

Features

- $BV_{CEO} > -40V$
- Small Form Factor Thermally Efficient Package. Enables Higher Density End Products
- $I_C = -3A$ High Continuous Current
- $I_{CM} = -6A$ Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)} < -400mV @ -1A$
- Minimum $h_{FE} 200 @ I_C=-1A$
- 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)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Mechanical Data

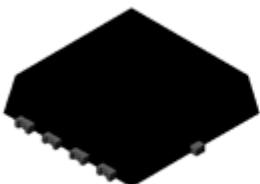
- Case: PowerDI®3333-8
- Case Material: Molded Plastic. "Green" Molding Compound
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish—Matte Tin Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.03 grams (Approximate)

Applications

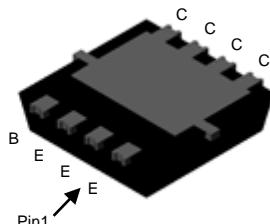
- High-Side Switch
- Low Drop Out Regulator
- MOSFET or IGBT Gate Driving

PowerDI3333-8 (SWP) (Type UX)

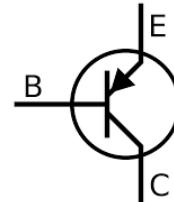
Equivalent Circuit



Top View



Bottom View



Device Symbol

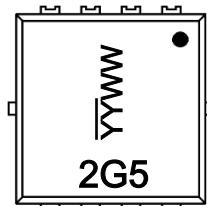
Ordering Information (Note 5)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DXTP07040CFGQ-7	Automotive	2G5	7	12	2000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See <http://www.diodes.com> 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information

PowerDI3333-8 (SWP) (Type UX)



2G5= Product Type Marking Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 18 = 2018)
 WW = Week Code (01 to 53)

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	-3	A
Peak Pulse Current	I_{CM}	-6	A

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

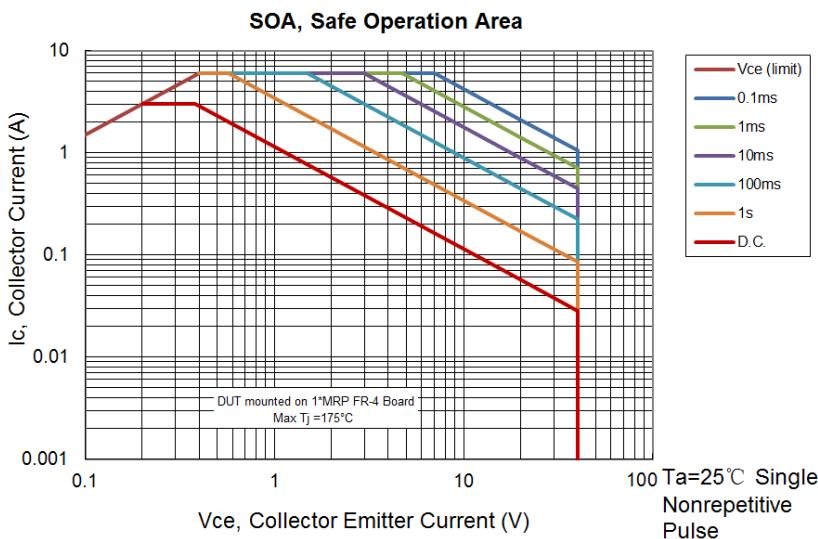
Characteristic	Symbol	Value	Unit
Power Dissipation	P_D	0.9	W
		2.1	W
		3.1	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	140	°C/W
		65	°C/W
		44	°C/W
Thermal Resistance, Junction to Leads (Note 9)	$R_{\theta JL}$	8.5	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +175	°C

ESD Ratings (Note 10)

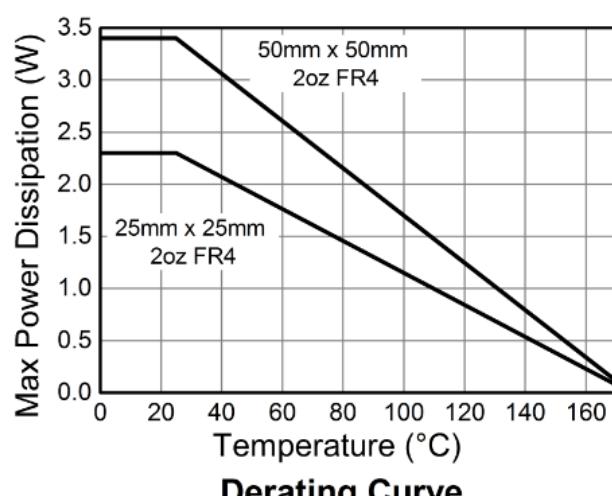
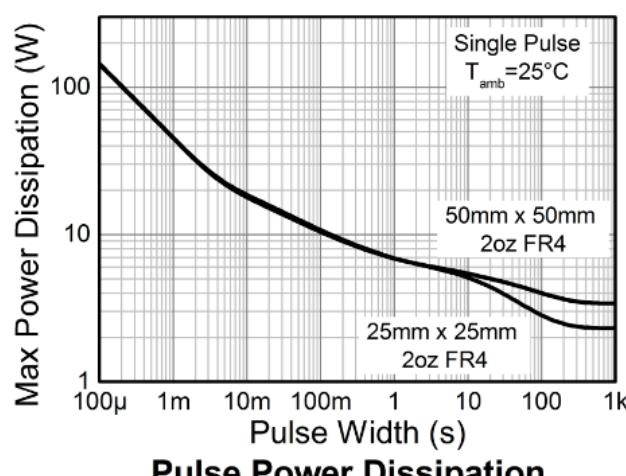
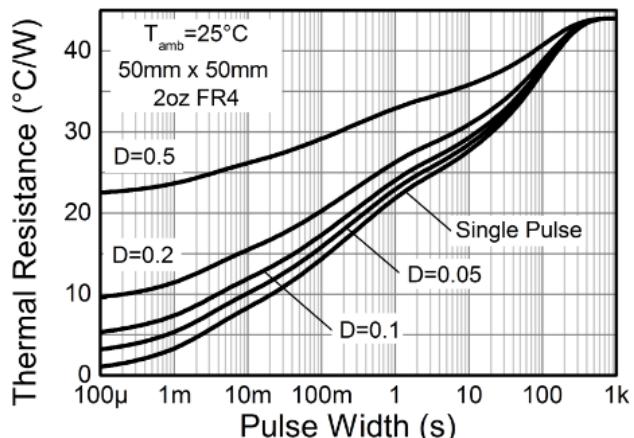
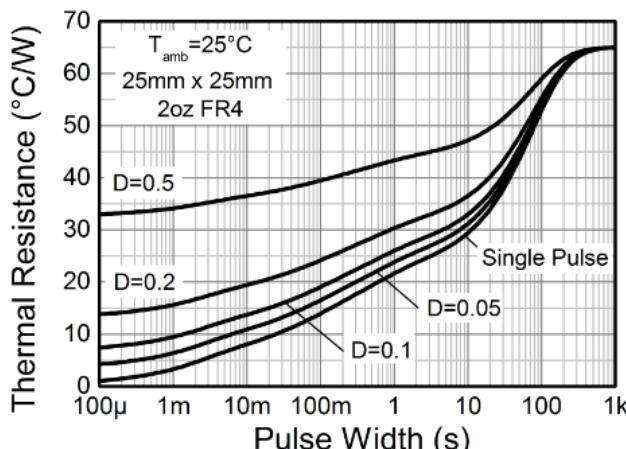
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge—Human Body Model	ESD HBM	4000	V	3A
Electrostatic Discharge—Machine Model	ESD MM	400	V	C

- Notes:
- 6. 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.
 - 7. Same as Note 5, except the device is mounted on 25mm x 25mm 2oz copper.
 - 8. Same as Note 5, except the device is mounted on 50mm x 50mm 2oz copper.
 - 9. Thermal resistance from junction to solder-point (at the collector tab).
 - 10. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information



$T_a = 25^\circ\text{C}$ Single
Nonrepetitive
Pulse

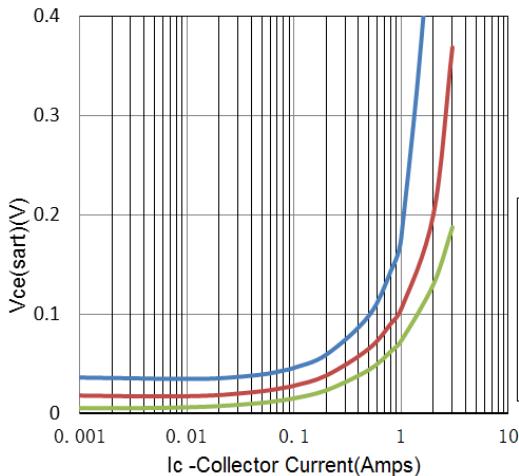


Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

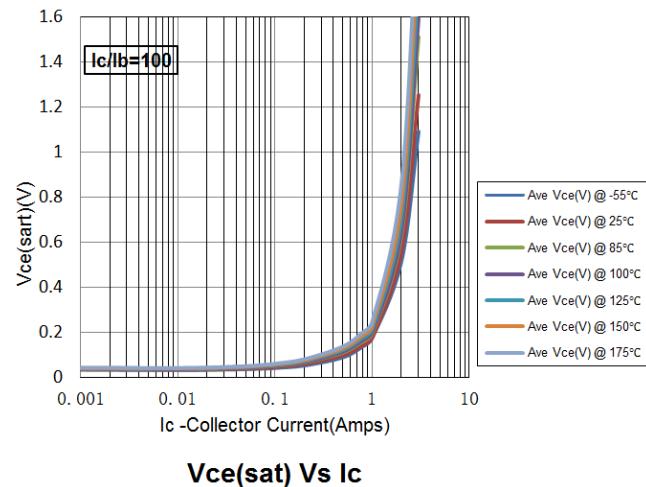
Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-50	-65	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 11)	BV_{CEO}	-40	-57	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.8	—	V	$I_E = -100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}	—	—	-20	nA	$V_{\text{CB}} = -40\text{V}$
		—	—	-10	μA	$V_{\text{CB}} = -40\text{V}, T_A = +125^\circ\text{C}$
Emitter Cut-Off Current	I_{EBO}	—	—	-20	nA	$V_{\text{EB}} = -6\text{V}$
DC Current Transfer Static Ratio (Note 11)	h_{FE}	300	527	800	—	$I_C = -10\text{mA}, V_{\text{CE}} = -2\text{V}$
		250	432	—	—	$I_C = -500\text{mA}, V_{\text{CE}} = -2\text{V}$
		200	377	—	—	$I_C = -1\text{A}, V_{\text{CE}} = -2\text{V}$
		150	273	—	—	$I_C = -2\text{A}, V_{\text{CE}} = -2\text{V}$
Collector-Emitter Saturation Voltage (Note 11)	$V_{\text{CE}(\text{sat})}$	—	-99	-200	mV	$I_C = -500\text{mA}, I_B = -5\text{mA}$
		—	-177	-400	mV	$I_C = -1\text{A}, I_B = -10\text{mA}$
		—	-200	-500	mV	$I_C = -2\text{A}, I_B = -50\text{mA}$
Base-Emitter Saturation Voltage (Note 11)	$V_{\text{BE}(\text{sat})}$	—	-0.8	-1	V	$I_C = -1\text{A}, I_B = -10\text{mA}$
Base-Emitter Turn-On Voltage (Note 11)	$V_{\text{BE}(\text{on})}$	—	-0.75	0.9	V	$I_C = -1\text{A}, V_{\text{CE}} = -2\text{V}$
Transitional Frequency	f_T	100	—	—	MHz	$I_C = -50\text{mA}, V_{\text{CE}} = -5\text{V}, f = 50\text{MHz}$
Output Capacitance	C_{obo}	—	24	—	pF	$V_{\text{CB}} = -10\text{V}, f = 1\text{MHz}$
Switching Time	t_{ON}	—	35	—	ns	$V_{\text{CC}} = -10\text{V}, I_C = -500\text{mA}, I_{\text{B1}} = -I_{\text{B2}} = -50\text{mA}$
	t_{OFF}	—	600	—	ns	

Note: 11. Measured under pulsed conditions. Pulse width $\leq 300\ \mu\text{s}$. Duty cycle $\leq 2\%$.

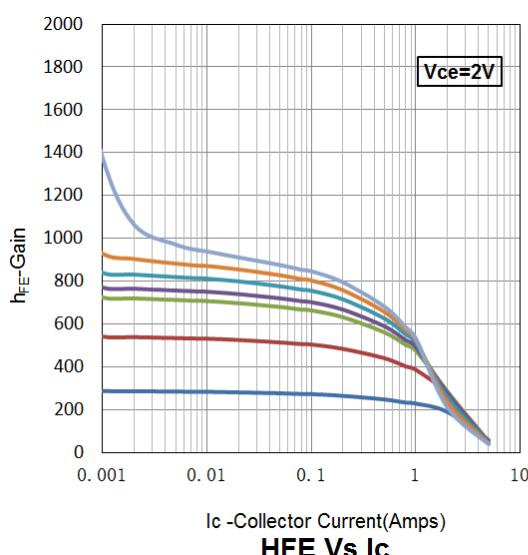
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



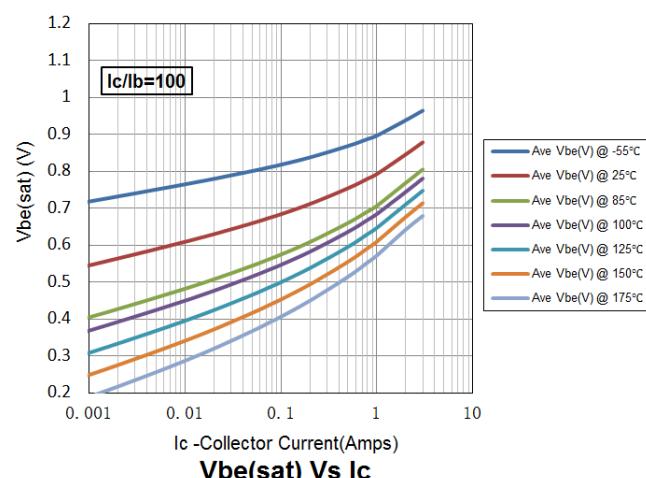
$V_{ce(sat)}$ Vs I_c



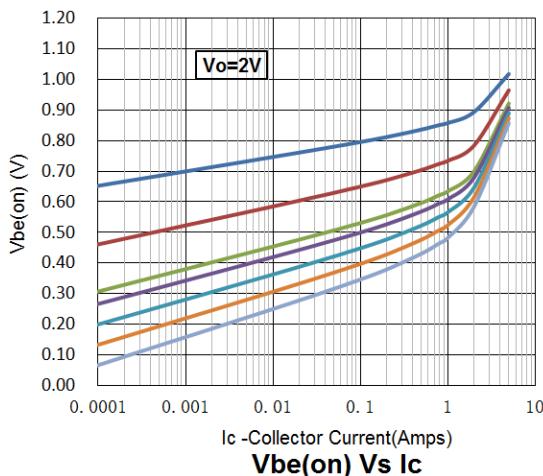
$V_{ce(sat)}$ Vs I_c



HFE Vs I_c



$V_{be(sat)}$ Vs I_c

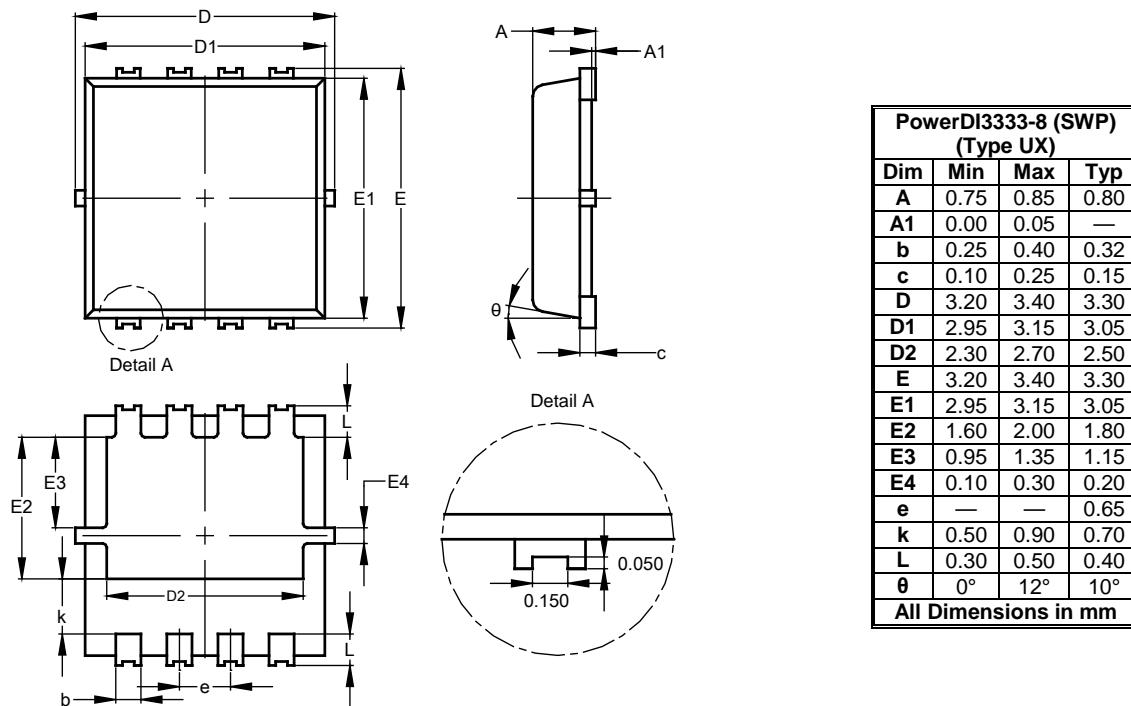


$V_{be(on)}$ Vs I_c

Package Outline Dimensions

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

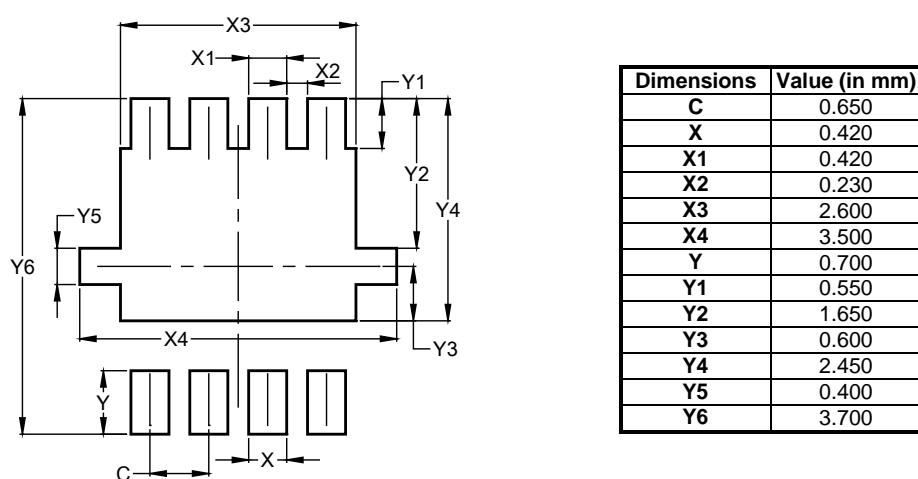
PowerDI3333-8 (SWP) (Type UX)



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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