


## Features

- $BV_{CEO} > -25V$
- Small Form Factor Thermally Efficient Package. Enables Higher Density End Products
- $I_C = -3A$  High Continuous Current
- $I_{CM} = -8A$  Peak Pulse Current
- Low Saturation Voltage  $V_{CE(sat)} < -200mV @ -1A$
- Complementary NPN Type: DXTN07025BFG
- 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**

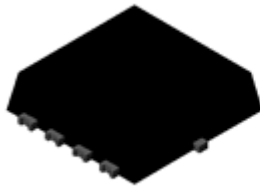
## Mechanical Data

- 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 Solderable per MIL-STD-202, Method 208 
- Weight: 0.03 grams (Approximate)

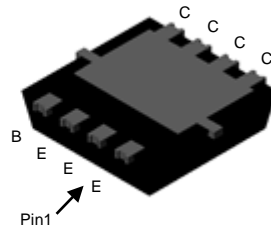
## Applications

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

PowerDI3333-8 (SWP) (Type UX)

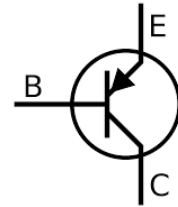


Top View



Bottom View

Equivalent Circuit



Device Symbol

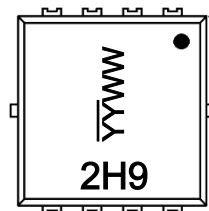
## Ordering Information (Notes 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DXTP07025BFG-7	AEC-Q101	2H9	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 <http://www.diodes.com/products/packages.html>.

## Marking Information

PowerDI3333-8 (SWP) (Type UX)



- 2H9= 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<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-35	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-25	V
Emitter-Base Voltage	V <sub>EBO</sub>	-7	V
Continuous Collector Current	I <sub>C</sub>	-3	A
Peak Pulse Current	I <sub>CM</sub>	-8	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	0.9	W
		2.1	W
		3.1	W
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	140	°C/W
		65	°C/W
		44	°C/W
Thermal Resistance, Junction to Leads (Note 8)	R <sub>θJL</sub>	8.5	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +175	°C

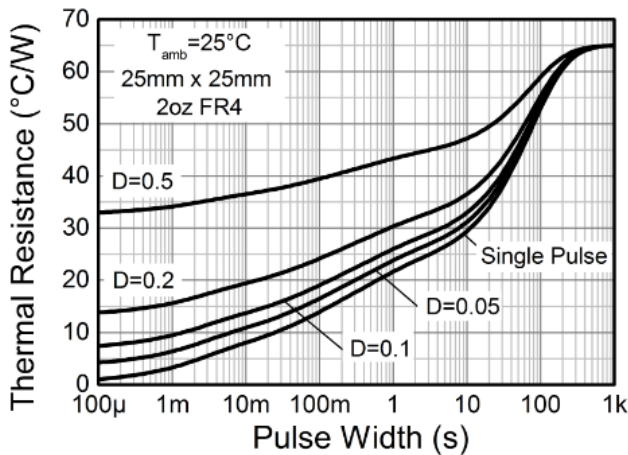
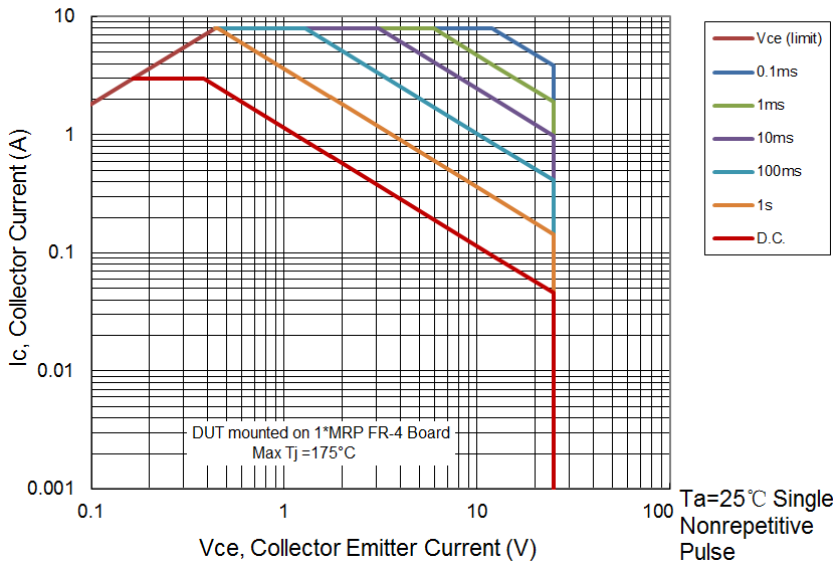
**ESD Ratings** (Note 9)

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

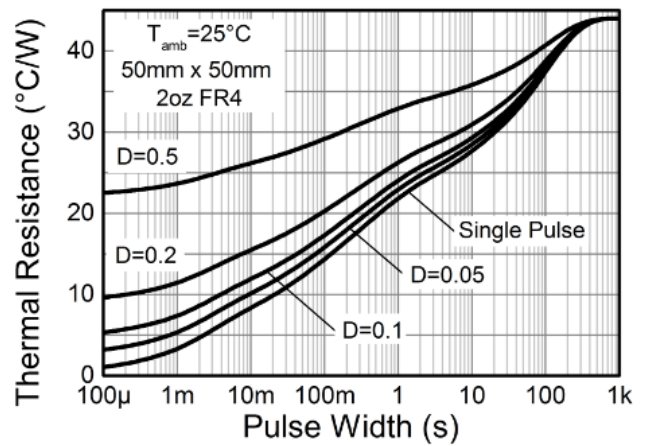
- Notes:
1. For a device mounted with the collector tab on MRP FR4-PCB; device is measured under still air conditions whilst operating in a steady-state.
  2. Same as Note 5, except the device is mounted on 25mm x 25mm 2oz copper.
  3. Same as Note 5, except the device is mounted on 50mm x 50mm 2oz copper.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

**Thermal Characteristics and Derating Information**

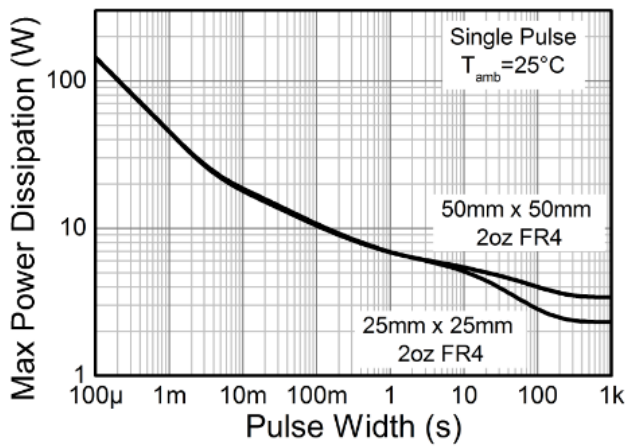
**SOA, Safe Operation Area**



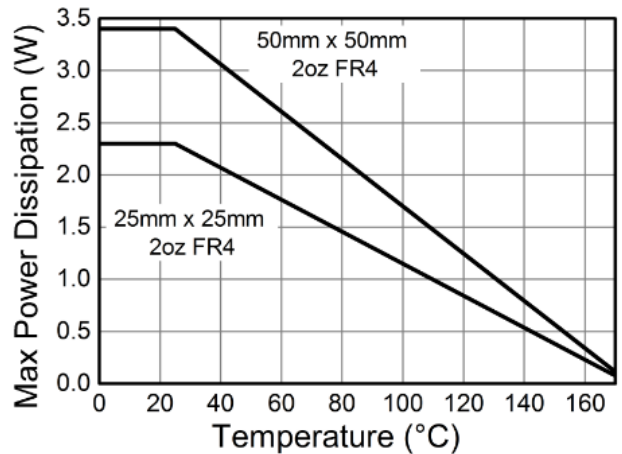
**Transient Thermal Impedance**



**Transient Thermal Impedance**



**Pulse Power Dissipation**



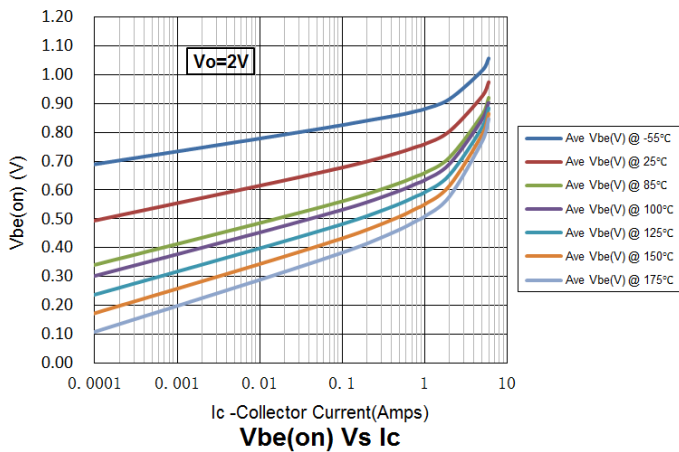
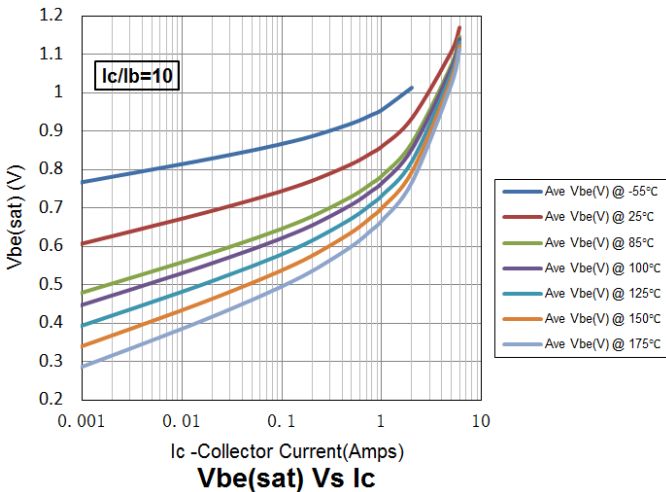
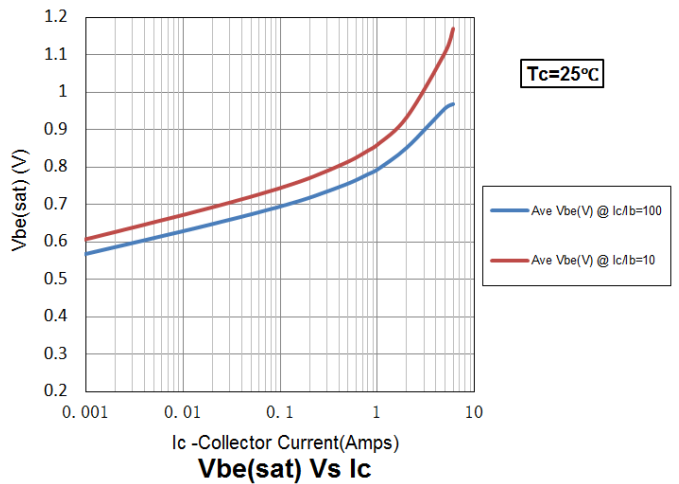
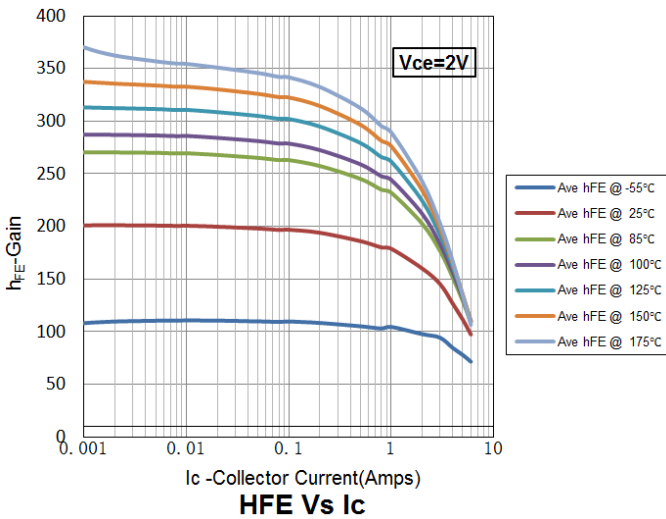
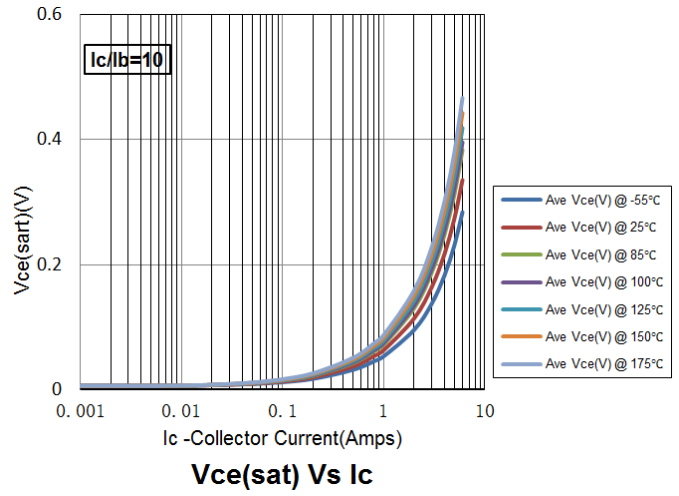
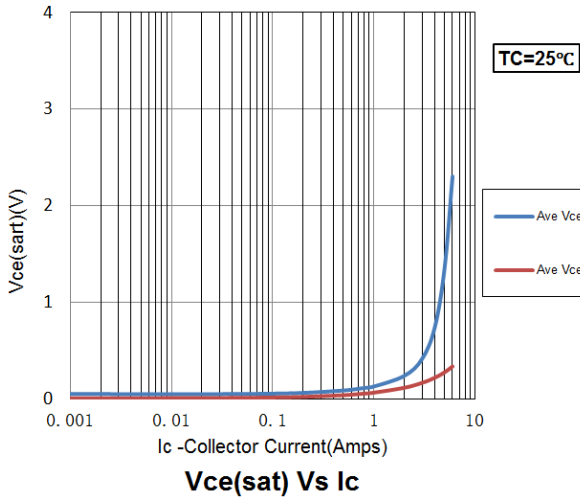
**Derating Curve**

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$BV_{CBO}$	-35	-71	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 10)	$BV_{CEO}$	-25	-42	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	-7	-8.3	—	V	$I_E = -100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$	—	—	-20	nA	$V_{CB} = -30\text{V}$
		—	—	-10	$\mu\text{A}$	$V_{CB} = -30\text{V}, T_A = +125^\circ\text{C}$
Emitter Cut-Off Current	$I_{EBO}$	—	—	-20	nA	$V_{EB} = -6\text{V}$
Collector-Emitter Saturation Voltage (Note 10)	$V_{CE(SAT)}$	—	-64	-200	mV	$I_C = -1\text{A}, I_B = -100\text{mA}$
		—	-164	-400	mV	$I_C = -3\text{A}, I_B = -300\text{mA}$
Base-Emitter Saturation Voltage (Note 10)	$V_{CE(SAT)}$	—	-0.86	-1	V	$I_C = -1\text{A}, I_B = -100\text{mA}$
Base-Emitter Turn-On Voltage (Note 10)	$V_{BE(ON)}$	—	-0.77	-0.9	V	$I_C = -1\text{A}, V_{CE} = -2\text{V}$
DC Current Gain (Note 10)	$h_{FE}$	70	196	—	—	$I_C = -50\text{mA}, V_{CE} = -2\text{V}$
		100	174	300	—	$I_C = -1\text{A}, V_{CE} = -2\text{V}$
		75	153	—	—	$I_C = -2\text{A}, V_{CE} = -2\text{V}$
		40	94	—	—	$I_C = -6\text{A}, V_{CE} = -2\text{V}$
Current Gain-Bandwidth Product	$f_T$	100	160	—	MHz	$V_{CE} = -5\text{V}, I_C = -100\text{mA}$ $f = 100\text{MHz}$
Turn-On Time	$t_{on}$	—	40	—	ns	$V_{CC} = -10\text{V}, I_C = -500\text{mA}$
Turn-Off Time	$t_{off}$	—	450	—	ns	$I_{B1} = -I_{B2} = -50\text{mA}$
Output Capacitance	$C_{obo}$	—	55	100	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$

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

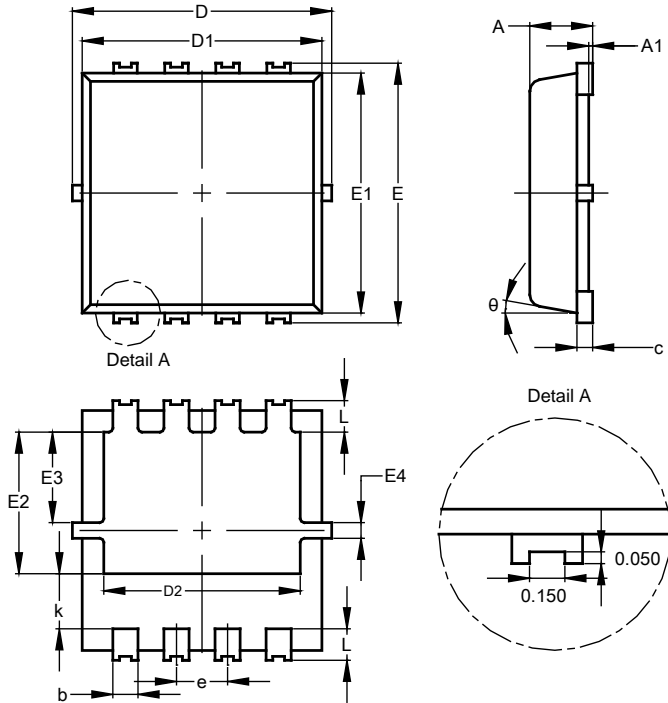
**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)



**Package Outline Dimensions**

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

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

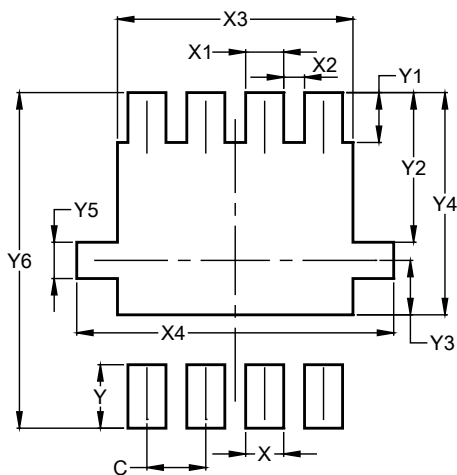


PowerDI3333-8 (SWP) (Type UX)			
Dim	Min	Max	Typ
A	0.75	0.85	0.80
A1	0.00	0.05	—
b	0.25	0.40	0.32
c	0.10	0.25	0.15
D	3.20	3.40	3.30
D1	2.95	3.15	3.05
D2	2.30	2.70	2.50
E	3.20	3.40	3.30
E1	2.95	3.15	3.05
E2	1.60	2.00	1.80
E3	0.95	1.35	1.15
E4	0.10	0.30	0.20
e	—	—	0.65
k	0.50	0.90	0.70
L	0.30	0.50	0.40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