

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)

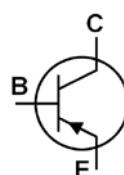
POWERDI5



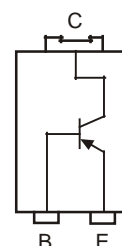
Top View



Bottom View



Device Schematic



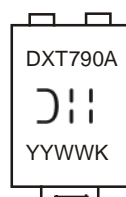
Top View
Pin Out


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 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°C, unless otherwise specified.)

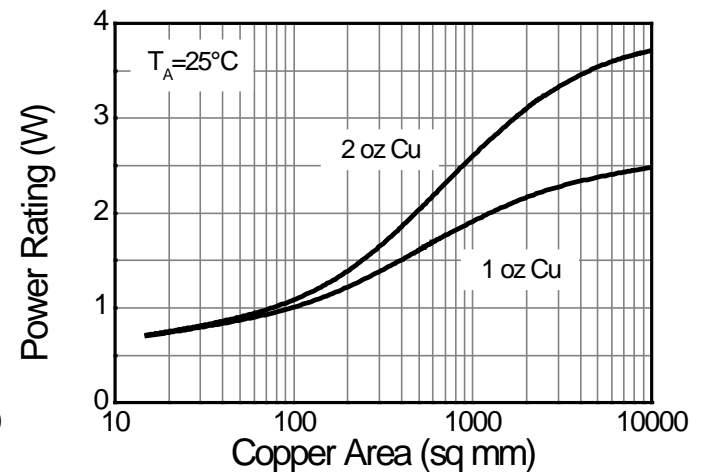
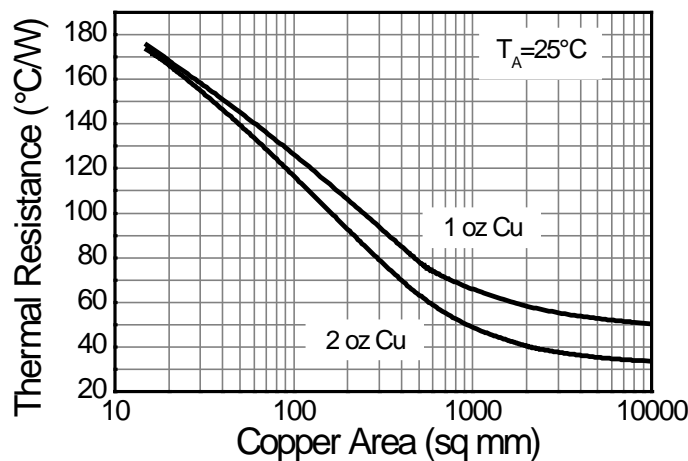
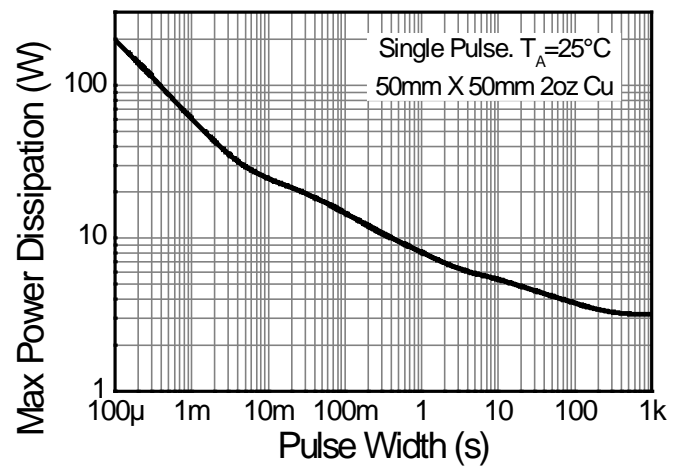
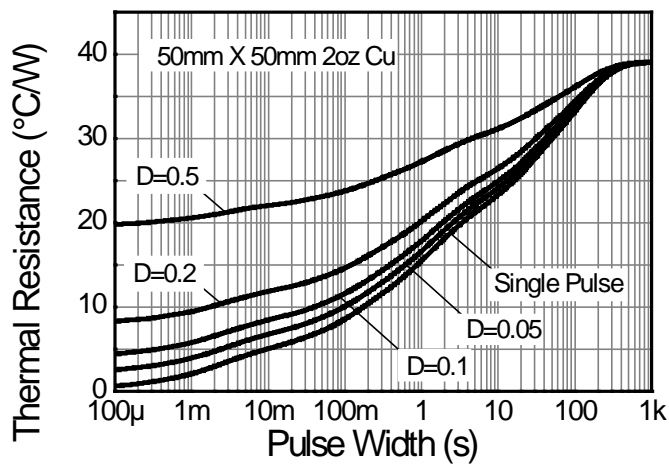
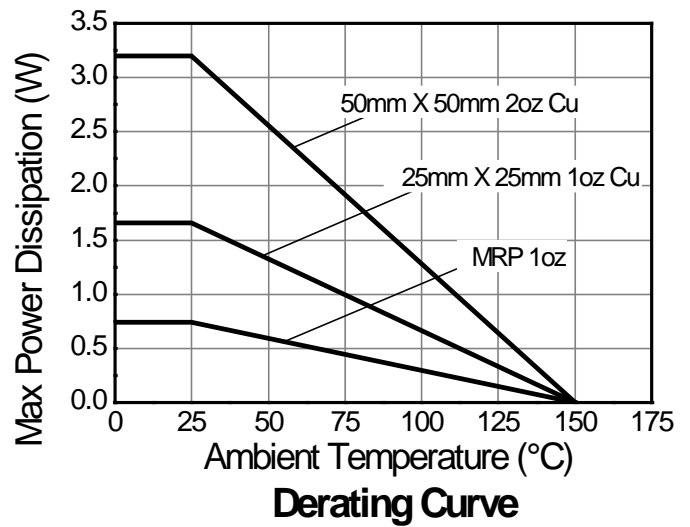
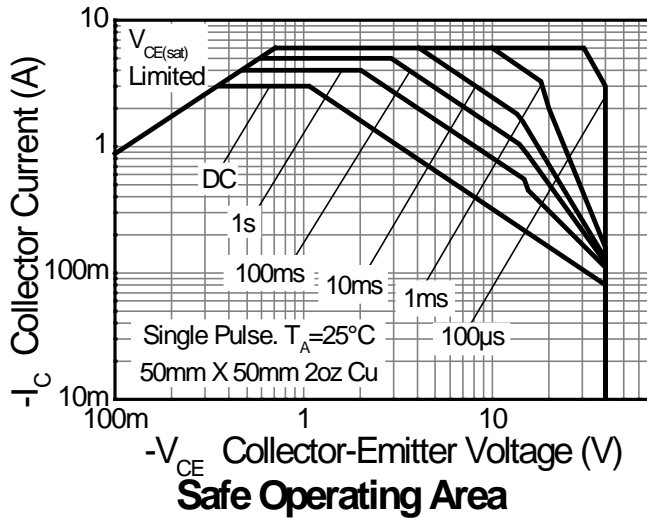
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-50	V
Collector-Emitter Voltage	V _{CEO}	-40	V
Emitter-Base Voltage	V _{EBO}	-6	V
Continuous Collector Current	I _C	-3	A
Peak Pulse Current	I _{CM}	-6	A
Base Current	I _B	-0.5	A

Thermal Characteristics (@T_A = +25°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 _{θJA}	39	°C/W
		75	
		169	
Thermal Resistance, Junction to Lead	R _{θJL}	8.9	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

- Notes:
- 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.
 - Same as note (5), except the device is mounted on 25mm x 25mm 1oz copper.
 - Same as note (5), except the device is mounted on minimum recommended pad (MRP) layout 1oz copper.
 - Thermal resistance from junction to solder-point (on the exposed collector pad).

Thermal Characteristics and Derating Information



Thermal Resistance vs. Cu Area

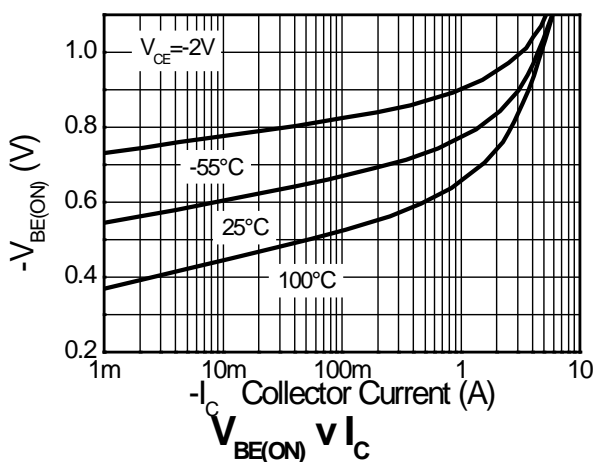
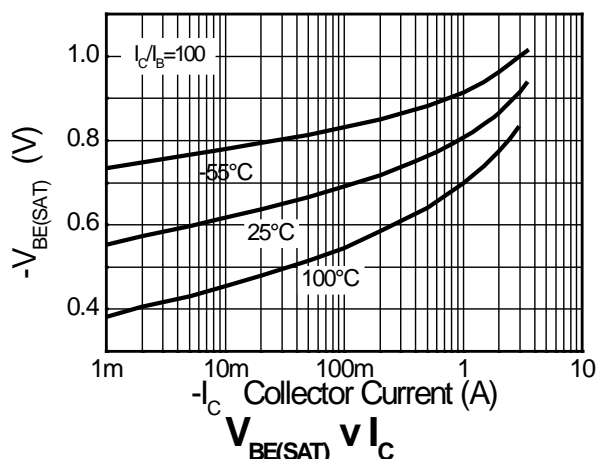
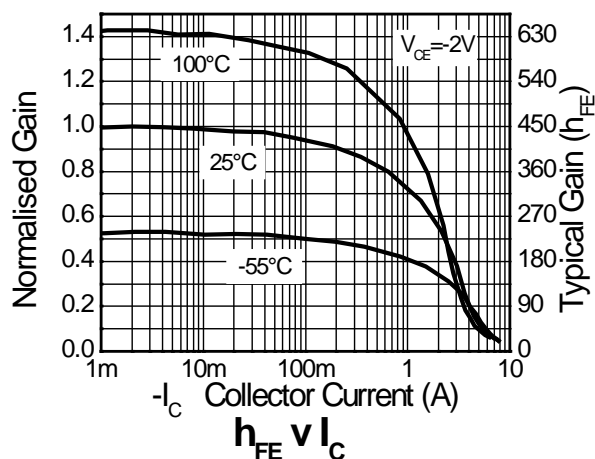
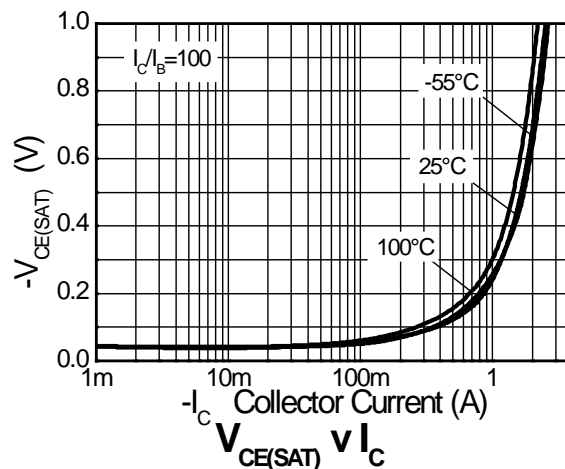
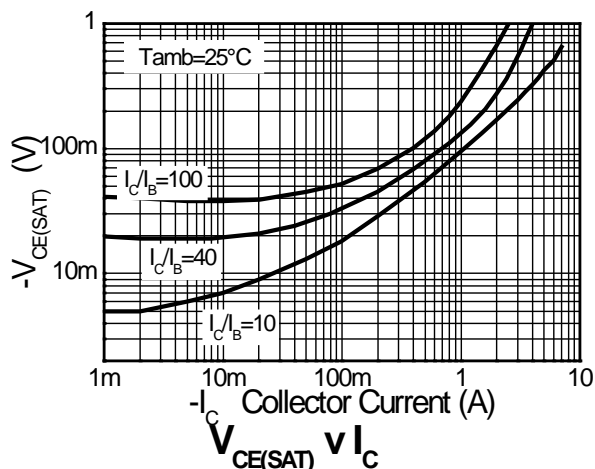
Power Rating vs. Cu Area

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

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

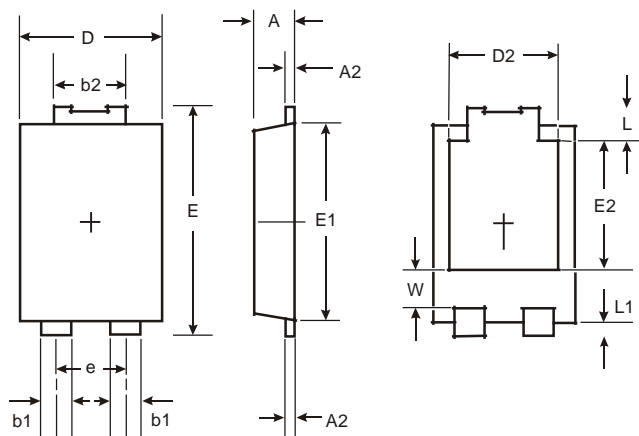
Notes: 8. Measured under pulsed conditions. Pulse width • 300μs. Duty cycle • 2%.

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



Package Outline Dimensions

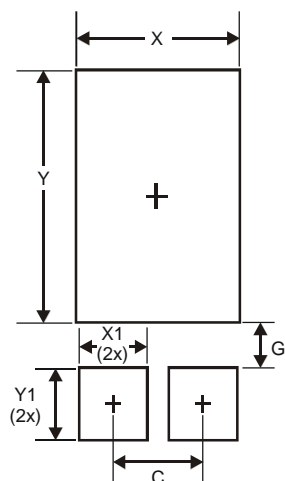
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



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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