

200V PNP HIGH VOLTAGE TRANSISTOR
PowerDI®5

Features

- 43% smaller than SOT223; 60% smaller than TO252
- Maximum height just 1.1mm
- Rated up to 3.2W
- $V_{CEO} = -200V$
- $I_C = -2A$; $I_{CM} = -5A$
- Low Saturation voltage
- **Lead, Halogen, and Antimony Free/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**

Application

- DC – DC conversion

Mechanical Data

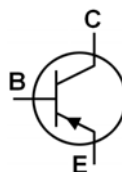
- Case: PowerDI®5
- Case Material: Molded Plastic, "Green" Molding Compound.
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin annealed over Copper leadframe.
Solderable per MIL-STD-202, Method 208 
- Weight: 0.093 grams (approximate)



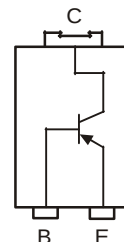
Top View



Bottom View



Device Schematic



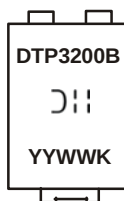
Pin-out diagram

Ordering Information (Note 3)

Part Number	Case	Packaging
DXTP03200BP5-13	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



DTP3200B = 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

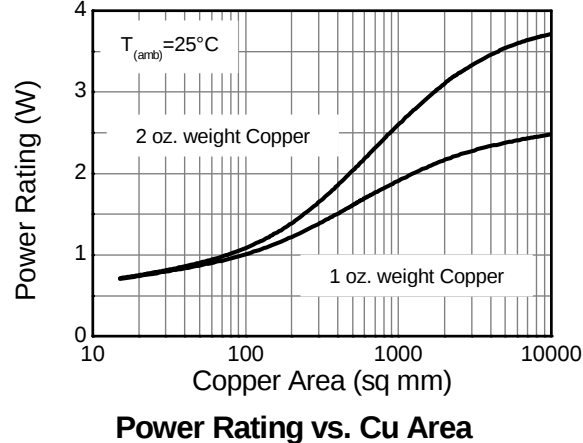
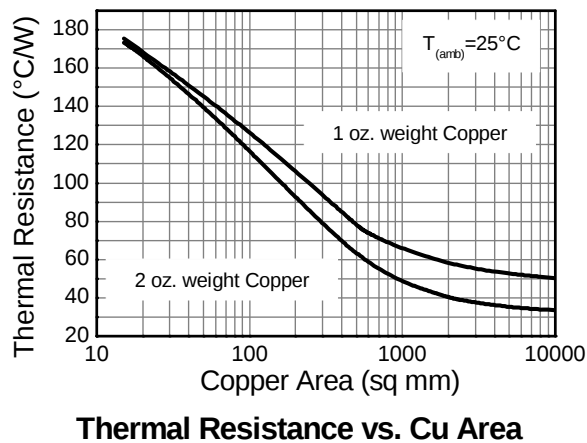
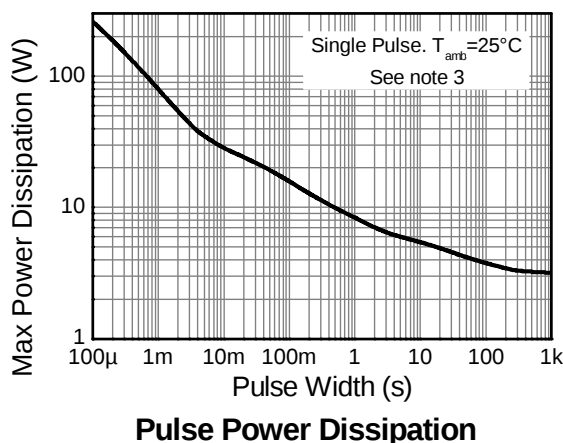
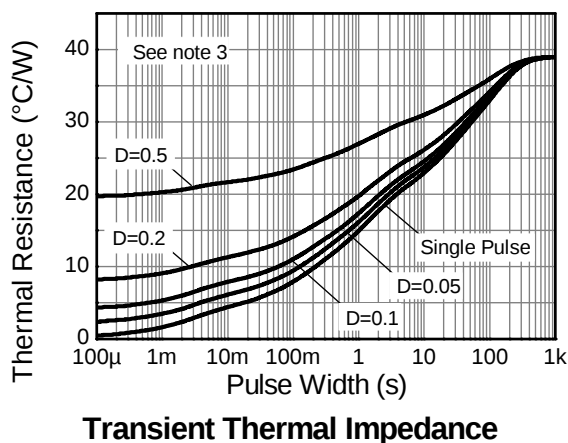
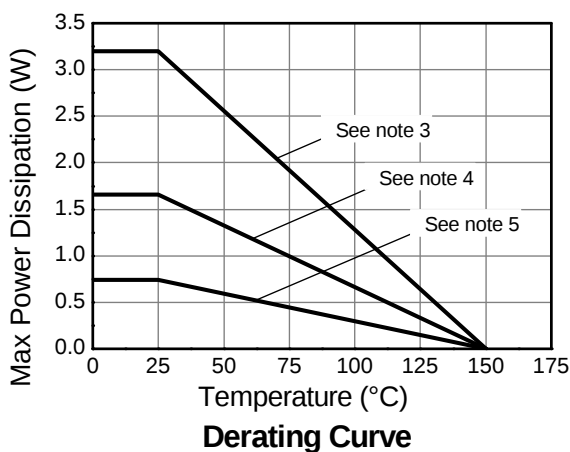
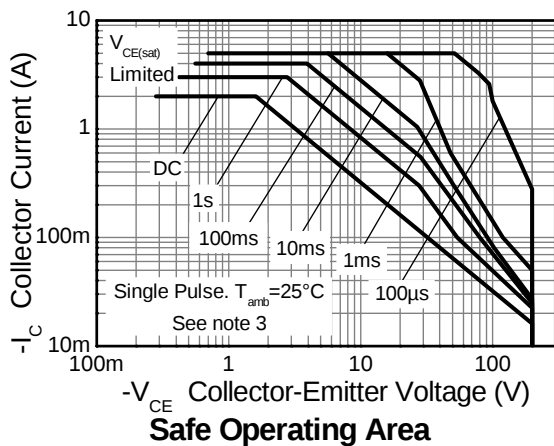
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-220	V
Collector-Emitter Voltage	V _{CEO}	-200	V
Emitter-Base Voltage	V _{EBO}	-7	V
Continuous Collector Current	I _C	-2	A
Base Current	I _B	-1	A
Peak Pulse Current	I _{CM}	-5	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation @ T _A = 25°C (Note 4)	P _D	3.2	W
Thermal Resistance, Junction to Ambient Air (Note 4) @T _A = 25°C	R _{θJA}	39	°C/W
Power Dissipation @ T _A = 25°C (Note 5)	P _D	1.7	W
Thermal Resistance, Junction to Ambient Air (Note 5) @T _A = 25°C	R _{θJA}	75	°C/W
Power Dissipation @ T _A = 25°C (Note 6)	P _D	0.74	W
Thermal Resistance, Junction to Ambient Air (Note 6) @T _A = 25°C	R _{θJA}	169	°C/W
Thermal Resistance, Junction to Collector Terminal	R _{θJT}	5.6	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Notes:

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

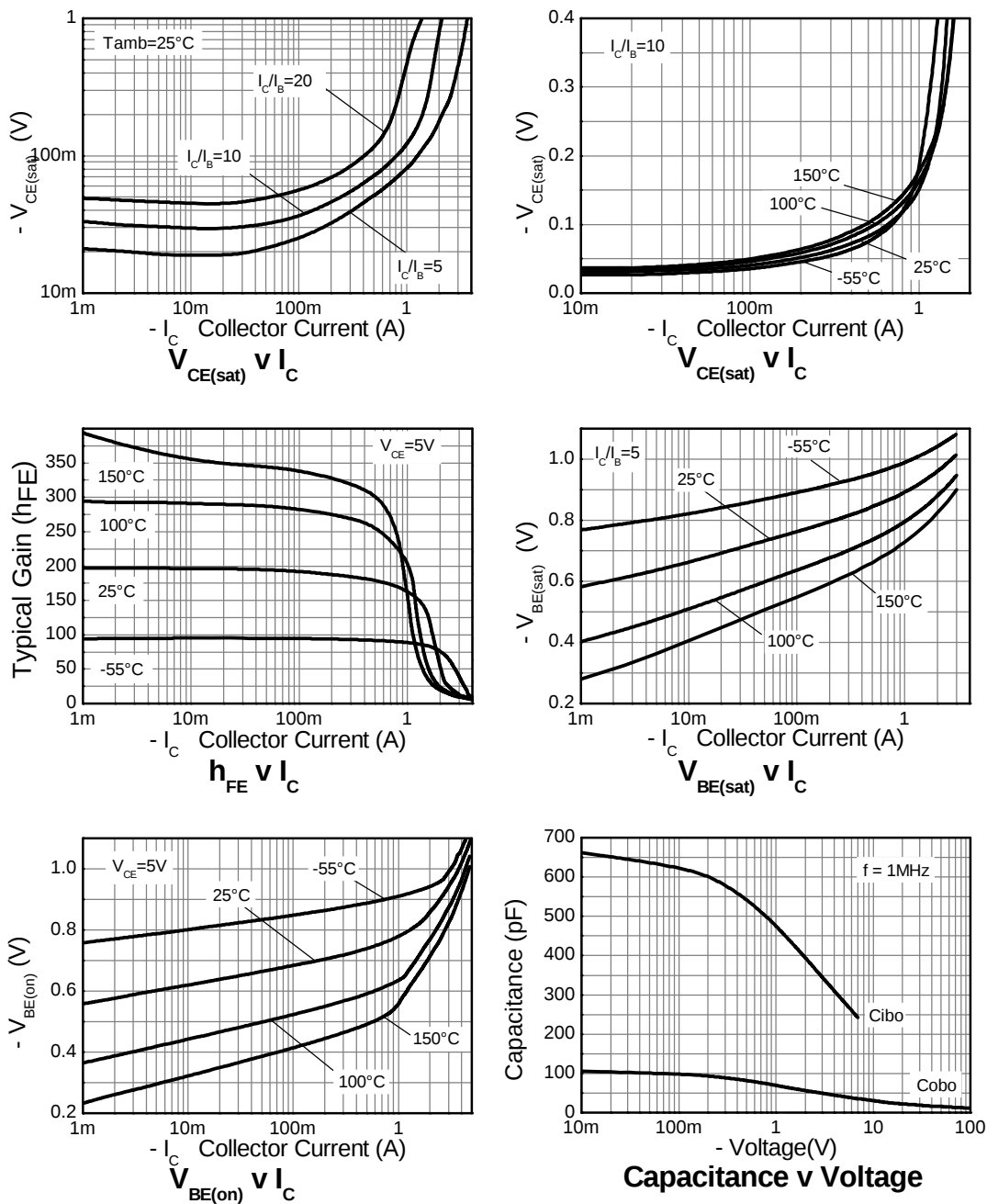


Electrical Characteristics @T_A = 25°C unless otherwise specified

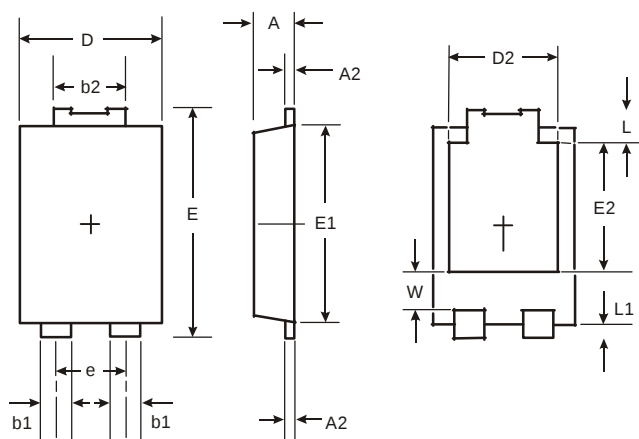
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	V _{(BR)CBO}	-220	-245	–	V	I _C = -100μA
Collector-Emitter Breakdown Voltage (Note 7)	V _{(BR)CEO}	-200	-225	–	V	I _C = -10mA
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	-7	-8.4	–	V	I _E = -100μA
Collector Cutoff Current	I _{CBO}	–	<1	-50 -0.5	nA μA	V _{CB} = -200V V _{CB} = -200V, T _A = 100 °C
Emitter Cutoff Current	I _{EBO}	–	<1	-10	nA	V _{EB} = -6V
Collector-Emitter Saturation Voltage (Note 7)	V _{CE(sat)}	–	-37 -130 -135 -180	-50 -155 -160 -275	mV	I _C = -0.1A, I _B = -10mA I _C = -0.5A, I _B = -25mA I _C = -1A, I _B = -100mA I _C = -2A, I _B = -400mA
Base-Emitter Saturation Voltage (Note 7)	V _{BE(sat)}	–	-955	-1100	mV	I _C = -2A, I _B = -400mA
Base-Emitter Turn-On Voltage (Note 7)	V _{BE(on)}	–	-860	-1000	mV	V _{CE} = -5V, I _C = -2A
DC Current Gain (Note 7)	h _{FE}	100 100 20 –	195 170 50 5	– 300 – –	–	V _{CE} = -5V, I _C = -10mA V _{CE} = -5V, I _C = -1A V _{CE} = -5V, I _C = -2A V _{CE} = -5V, I _C = -5A
Transition Frequency	f _T	–	105	–	MHz	V _{CE} = -10V, I _C = -100mA, f = 50MHz
Output Capacitance	C _{obo}	–	31	–	pF	V _{CB} = -10V, f = 1MHz
Delay Time	t _d	–	21	–	ns	V _{CC} = -50V, I _C = -1A, I _{B1} = -I _{B2} = -100mA
Rise Time	t _r	–	18	–	ns	
Storage Time	t _s	–	680	–	ns	
Fall Time	t _f	–	75	–	ns	

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

Typical Characteristic

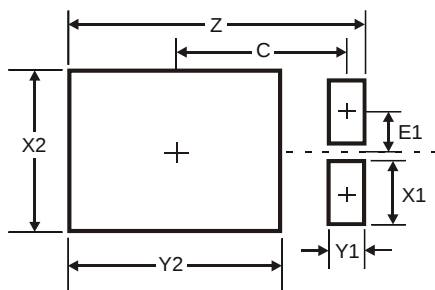


Package Outline Dimensions



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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