

## Features

- $BV_{CEO} > -100V$
- $I_C = -3A$  Continuous Collector Current
- $I_{CM} = -8A$  Peak Pulse Current
- $R_{CE(SAT)} = 110m\Omega$  (typ)
- Rated to +175°C—Ideal for High Ambient Temperature Environments
- Complementary Part DXTN3C100PS
- Meets Requirements of Automotive Applications
- **Lead-Free Finish; 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: Power®DI5060-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Finish—Matte Tin Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208
- Weight: 0.097 grams (Approximate)

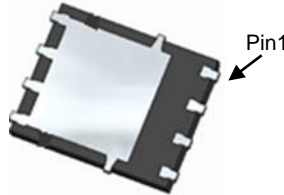
## Applications

- Power Management
- Load Switch
- Linear Mode Voltage Regulator
- Backlighting Applications

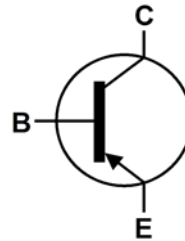
PowerDI5060-8



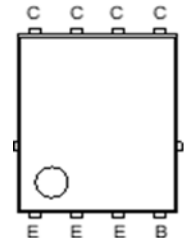
Top View



Bottom View



Internal Schematic



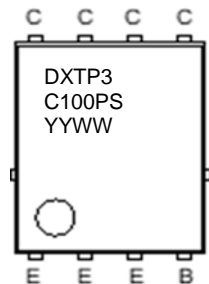
Top View  
Pin Configuration

## Ordering Information

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DXTP3C100PSQ-13	Automotive	DXTP3C100PS	13	12	2500

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.

## Marking Information



DXTP3 = Product Type Marking Code  
 C100PS = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Last Digit 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>	-100	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-100	V
Emitter-Base Voltage	V <sub>EBO</sub>	-7	V
Base Current	I <sub>B</sub>	-0.5	A
Continuous Collector Current	I <sub>C</sub>	-3	A
Peak Pulse Collector Current	I <sub>CM</sub>	-8	A

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

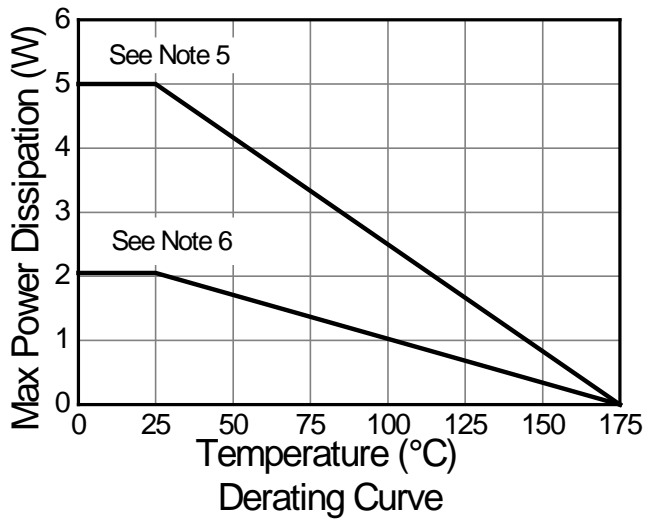
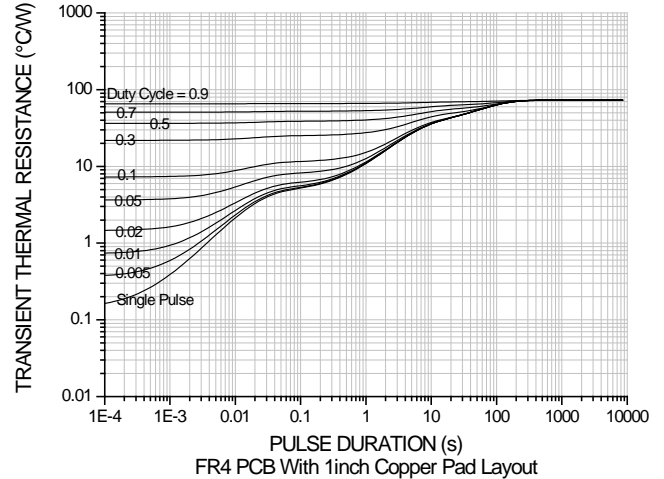
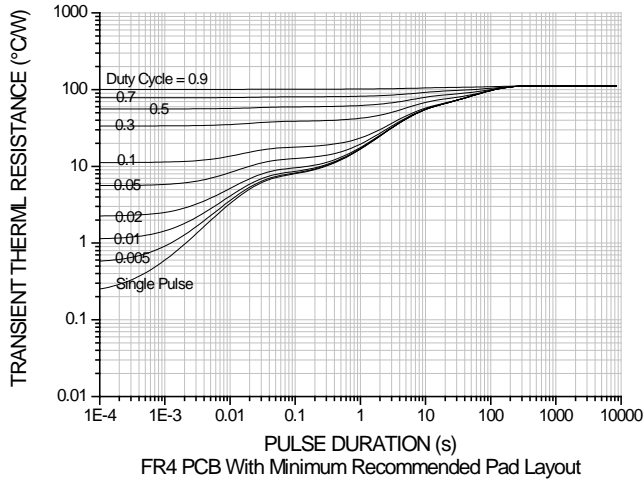
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	5	W
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	40	°C/W
		120 (Note 6)	
Thermal Resistance, Junction to Case (Note 5, 7)	R <sub>θJC</sub>	2	°C/W
		12 (Note 6, 7)	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +175	°C

**ESD Ratings** (Note 8)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge—Human Body Model	ESD HBM	8000V	V	3A
Electrostatic Discharge—Machine Model	ESD MM	400V	V	C

- Notes:
5. For a device mounted with the collector lead on 25mm x 25mm 2oz copper, on a single-sided 1.6mm FR4 PCB; the device is measured under still air conditions while operating in a steady state.
  6. Same as Note 5 except mounted on minimum recommended pad layout.
  7. Thermal resistance from junction to the top of the case.
  8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

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

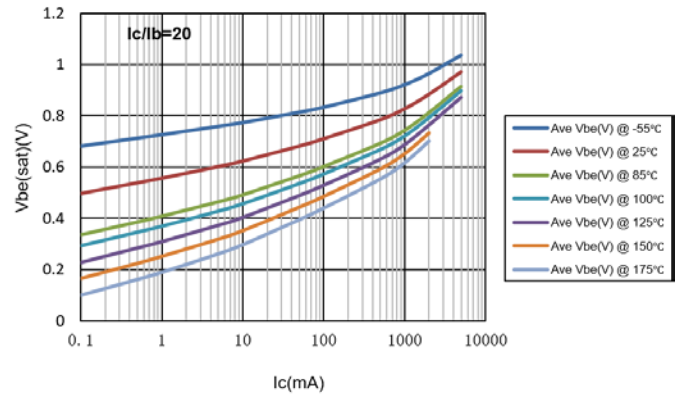
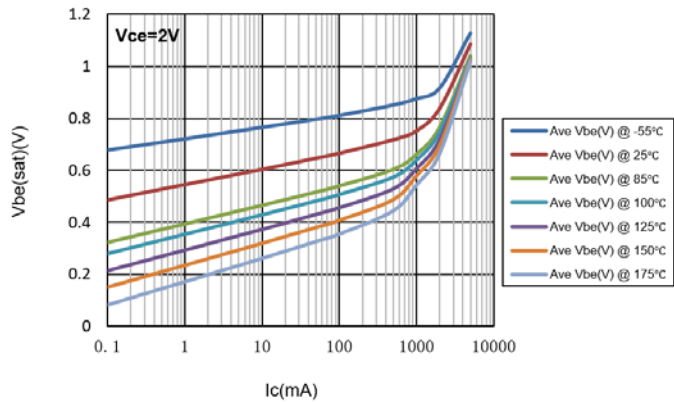
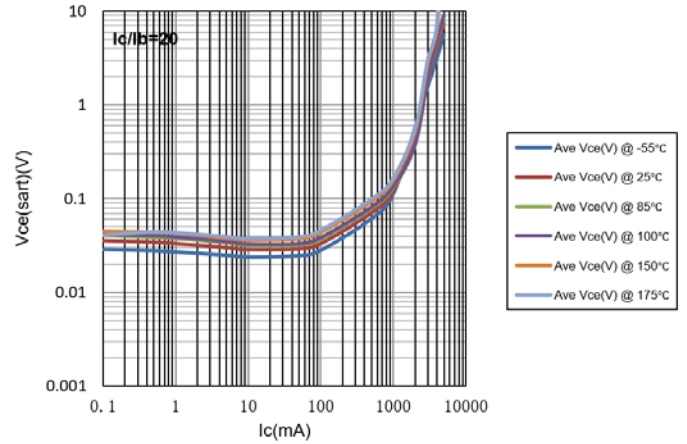
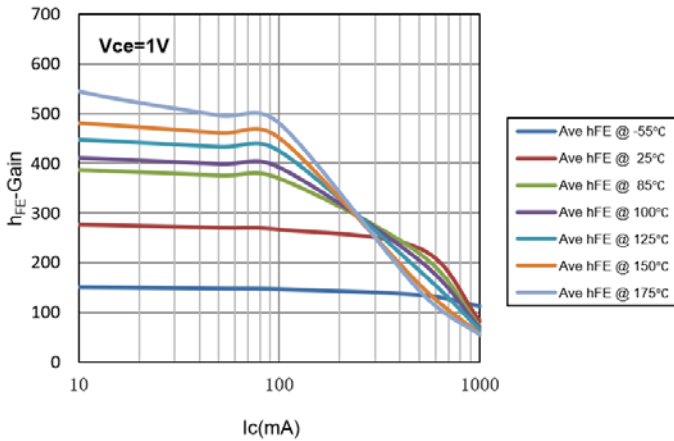
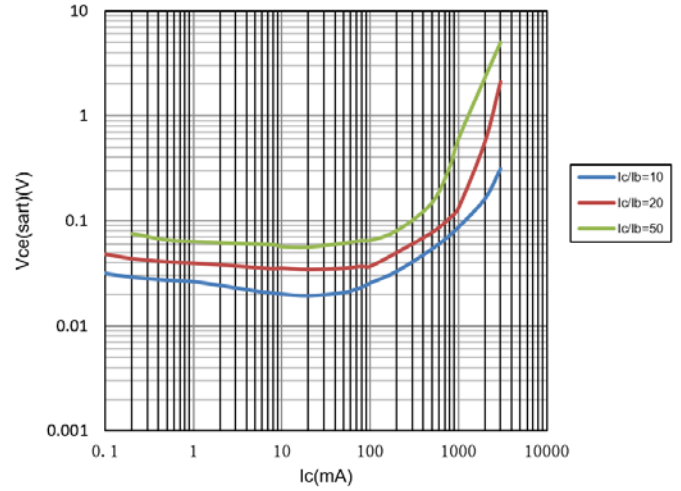
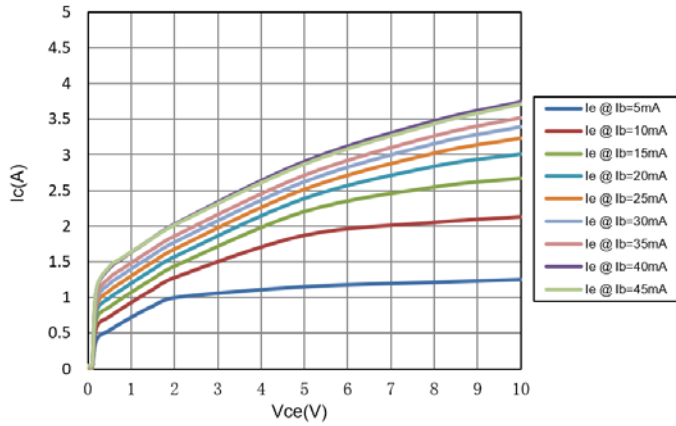


**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-100	—	—	V	I <sub>C</sub> = -100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV <sub>CEO</sub>	-100	—	—	V	I <sub>C</sub> = -10mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-7	—	—	V	I <sub>E</sub> = -100μA
Collector-Base Cutoff Current	I <sub>CBO</sub>	—	—	-100	nA	V <sub>CB</sub> = -80V
		—	—	-50	μA	V <sub>CB</sub> = -80V @T <sub>J</sub> = 150°C
Emitter Cutoff Current	I <sub>EBO</sub>	—	—	-100	nA	V <sub>EB</sub> = -7V
Collector-Emitter Cutoff Current	I <sub>CES</sub>	—	—	-100	nA	V <sub>CES</sub> = -80V
<b>ON CHARACTERISTICS</b> (Note 9)						
DC Current Gain	h <sub>FE</sub>	170	305	—	—	I <sub>C</sub> = -500mA, V <sub>CE</sub> = -10V
		160	275	—		I <sub>C</sub> = -1A, V <sub>CE</sub> = -10V
		45	90	—		I <sub>C</sub> = -2A, V <sub>CE</sub> = -10V
		10	20	—		I <sub>C</sub> = -3A, V <sub>CE</sub> = -10V
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	—	-70	-110	mV	I <sub>C</sub> = -0.5A, I <sub>B</sub> = -50mA
		—	-220	-360		I <sub>C</sub> = -2A, I <sub>B</sub> = -200mA
Collector-Emitter Saturation Resistance	R <sub>CE(sat)</sub>	—	110	180	mΩ	I <sub>C</sub> = -2A, I <sub>B</sub> = -200mA
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	—	-0.91	-1	V	I <sub>C</sub> = -1A, I <sub>B</sub> = -50mA
		—	-1.02	-1.2		I <sub>C</sub> = -2A, I <sub>B</sub> = -200mA
Base-Emitter Turn-On Voltage	V <sub>BE(on)</sub>	—	-0.68	-0.9	V	I <sub>C</sub> = -0.1A, V <sub>CE</sub> = -2V
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Current Gain-Bandwidth Product	f <sub>T</sub>	—	125	—	MHz	V <sub>CE</sub> = -10V, I <sub>C</sub> = -100mA, f = 100MHz
Output Capacitance	C <sub>obo</sub>	—	30	—	pF	V <sub>CB</sub> = -10V, f = -1MHz
Delay Time	t <sub>d</sub>	—	20	—	ns	V <sub>CC</sub> = -12.5V, I <sub>C</sub> = -1A I <sub>B1</sub> = -I <sub>B2</sub> = 50mA
Rise Time	t <sub>r</sub>	—	180	—	ns	
Turn-On Time	t <sub>(on)</sub>	—	200	—	ns	
Storage Time	t <sub>s</sub>	—	350	—	ns	
Fall Time	t <sub>f</sub>	—	220	—	ns	
Turn-Off Time	t <sub>(off)</sub>	—	570	—	ns	

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

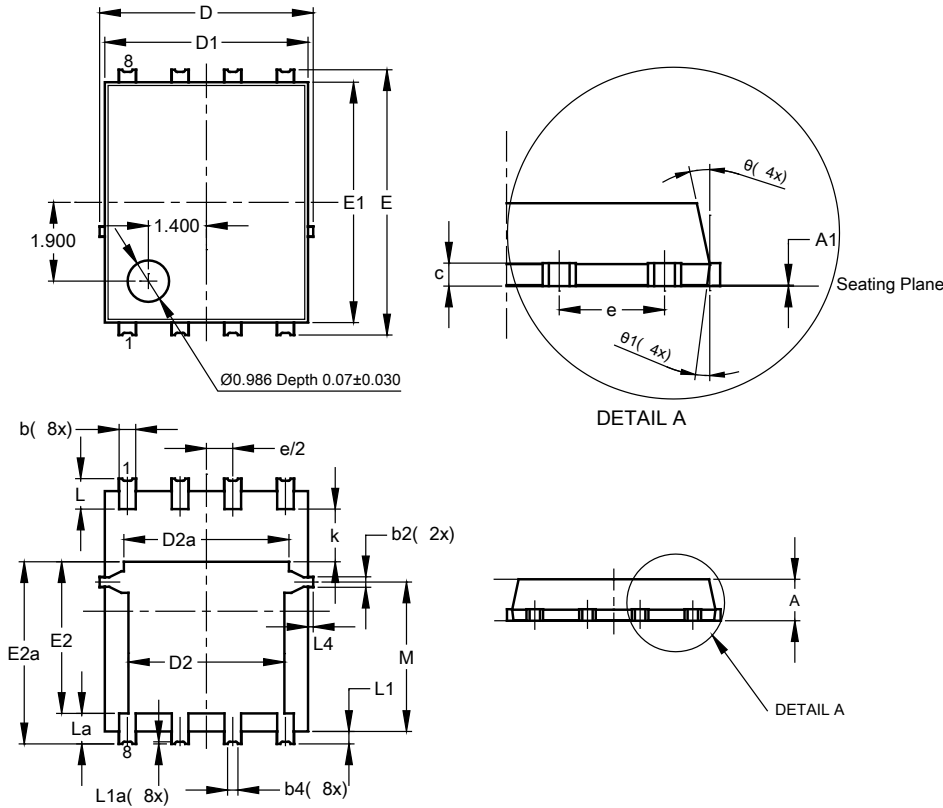
**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)



## Package Outline Dimensions

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

**PowerDI5060-8 (SWP) (Type Q)**

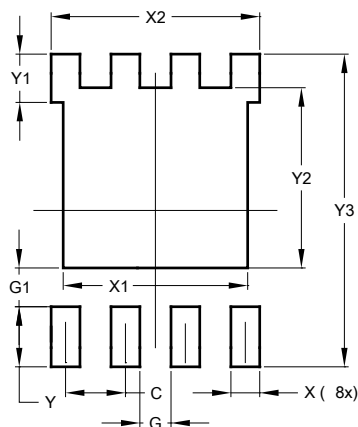


PowerDI5060-8 (SWP) (Type Q)			
Dim	Min	Max	Typ
A	0.90	1.10	1.00
A1	0	0.05	—
b	0.30	0.50	0.41
b2	0.20	0.35	0.25
b4	0.25REF		
c	0.230	0.330	0.277
D	5.15 BSC		
D1	4.70	5.10	4.90
D2	3.56	3.96	3.76
D2a	3.78	4.18	3.98
E	6.40 BSC		
E1	5.60	6.00	5.80
E2	3.46	3.86	3.66
E2a	4.195	4.595	4.395
e	1.27BSC		
k	1.05	—	—
L	0.635	0.835	0.735
La	0.635	0.835	0.735
L1	0.200	0.400	0.300
L1a	0.050REF		
L4	0.025	0.225	0.125
M	3.205	4.005	3.605
theta	10°	12°	11°
theta1	6°	8°	7°
All Dimensions in mm			

## Suggested Pad Layout

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

**PowerDI5060-8 (SWP) (Type Q)**



Dimensions	Value (in mm)
C	1.270
G	0.660
G1	0.820
X	0.610
X1	4.100
X2	4.420
Y	1.270
Y1	1.020
Y2	3.810
Y3	6.610

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