

Features

- $BV_{CEO} > -60V$
- Small Form Factor Thermally Efficient Package. Enables Higher Density End Products
- $I_C = -5.5A$ Continuous Collector Current
- $I_{CM} = -15A$ Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)} < 90mV @ -1A$
- h_{FE} Specified Up to $-10A$ for a High Gain Hold Up
- Complementary NPN Type: DXTN03060CFG
- Rated to $+175^\circ C$ – Ideal For High Temperature Environment
- Wettable Flank For Improved Optical Inspection
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. “Green” Device (Note 3)**

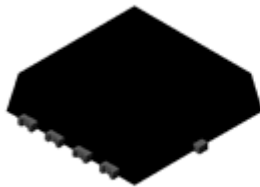
Mechanical Data

- Case: PowerDI[®] 3333-8
- Case Material: Molded Plastic. “Green” Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish—Matte Tin Plated Leads Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.03 grams (Approximate)

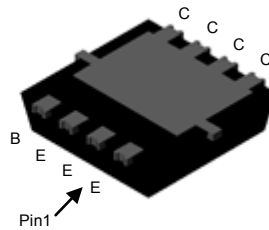
Applications

- Motor Driving
- Line Switching
- High Side Switches

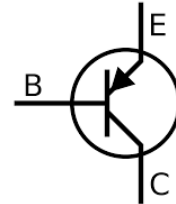
PowerDI3333-8 (SWP) (Type UX)



Top View



Bottom View



Device Symbol

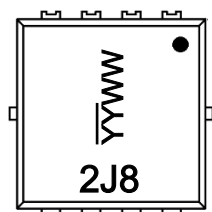
Ordering Information (Note 4)

Part Number	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DXTP03060CFG-7	2J8	7	12	2000

- 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/products/packages.html>.

Marking Information

PowerDI3333-8 (SWP) (Type UX)



2J8= Product Type Marking Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 19 = 2019)
 WW = Week Code (01 to 53)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-70	V
Collector-Emitter Voltage	V _{CEO}	-60	V
Emitter-Base Voltage	V _{EBO}	-7	V
Continuous Collector Current	I _C	-5.5	A
Peak Pulse Current	I _{CM}	-15	A

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

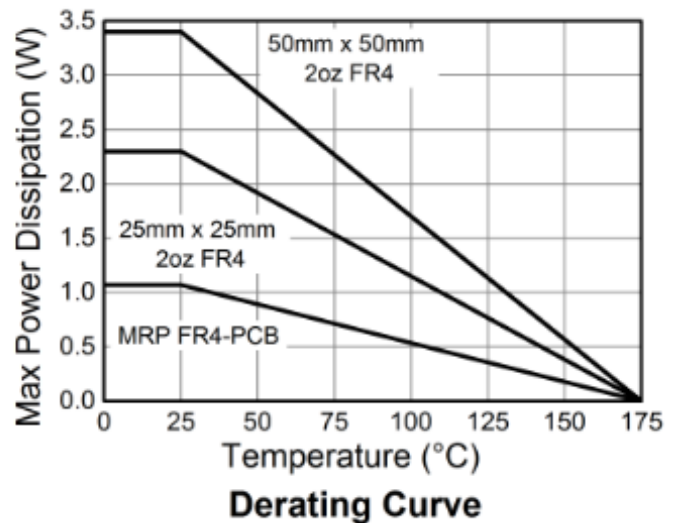
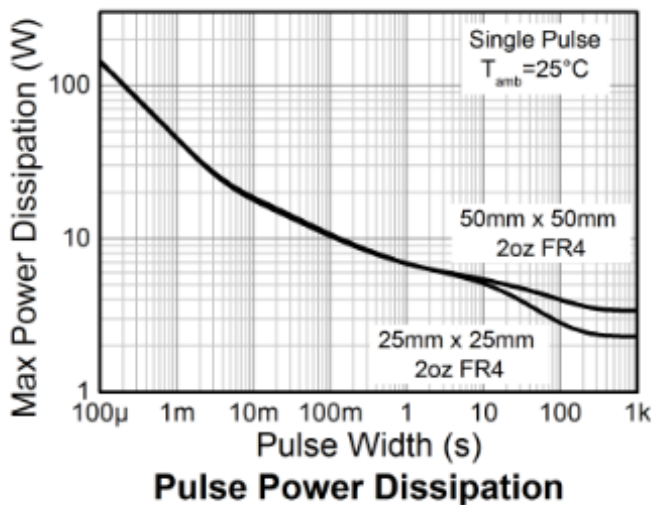
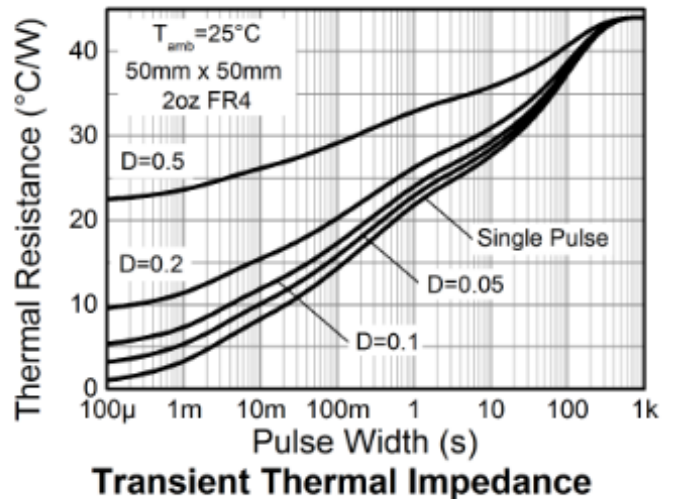
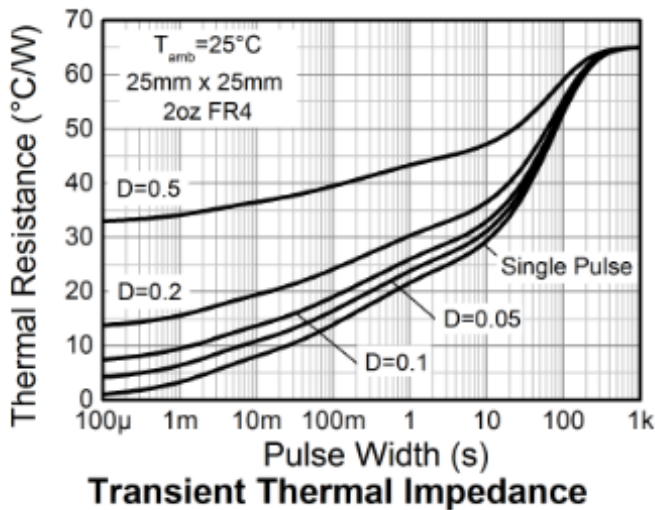
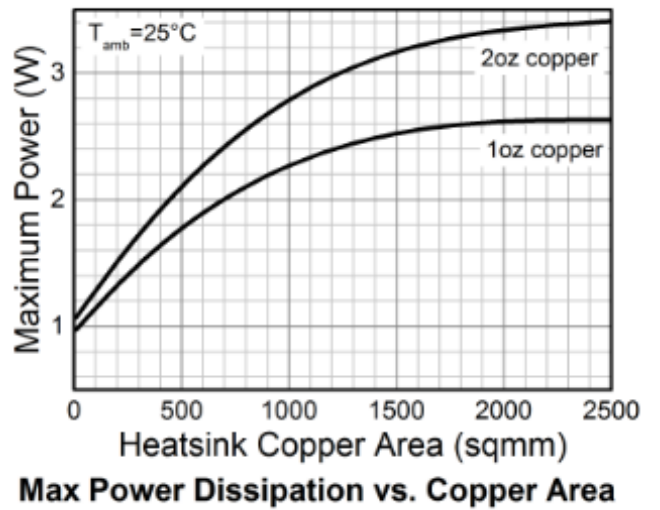
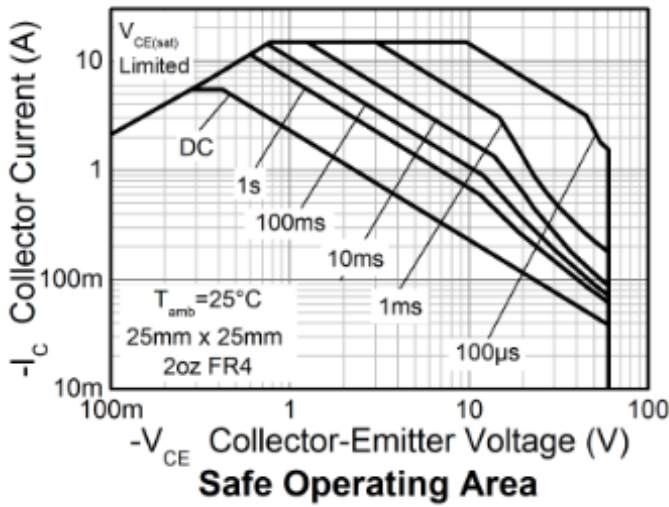
Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	1.07	W
		2.3	W
		3.4	W
Thermal Resistance, Junction to Ambient	R _{θJA}	140	°C/W
		65	°C/W
		44	°C/W
Thermal Resistance, Junction to Leads (Note 8)	R _{θJL}	6	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +175	°C

ESD Ratings (Note 9)

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

- Notes:
5. For a device mounted with the collector tab on MRP FR4-PCB; device is measured under still air conditions whilst operating in a steady-state.
 6. Same as Note 5, except the device is mounted on 25mm × 25mm 2oz copper.
 7. Same as Note 5, except the device is mounted on 50mm × 50mm 2oz copper.
 8. Thermal resistance from junction to solder-point (at the collector tab).
 9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information

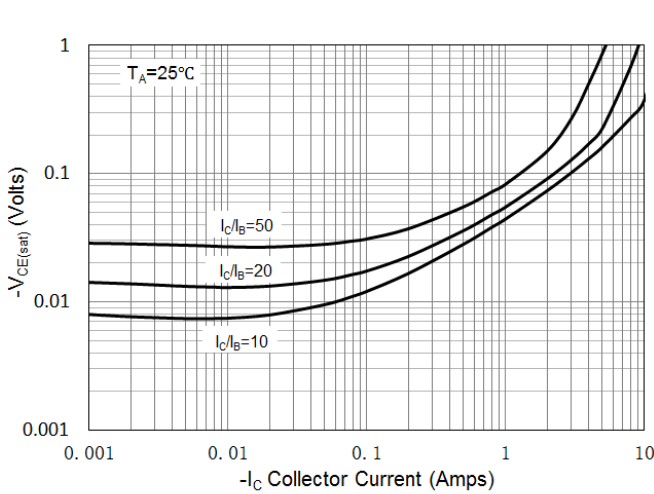


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

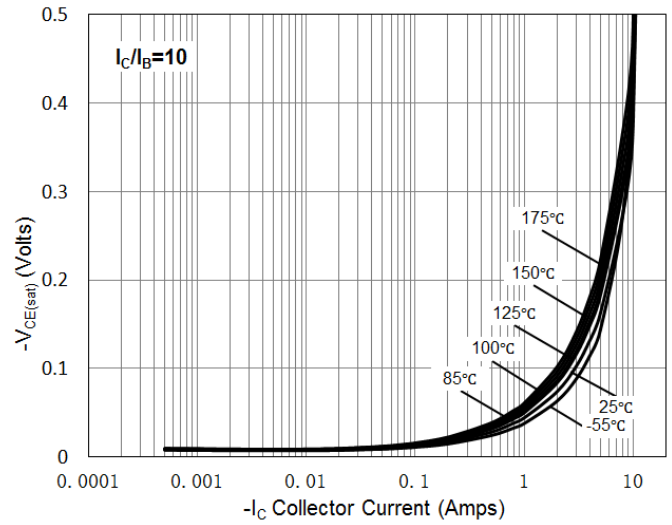
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	-70	-102	—	V	I _C = -100μA
Collector-Emitter Breakdown Voltage (Note 10)	BV _{CEO}	-60	-79	—	V	I _C = -10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	-7	-8.6	—	V	I _E = -100μA
Collector-Base Cutoff Current	I _{CBO}	—	-1	-50	nA	V _{CB} = -70V
		—	-0.06	-10	μA	V _{CB} = -70V, T _A = +125°C
Collector-Emitter Cutoff Current	I _{CER} R ≤ 1kΩ	—	-1	-50	nA	V _{CB} = -60V
		—	-1	-10	μA	V _{CB} = -60V, T _A = +125°C
Emitter Cutoff Current	I _{EBO}	—	-1	-20	nA	V _{EB} = -6V
Static Forward Current Transfer Ratio (Note 10)	h _{FE}	240	362	—	—	I _C = -10mA, V _{CE} = -2V
		200	308	800	—	I _C = -1A, V _{CE} = -2V
		180	271	—	—	I _C = -2A, V _{CE} = -2V
		45	130	—	—	I _C = -5A, V _{CE} = -2V
Collector-Emitter Saturation Voltage (Note 10)	V _{CE(sat)}	—	-12	-30	mV	I _C = -100mA, I _B = -10mA
		—	-44	-90	mV	I _C = -1A, I _B = -100mA
		—	-74	-150	mV	I _C = -2A, I _B = -200mA
		—	-161	-300	mV	I _C = -5A, I _B = -500mA
Base-Emitter Saturation Voltage (Note 10)	V _{BE(sat)}	—	-995	-1.1	V	I _C = -5A, I _B = -500mA
Base-Emitter Turn-On Voltage (Note 10)	V _{BE(on)}	—	-891	-1	V	I _C = -5A, V _{CE} = -1V
Output Capacitance	C _{obo}	—	48	—	pF	V _{CB} = -10V, f = 1MHz
Transition Frequency	f _T	—	120	—	MHz	V _{CE} = -10V, I _C = -100mA f = 50MHz
Switching Characteristics	t _{delay}	—	5	—	ns	V _{CC} = -10V, I _C = -1A I _{B1} = -I _{B2} = -100mA
	t _{rise}	—	300	—	ns	
	t _{storage}	—	1486	—	ns	
	t _{fall}	—	191	—	ns	

Note: 10. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

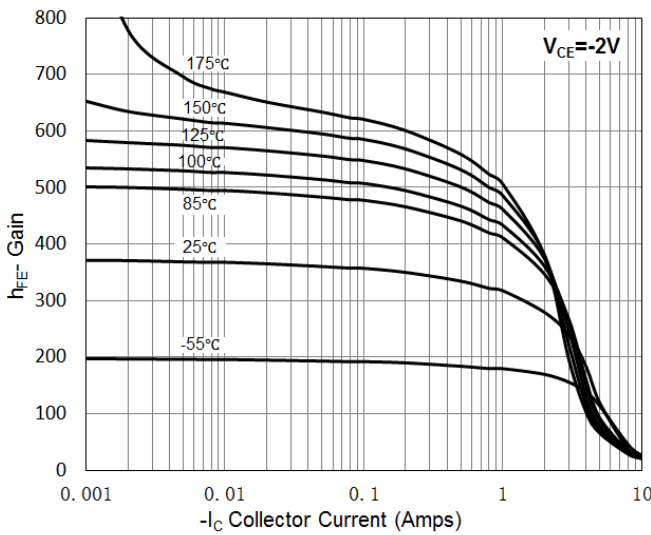
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



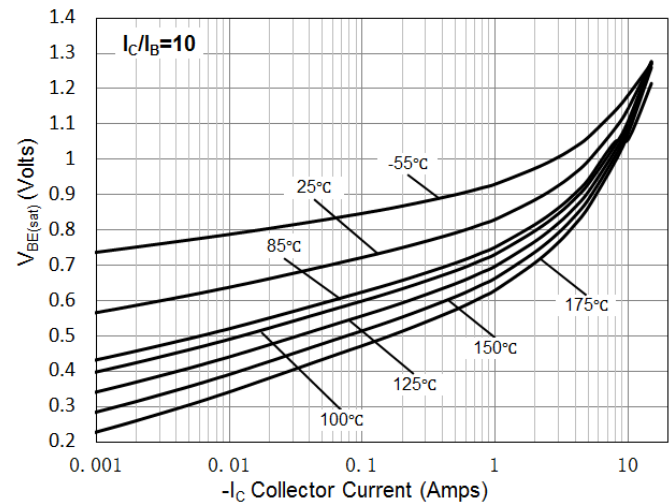
$V_{CE(sat)}$ vs I_C



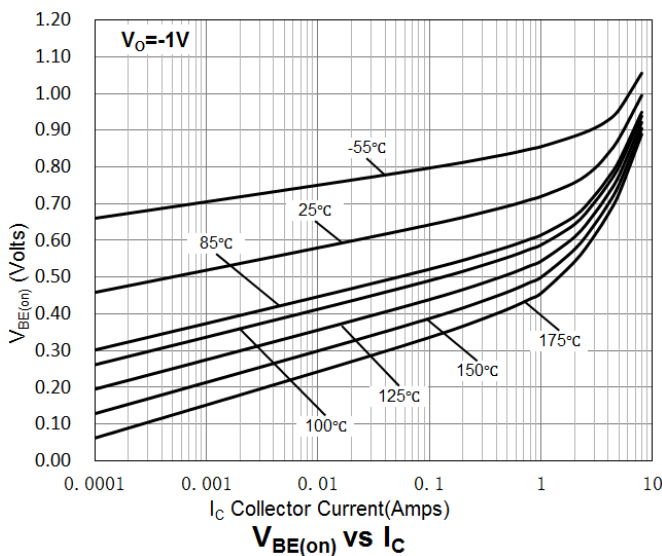
$V_{CE(sat)}$ vs I_C



h_{FE} vs I_C



$V_{BE(sat)}$ vs I_C

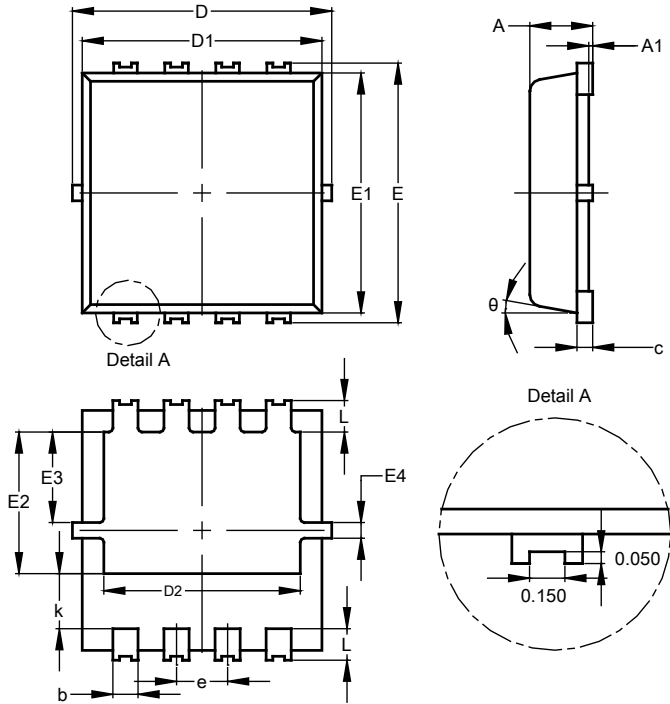


$V_{BE(on)}$ vs I_C

Package Outline Dimensions

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

PowerDI3333-8 (SWP) (Type UX)

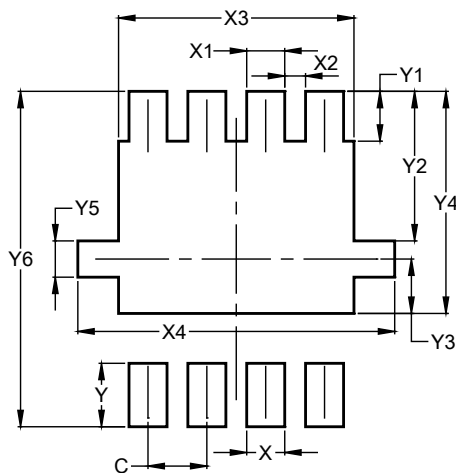


PowerDI3333-8 (SWP) (Type UX)			
Dim	Min	Max	Typ
A	0.75	0.85	0.80
A1	0.00	0.05	—
b	0.25	0.40	0.32
c	0.10	0.25	0.15
D	3.20	3.40	3.30
D1	2.95	3.15	3.05
D2	2.30	2.70	2.50
E	3.20	3.40	3.30
E1	2.95	3.15	3.05
E2	1.60	2.00	1.80
E3	0.95	1.35	1.15
E4	0.10	0.30	0.20
e	—	—	0.65
k	0.50	0.90	0.70
L	0.30	0.50	0.40
θ	0°	12°	10°
All Dimensions in mm			

Suggested Pad Layout

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

PowerDI3333-8 (SWP) (Type UX)



Dimensions	Value (in mm)
C	0.650
X	0.420
X1	0.420
X2	0.230
X3	2.600
X4	3.500
Y	0.700
Y1	0.550
Y2	1.650
Y3	0.600
Y4	2.450
Y5	0.400
Y6	3.700

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device terminals and PCB tracking.

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