



DXT2010P5

60V NPN MEDIUM POWER TRANSISTOR
PowerDI[®]5

Features

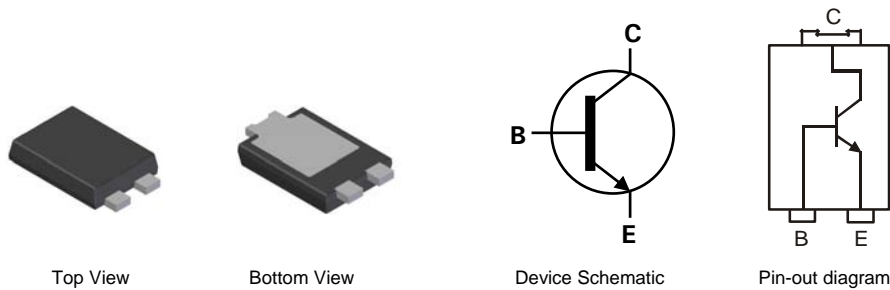
- 43% smaller than SOT223; 60% smaller than TO252
- Maximum height just 1.1mm
- Rated up to 3.2W
- $V_{CE0} = 60V$
- $I_C = 6A$; $I_{CM} = 20A$
- Low Saturation voltage
- **Lead, Halogen and Antimony Free, RoHS Compliant (Note 1)**
- **“Green” Device (Note 2)**

Applications

- Motor driver
- Regulator circuit

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 [Ⓢ]
- Weight: 0.093 grams (approximate)

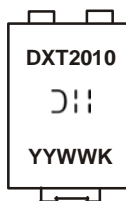


Ordering Information (Note 3)

Part Number	Case	Packaging
DXT2010P5-13	PowerDI [®] 5	5000/Tape & Reel

- Notes:
1. No purposefully added lead. Halogen and Antimony Free.
 2. 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/datasheets/ap02007.pdf>.

Marking Information



DXT2010 = 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)

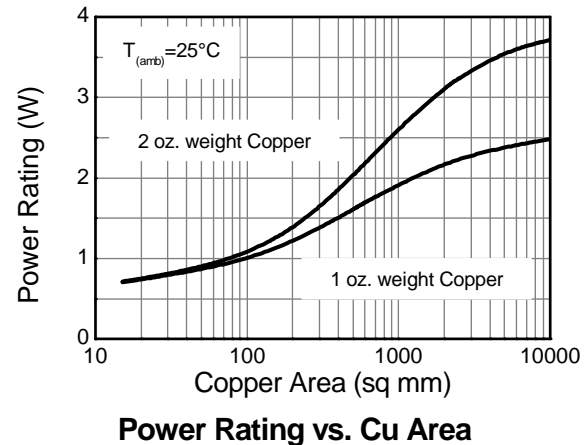
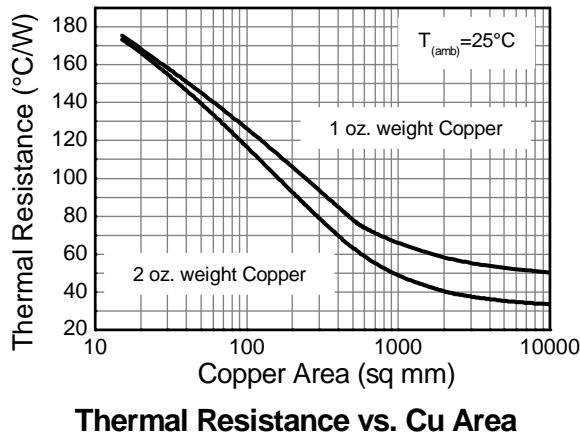
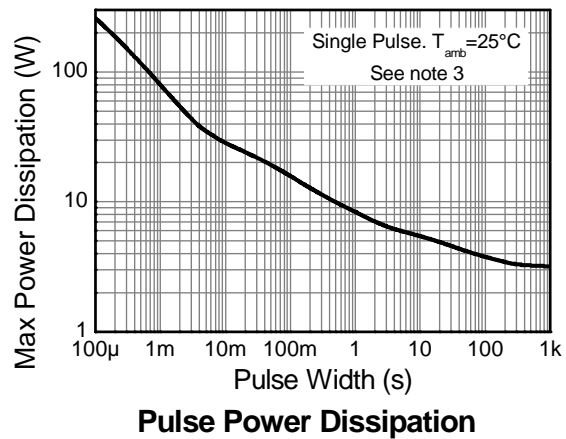
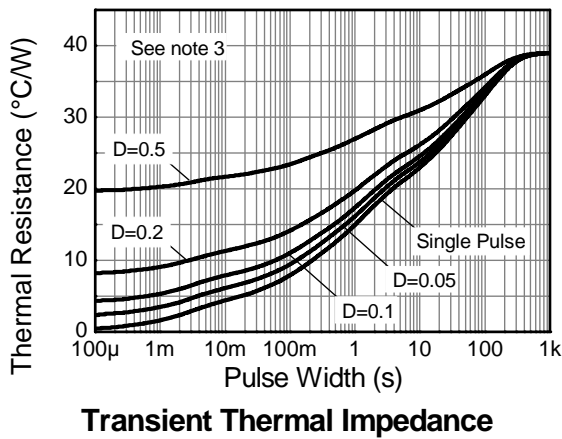
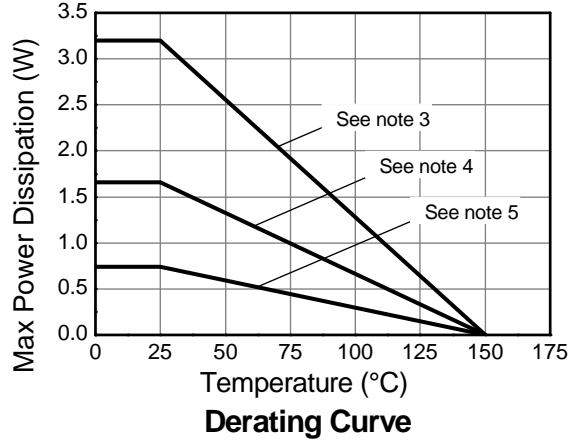
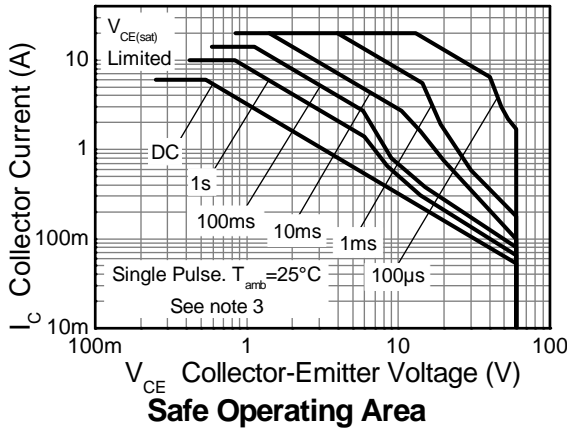
Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	150	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	6	A
Peak Pulse Current	I_{CM}	20	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation @ $T_A = 25^\circ\text{C}$ (Note 4)	P_D	3.2	W
Thermal Resistance, Junction to Ambient Air (Note 4) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	39	$^\circ\text{C/W}$
Power Dissipation @ $T_A = 25^\circ\text{C}$ (Note 5)	P_D	1.7	W
Thermal Resistance, Junction to Ambient Air (Note 5) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	75	$^\circ\text{C/W}$
Power Dissipation @ $T_A = 25^\circ\text{C}$ (Note 6)	P_D	0.74	W
Thermal Resistance, Junction to Ambient Air (Note 6) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	169	$^\circ\text{C/W}$
Thermal Resistance, Junction to Collector Terminal	$R_{\theta JT}$	5.6	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

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

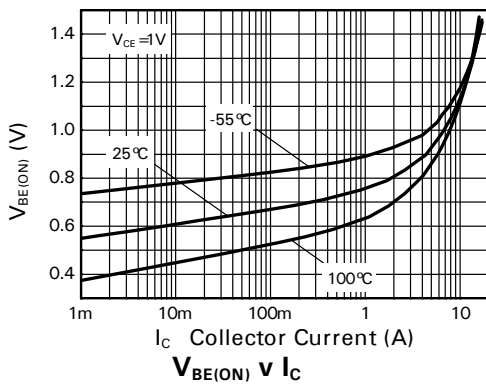
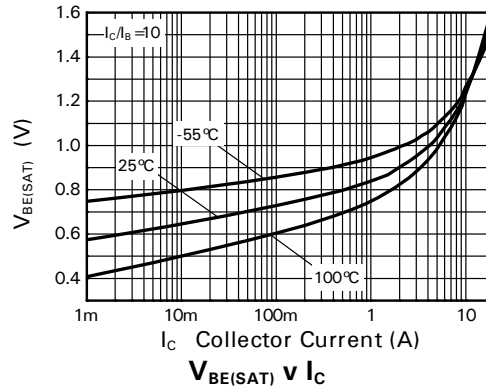
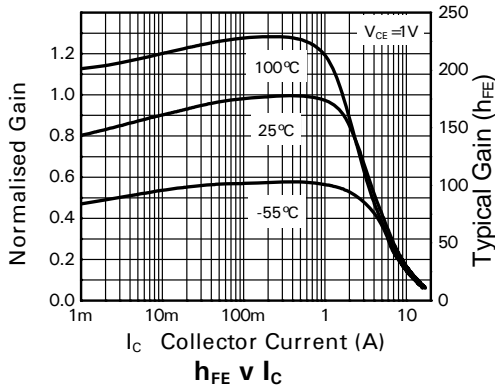
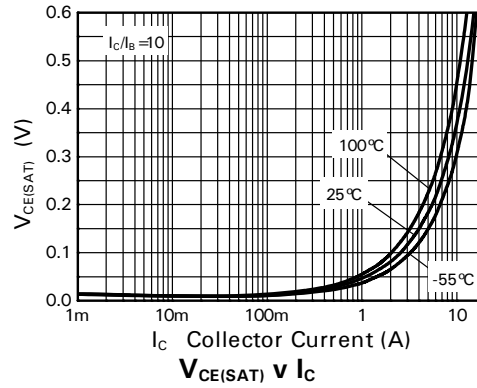
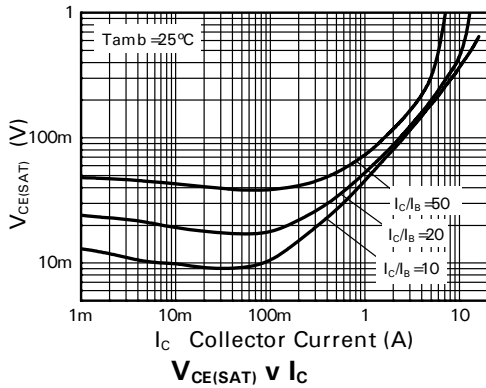


Electrical Characteristics @T_A = 25°C unless otherwise specified

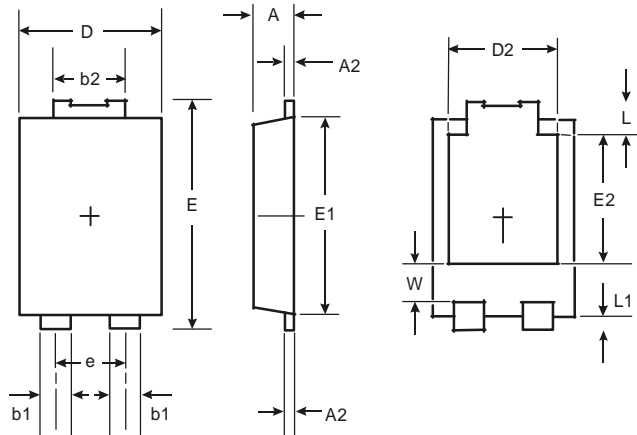
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	V _{(BR)CBO}	150	190	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 7)	V _{(BR)CEO}	60	80	—	V	I _C = 10mA
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	7.0	8.1	—	V	I _E = 100μA
Collector Cutoff Current	I _{CBO}	—	—	20 0.5	nA μA	V _{CB} = 120V V _{CB} = 120V, T _{amb} = 100 °C
Collector Cutoff Current	I _{CER} R ≤ 1kΩ	—	—	20 0.5	nA μA	V _{CB} = 120V V _{CB} = 120V, T _{amb} = 100 °C
Emitter Cutoff Current	I _{EBO}	—	—	10	nA	V _{EB} = 6V
Collector-Emitter Saturation Voltage (Note 7)	V _{CE(sat)}	—	20 45 50 100 210	30 60 70 135 260	mV	I _C = 100mA, I _B = 5mA I _C = 1A, I _B = 100mA I _C = 1A, I _B = 50mA I _C = 2A, I _B = 50mA I _C = 6A, I _B = 300mA
Base-Emitter Saturation Voltage (Note 7)	V _{BE(sat)}	—	1000	1100	mV	I _C = 6A, I _B = 300mA
Base-Emitter Turn-On Voltage (Note 7)	V _{BE(on)}	—	940	1050	mV	V _{CE} = 1V, I _C = 6A
DC Current Gain (Note 6)	h _{FE}	100 100 55 20	200 200 105 40	— 300 — —	—	I _C = 10mA, V _{CE} = 1V I _C = 2A, V _{CE} = 1V I _C = 5A, V _{CE} = 1V I _C = 10A, V _{CE} = 1V
Transition Frequency	f _T	—	130	—	MHz	I _C = 100mA, V _{CE} = 10V f = 50MHz
Output Capacitance (Note 7)	C _{obo}	—	31	—	pF	V _{CB} = -10A, f = 1MHz
Switching Times	t _{on} t _{off}	— —	42 760	— —	ns ns	I _C = 1A, V _{CC} = 10V, I _{B1} = I _{B2} = 100mA

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

Typical Characteristic

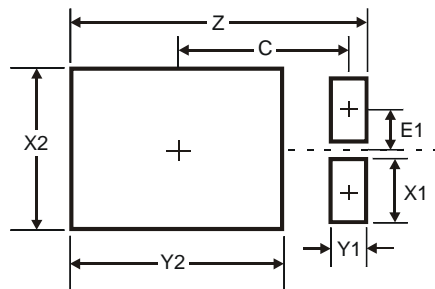


Package Outline Dimensions



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)
Z	6.6
X1	1.4
X2	3.6
Y1	0.8
Y2	4.7
C	3.87
E1	0.9

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