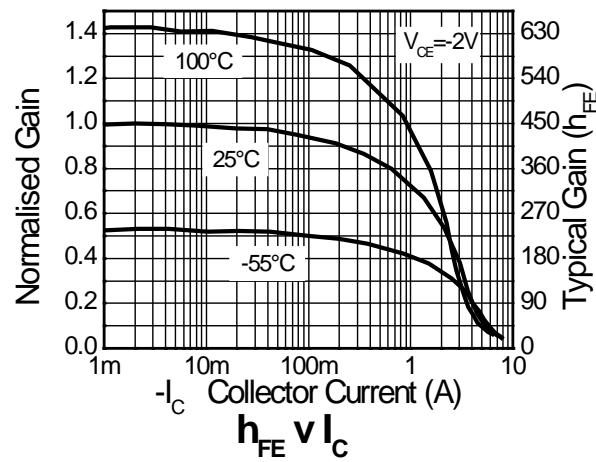
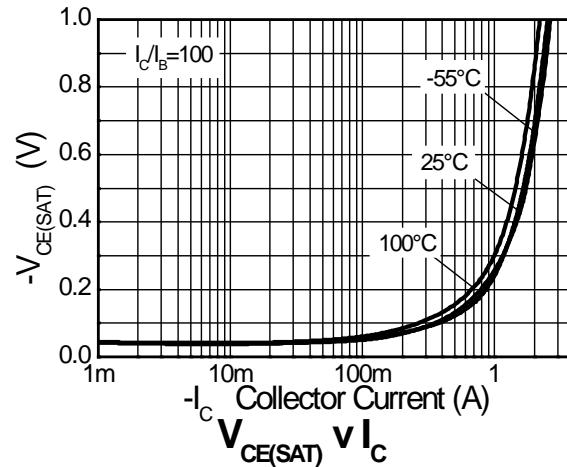
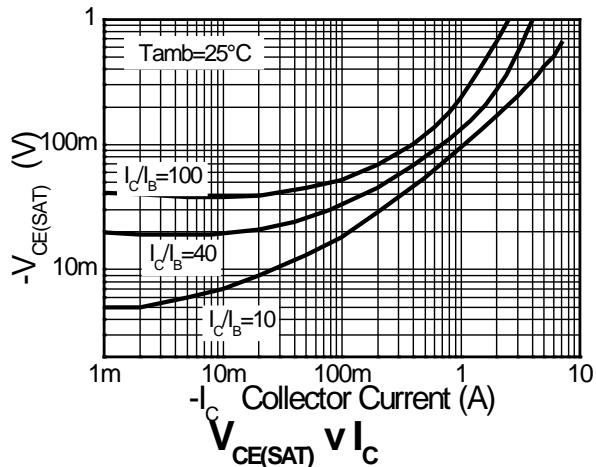


**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

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

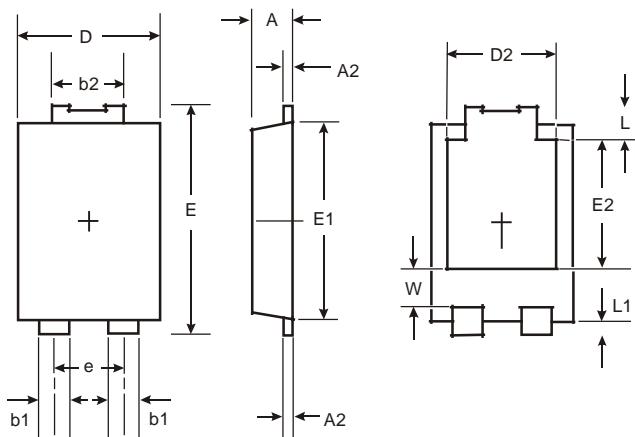
Notes: 8. Measured under pulsed conditions. Pulse width • 300 $\mu\text{s}$ . Duty cycle • 2%.

**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.

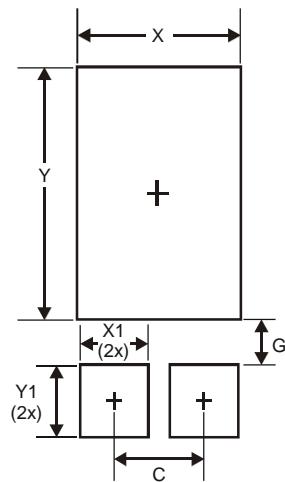


POWERDI5		
Dim	Min	Max
A	1.05	1.15
A2	0.33	0.43
b1	0.80	0.99
b2	1.70	1.88
D	3.90	4.05
D2	3.054 Typ	
E	6.40	6.60
e	1.84 Typ	
E1	5.30	5.45
E2	3.549 Typ	
L	0.75	0.95
L1	0.50	0.65
W	1.10	1.41

All Dimensions in mm

## 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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