

Features

- $BV_{CEO} > 40V$
- Small Form Factor Thermally Efficient Package. Enables Higher Density End Products
- $I_C = 2A$ High Continuous Collector Current
- $I_{CM} = 3A$ Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)} < 320mV @ 1A$
- Complementary PNP Type: DXTP22040DFG
- 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 refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.
- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>

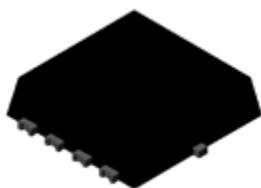
Mechanical Data

- 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)

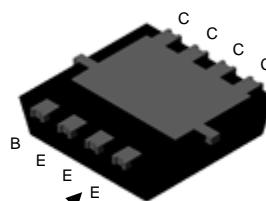
Applications

- DC to DC Conversion
- Supply Line Switching
- Low Drop Out Regulation
- LCD Backlighting

PowerDI3333-8 (SWP) (Type UX)

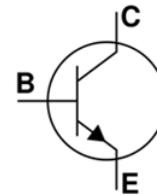


Top View



Bottom View

Equivalent Circuit



Device Symbol

Ordering Information

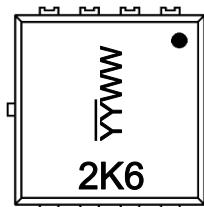
Part Number	Compliance	Marking	Reel Size (Inches)	Tape Width (mm)	Quantity per Reel
DXTN22040DFG-7	AEC-Q101	2K6	7	12	2,000

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)



2K6 = Product Type Marking Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 21 = 2021)
 WW = Week Code (01 to 53)

PowerDI is a registered trademark of Diodes Incorporated.

DXTN22040DFG

Datasheet number: DS41064 Rev. 2 - 2

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	2	A
Peak Pulse Collector Current	I_{CM}	3	A
Continuous Base Current	I_B	100	mA
Peak Pulse Base Current	I_{BM}	200	mA

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

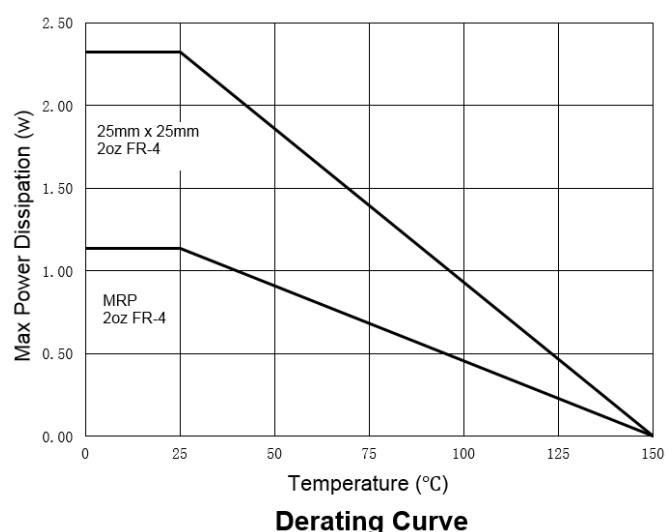
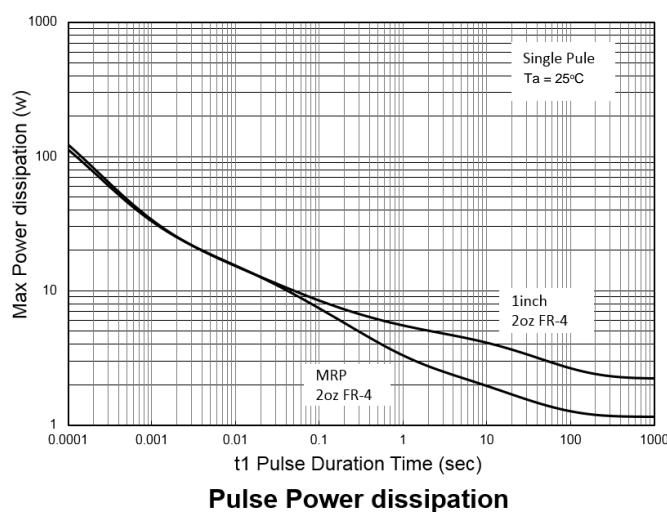
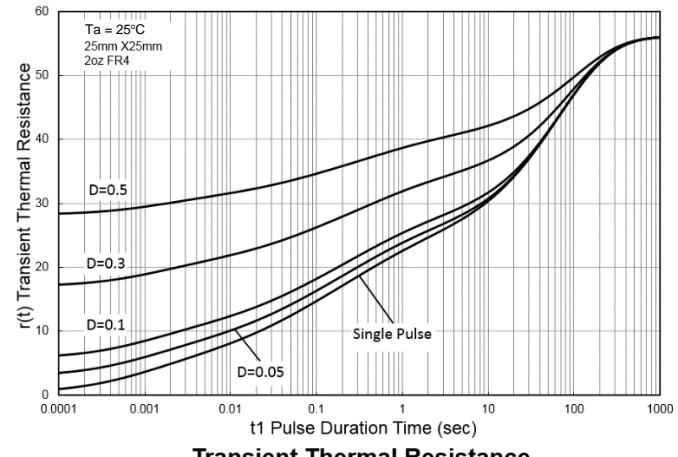
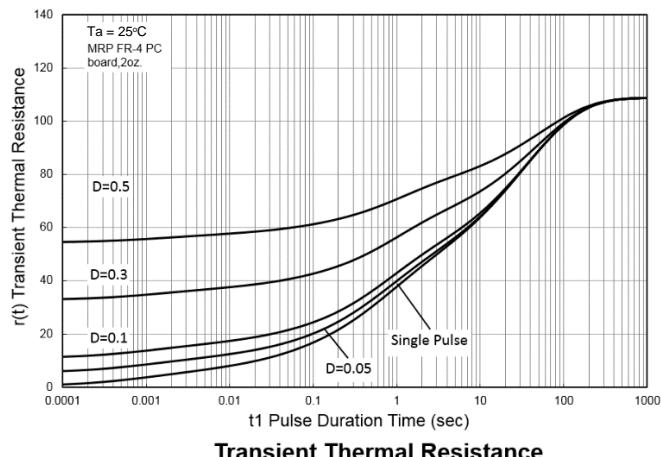
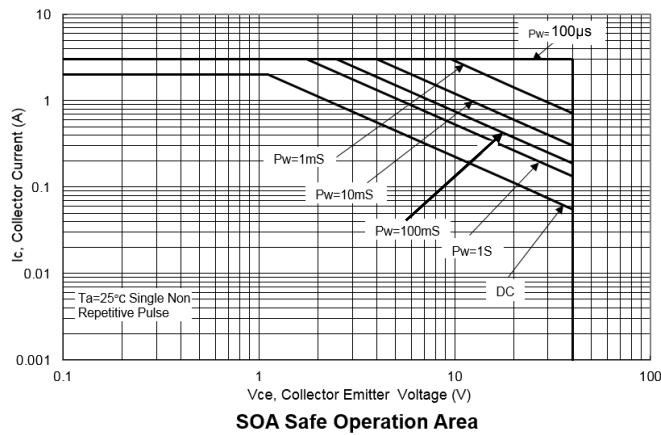
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5) (Note 6)	P_D	1.1	W
		2.3	W
Thermal Resistance, Junction to Ambient (Note 5) (Note 6)	$R_{\theta JA}$	113	°C/W
		55	°C/W
Thermal Resistance, Junction to Leads (Note 7)	$R_{\theta JL}$	7.4	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 8)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge – Human Body Model	ESD HBM	4,000	V	3A
Charge Device Model	CDM	1000	V	C5

- 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. Thermal resistance from junction to solder-point (at the collector tab).
 - 8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

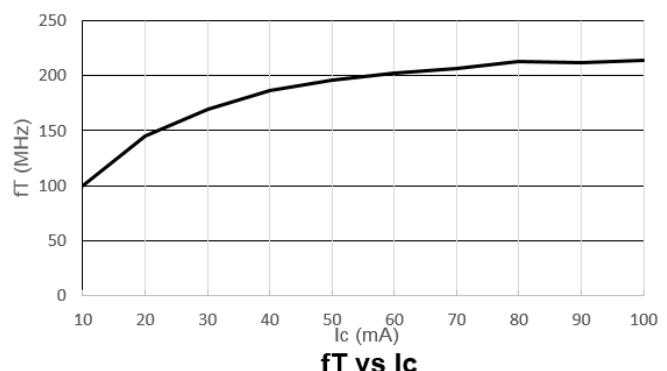
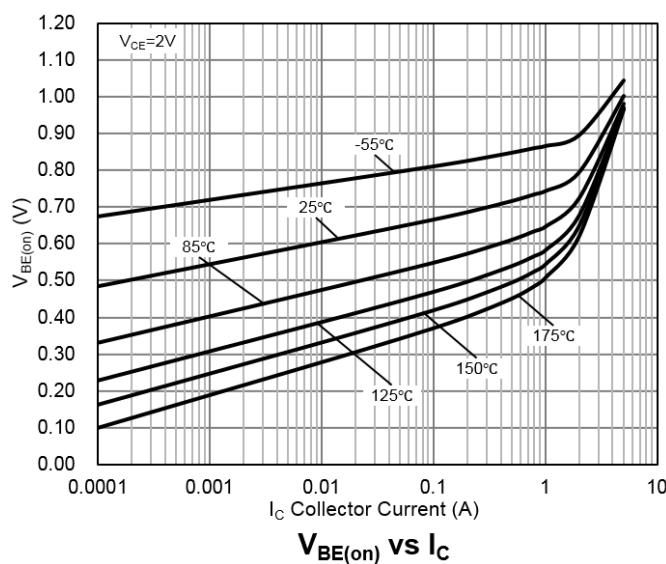
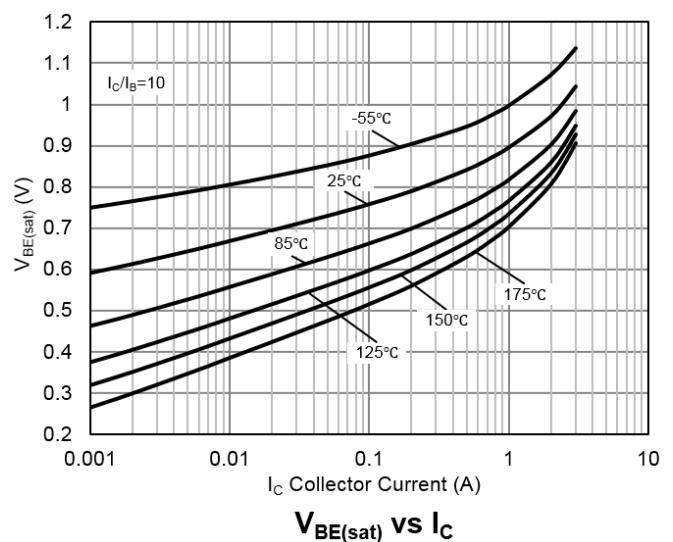
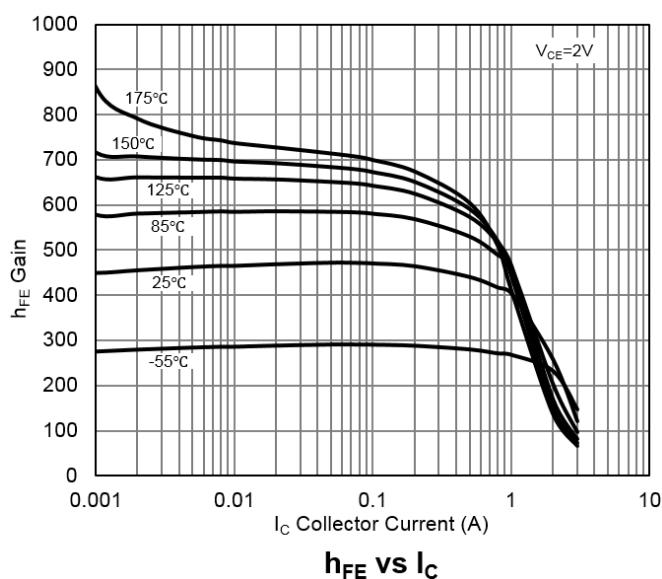
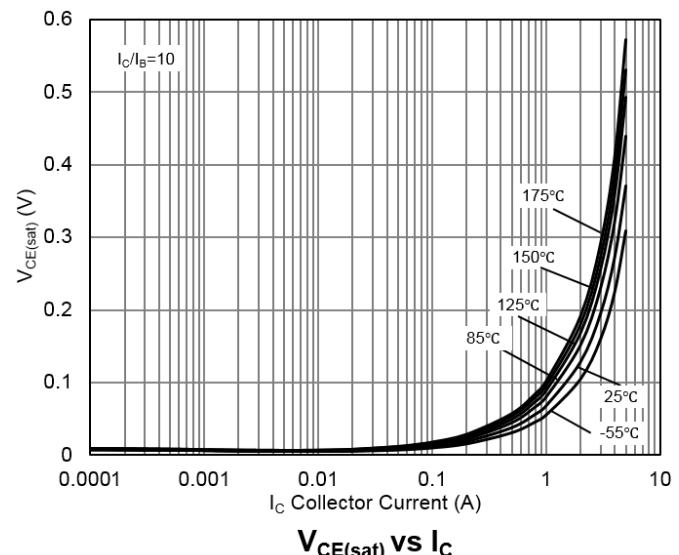
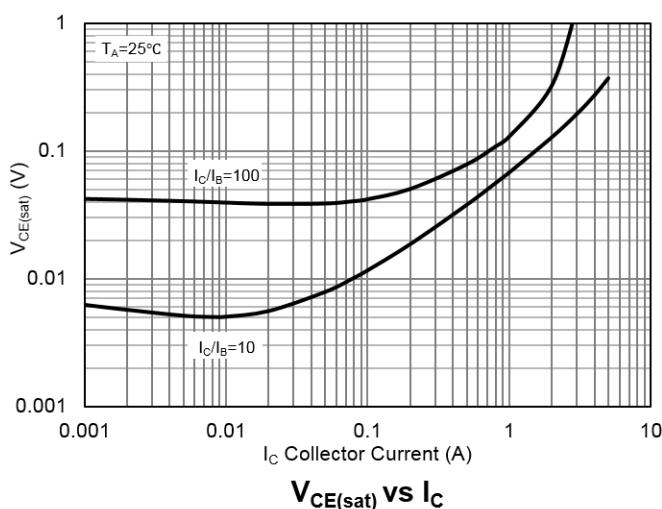
Thermal Characteristics and Derating Information



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}	50	171	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	40	54	—	V	$I_C = 10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	7	8.1	—	V	$I_E = 100\mu\text{A}$
Collector-Base Cut-Off Current	I_{CBO}	—	1 0.01	50 10	nA μA	$V_{\text{CB}} = 40\text{V}$ $V_{\text{CB}} = 40\text{V}, T_A = +150^\circ\text{C}$
Emitter-Base Cut-Off Current	I_{EBO}	—	1	20	nA	$V_{\text{EB}} = 6\text{V}$
Collector-Emitter Cut-Off Current	I_{CES}	—	1	50	nA	$V_{\text{CE}} = 40\text{V}, V_{\text{BE}} = 0\text{V}$
Static Forward Current Transfer Ratio (Note 9)	h_{FE}	300 300 200 140	464 468 445 377	— 900 — —	—	$I_C = 1\text{mA}, V_{\text{CE}} = 2\text{V}$ $I_C = 500\text{mA}, V_{\text{CE}} = 2\text{V}$ $I_C = 1\text{A}, V_{\text{CE}} = 2\text{V}$ $I_C = 2\text{A}, V_{\text{CE}} = 2\text{V}$
Collector-Emitter Saturation Voltage (Note 9)	$V_{\text{CE}(\text{sat})}$	—	43 38 68 126 187	80 120 220 350 600	mV	$I_C = 100\text{mA}, I_B = 1\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$ $I_C = 1\text{A}, I_B = 100\text{mA}$ $I_C = 2\text{A}, I_B = 200\text{mA}$ $I_C = 3\text{A}, I_B = 300\text{mA}$
Base-Emitter Saturation Voltage (Note 9)	$V_{\text{BE}(\text{sat})}$	—	0.9	1.1	V	$I_C = 1\text{A}, I_B = 100\text{mA}$
Base-Emitter Turn-On Voltage (Note 9)	$V_{\text{BE}(\text{on})}$	—	0.74	1	V	$I_C = 1\text{A}, V_{\text{CE}} = 5\text{V}$
Input Capacitance	$C_{\text{ib}\text{o}}$	—	161	—	pF	$V_{\text{EB}} = 0.5\text{V}, f = 1\text{MHz}$
Output Capacitance	$C_{\text{ob}\text{o}}$	—	11	—	pF	$V_{\text{CB}} = 10\text{V}, f = 1\text{MHz}$
Transition Frequency	f_T	—	198	—	MHz	$I_C = 50\text{mA}, V_{\text{CE}} = 10\text{V}$ $f = 100\text{MHz}$
Switching Time	t_{delay}	—	7.9	—	ns	$I_C = 1\text{A}, V_{\text{CC}} = 10\text{V},$ $I_{B1} = -I_{B2} = 100\text{mA}$
	t_{rise}	—	2.9	—	ns	
	t_{storage}	—	673	—	ns	
	t_{fall}	—	26.8	—	ns	

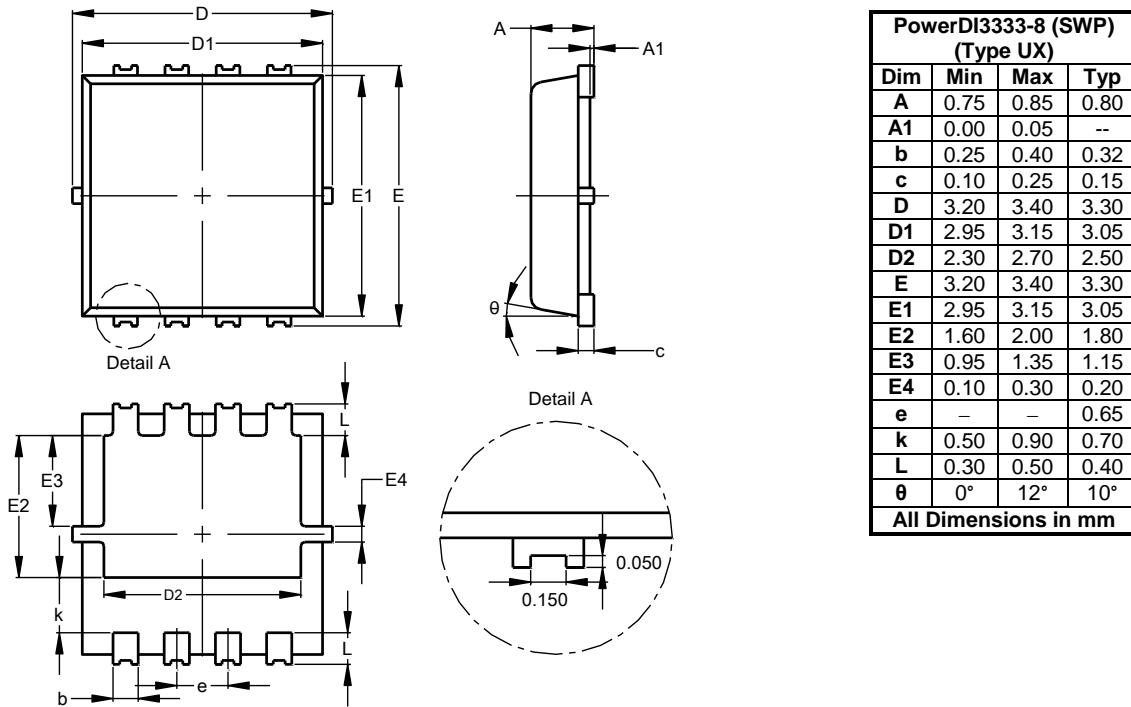
Note: 9. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.



Package Outline Dimensions

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

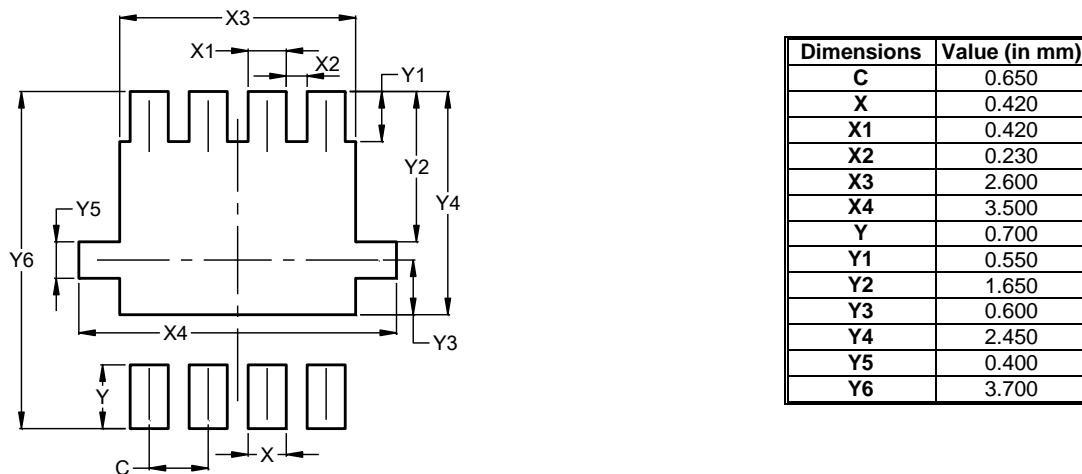
PowerDI3333-8 (SWP) (Type UX)



Suggested Pad Layout

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

PowerDI3333-8 (SWP) (Type UX)



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