

**80V PNP MEDIUM POWER TRANSISTOR IN PowerDI3333-8**

**Features**

- $BV_{CEO} > -80V$
- Small Form Factor Thermally Efficient Package. Enables Higher Density End Products
- $I_C = -1A$  Continuous Collector Current
- $I_{CM} = -2A$  Peak Pulse Current
- Low Saturation Voltage  $V_{CE(sat)} < -280mV @ -0.5A$
- Complementary NPN Types: DXTN06080BFG
- 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)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

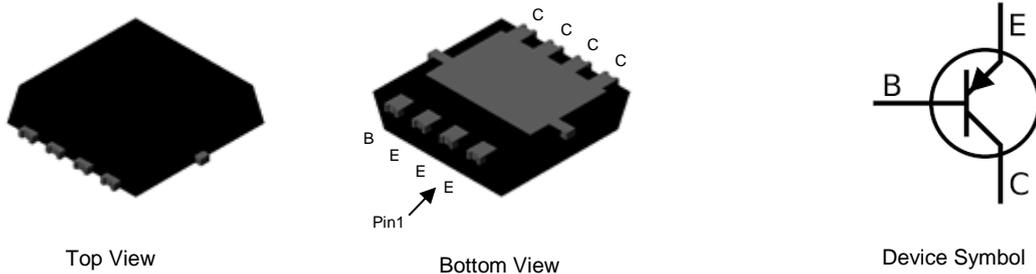
**Mechanical Data**

- Case: PowerDI<sup>®</sup>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**

- Medium Power Switching
- Power Amplification
- AF Driver and Output Stages

PowerDI3333-8 (SWP) (Type UX)



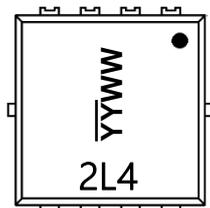
**Ordering Information** (Note 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DXTP06080BFG-7	Standard	2L4	7	12	2,000

- 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/design/support/packaging/diodes-packaging/>.

**Marking Information**

PowerDI3333-8 (SWP) (Type UX)



2L4= Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 21 = 2021)  
 WW = Week Code (01 to 53)

**Absolute Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-100	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-80	V
Emitter-Base Voltage	V <sub>EBO</sub>	-7	V
Continuous Collector Current	I <sub>C</sub>	-1	A
Peak Pulse Collector Current	I <sub>CM</sub>	-2	A
Continuous Base Current	I <sub>B</sub>	-100	mA
Peak Pulse Base Current	I <sub>BM</sub>	-200	mA

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

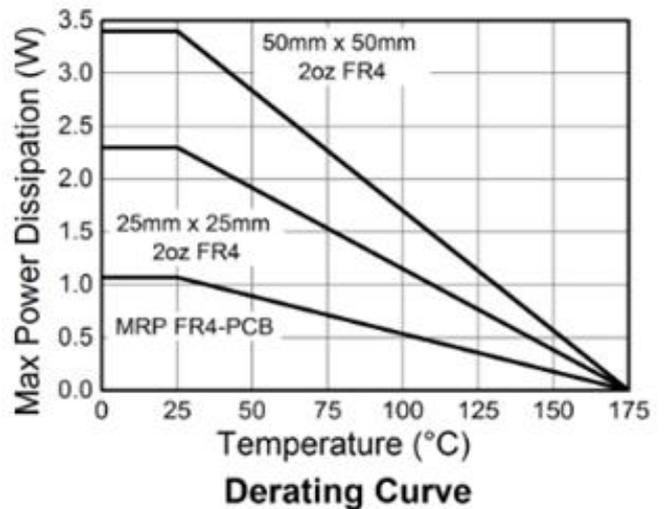
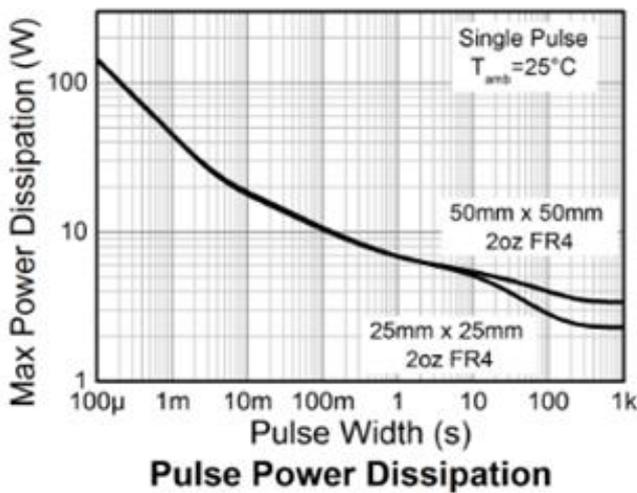
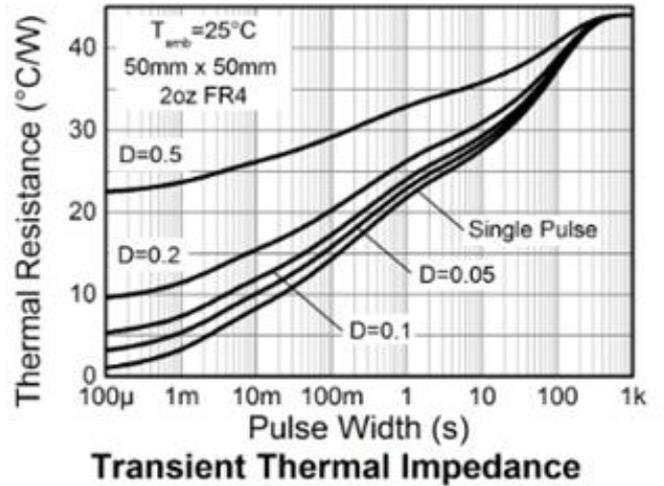
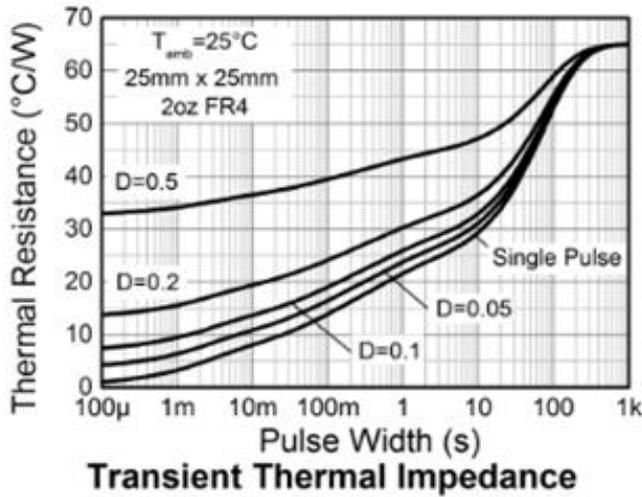
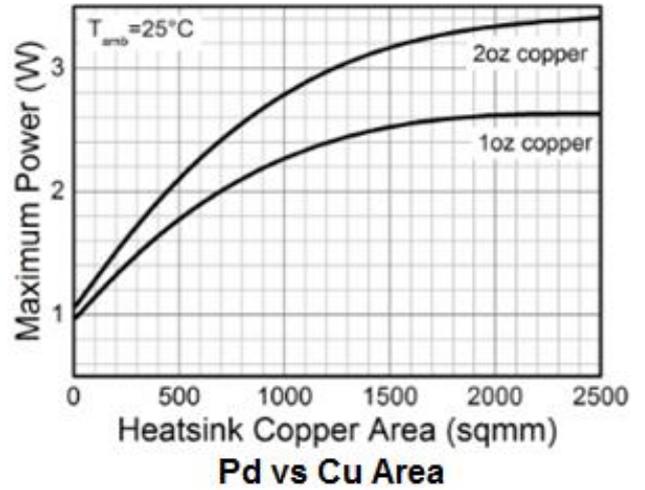
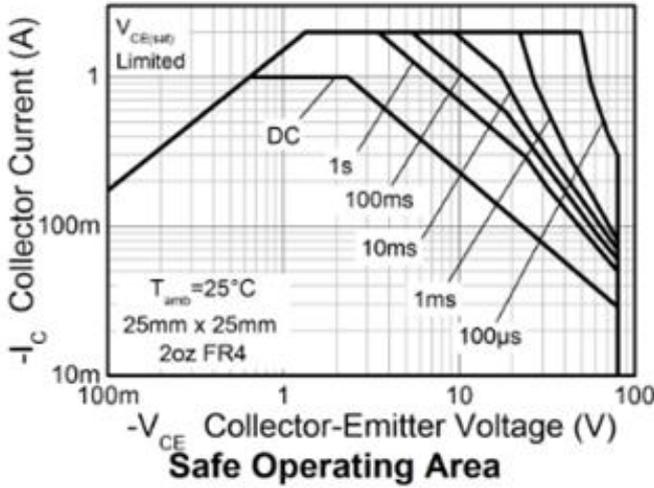
Characteristic	Symbol	Value	Unit	
Power Dissipation	P <sub>D</sub>	(Note 5)	1.07	W
		(Note 6)	2.3	W
		(Note 7)	3.4	W
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	(Note 5)	140	°C/W
		(Note 6)	65	°C/W
		(Note 7)	44	°C/W
Thermal Resistance, Junction to Leads (Note 8)	R <sub>θJL</sub>	11.3	°C/W	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +175	°C	

**ESD Ratings** (Note 9)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	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 x 25mm 2oz copper.
  7. Same as Note 5, except the device is mounted on 50mm x 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**

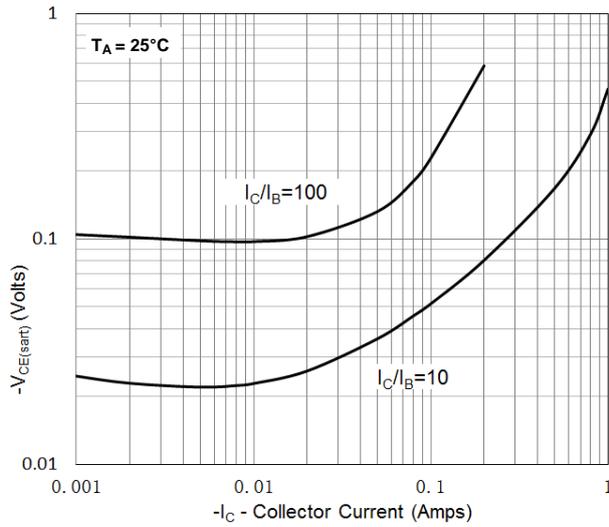


**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

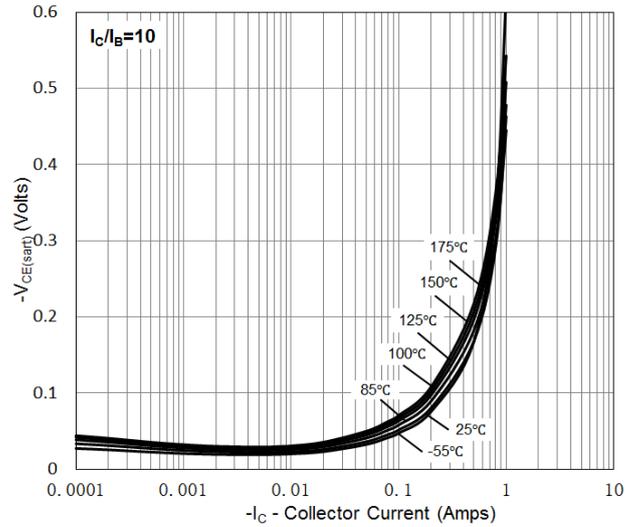
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$BV_{CBO}$	-100	-183	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 10)	$BV_{CEO}$	-80	-132	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	-7	-8.4	—	V	$I_E = -100\mu\text{A}$
Collector-Base Cut-Off Current	$I_{CBO}$	—	-1 -0.13	-50 -10	nA $\mu\text{A}$	$V_{CB} = -100\text{V}$ $V_{CB} = -80\text{V}, T_A = +150^\circ\text{C}$
Collector-Emitter Cut-Off Current	$I_{CES}$	—	-1	-20	nA	$V_{CE} = -80\text{V}$
Emitter Cut-Off Current	$I_{EBO}$	—	-1	-20	nA	$V_{EB} = -6\text{V}$
Static Forward Current Transfer Ratio (Note 10)	$h_{FE}$	50 100 40 —	167 152 76 26	— 250 — —	—	$I_C = -5\text{mA}, V_{CE} = -2\text{V}$ $I_C = -150\text{mA}, V_{CE} = -2\text{V}$ $I_C = -500\text{mA}, V_{CE} = -2\text{V}$ $I_C = -800\text{mA}, V_{CE} = -2\text{V}$
Collector-Emitter Saturation Voltage (Note 10)	$V_{CE(sat)}$	—	-181 -410	-280 —	mV mV	$I_C = -500\text{mA}, I_B = -50\text{mA}$ $I_C = -800\text{mA}, I_B = -70\text{mA}$
Base-Emitter Turn-On Voltage (Note 10)	$V_{BE(on)}$	—	-0.804	-0.9	V	$I_C = -500\text{mA}, V_{CE} = -2\text{V}$
Transition Frequency	$f_T$	150	—	—	MHz	$I_C = -50\text{mA}, V_{CE} = -10\text{V}$ $f = 100\text{MHz}$
Output Capacitance	$C_{obo}$	—	—	25	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$
Switching Characteristics	$t_{delay}$	—	8.6	—	ns	$V_{CC} = -10\text{V}, I_C = -500\text{mA}$ $I_{B1} = -I_{B2} = -50\text{mA}$
	$t_{rise}$	—	3.4	—	ns	
	$t_{storage}$	—	43	—	ns	
	$t_{fall}$	—	46	—	ns	

Note: 10. Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

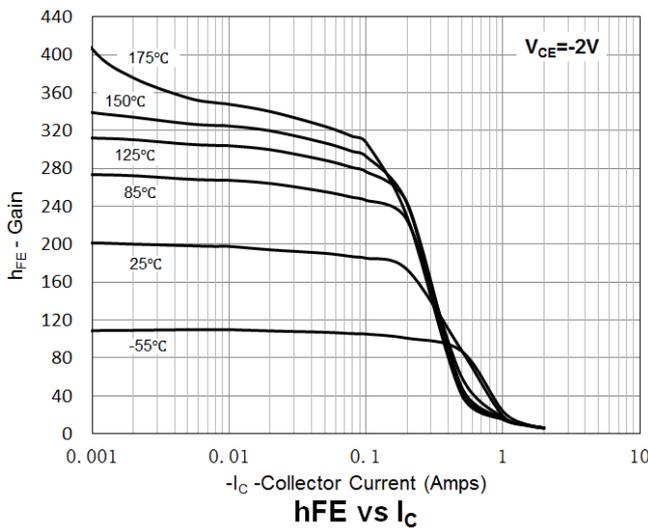
**Typical Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)



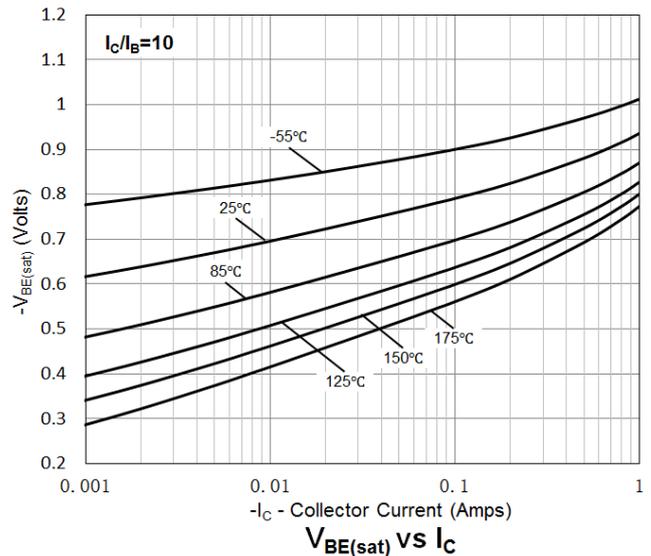
**V<sub>CE(sat)</sub> vs I<sub>C</sub>**



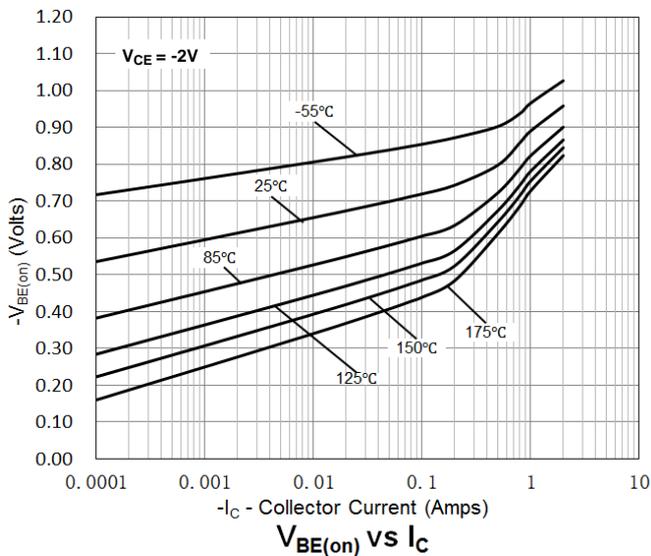
**V<sub>CE(sat)</sub> vs I<sub>C</sub>**



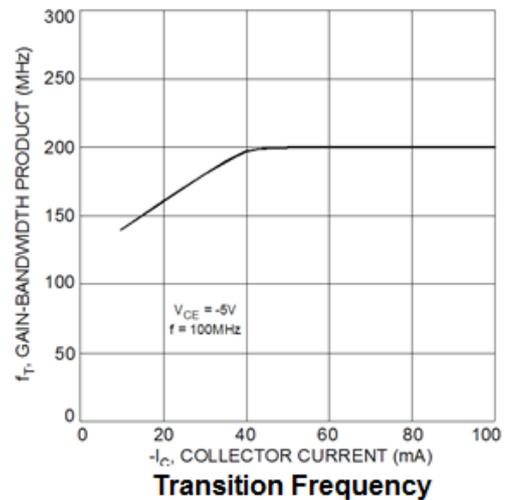
**hFE vs I<sub>C</sub>**



**V<sub>BE(sat)</sub> vs I<sub>C</sub>**



**V<sub>BE(on)</sub> vs I<sub>C</sub>**

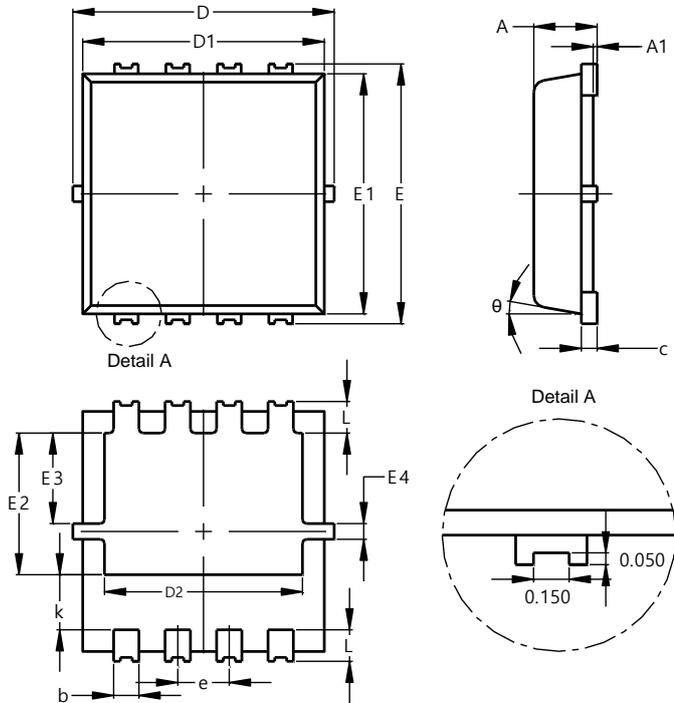


**Transition Frequency**

**Package Outline Dimensions**

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

**PowerDI3333-8 (SWP) (Type UX)**

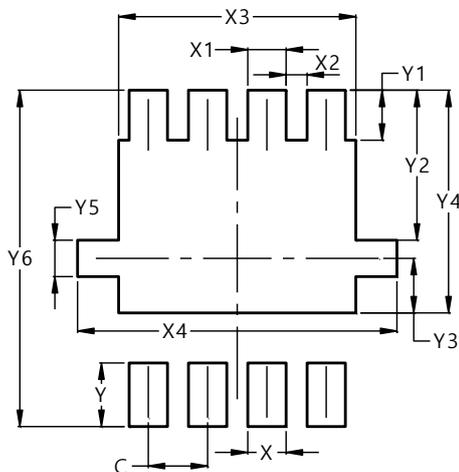


PowerDI3333-8 (SWP) (Type UX)			
Dim	Min	Max	Typ
A	0.75	0.85	0.80
A1	0.00	0.05	--
b	0.25	0.40	0.32
c	0.10	0.25	0.15
D	3.20	3.40	3.30
D1	2.95	3.15	3.05
D2	2.30	2.70	2.50
E	3.20	3.40	3.30
E1	2.95	3.15	3.05
E2	1.60	2.00	1.80
E3	0.95	1.35	1.15
E4	0.10	0.30	0.20
e	--	--	0.65
k	0.50	0.90	0.70
L	0.30	0.50	0.40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

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