

Features

- $BV_{CEO} > 100V$
- $I_C = 3A$ Continuous Collector Current
- $I_{CM} = 6A$ Peak Pulse Current
- $R_{CE(SAT)} < 150m\Omega$
- Rated to $+175^\circ C$ —Ideal for High Ambient Temperature Environments
- Wettable Flank for Improved Optical Inspection
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DXTN3C100PSQ is suitable for automotive applications requiring specific change control and is AEC-Q101 qualified, is PPAP capable, and is manufactured in IATF16949:2016 certified facilities.**

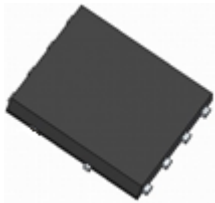
Mechanical Data

- Case: PowerDI[®] 5060-8
- 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 @3
- Weight: 0.097 grams (Approximate)

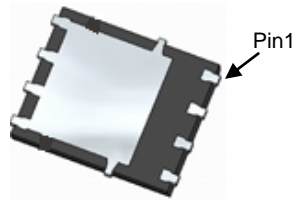
Applications

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

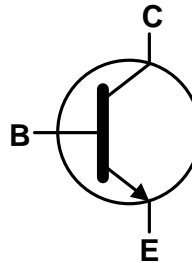
PowerDI5060-8 (SWP) (Type Q)



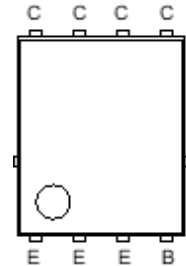
Top View



Bottom View



Internal Schematic



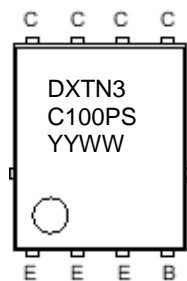
Top View
Pin Configuration

Ordering Information (Note 4)

| Part Number | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|-----------------|------------|-------------|--------------------|-----------------|-------------------|
| DXTN3C100PSQ-13 | Automotive | DXTN3C100PS | 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. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



DXTN3 = Product Type Marking Code
 C100PS = Product Type Marking Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 19 = 2019)
 WW = Week Code (01 to 53)

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

| Characteristic | Symbol | Value | Unit |
|------------------------------|------------------|-------|------|
| Collector-Base Voltage | V _{CBO} | 100 | V |
| Collector-Emitter Voltage | V _{CEO} | 100 | V |
| Emitter-Base Voltage | V _{EBO} | 7 | V |
| Base Current | I _B | 500 | mA |
| Continuous Collector Current | I _C | 3 | A |
| Peak Pulse Collector Current | I _{CM} | 6 | A |

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

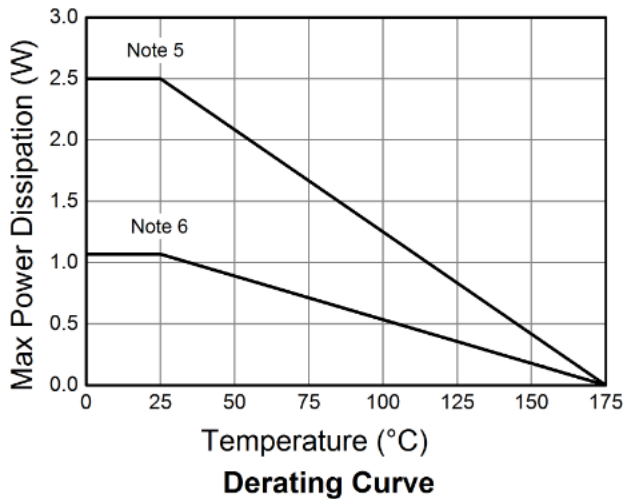
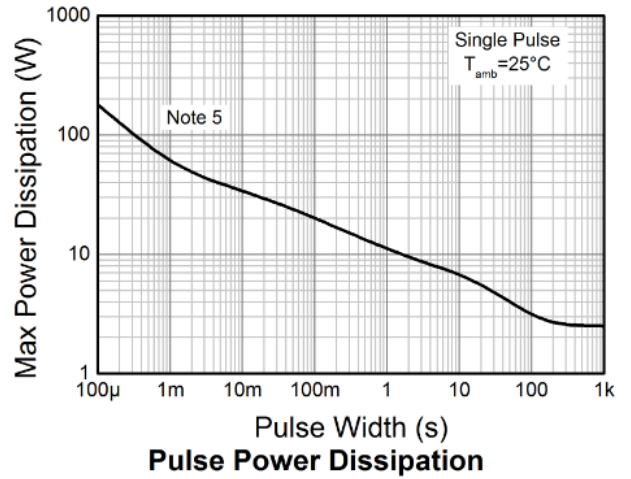
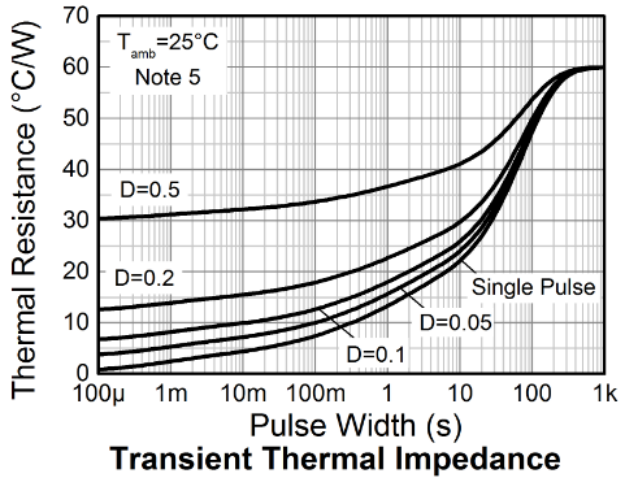
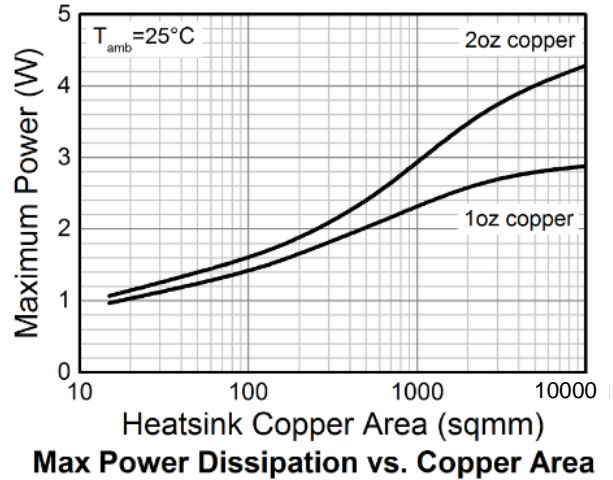
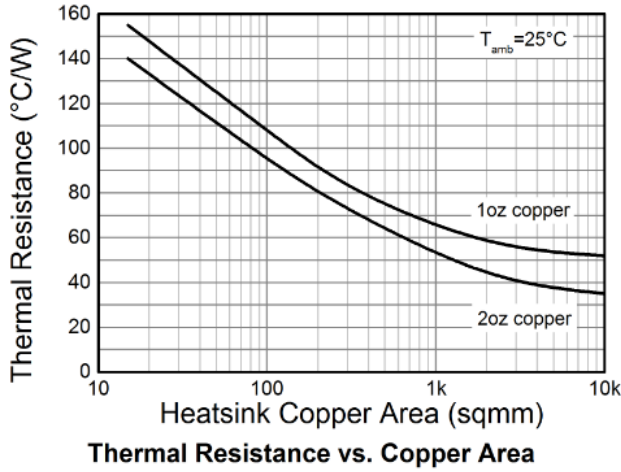
| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Power Dissipation | P _D | 2.5 | W |
| Thermal Resistance, Junction to Ambient | R _{θJA} | 60 | °C/W |
| | | 140 | |
| Thermal Resistance, Junction to Lead | R _{θJL} | 5.7 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +175 | °C |

ESD Ratings (Note 8)

| 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:
5. For a device mounted with the collector lead on 25mm x 25mm 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 6. Same as note (5), except mounted on minimum recommended pad layout.
 7. Thermal resistance from junction to solder point (at the collector tab).
 8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

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

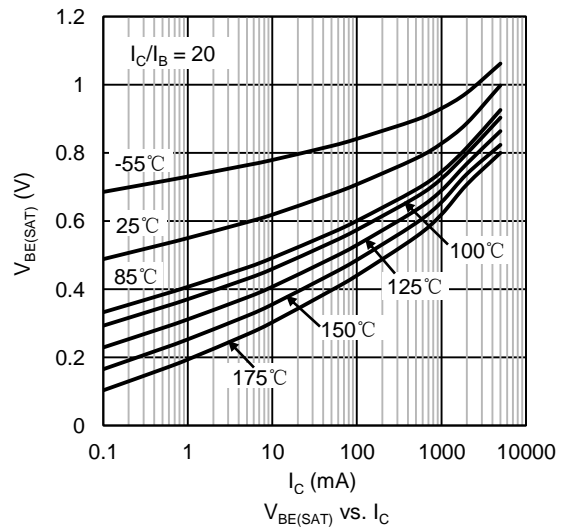
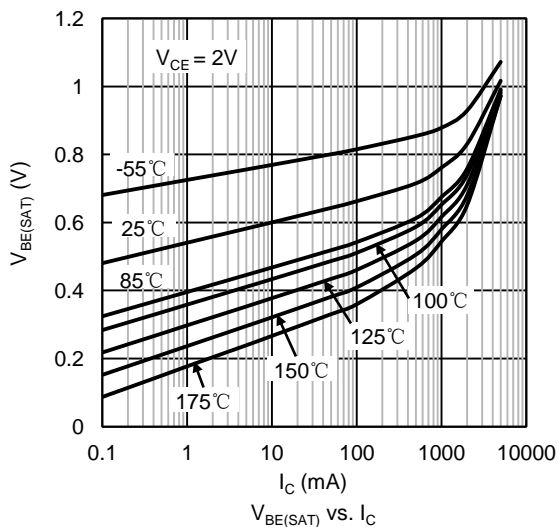
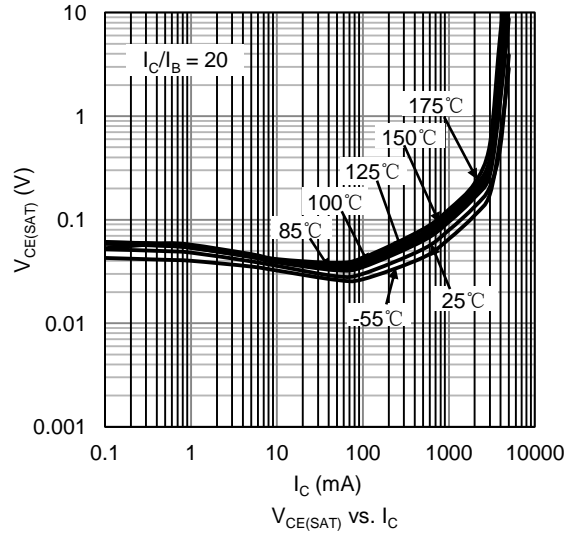
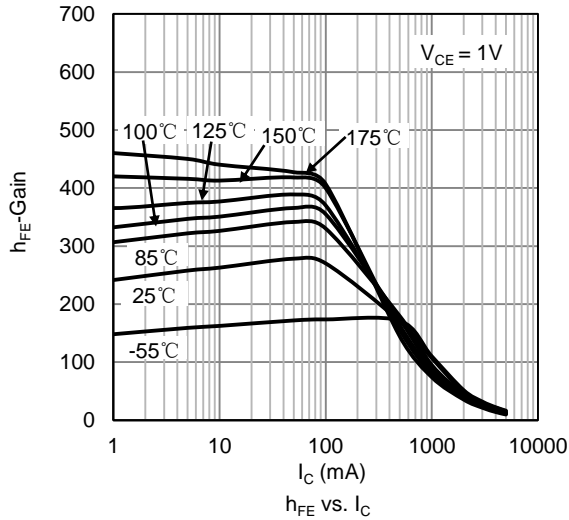
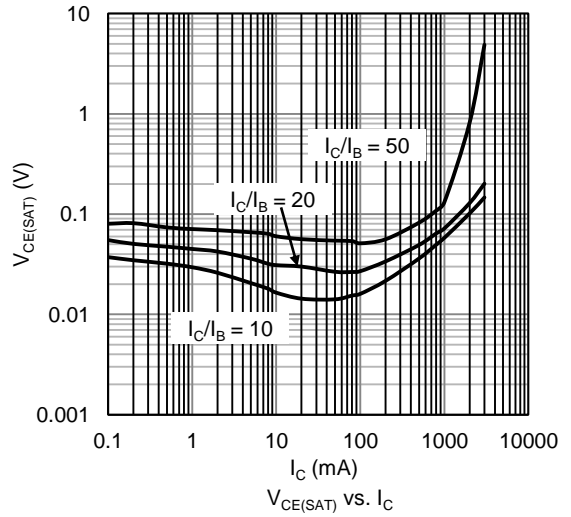
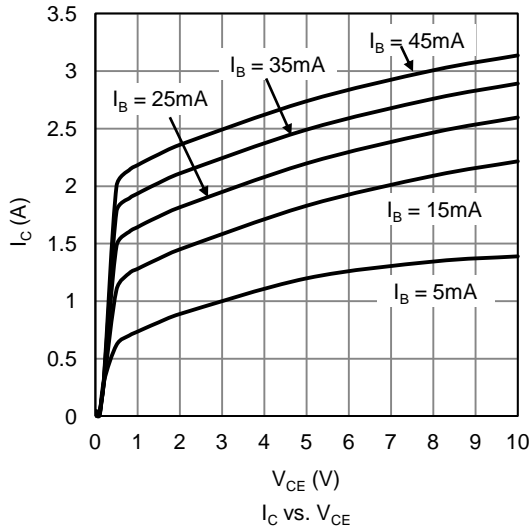


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|----------------------|-----|------|------|------|--|
| OFF CHARACTERISTICS | | | | | | |
| Collector-Base Breakdown Voltage | BV _{CBO} | 100 | — | — | V | I _C = 100μA |
| Collector-Emitter Breakdown Voltage (Note 9) | BV _{CEO} | 100 | — | — | V | I _C = 10mA |
| Emitter-Base Breakdown Voltage | BV _{EBO} | 7 | — | — | V | I _E = 100μA |
| Collector-Base Cutoff Current | I _{CBO} | — | — | 100 | nA | V _{CB} = 80V |
| | | — | — | 50 | μA | V _{CB} = 80V @ T _J = +150°C |
| Emitter Cutoff Current | I _{EBO} | — | — | 100 | nA | V _{EB} = 7V |
| Collector-Emitter Cutoff Current | I _{CES} | — | — | 100 | nA | V _{CE} = 80V |
| ON CHARACTERISTICS (Note 9) | | | | | | |
| DC Current Gain | h _{FE} | 150 | 250 | — | — | I _C = 500mA, V _{CE} = 10V |
| | | 80 | 250 | — | | I _C = 1A, V _{CE} = 10V |
| | | 20 | 100 | — | | I _C = 2A, V _{CE} = 10V |
| | | 10 | 40 | — | | I _C = 3A, V _{CE} = 10V |
| Collector-Emitter Saturation Voltage | V _{CE(SAT)} | — | 90 | 150 | mV | I _C = 1A, I _B = 50mA |
| | | — | 225 | 330 | mV | I _C = 3A, I _B = 300mA |
| Collector-Emitter Saturation Resistance | R _{CE(SAT)} | — | 90 | 150 | mΩ | I _C = 1A, I _B = 50mA |
| Base-Emitter Saturation Voltage | V _{BE(SAT)} | — | 0.86 | 1.0 | V | I _C = 1A, I _B = 50mA |
| | | — | 1.0 | 1.2 | | I _C = 2A, I _B = 200mA |
| Base-Emitter Turn-On Voltage | V _{BE(ON)} | — | 0.67 | 0.85 | V | I _C = 0.1A, V _{CE} = 2V |
| SMALL SIGNAL CHARACTERISTICS | | | | | | |
| Current Gain-Bandwidth Product | f _T | — | 140 | — | MHz | V _{CE} = 10V, I _C = 100mA, f = 100MHz |
| Output Capacitance | C _{obo} | — | 11 | — | pF | V _{CB} = 10V, f = 1MHz |
| Delay Time | t _d | — | 20 | — | ns | V _{CC} = 12.5V, I _C = 1A I _{B1} = -I _{B2} = 0.05A |
| Rise Time | t _r | — | 300 | — | ns | |
| Turn-On Time | t _(on) | — | 320 | — | ns | |
| Storage Time | t _s | — | 830 | — | ns | |
| Fall Time | t _f | — | 470 | — | ns | |
| Turn-Off Time | t _(off) | — | 1300 | — | ns | |

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

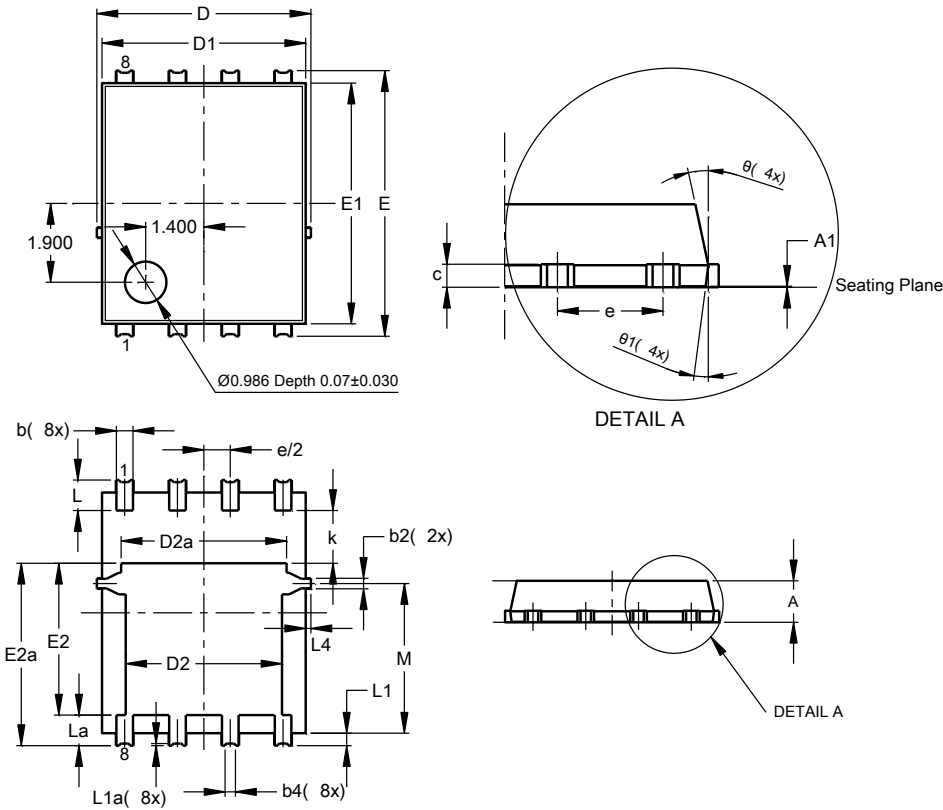
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



Package Outline Dimensions

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

PowerDI5060-8 (SWP) (Type Q)

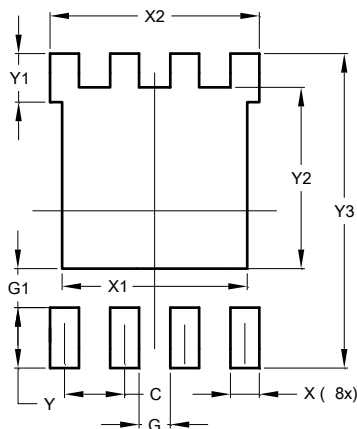


| PowerDI5060-8 (SWP) (Type Q) | | | |
|---------------------------------|----------|-------|-------|
| Dim | Min | Max | Typ |
| A | 0.90 | 1.10 | 1.00 |
| A1 | 0 | 0.05 | — |
| b | 0.30 | 0.50 | 0.41 |
| b2 | 0.20 | 0.35 | 0.25 |
| b4 | 0.25REF | | |
| c | 0.230 | 0.330 | 0.277 |
| D | 5.15 BSC | | |
| 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 |
| θ | 10° | 12° | 11° |
| θ1 | 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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