

60V PNP LOW-SATURATION MEDIUM POWER TRANSISTOR IN PowerDI5060-8

Features

- $BV_{CEO} > -60V$
- $I_C = -3A$ Continuous Collector Current
- $I_{CM} = -8A$ Peak Pulse Current
- $R_{CE(sat)} < 120m\Omega$
- Rated to $+175^\circ C$ —Ideal for High Ambient Temperature Environments
- Complementary Part [DXTN3C60PS](#)
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.
<https://www.diodes.com/quality/product-definitions/>
- An automotive-compliant part is available under a separate datasheet ([DXTP3C60PSQ](#))

Mechanical Data

- Package: PowerDI[®]5060-8
- Package 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 Lead frame. Solderable per MIL-STD-202, Method 208 
- Weight: 0.097 grams (Approximate)

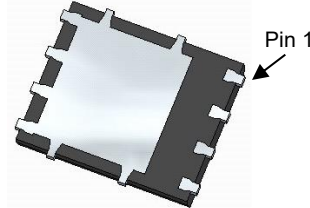
Applications

- Power management
- Load switches
- Linear mode voltage regulators
- Backlighting applications

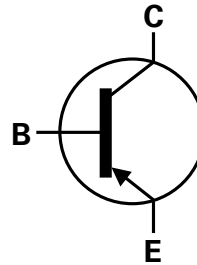
PowerDI5060-8



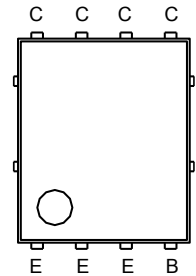
Top View



Bottom View



Internal Schematic



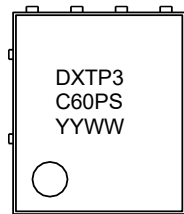
Top View
Pin Configuration

Ordering Information (Note 4)

Orderable Part Number	Marking	Package	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
DXTP3C60PS-13	DXTP3C60PS	PowerDI5060-8	13	12	2500	Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
 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



DXTP3 = Product Type Marking Code
C60PS = Product Type Marking Code
YYWW = Date Code Marking
YY = Last Two Digits of Year (ex: 26 = 2026)
WW = Week Code (01 to 53)

PowerDI[®] is a registered trademark of Diodes Incorporated in the United States and other countries.

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-60	V
Collector-Emitter Voltage	V _{CEO}	-60	V
Emitter-Base Voltage	V _{EBO}	-7	V
Base Current	I _B	-1	A
Continuous Collector Current	I _C	-3	A
Peak Pulse Collector Current	I _{CM}	-8	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	2.5	W
Thermal Resistance, Junction to Ambient	R _{θJA}	60	°C/W
		140	
Thermal Resistance, Junction to Case	R _{θJC}	2	°C/W
		12	
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +175	°C

ESD Ratings (Note 8)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge – Human Body Model	ESD HBM	4000	V	3A
Electrostatic Discharge – Machine Model	ESD MM	400	V	C
Electrostatic Discharge – Charged Device Model	ESD CDM	1000	V	3C

- Notes:
5. For a device mounted with the collector lead on 25mm × 25mm 2oz copper that is on single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady state.
 6. Same as Note 5, except mounted on minimum recommended pad layout.
 7. Thermal resistance from junction to the top of the case.
 8. Refer to JEDEC specifications JESD22-A114, JESD22-A115 and JS-002.

Thermal Characteristics and Derating Information

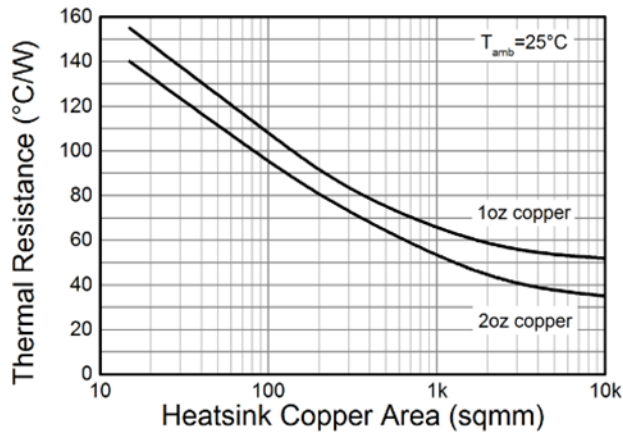


Fig 1. Thermal Resistance vs. Copper Area

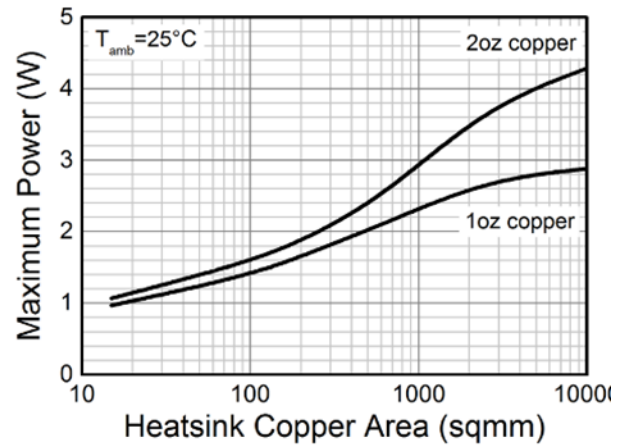


Fig 2. Max Power Dissipation vs. Copper Area

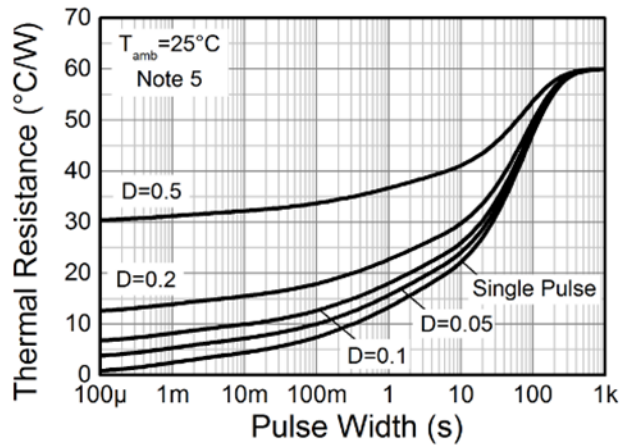


Fig 3. Transient Thermal Impedance

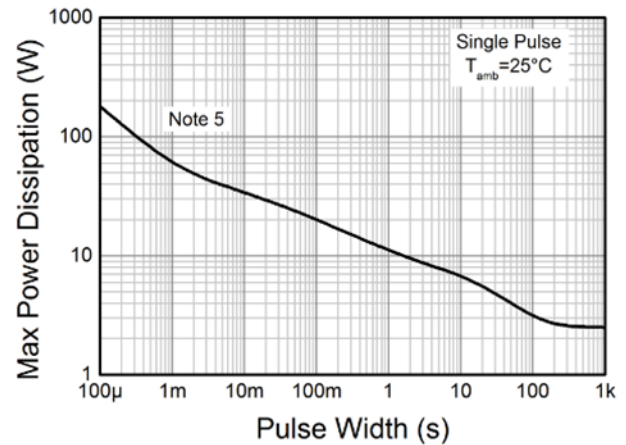


Fig 4. Pulse Power Dissipation

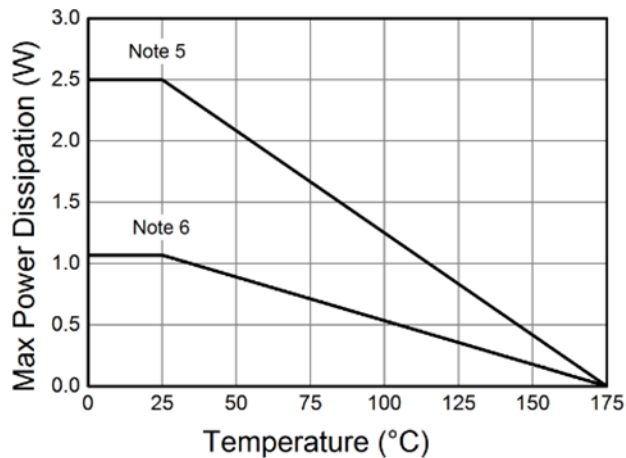


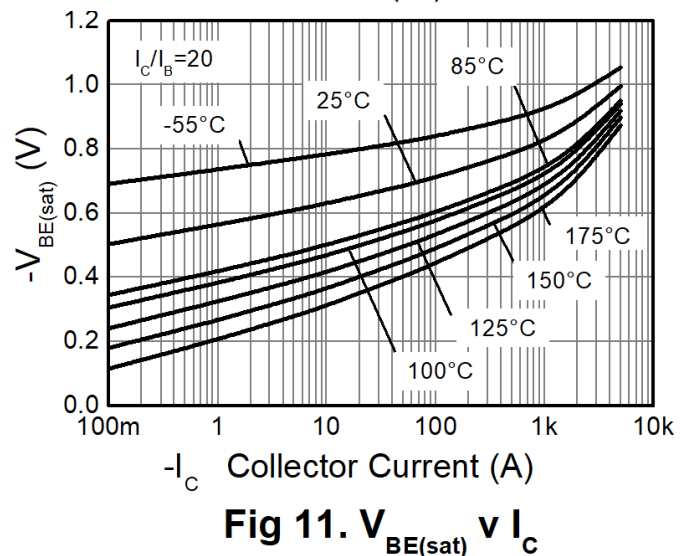
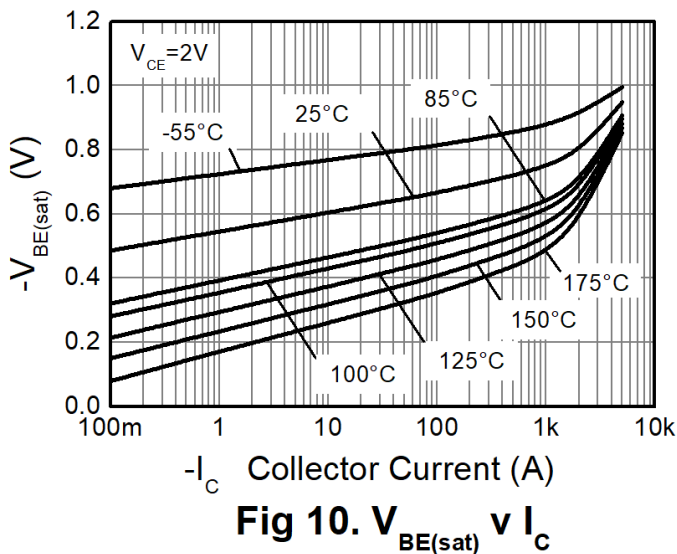
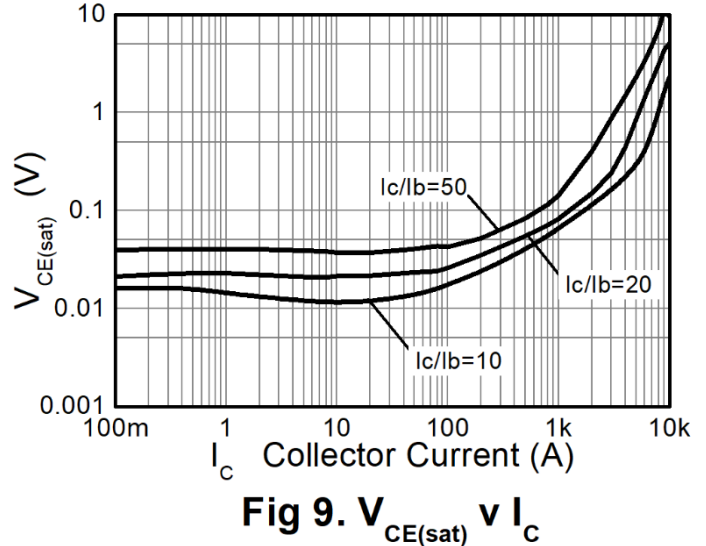
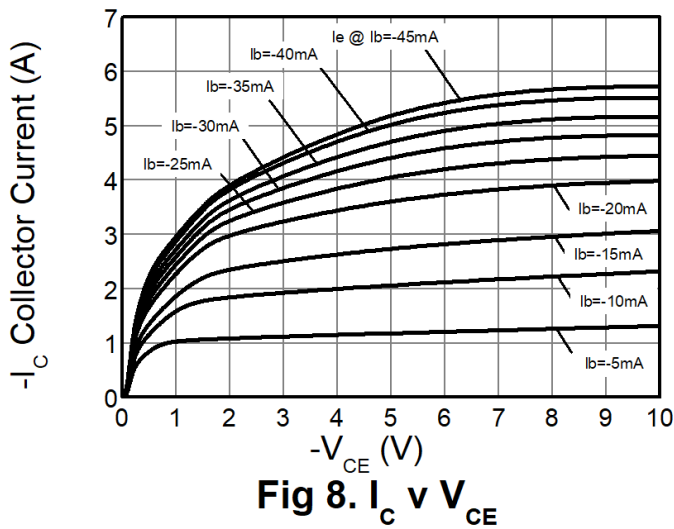
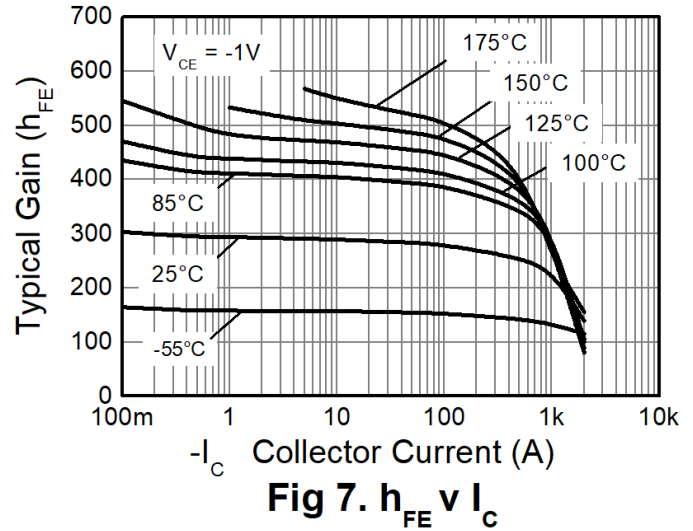
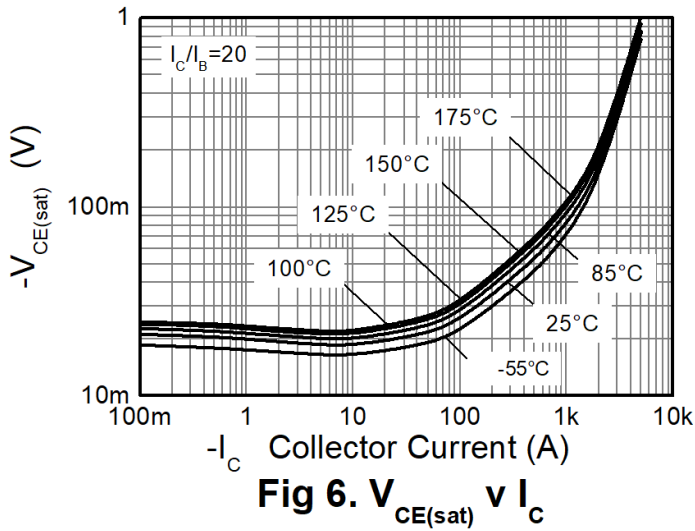
Fig 5. Derating Curve

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV _{CBO}	-60	—	—	V	I _C = -100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV _{CEO}	-60	—	—	V	I _C = -10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	-7	—	—	V	I _E = -100μA
Collector-Base Cutoff Current	I _{CBO}	—	—	-100	nA	V _{CB} = -48V
		—	—	-50	μA	V _{CB} = -48V @ T _J = +150°C
Emitter Cutoff Current	I _{EBO}	—	—	-100	nA	V _{EB} = -7V
Collector-Emitter Cutoff Current	I _{CES}	—	—	-100	nA	V _{CES} = -48V
ON CHARACTERISTICS (Note 9)						
DC Current Gain	h _{FE}	150	250	—	—	I _C = -500mA, V _{CE} = -2V
		150	225	—		I _C = -1A, V _{CE} = -2V
		80	130	—		I _C = -2A, V _{CE} = -2V
		35	75	—		I _C = -3A, V _{CE} = -2V
Collector-Emitter Saturation Voltage	V _{CE(sat)}	—	-100	-225	mV	I _C = -1A, I _B = -50mA
		—	-240	-360		I _C = -3A, I _B = -300mA
Collector-Emitter Saturation Resistance	R _{CE(sat)}	—	100	225	mΩ	I _C = -1A, I _B = -50mA
		—	80	120		I _C = -3A, I _B = -300mA
Base-Emitter Saturation Voltage	V _{BE(sat)}	—	-0.8	-0.95	V	I _C = -1A, I _B = -50mA
		—	-1.02	-1.2		I _C = -2A, I _B = -200mA
Base-Emitter Turn-On Voltage	V _{BE(on)}	—	-0.7	-0.8	V	I _C = -0.5A, V _{CE} = -2V
SMALL-SIGNAL CHARACTERISTICS						
Current Gain-Bandwidth Product	f _T	—	135	—	MHz	V _{CE} = -10V, I _C = -100mA, f = 100MHz
Output Capacitance	C _{obo}	—	42	—	pF	V _{CB} = -10V, f = -1MHz
Delay Time	t _d	—	15	—	ns	V _{CC} = -12.5V, I _C = 3A I _{B1} = -I _{B2} = -0.150A
Rise Time	t _r	—	220	—	ns	
Turn-On Time	t _(on)	—	235	—	ns	
Storage Time	t _s	—	160	—	ns	
Fall Time	t _f	—	185	—	ns	
Turn-Off Time	t _(off)	—	345	—	ns	

Note: 9. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

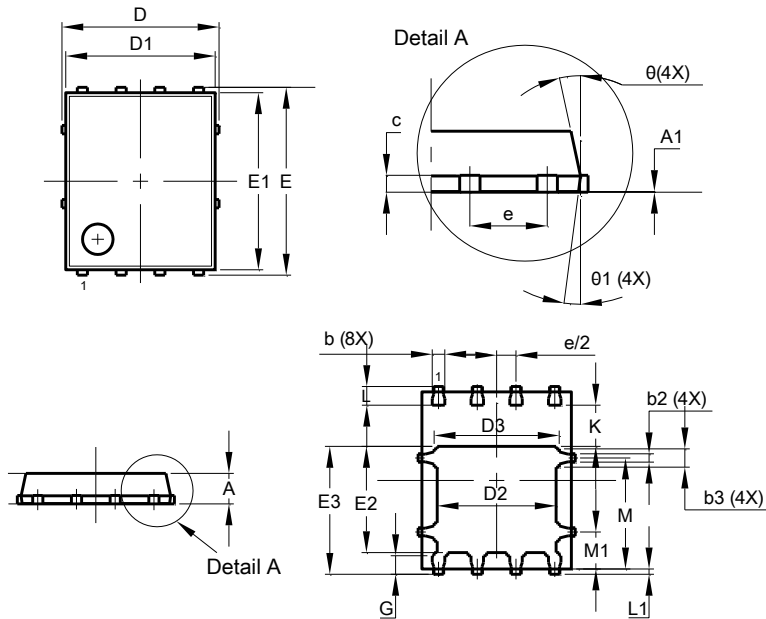
Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

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

PowerDI5060-8

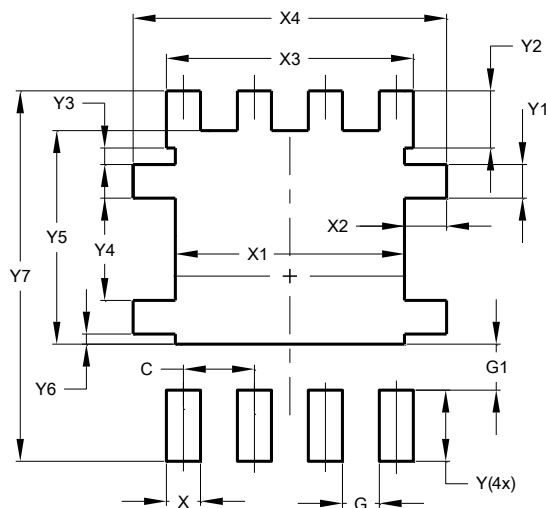


PowerDI5060-8			
Dim	Min	Max	Typ
A	0.90	1.10	1.00
A1	0.00	0.05	—
b	0.33	0.51	0.41
b2	0.200	0.350	0.273
b3	0.40	0.80	0.60
c	0.230	0.330	0.277
D	5.15 BSC		
D1	4.70	5.10	4.90
D2	3.70	4.10	3.90
D3	3.90	4.30	4.10
E	6.15 BSC		
E1	5.60	6.00	5.80
E2	3.28	3.68	3.48
E3	3.99	4.39	4.19
e	1.27 BSC		
G	0.51	0.71	0.61
K	0.51	—	—
L	0.51	0.71	0.61
L1	0.100	0.200	0.175
M	3.235	4.035	3.635
M1	1.00	1.40	1.21
θ	10°	12°	11°
$\theta1$	6°	8°	7°
All Dimensions in mm			

Suggested Pad Layout

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

PowerDI5060-8



Dimensions	Value (in mm)
C	1.270
G	0.660
G1	0.820
X	0.610
X1	4.100
X2	0.755
X3	4.420
X4	5.610
Y	1.270
Y1	0.600
Y2	1.020
Y3	0.295
Y4	1.825
Y5	3.810
Y6	0.180
Y7	6.610

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