



**DXTP560BP5**

**500V PNP SILICON PLANAR HIGH VOLTAGE TRANSISTOR  
POWERDI®5**

**Features and Benefits**

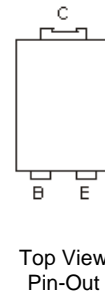
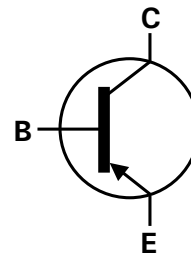
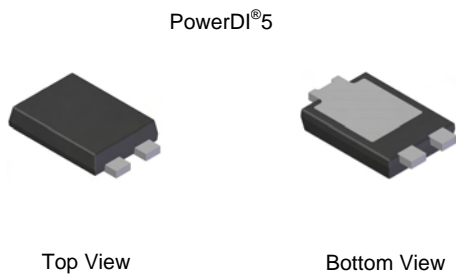
- $BV_{CEO} > -500V$
- $I_C = -150mA$  Continuous Collector Current
- 47% smaller than SOT223; 60% smaller than TO252 (D-PAK)
- Profile height just 1.1mm for thin application
- $R_{\theta JA}$  efficient giving high  $P_D$  rating up to 2.8W
- **“Lead Free”, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free, “Green” Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**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)

**Applications**

- Gate driver
- Startup switch in offline lighting
- Motor Control

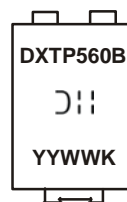


**Ordering Information** (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DXTP560BP5-13	DXTP560B	13	16	5,000

- Notes:
1. No purposefully added lead.
  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>

**Marking Information**



DXTP560B = Product Type Marking Code  
 Ⓜ = Manufacturers' Code Marking  
 K = Factory Designator  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 10 for 2010)  
 WW = Week code (01 - 53)

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

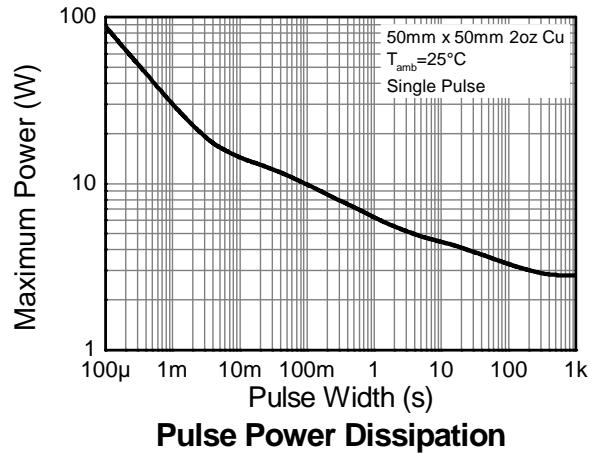
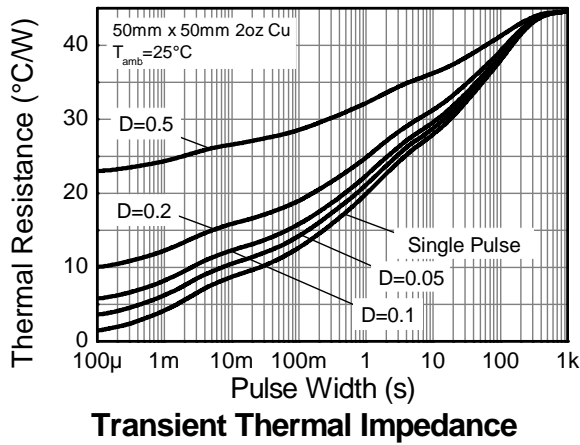
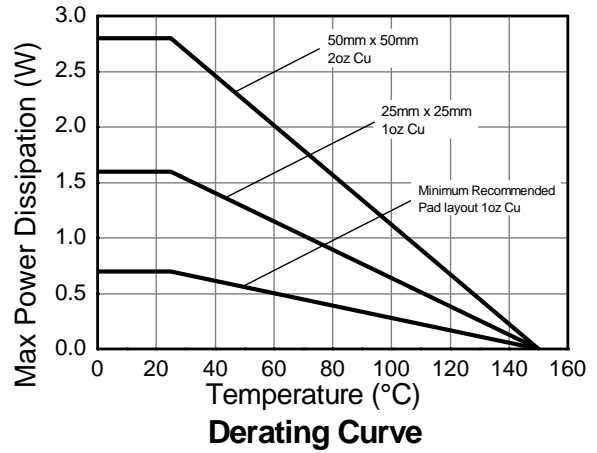
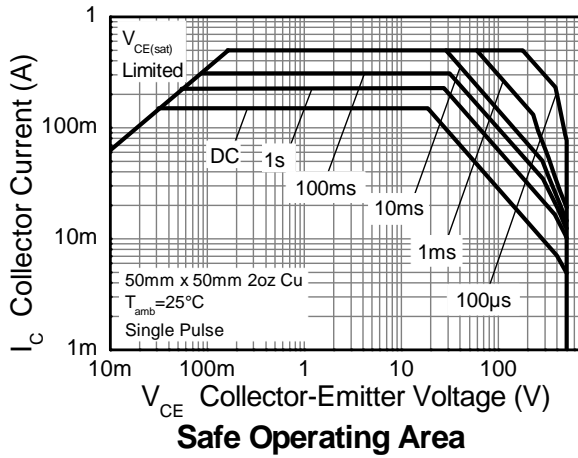
Characteristic		Symbol	Limit	Unit
Collector-Base Voltage		$V_{CBO}$	-500	V
Collector-Emitter Voltage		$V_{CEO}$	-500	
Emitter-Base Voltage		$V_{EBO}$	-7	
Continuous Collector Current	(Note 4)	$I_C$	-150	mA
Peak Pulse Current		$I_{CM}$	-500	

**Thermal Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Note 4)	$P_D$	2.8	W mW/ $^\circ\text{C}$
			22.4	
	(Note 5)		1.3	
			10.4	
	(Note 6)		0.7	
			5.6	
Thermal Resistance, Junction to Ambient	(Note 4)	$R_{\theta JA}$	45	$^\circ\text{C/W}$
	(Note 5)		96	
	(Note 6)		179	
Thermal Resistance, Junction to Lead	(Note 7)	$R_{\theta JL}$	14	$^\circ\text{C/W}$
Operating and Storage Temperature Range		$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

- Notes:
4. For a device surface mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions; the device is measured when operating in a steady-state condition. The entire exposed collector pad is attached to the heatsink.
  5. Same as note (4), except the device is mounted on 25mm x 25mm 1oz copper.
  6. Same as note (4), except the device is mounted on a minimum recommended pad layout of 1oz copper.
  7. Thermal resistance from junction to solder-point (at the end of the collector lead).

**Thermal Characteristics**

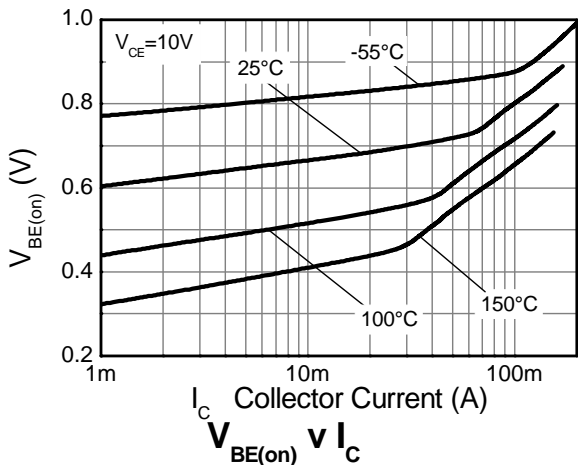
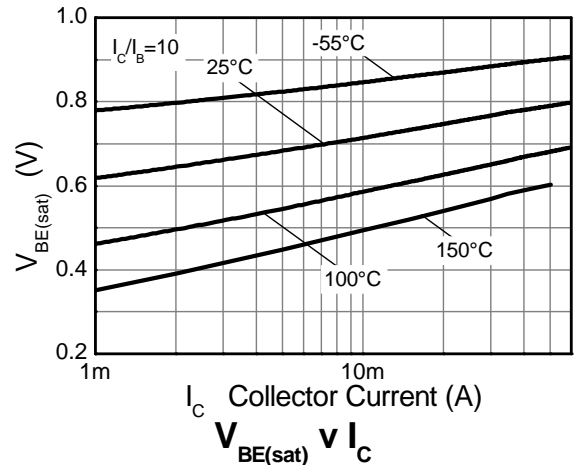
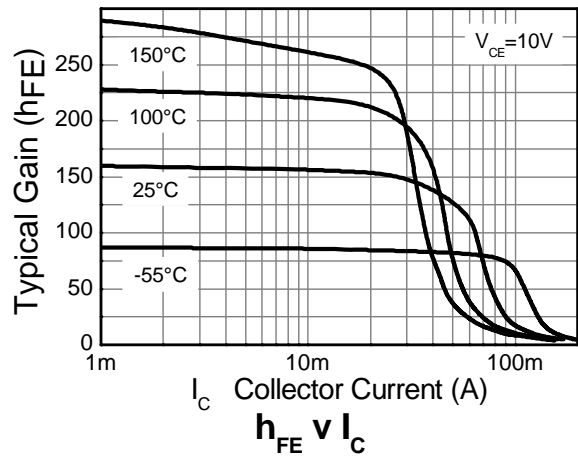
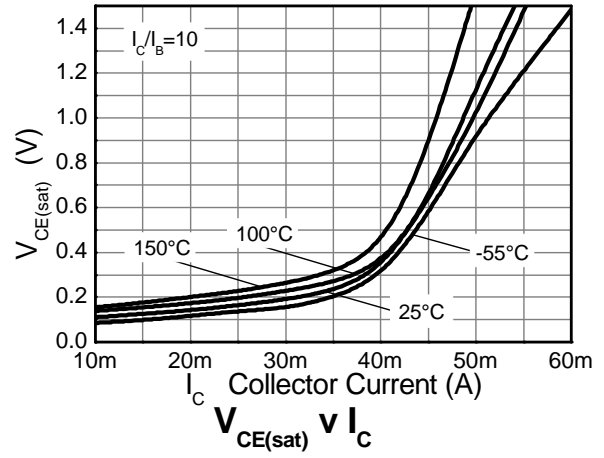
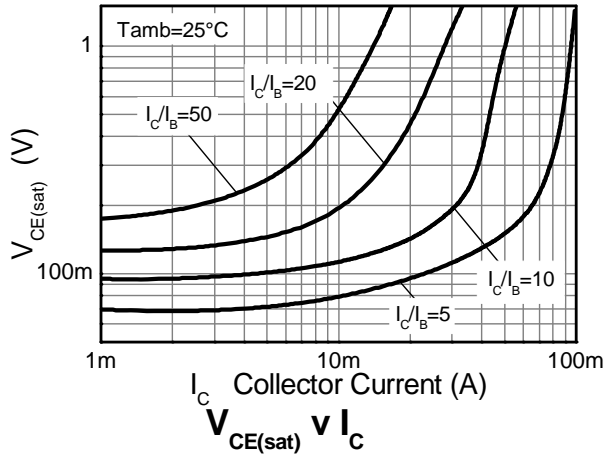


**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

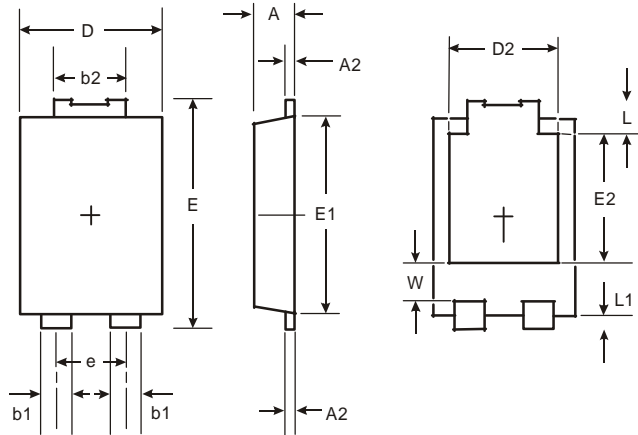
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-500	—	—	V	I <sub>C</sub> = -100μA
Collector-Emitter Breakdown Voltage (Note 8)	BV <sub>CEO</sub>	-500	—	—	V	I <sub>C</sub> = -10mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-7	—	—	V	I <sub>E</sub> = -100μA
Collector Cutoff Current	I <sub>CBO</sub>	—	—	-100	nA	V <sub>CB</sub> = -500V
Collector Cutoff Current	I <sub>CES</sub>	—	—	-100	nA	V <sub>CE</sub> = -500V
Emitter Cutoff Current	I <sub>EBO</sub>	—	—	-100	nA	V <sub>EB</sub> = -5.6V
Collector-Emitter Saturation Voltage (Note 8)	V <sub>CE(sat)</sub>	—	—	-200 -500	mV	I <sub>C</sub> = -20mA, I <sub>B</sub> = -2mA I <sub>C</sub> = -50mA, I <sub>B</sub> = -10mA
Base-Emitter Saturation Voltage (Note 8)	V <sub>BE(sat)</sub>	—	—	-900	mV	I <sub>C</sub> = -50mA, I <sub>B</sub> = -10mA
Base-Emitter Turn-On Voltage (Note 8)	V <sub>BE(on)</sub>	—	—	-900	mV	V <sub>CE</sub> = -10V, I <sub>C</sub> = -50mA
DC Current Gain (Note 8)	h <sub>FE</sub>	100 80 —	— — 15	300 300 —	—	V <sub>CE</sub> = -10V, I <sub>C</sub> = -1mA V <sub>CE</sub> = -10V, I <sub>C</sub> = -50mA V <sub>CE</sub> = -10V, I <sub>C</sub> = -100mA
Transition Frequency	f <sub>T</sub>	60	—	—	MHz	V <sub>CE</sub> = -20V, I <sub>C</sub> = -10mA, f = 50MHz
Output Capacitance	C <sub>obo</sub>	—	—	8	pF	V <sub>CB</sub> = -20V, f = 1MHz
Switching Times	t <sub>on</sub> t <sub>off</sub>	— —	110 1500	— —	ns	V <sub>CC</sub> = -100V, I <sub>C</sub> = -50mA, I <sub>B1</sub> = 5mA, I <sub>B2</sub> = -10mA

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

**Typical Electrical Characteristics**

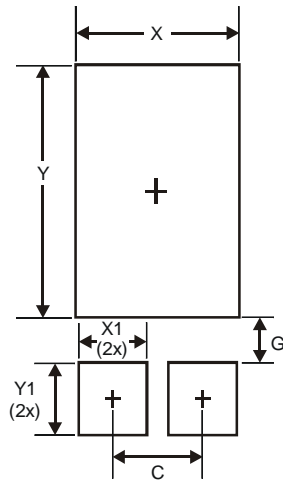


**Package Outline Dimensions**



POWERDI <sup>®</sup> 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)
C	1.840
G	0.852
X	3.360
X1	1.390
Y	4.860
Y1	1.400

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