

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 $V_{CE(sat)} < 220mV @ 1A$
- Complementary PNP Type: DXTP22040CFG
- 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/>**

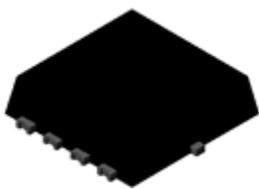
Mechanical Data

- Case: PowerDI®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(3)
- Weight: 0.03 grams (Approximate)

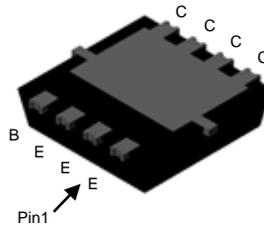
Applications

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

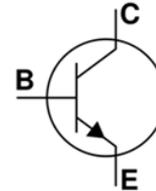
PowerDI3333-8 (SWP) (Type UX)



Top View



Bottom View



Device Symbol

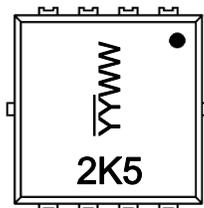
Ordering Information

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DXTN22040CFG-7	Standard	2K5	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)



- 2K5 = 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.

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CB0}	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	
Continuous Base Current	I _B	100	mA
Peak Pulse Base Current	I _{BM}	200	

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

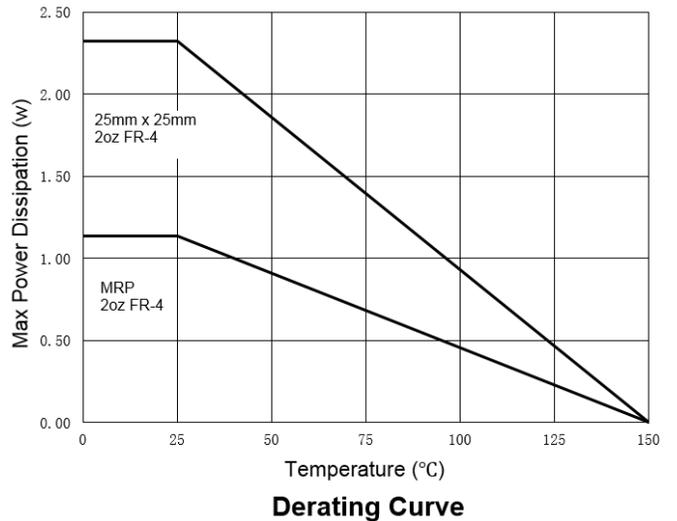
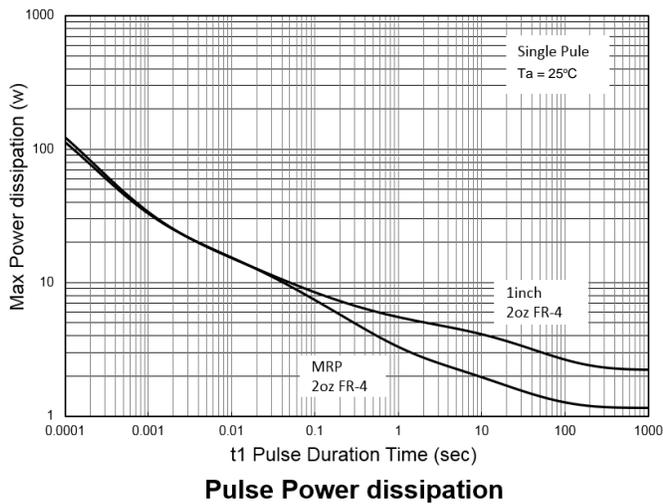
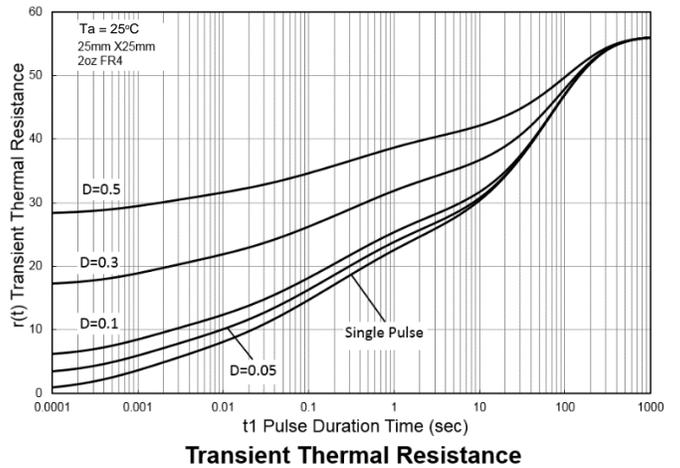
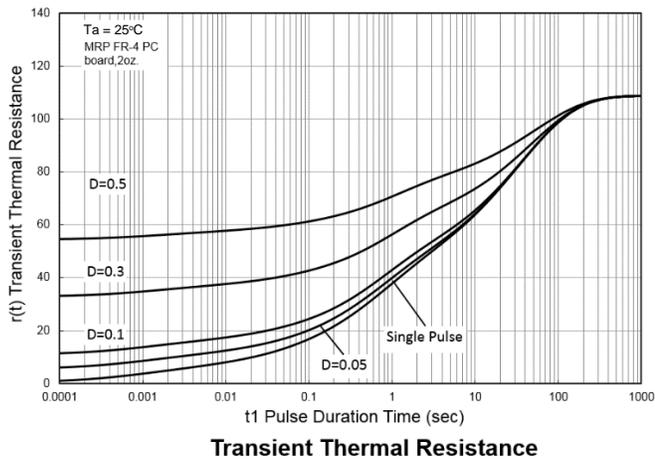
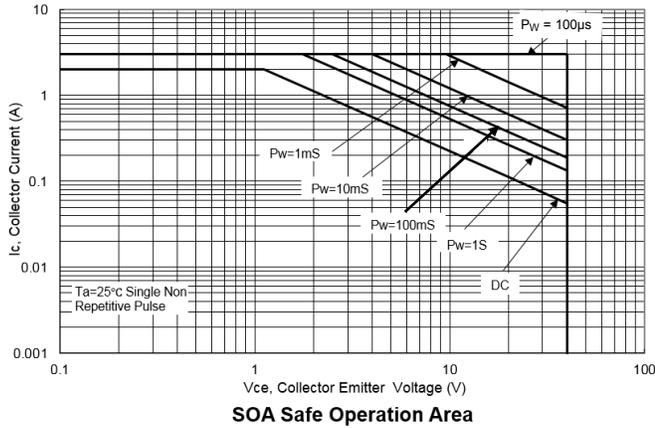
Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	(Note 5) 1.1	W
		(Note 6) 2.3	W
Thermal Resistance, Junction to Ambient	R _{θJA}	(Note 5) 113	°C/W
		(Note 6) 55	°C/W
Thermal Resistance, Junction to Leads (Note 7)	R _{θJL}	7.4	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +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	1,000	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

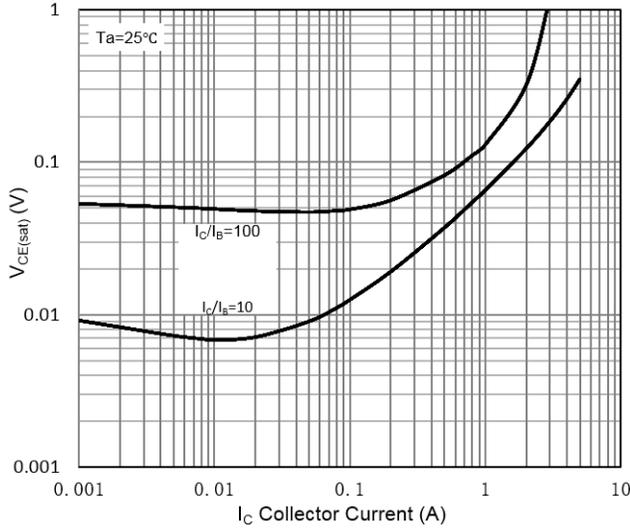


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

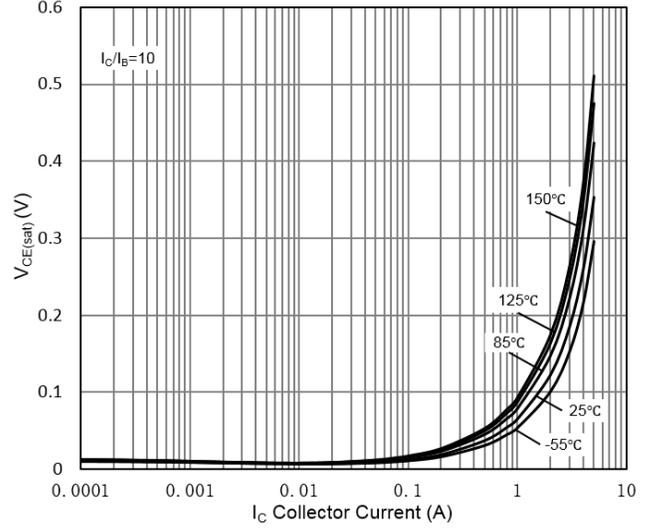
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CB0}	50	172	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV _{CEO}	40	54	—	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7	8	—	V	I _E = 100μA
Collector-Base Cut-Off Current	I _{CB0}	—	1.5 0.06	50 20	nA μA	V _{CB} = 50V V _{CB} = 50V, T _A = +150°C
Emitter-Base Cut-Off Current	I _{EBO}	—	1	20	nA	V _{EB} = 6V
Collector-Emitter Cut-Off Current	I _{CES}	—	2	50	nA	V _{CE} = 40V, V _{BE} = 0V
Static Forward Current Transfer Ratio (Note 9)	h _{FE}	200	329	—	—	I _C = 100mA, V _{CE} = 2V
		200	329	600		I _C = 500mA, V _{CE} = 2V
		150	305	—		I _C = 1A, V _{CE} = 2V
		80	233	—		I _C = 2A, V _{CE} = 2V
Collector-Emitter Saturation Voltage (Note 9)	V _{CE(sat)}	—	49	80	mV	I _C = 100mA, I _B = 1mA
		—	37	120		I _C = 500mA, I _B = 50mA
		—	65	220		I _C = 1A, I _B = 100mA
		—	121	350		I _C = 2A, I _B = 200mA
		—	180	600		I _C = 3A, I _B = 300mA
Base-Emitter Saturation Voltage (Note 9)	V _{BE(sat)}	—	0.91	1.1	V	I _C = 1A, I _B = 100mA
Base-Emitter Turn-On Voltage (Note 9)	V _{BE(on)}	—	0.78	1	V	I _C = 1A, V _{CE} = 2V
Input Capacitance	C _{IBO}	—	160	—	pF	V _{EB} = 0.5V, f = 1MHz
Output Capacitance	C _{OBO}	—	11	—	pF	V _{CB} = 10V, f = 1MHz
Transition Frequency	f _T	—	200	—	MHz	I _C = 50mA, V _{CE} = 10V f = 100MHz
Switching Time	t _{delay}	—	7.9	—	ns	I _C = 1A, V _{CC} = 10V, I _{B1} = -I _{B2} = 100mA
	t _{rise}	—	2.9	—	ns	
	t _{storage}	—	728	—	ns	
	t _{fall}	—	32.6	—	ns	

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

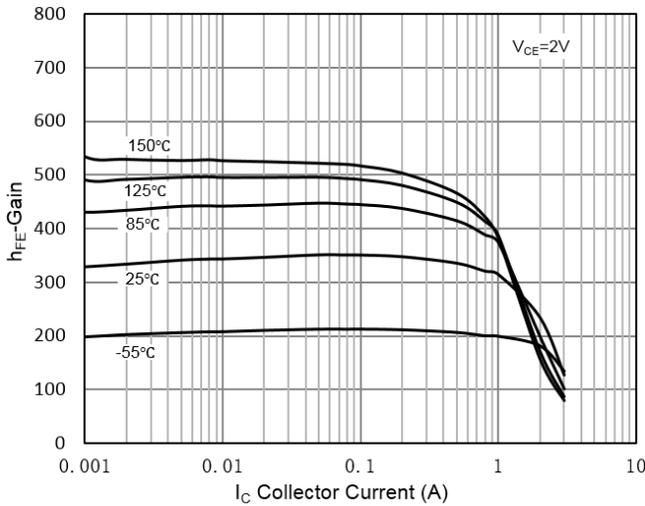
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



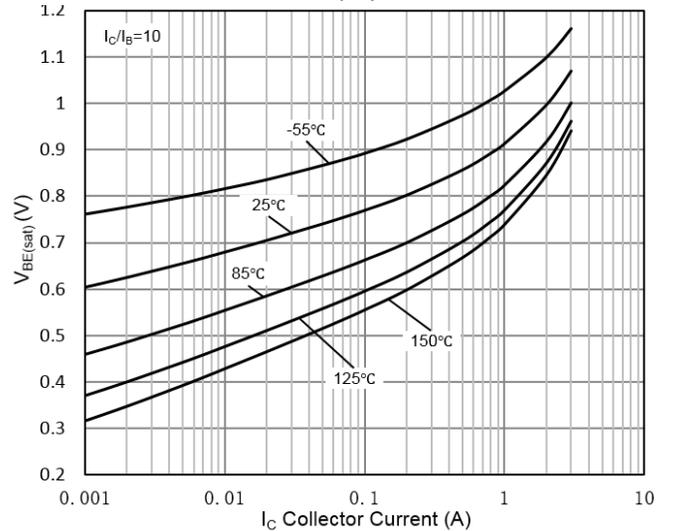
$V_{CE(sat)}$ vs I_C



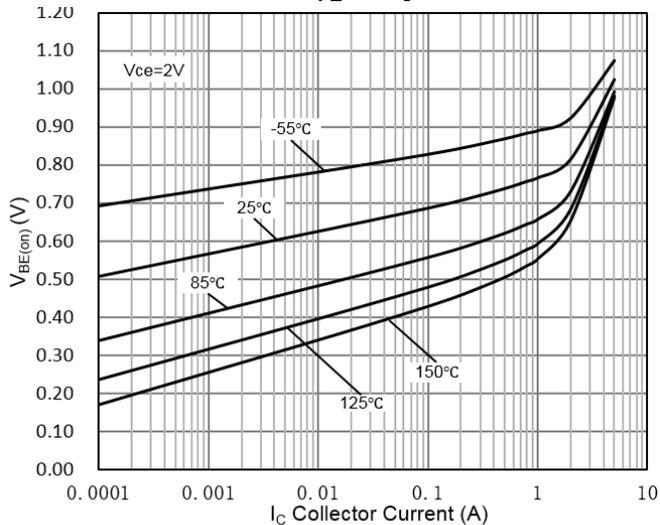
$V_{CE(sat)}$ vs I_C



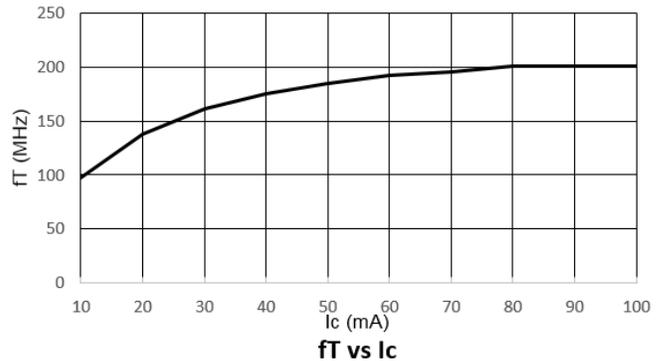
h_{FE} vs I_C



$V_{BE(sat)}$ vs I_C



$V_{BE(on)}$ vs I_C

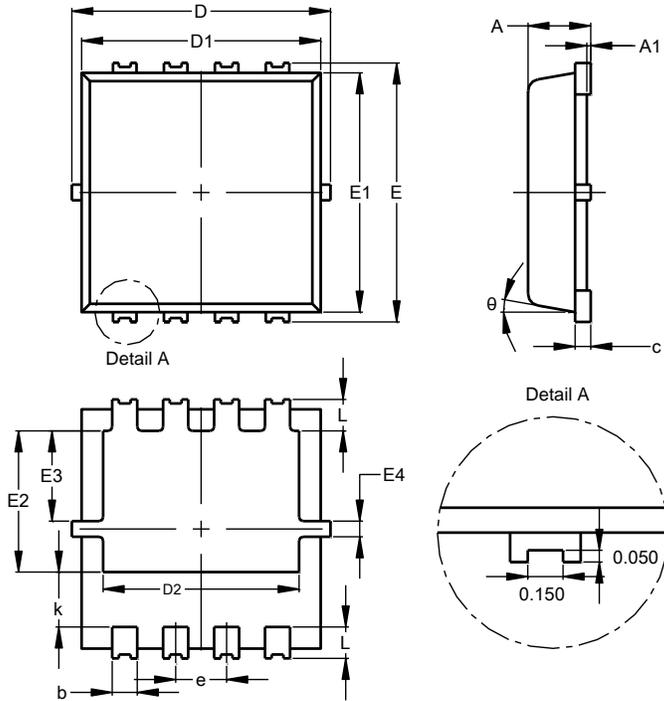


f_T vs I_C

Package Outline Dimensions

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

PowerDI3333-8 (SWP) (Type UX)

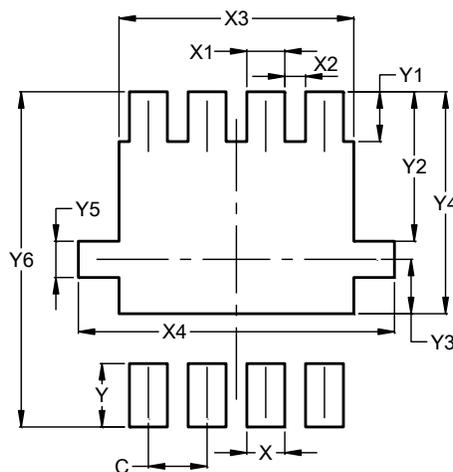


PowerDI3333-8 (SWP) (Type UX)			
Dim	Min	Max	Typ
A	0.75	0.85	0.80
A1	0.00	0.05	--
b	0.25	0.40	0.32
c	0.10	0.25	0.15
D	3.20	3.40	3.30
D1	2.95	3.15	3.05
D2	2.30	2.70	2.50
E	3.20	3.40	3.30
E1	2.95	3.15	3.05
E2	1.60	2.00	1.80
E3	0.95	1.35	1.15
E4	0.10	0.30	0.20
e	--	--	0.65
k	0.50	0.90	0.70
L	0.30	0.50	0.40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

Suggested Pad Layout

Please see <http://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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