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**DXTP560BP5**

**500V PNP SILICON PLANAR HIGH VOLTAGE TRANSISTOR  
POWERDI<sup>®</sup>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<sup>®</sup>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

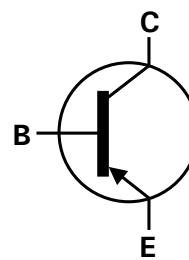
- Gate driver
- Startup switch in offline lighting
- Motor Control



Top View



Bottom View



Device Schematic



Top View  
Pin-Out

## 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  
DII = 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)

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**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

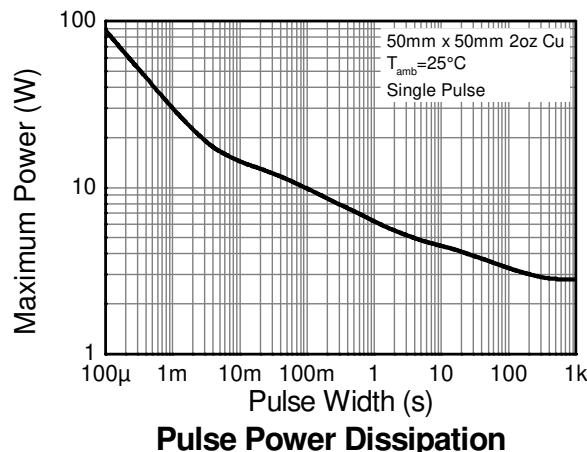
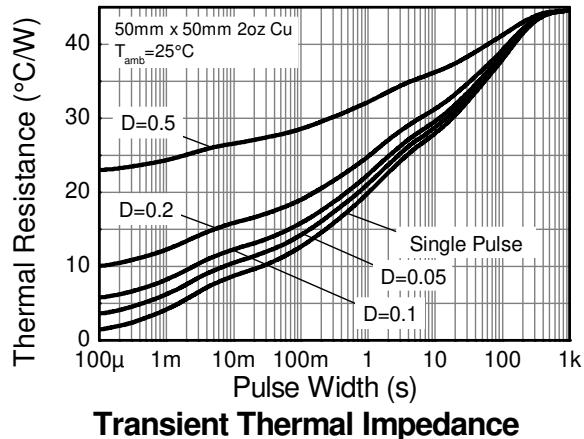
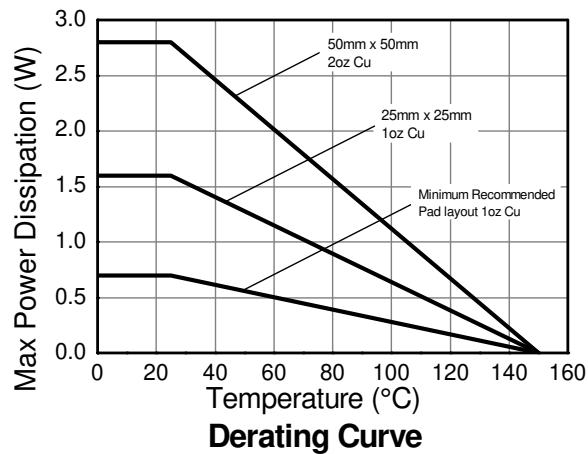
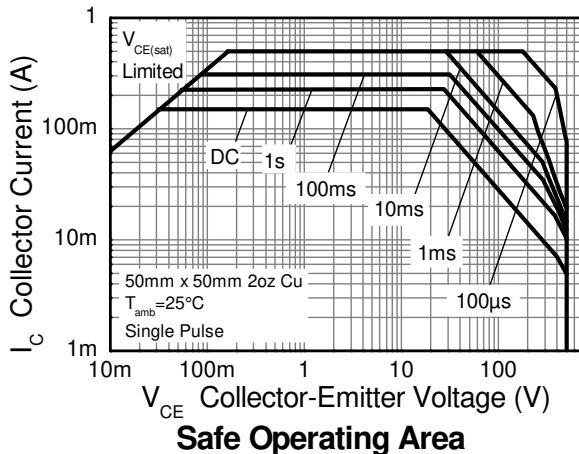
Characteristic	Symbol	Value	Unit
Power Dissipation Linear Derating Factor	$P_D$	2.8	W mW/°C
		22.4	
		1.3	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	10.4	°C/W
		0.7	
		5.6	
Thermal Resistance, Junction to Lead	$R_{\theta JL}$	45	°C/W
		96	
		179	
Operating and Storage Temperature Range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

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## Thermal Characteristics



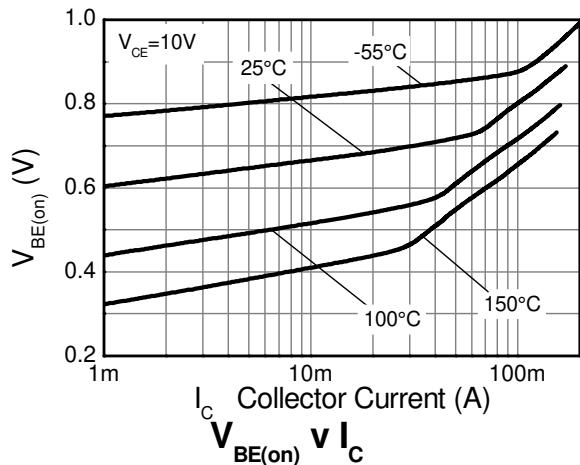
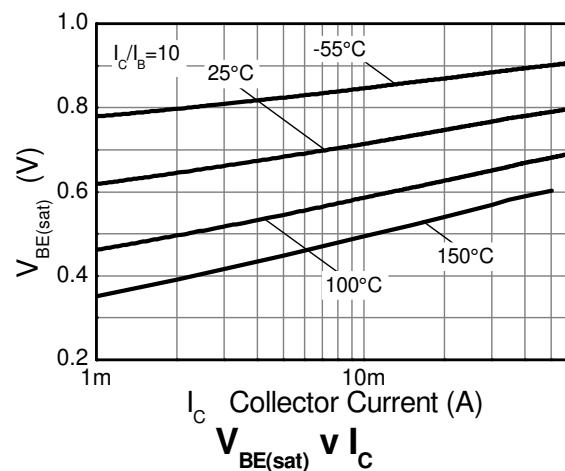
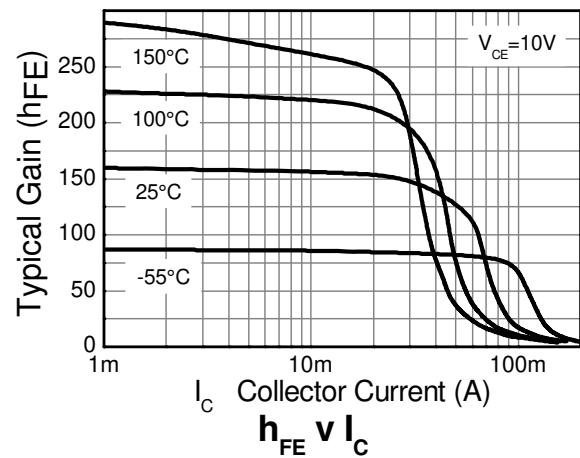
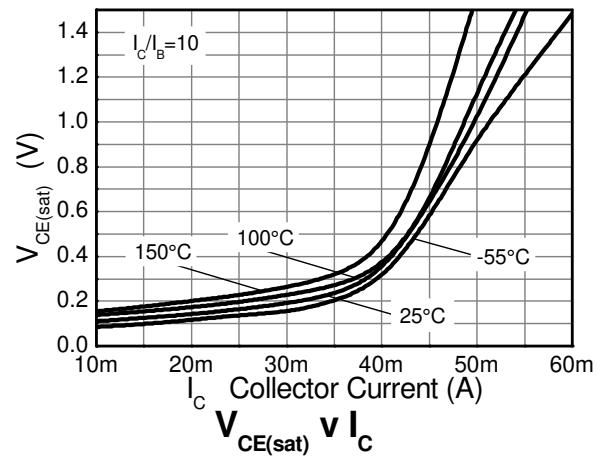
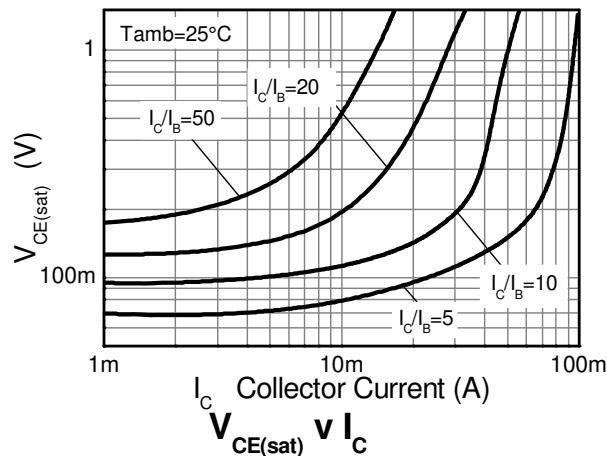
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**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$\text{BV}_{\text{CBO}}$	-500	—	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 8)	$\text{BV}_{\text{CEO}}$	-500	—	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	$\text{BV}_{\text{EBO}}$	-7	—	—	V	$I_E = -100\mu\text{A}$
Collector Cutoff Current	$I_{\text{CBO}}$	—	—	-100	nA	$V_{\text{CB}} = -500\text{V}$
Collector Cutoff Current	$I_{\text{CES}}$	—	—	-100	nA	$V_{\text{CE}} = -500\text{V}$
Emitter Cutoff Current	$I_{\text{EBO}}$	—	—	-100	nA	$V_{\text{EB}} = -5.6\text{V}$
Collector-Emitter Saturation Voltage (Note 8)	$V_{\text{CE}(\text{sat})}$	—	—	-200	mV	$I_C = -20\text{mA}, I_B = -2\text{mA}$
		—	—	-500	mV	$I_C = -50\text{mA}, I_B = -10\text{mA}$
Base-Emitter Saturation Voltage (Note 8)	$V_{\text{BE}(\text{sat})}$	—	—	-900	mV	$I_C = -50\text{mA}, I_B = -10\text{mA}$
Base-Emitter Turn-On Voltage (Note 8)	$V_{\text{BE}(\text{on})}$	—	—	-900	mV	$V_{\text{CE}} = -10\text{V}, I_C = -50\text{mA}$
DC Current Gain (Note 8)	$\text{h}_{\text{FE}}$	100 80 —	— — 15	300 300 —	—	$V_{\text{CE}} = -10\text{V}, I_C = -1\text{mA}$ $V_{\text{CE}} = -10\text{V}, I_C = -50\text{mA}$ $V_{\text{CE}} = -10\text{V}, I_C = -100\text{mA}$
Transition Frequency	$f_T$	60	—	—	MHz	$V_{\text{CE}} = -20\text{V}, I_C = -10\text{mA}, f = 50\text{MHz}$
Output Capacitance	$C_{\text{obo}}$	—	—	8	pF	$V_{\text{CB}} = -20\text{V}, f = 1\text{MHz}$
Switching Times	$t_{\text{on}}$ $t_{\text{off}}$	—	110 1500	—	ns	$V_{\text{CC}} = -100\text{V}, I_C = -50\text{mA}, I_{B1} = 5\text{mA}, I_{B2} = -10\text{mA}$

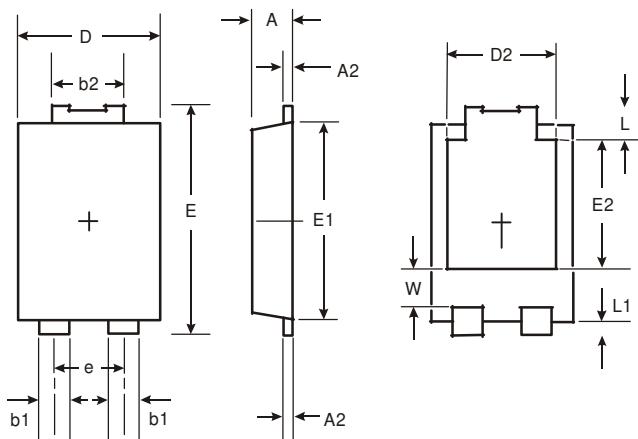
Notes: 8. Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

## Typical Electrical Characteristics



**DXTP560BP5**

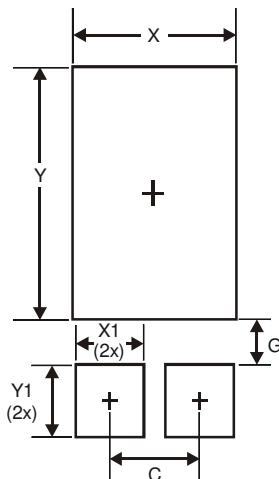
## Package Outline Dimensions



POWERDI®5		
Dim	Min	Max
<b>A</b>	1.05	1.15
<b>A2</b>	0.33	0.43
<b>b1</b>	0.80	0.99
<b>b2</b>	1.70	1.88
<b>D</b>	3.90	4.05
<b>D2</b>	3.054 Typ	
<b>E</b>	6.40	6.60
<b>e</b>	1.84 Typ	
<b>E1</b>	5.30	5.45
<b>E2</b>	3.549 Typ	
<b>L</b>	0.75	0.95
<b>L1</b>	0.50	0.65
<b>W</b>	1.10	1.41

All Dimensions in mm

## Suggested Pad Layout



Dimensions	Value (in mm)
<b>C</b>	1.840
<b>G</b>	0.852
<b>X</b>	3.360
<b>X1</b>	1.390
<b>Y</b>	4.860
<b>Y1</b>	1.400

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