

## Features

- $BV_{CEO} > -60V$
- 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  $V_{CE(SAT)} < -250mV @ -1A$
- Complementary NPN Type: DXTN07060BFG
- 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**

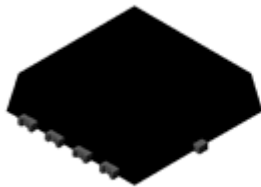
## Mechanical Data

- 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)

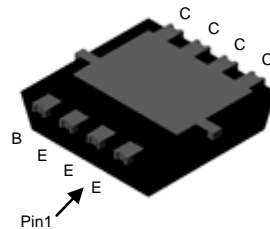
## Applications

- High Side Switch
- MOSFET or IGBT Gate Driver

PowerDI3333-8 (SWP) (Type UX)

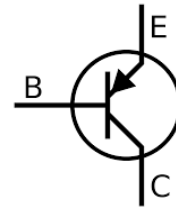


Top View



Bottom View

Equivalent Circuit



Device Symbol

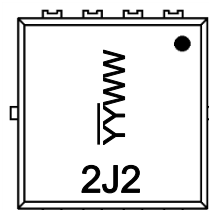
## Ordering Information (Note 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
DXTP07060BFG-7	AEC-Q101	2J2	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)



2J2= 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>CB0</sub>	-80	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-60	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>	-6	A

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

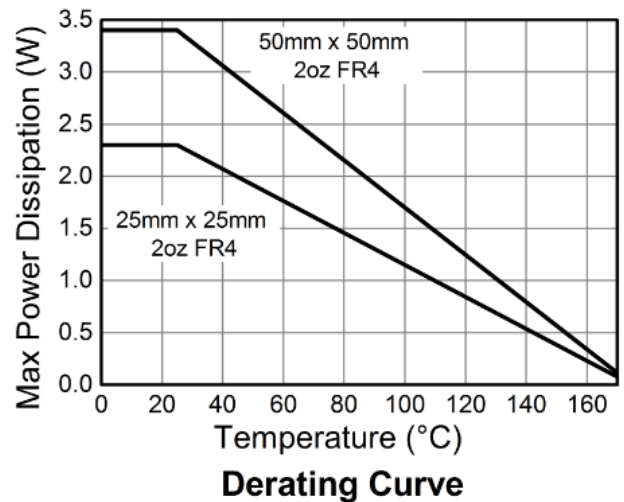
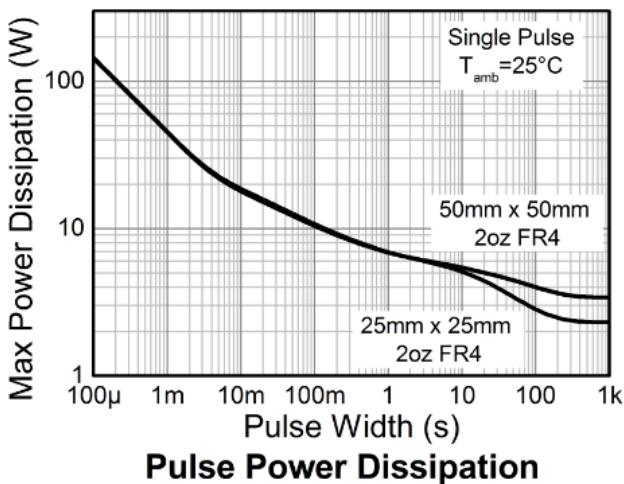
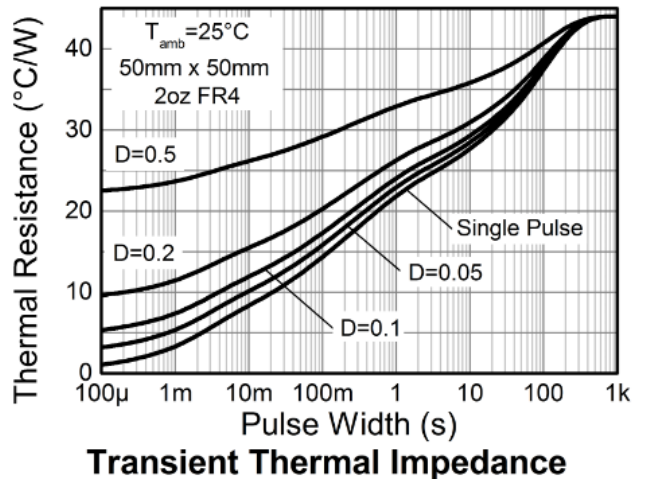
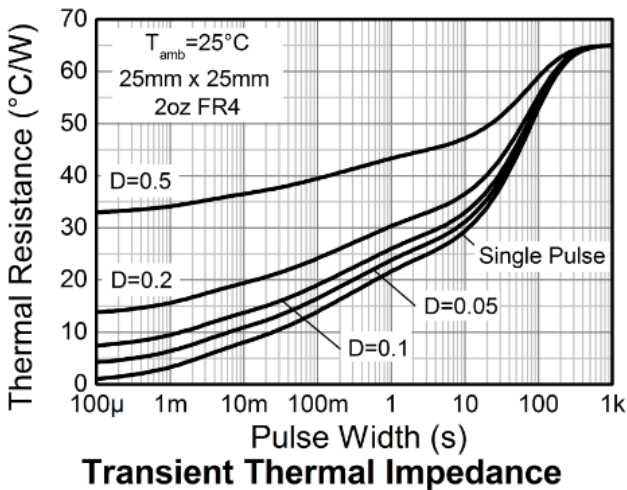
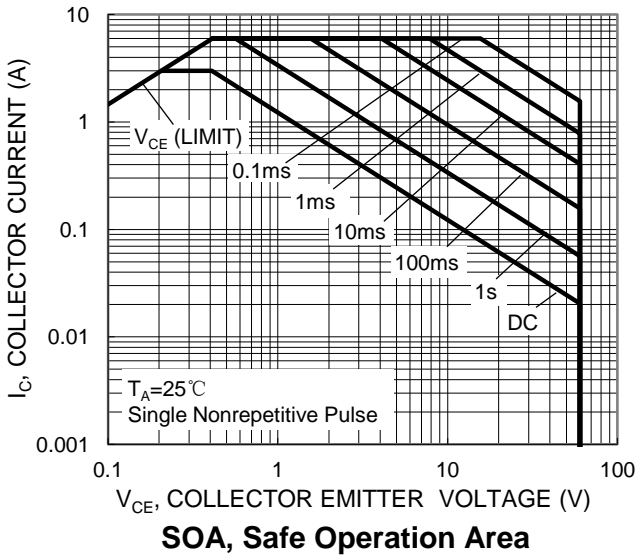
Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	0.9	W
		2.1	W
		3.1	W
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	140	°C/W
		65	°C/W
		44	°C/W
Thermal Resistance, Junction to Leads (Note 8)	R <sub>θJL</sub>	8.5	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , 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	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 FR-4 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**

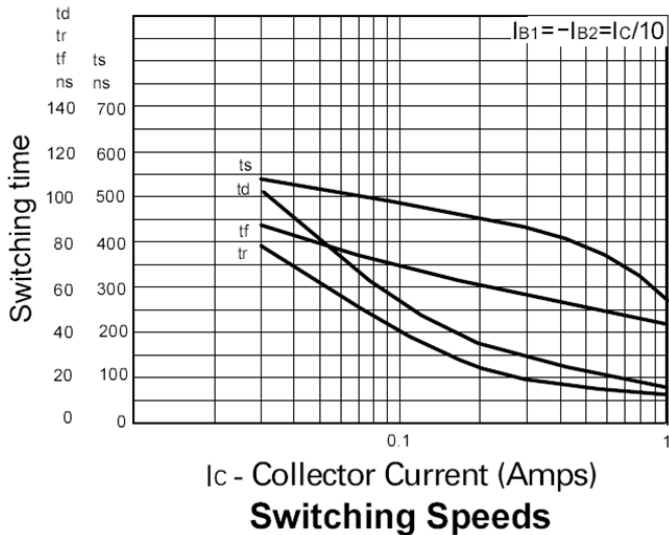
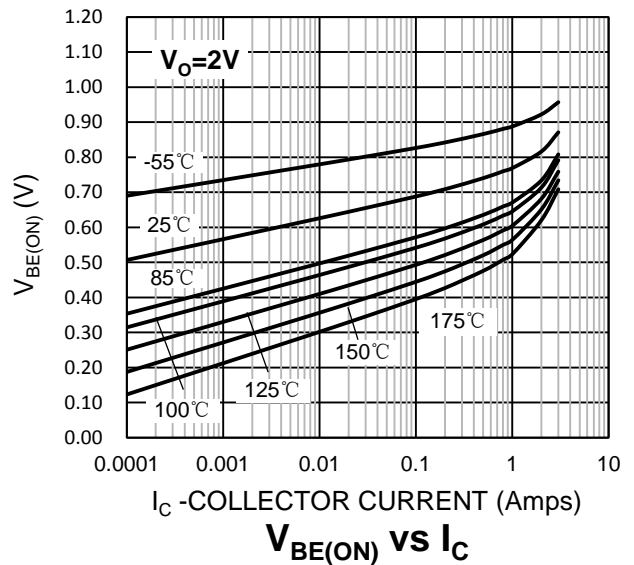
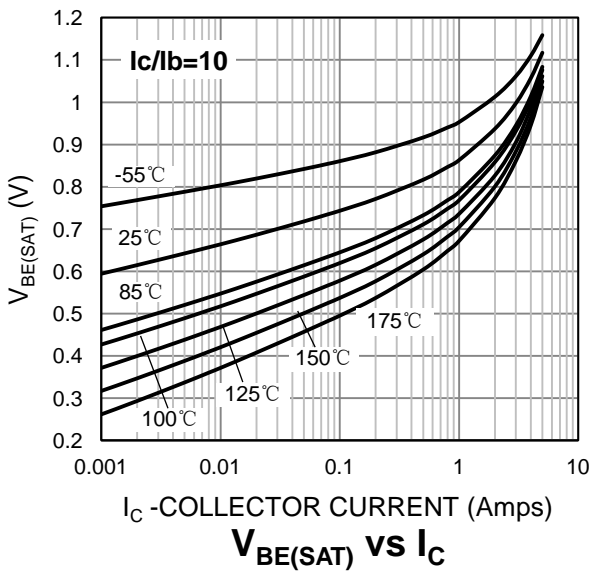
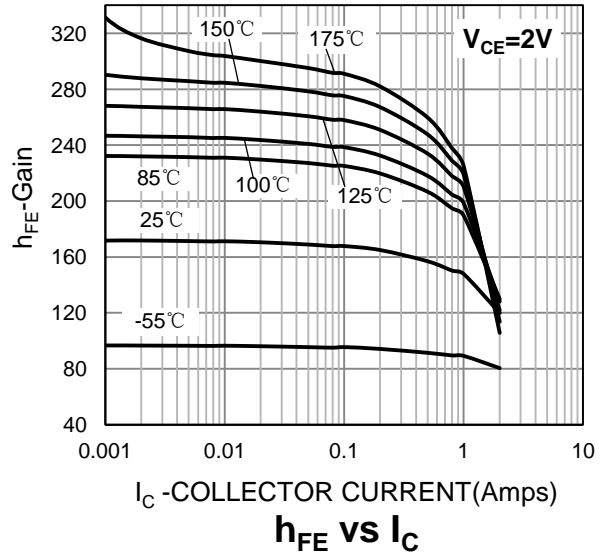
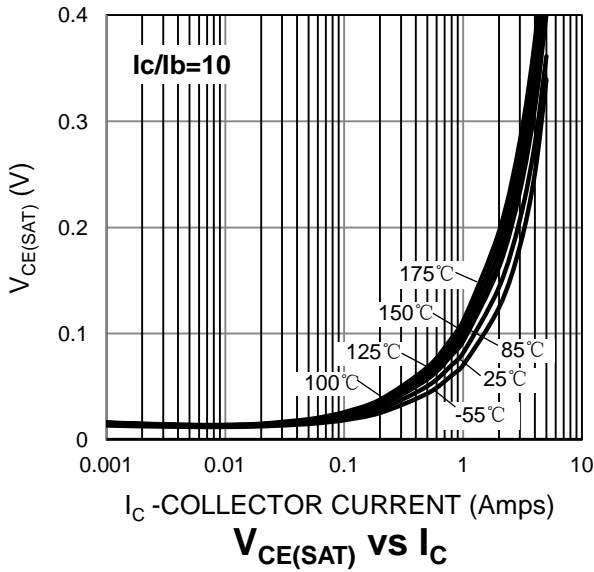


**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$BV_{CBO}$	-80	-130	—	V	$I_C = -100\mu A$
Collector-Emitter Breakdown Voltage (Note 10)	$BV_{CEO}$	-60	-88	—	V	$I_C = -10mA$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	-7	-8.3	—	V	$I_E = -100\mu A$
Collector Cut-off Current	$I_{CBO}$	—	—	-20	nA	$V_{CB} = -60V$
		—	—	-10	$\mu A$	$V_{CB} = -60V, T_A = +125^\circ C$
Emitter Cut-off Current	$I_{EBO}$	—	—	-20	nA	$V_{EB} = -6V$
Collector-Emitter Saturation Voltage (Note 10)	$V_{CE(SAT)}$	—	-82	-250	mV	$I_C = -1A, I_B = -100mA$
		—	-206	-500	mV	$I_C = -3A, I_B = -300mA$
Base-Emitter Saturation Voltage (Note 10)	$V_{BE(SAT)}$	—	-0.87	-1	V	$I_C = -1A, I_B = -100mA$
Base-Emitter Turn-On Voltage (Note 10)	$V_{BE(ON)}$	—	-0.78	-0.9	V	$I_C = -1A, V_{CE} = -2V$
DC Current Gain (Note 10)	$h_{FE}$	70	168	—	—	$I_C = -50mA, V_{CE} = -2V$
		100	155	300	—	$I_C = -500mA, V_{CE} = -2V$
		80	145	—	—	$I_C = -1A, V_{CE} = -2V$
		40	117	—	—	$I_C = -2A, V_{CE} = -2V$
Current Gain-Bandwidth Product	$f_T$	100	140	—	MHz	$V_{CE} = -5V, I_C = -100mA$ $f = 100MHz$
Turn-On Time	$t_{ON}$	—	40	—	ns	$V_{CC} = -10V, I_C = -500mA$
Turn-Off Time	$t_{OFF}$	—	450	—	ns	$I_{B1} = -I_{B2} = -50mA$
Output Capacitance	$C_{OBO}$	—	—	30	pF	$V_{CB} = -10V, f = 1MHz$

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

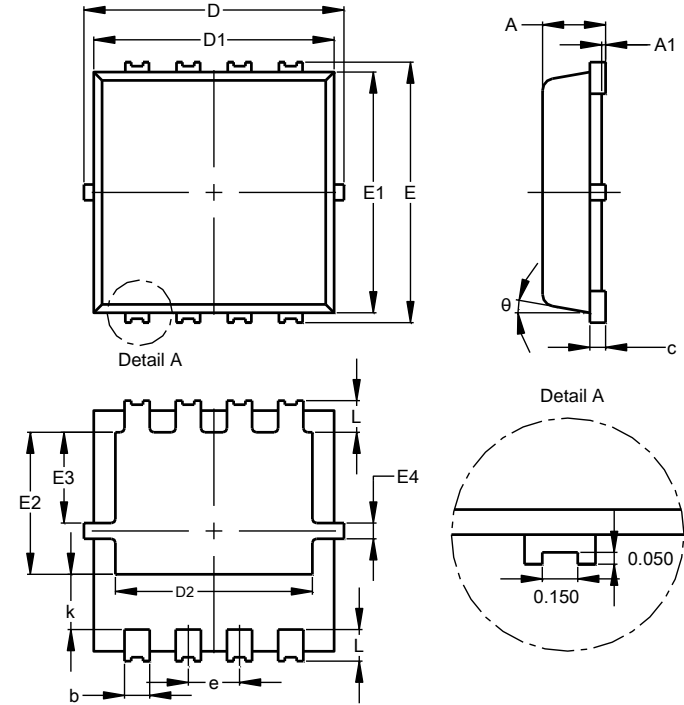
**Typical Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)



**Package Outline Dimensions**

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

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

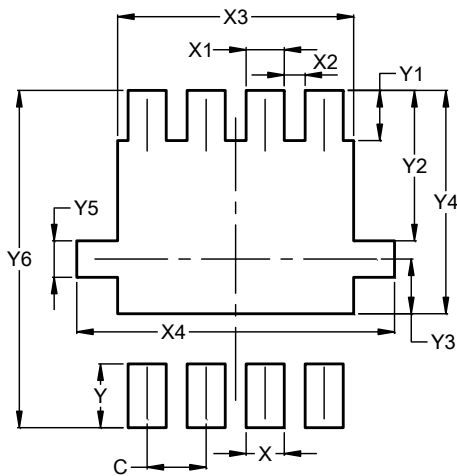


PowerDI3333-8 (SWP) (Type UX)			
Dim	Min	Max	Typ
A	0.75	0.85	0.80
A1	0.00	0.05	--
b	0.25	0.40	0.32
c	0.10	0.25	0.15
D	3.20	3.40	3.30
D1	2.95	3.15	3.05
D2	2.30	2.70	2.50
E	3.20	3.40	3.30
E1	2.95	3.15	3.05
E2	1.60	2.00	1.80
E3	0.95	1.35	1.15
E4	0.10	0.30	0.20
e	--	--	0.65
k	0.50	0.90	0.70
L	0.30	0.50	0.40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

**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

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device terminals and PCB tracking.

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