



DXTP560BP5

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

Features and Benefits

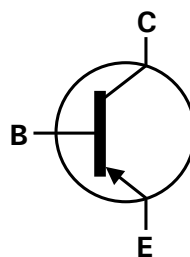
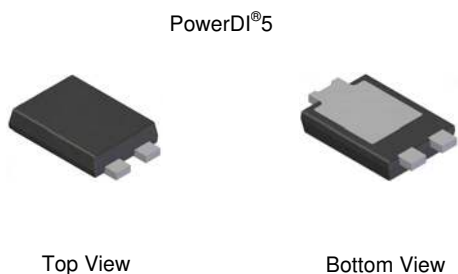
- $BV_{CEO} > -500V$
- $I_C = -150mA$ Continuous Collector Current
- 47% smaller than SOT223; 60% smaller than TO252 (D-PAK)
- Profile height just 1.1mm for thin application
- $R_{\theta JA}$ efficient giving high P_D rating up to 2.8W
- **“Lead Free”, RoHS Compliant (Note 1)**
- **Halogen and Antimony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



Device Schematic



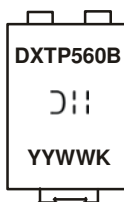
Top View Pin-Out

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
 ⓂⓂ = 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

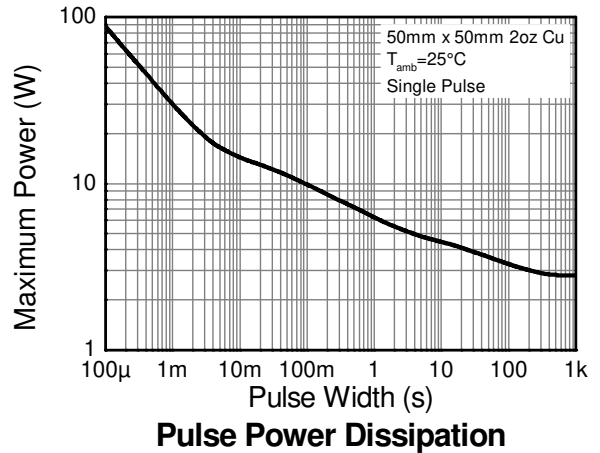
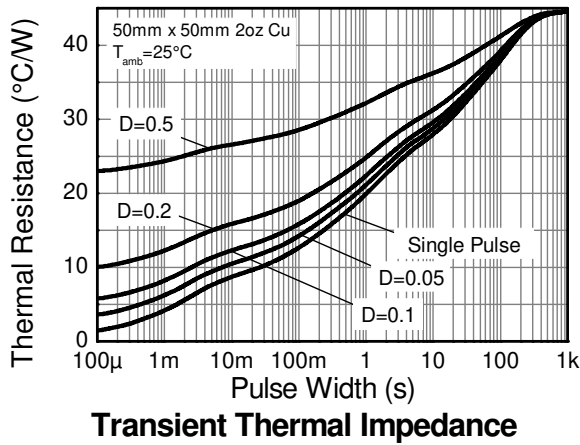
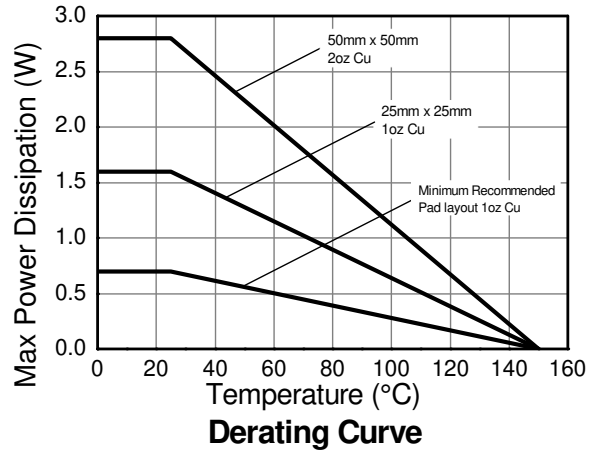
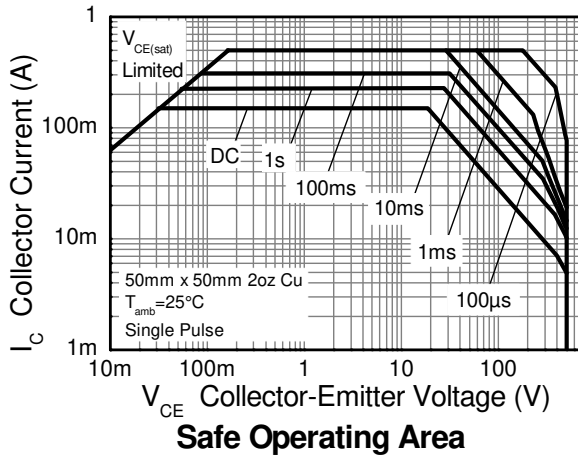
Characteristic		Symbol	Limit	Unit
Collector-Base Voltage		V_{CBO}	-500	V
Collector-Emitter Voltage		V_{CEO}	-500	
Emitter-Base Voltage		V_{EBO}	-7	
Continuous Collector Current	(Note 4)	I_C	-150	mA
Peak Pulse Current		I_{CM}	-500	

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

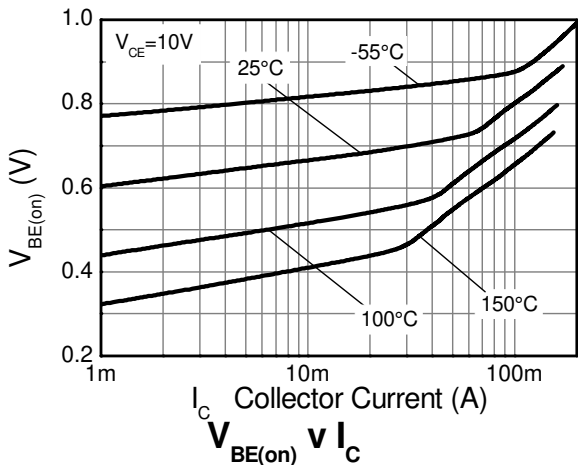
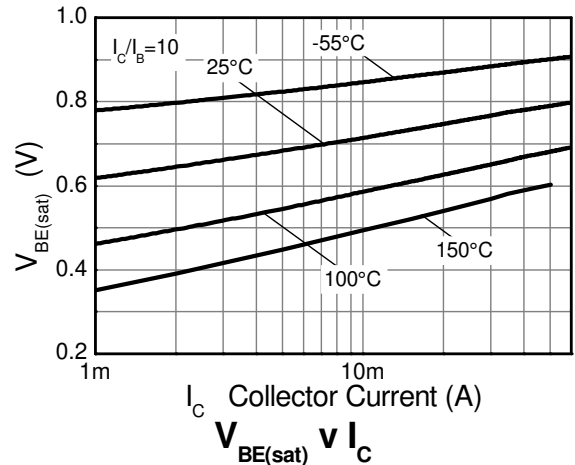
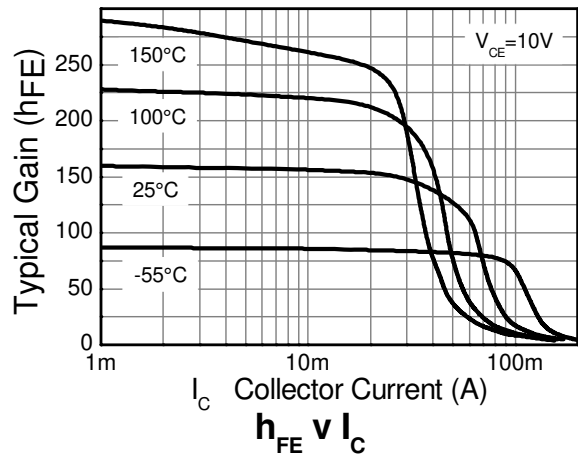
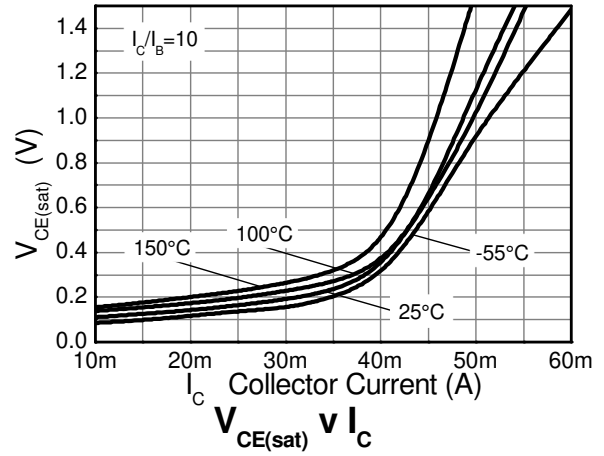
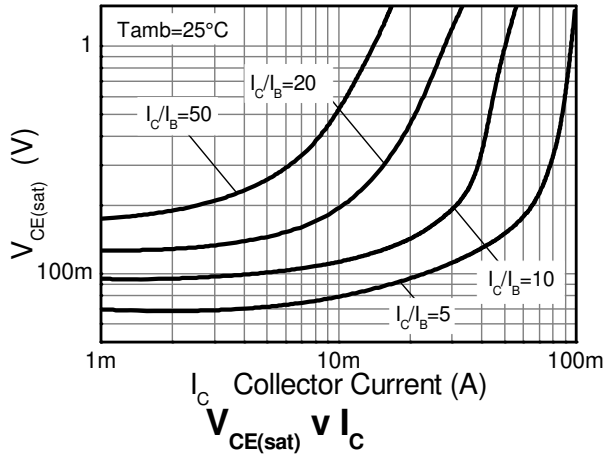


Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

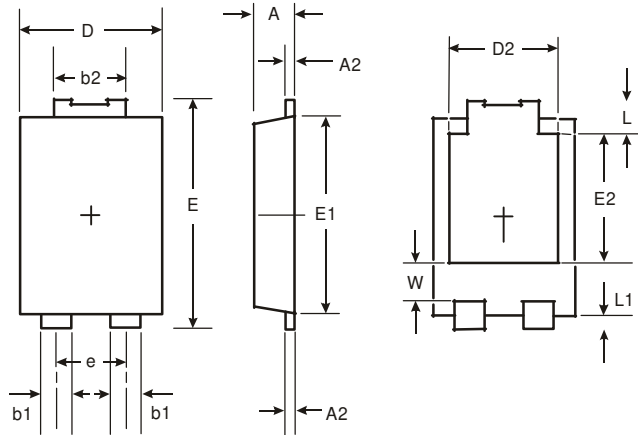
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-500	—	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 8)	BV_{CEO}	-500	—	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	—	—	V	$I_E = -100\mu\text{A}$
Collector Cutoff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

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

Typical Electrical Characteristics

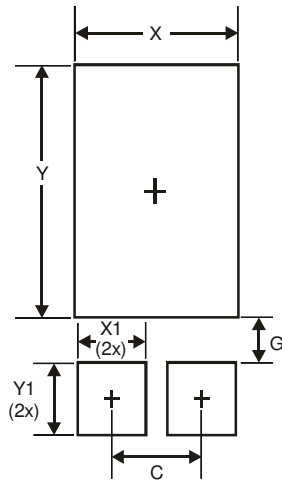


Package Outline Dimensions



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)
C	1.840
G	0.852
X	3.360
X1	1.390
Y	4.860
Y1	1.400

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