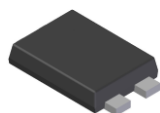


## Features

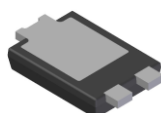
- 43% smaller than SOT223; 60% smaller than TO252
- Maximum height just 1.1mm
- Rated up to 1.3W
- $V_{CE0} = -20V$
- $I_C = -8A$ ;  $I_{CM} = -15A$
- Low saturation voltage, high gain transistor
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

## Features

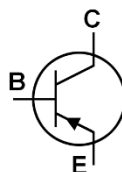
- Load disconnect switches
- Battery charging



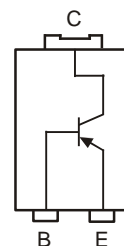
Top View



Bottom View



Device Schematic



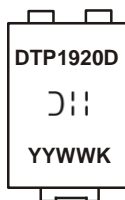
Pin-out diagram

## Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Quantity	Carrier
DXTP19020DP5-13	PowerDI5	DTP1920D	13	12	5,000	Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



- DTP1920D = Product Type Marking Code
- ⌋|| = Manufacturers' Code Marking
- K = Factory Designator
- YYWW = Date Code Marking
- YY = Last Digit of Year (ex: 23 = 2023)
- WW = Week code (01 to 53)

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-25	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-20	V
Emitter-Collector Voltage (Reverse Blocking)	V <sub>ECO</sub>	-4	V
Emitter-Base Voltage	V <sub>EBO</sub>	-7	V
Continuous Collector Current	I <sub>C</sub>	-8	A
Base Current	I <sub>B</sub>	-1	A
Peak Pulse Current	I <sub>CM</sub>	-15	A

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	1,3	W
Power Dissipation (Note 6)	P <sub>D</sub>	3	W
Thermal Resistance, Junction to Ambient Air (Note 5)	R <sub>θJA</sub>	96.1	°C/W
Thermal Resistance, Junction to Ambient Air (Note 6)	R <sub>θJA</sub>	41.7	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

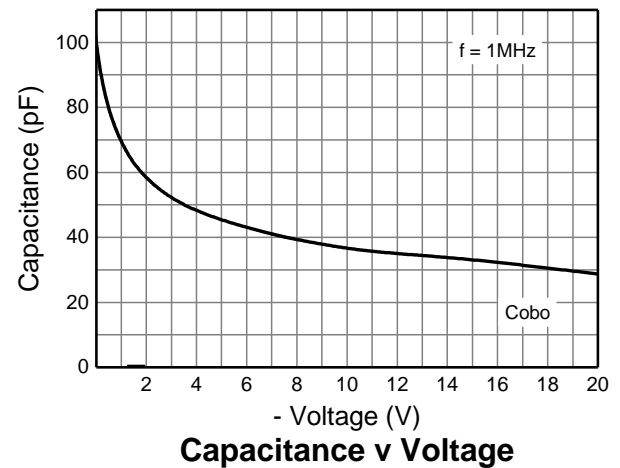
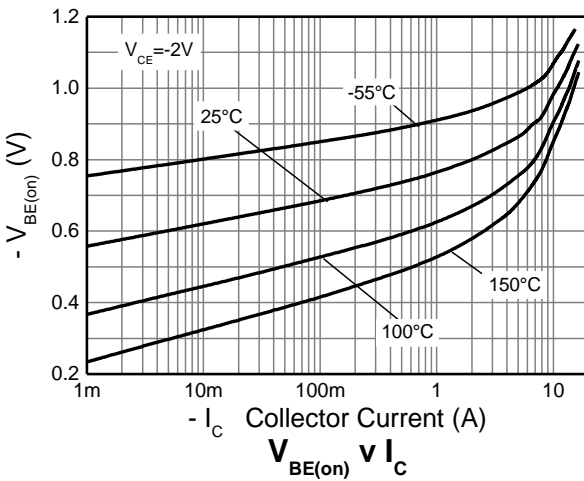
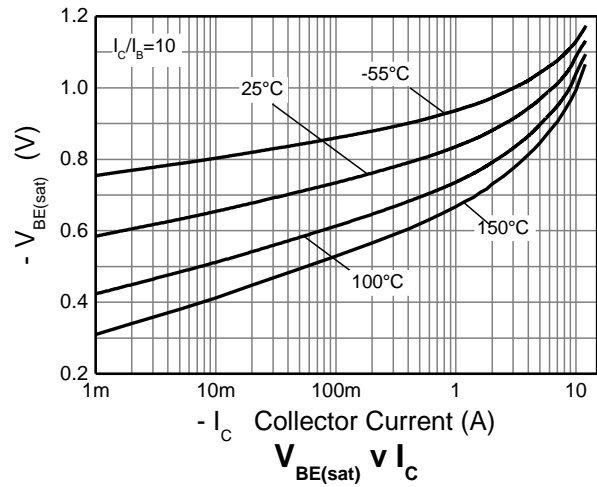
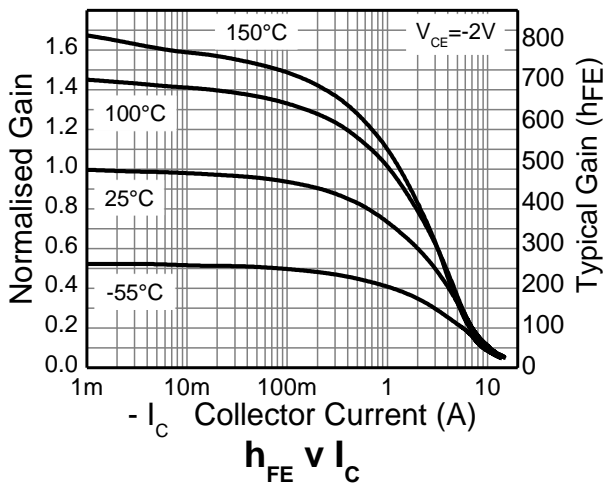
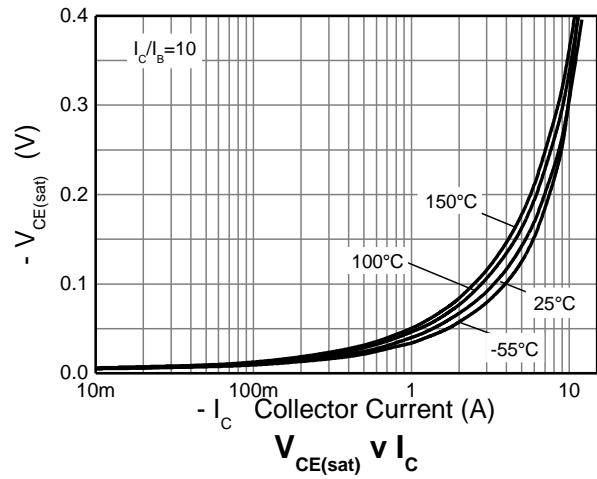
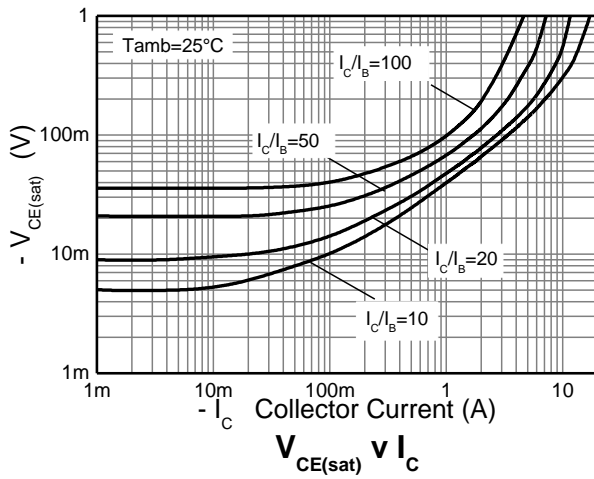
Notes: 5. Device mounted on FR-4 PCB, 2 oz. copper, minimum recommended pad layout.  
6. Device mounted on FR-4 PCB, 2 oz. copper, collector pad dimensions 0.42inch<sup>2</sup>.

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

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

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

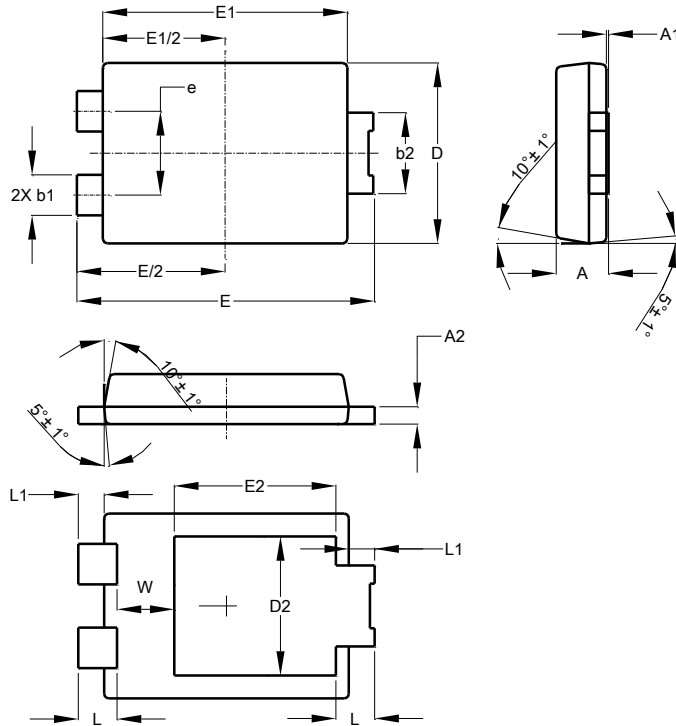
**Typical Characteristic**



**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**PowerDI5**

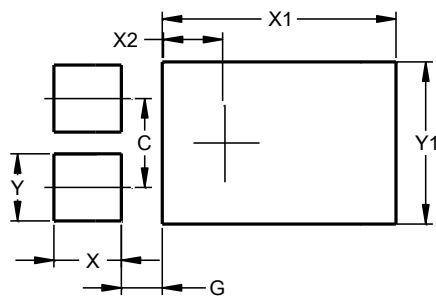


PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**PowerDI5**



Dimensions	Value (in mm)
C	1.840
G	0.852
X	1.400
X1	4.860
X2	1.310
Y	1.390
Y1	3.360

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