



DXTP19020DP5

20V PNP HIGH GAIN TRANSISTOR
PowerDI®5

Features

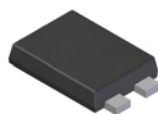
- 43% smaller than SOT223; 60% smaller than TO252
- Maximum height just 1.1mm
- Rated up to 1.3W
- $V_{CE0} = -20V$
- $I_C = -8A$; $I_{CM} = -15A$
- Low Saturation voltage, high gain transistor
- **Lead, Halogen and Antimony Free, RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**

Applications

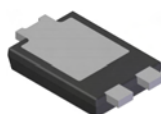
- Load disconnect switch
- Battery charging

Mechanical Data

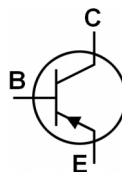
- Case: PowerDI®5
- Case Material: Molded Plastic, "Green" Molding Compound.
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin annealed over Copper leadframe.
Solderable per MIL-STD-202, Method 208 Ⓔ3
- Weight: 0.093 grams (approximate)



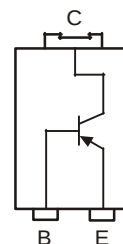
Top View



Bottom View



Device Schematic



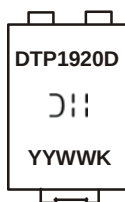
Pin-out diagram

Ordering Information (Note 3)

Part Number	Case	Packaging
DXTP19020DP5-13	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



DTP1920D = Product Type Marking Code
 311 = 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)

PowerDI is a registered trademark of Diodes Incorporated.

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-25	V
Collector-Emitter Voltage	V _{CEO}	-20	V
Emitter-Collector Voltage (Reverse Blocking)	V _{ECO}	-4	V
Emitter-Base Voltage	V _{EBO}	-7	V
Continuous Collector Current	I _C	-8	A
Base Current	I _B	-1	A
Peak Pulse Current	I _{CM}	-15	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation @ T _A = 25°C (Note 4)	P _D	1.3	W
Thermal Resistance, Junction to Ambient Air (Note 4) @T _A = 25°C	R _{θJA}	96.1	°C/W
Power Dissipation @ T _A = 25°C (Note 5)	P _D	3	W
Thermal Resistance, Junction to Ambient Air (Note 5) @T _A = 25°C	R _{θJA}	41.7	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Notes: 4. Device mounted on FR-4 PCB, 2 oz. copper, minimum recommended pad layout.
5. Device mounted on FR-4 PCB, 2 oz. copper, collector pad dimensions 0.42inch².

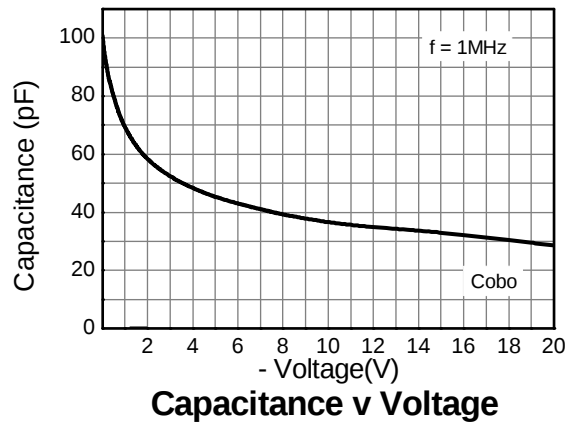
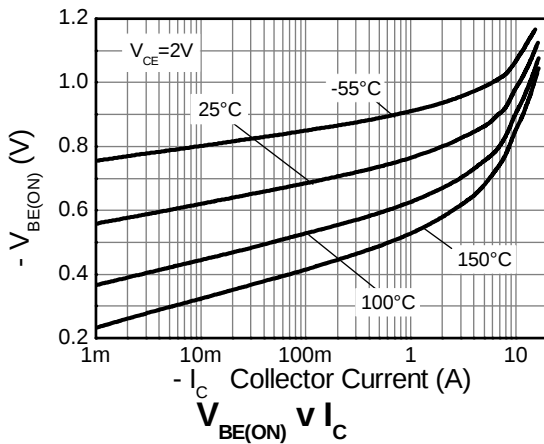
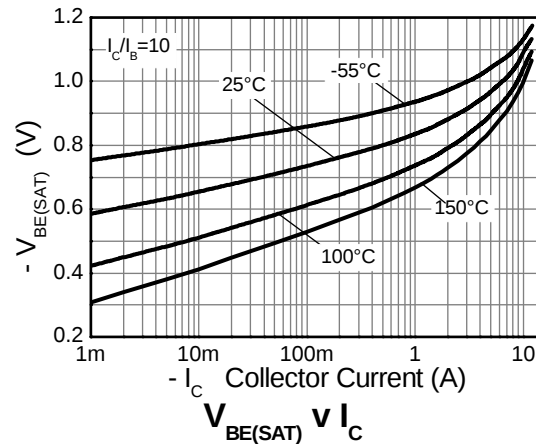
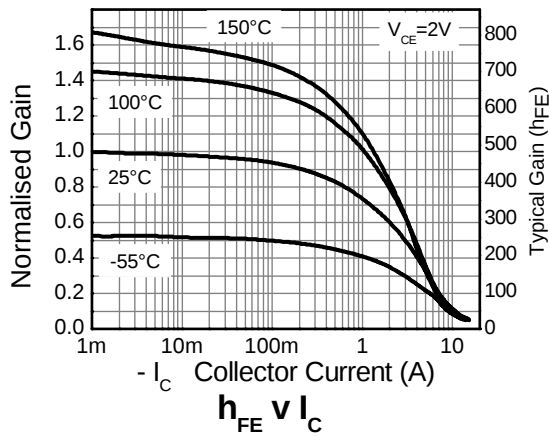
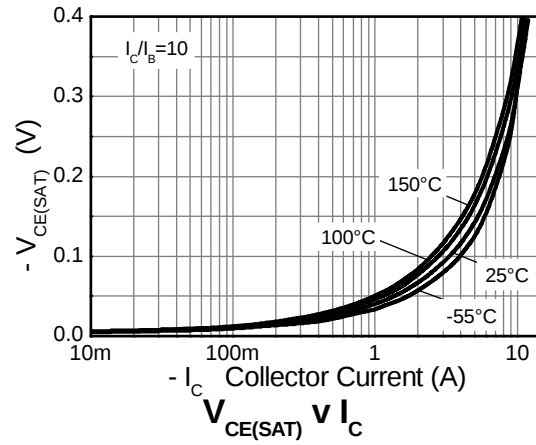
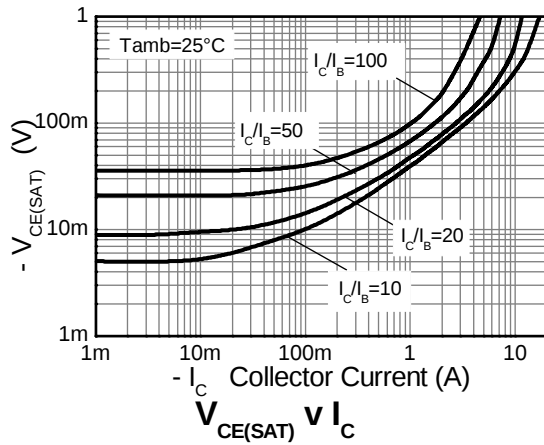
Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	V _{(BR)CBO}	-25	-55	—	V	I _C = -100μA
Collector-Emitter Breakdown Voltage (Note 6)	V _{(BR)CEO}	-20	-50	—	V	I _C = -10mA
Emitter-Collector Breakdown Voltage (Reverse Blocking)	V _{(BR)ECX}	-4	-8.6	—	V	I _E = -100μA, R _{BC} < 1kΩ or 0.25V > V _{CB} > -0.25V
Emitter-Base Breakdown Voltage (Reverse Blocking)	V _{(BR)ECO}	-4	-8.6	—	V	I _E = -100μA
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	-7	-8.2	—	V	I _E = -100μA
Collector Cutoff Current	I _{CBO}	—	<1	50 0.5	nA μA	V _{CB} = -25V V _{CB} = -25V, T _{amb} = 100 °C
Emitter Cutoff Current	I _{EBO}	—	<1	-50	nA	V _{EB} = -5.6V
Collector-Emitter Saturation Voltage (Note 6)	V _{CE(sat)}	—	-40 -97 -115 -220	-47 -130 -145 -275	mV	I _C = -1A, I _B = -100mA I _C = -1A, I _B = -10mA I _C = -2A, I _B = -40mA I _C = -8A, I _B = -800mA
Base-Emitter Saturation Voltage (Note 6)	V _{BE(sat)}	—	-1050	-1150	mV	I _C = -8A, I _B = -800mA
Base-Emitter Turn-On Voltage (Note 6)	V _{BE(on)}	—	-930	-1000	mV	I _C = -8A, V _{CE} = -2V
DC Current Gain (Note 6)	h _{FE}	300 200 45 —	450 290 70 25	900 — — —	—	I _C = -100mA, V _{CE} = -2V I _C = -2A, V _{CE} = -2V I _C = -8A, V _{CE} = -2V I _C = -15A, V _{CE} = -2V
Transition Frequency	f _T	—	176	—	MHz	I _C = -50mA, V _{CE} = -10V, f = 50MHz
Input Capacitance (Note 6)	C _{ibo}	—	—	400	pF	V _{EB} = -0.5V, f = 1MHz
Output Capacitance (Note 6)	C _{obo}	—	36	45	pF	V _{CB} = -10V, f = 1MHz
Delay Time	t _d	—	23	—	ns	I _C = -1A, V _{CC} = -10V, I _{B1} = -I _{B2} = -50mA
Rise Time	t _r	—	18.4	—		
Storage Time	t _s	—	266	—		
Fall Time	t _f	—	49.6	—		

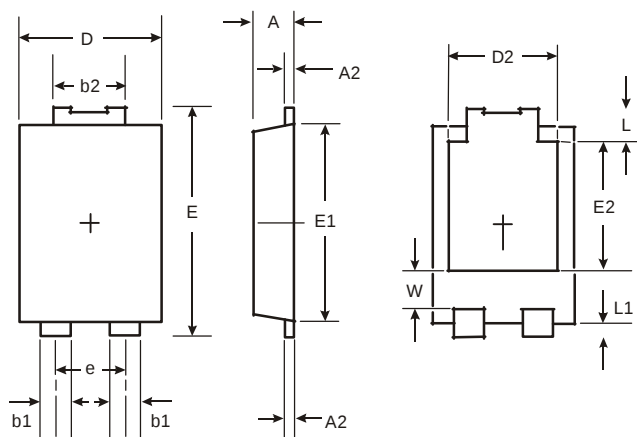
Notes: 6. Pulse Test: Pulse width ≤300μs. Duty cycle ≤2.0%.

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Typical Characteristic

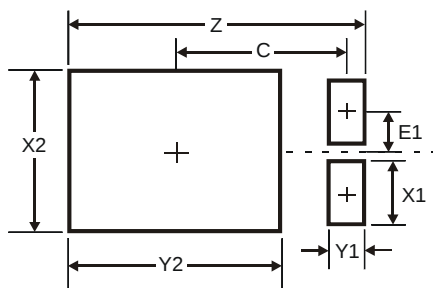


Package Outline Dimensions



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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