

80V PNP MEDIUM POWER TRANSISTOR IN PowerDI3333-8

Features

- $BV_{CEO} > -80V$
- Small Form Factor Thermally Efficient Package. Enables Higher Density End Products
- $I_C = -1A$ Continuous Collector Current
- $I_{CM} = -2A$ Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)} < -280mV @ -0.5A$
- Complementary NPN Types: DXTN06080BFG
- 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)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

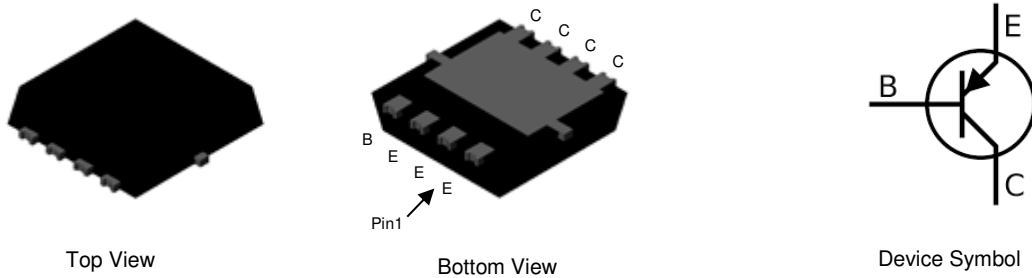
Mechanical Data

- 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 Plated Leads Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.03 grams (Approximate)

Applications

- Medium Power Switching
- Power Amplification
- AF Driver and Output Stages

PowerDI3333-8 (SWP) (Type UX)



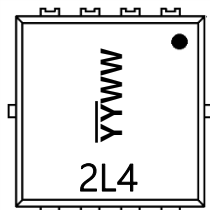
Ordering Information (Note 4)

| Part Number | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|----------------|------------|---------|--------------------|-----------------|-------------------|
| DXTP06080BFG-7 | Standard | 2L4 | 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)



2L4= Product Type Marking Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 21 = 2021)
 WW = Week Code (01 to 53)

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

| Characteristic | Symbol | Value | Unit |
|------------------------------|------------------|-------|------|
| Collector-Base Voltage | V _{CB0} | -100 | V |
| Collector-Emitter Voltage | V _{CEO} | -80 | V |
| Emitter-Base Voltage | V _{EBO} | -7 | V |
| Continuous Collector Current | I _C | -1 | A |
| Peak Pulse Collector Current | I _{CM} | -2 | A |
| Continuous Base Current | I _B | -100 | mA |
| Peak Pulse Base Current | I _{BM} | -200 | mA |

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

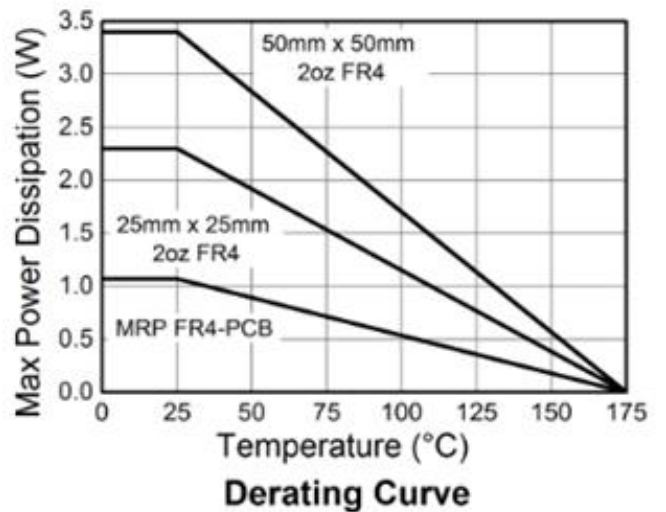
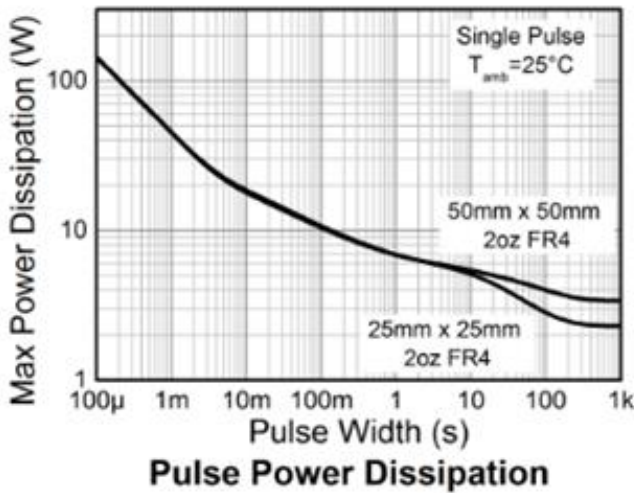
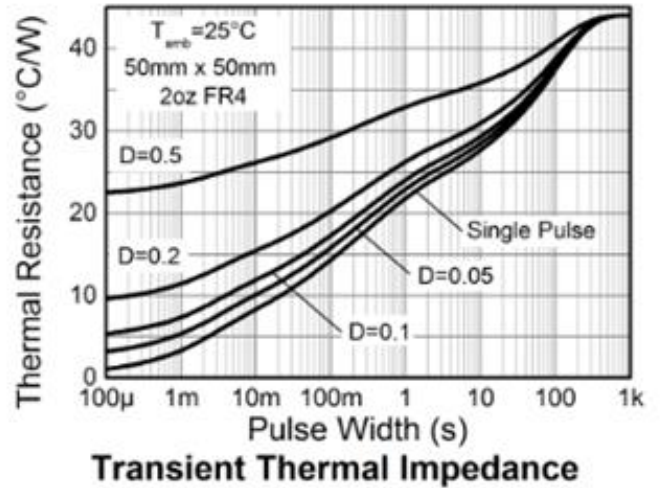
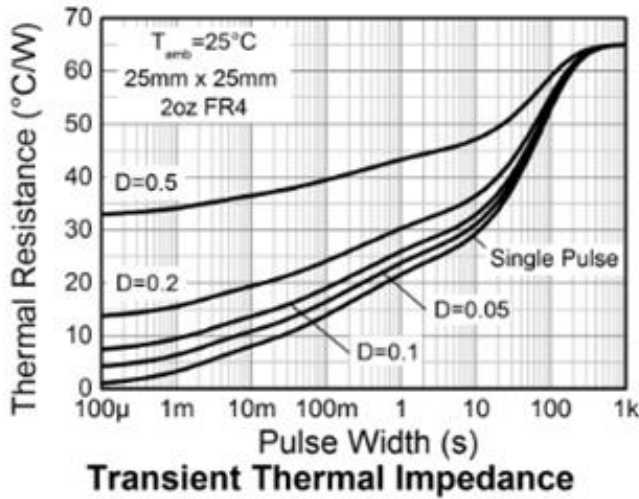
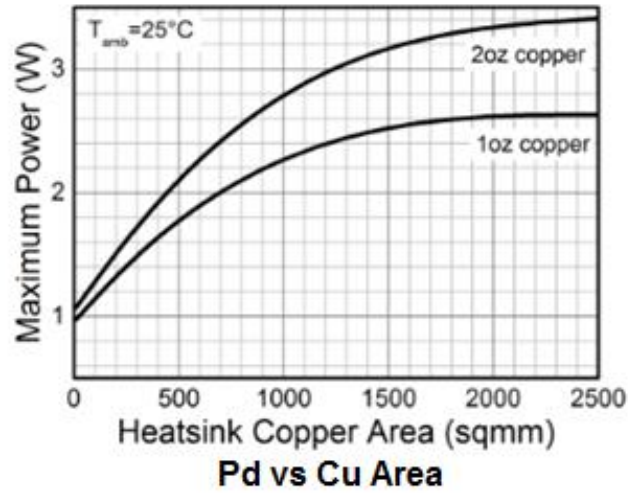
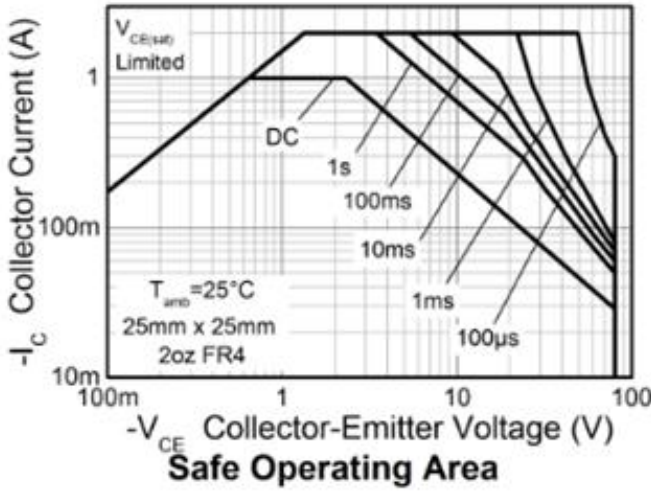
| Characteristic | Symbol | Value | Unit | |
|--|-----------------------------------|-------------|------|------|
| Power Dissipation | P _D | (Note 5) | 1.07 | W |
| | | (Note 6) | 2.3 | W |
| | | (Note 7) | 3.4 | W |
| Thermal Resistance, Junction to Ambient | R _{θJA} | (Note 5) | 140 | °C/W |
| | | (Note 6) | 65 | °C/W |
| | | (Note 7) | 44 | °C/W |
| Thermal Resistance, Junction to Leads (Note 8) | R _{θJL} | 11.3 | °C/W | |
| Operating and Storage Temperature Range | T _J , T _{STG} | -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 FR4-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

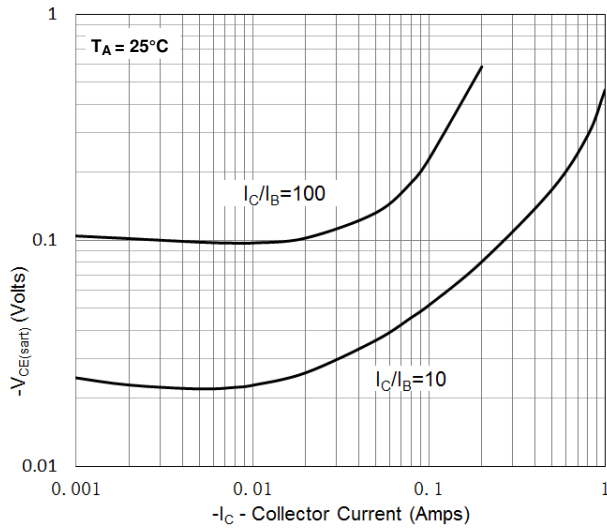


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

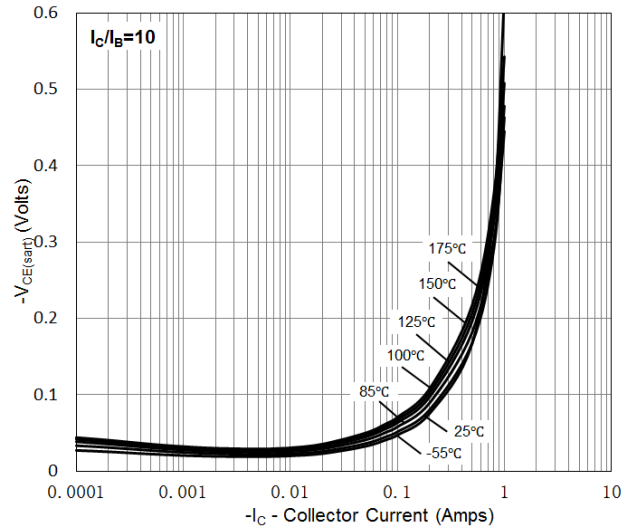
| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|----------------------|----------------------|------------------------|--------------------|----------|--|
| Collector-Base Breakdown Voltage | BV _{CBO} | -100 | -183 | — | V | I _C = -100μA |
| Collector-Emitter Breakdown Voltage (Note 10) | BV _{CEO} | -80 | -132 | — | V | I _C = -10mA |
| Emitter-Base Breakdown Voltage | BV _{EBO} | -7 | -8.4 | — | V | I _E = -100μA |
| Collector-Base Cut-Off Current | I _{CBO} | — | -1 -0.13 | -50 -10 | nA μA | V _{CB} = -100V V _{CB} = -80V, T _A = +150°C |
| Collector-Emitter Cut-Off Current | I _{CES} | — | -1 | -20 | nA | V _{CE} = -80V |
| Emitter Cut-Off Current | I _{EBO} | — | -1 | -20 | nA | V _{EB} = -6V |
| Static Forward Current Transfer Ratio (Note 10) | h _{FE} | 50 100 40 — | 167 152 76 26 | — 250 — — | — | I _C = -5mA, V _{CE} = -2V I _C = -150mA, V _{CE} = -2V I _C = -500mA, V _{CE} = -2V I _C = -800mA, V _{CE} = -2V |
| Collector-Emitter Saturation Voltage (Note 10) | V _{CE(sat)} | — | -181 -410 | -280 — | mV mV | I _C = -500mA, I _B = -50mA I _C = -800mA, I _B = -70mA |
| Base-Emitter Turn-On Voltage (Note 10) | V _{BE(on)} | — | -0.804 | -0.9 | V | I _C = -500mA, V _{CE} = -2V |
| Transition Frequency | f _T | 150 | — | — | MHz | I _C = -50mA, V _{CE} = -10V f = 100MHz |
| Output Capacitance | C _{obo} | — | — | 25 | pF | V _{CB} = -10V, f = 1MHz |
| Switching Characteristics | t _{delay} | — | 8.6 | — | ns | V _{CC} = -10V, I _C = -500mA I _{B1} = -I _{B2} = -50mA |
| | t _{rise} | — | 3.4 | — | ns | |
| | t _{storage} | — | 43 | — | ns | |
| | t _{fall} | — | 46 | — | ns | |

Note: 10. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

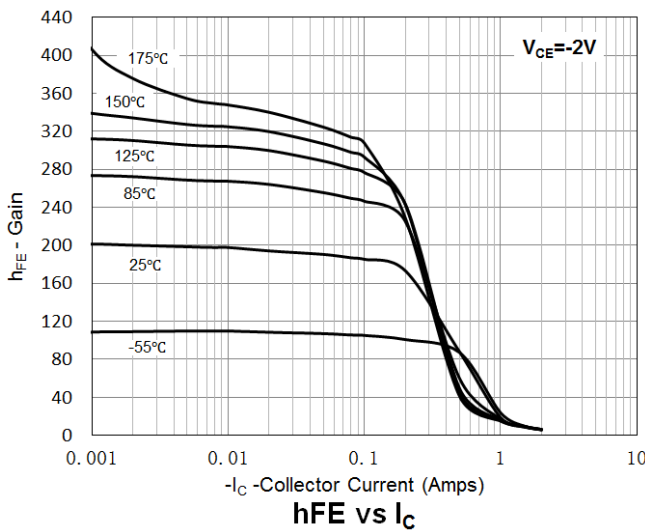
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



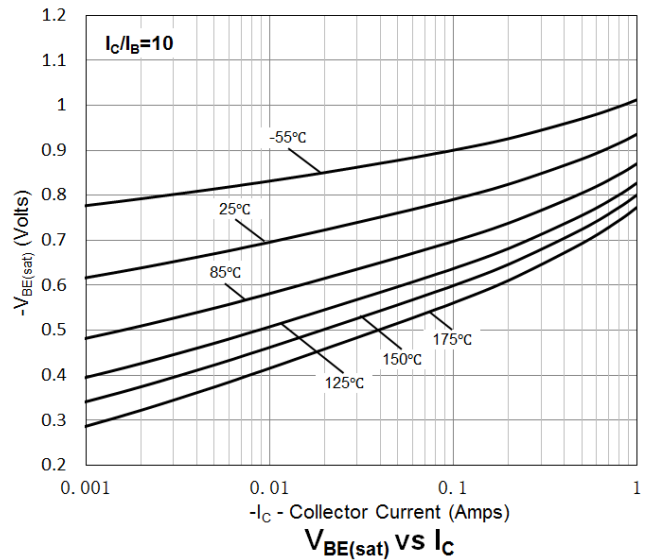
V_{CE(sat)} vs I_C



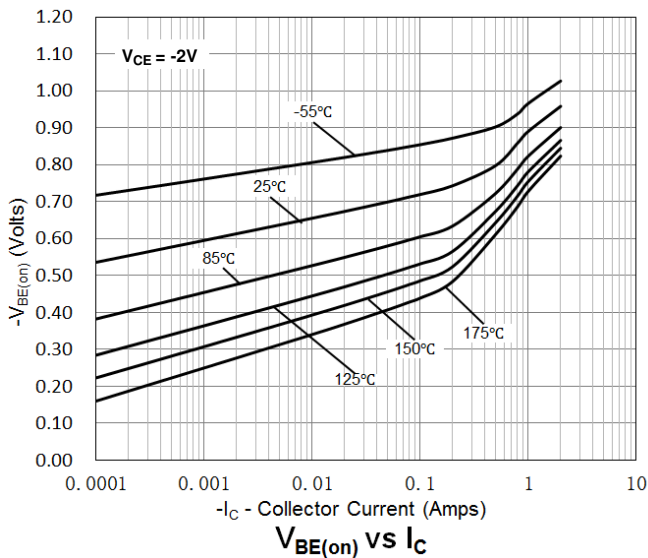
V_{CE(sat)} vs I_C



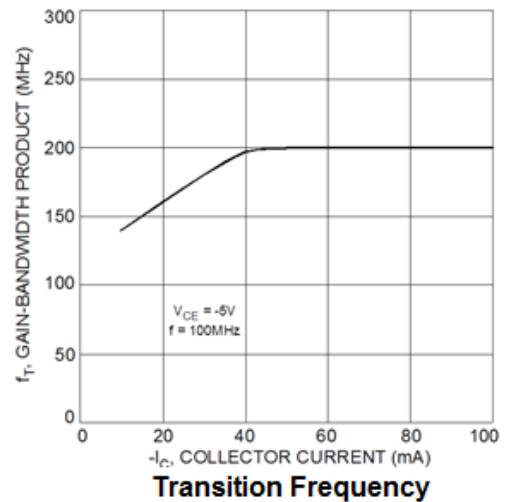
h_{FE} vs I_C



V_{BE(sat)} vs I_C



V_{BE(on)} vs I_C

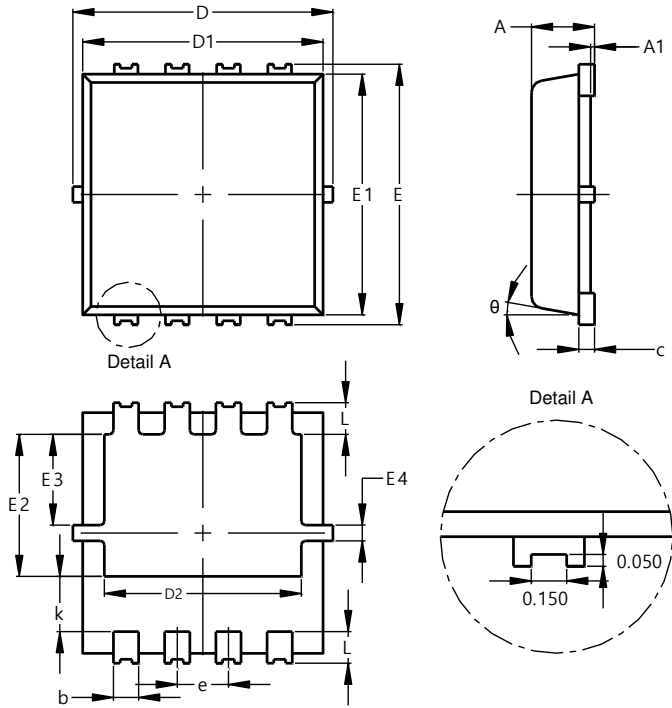


Transition Frequency

Package Outline Dimensions

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

PowerDI3333-8 (SWP) (Type UX)

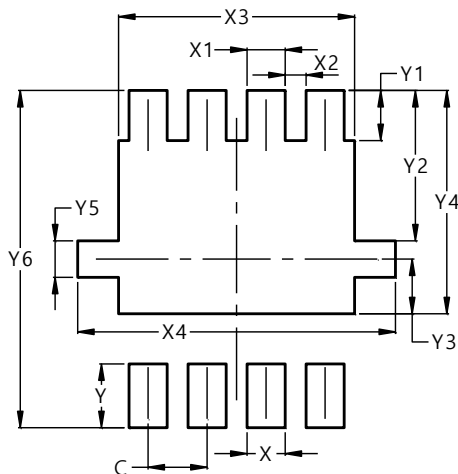


| PowerDI3333-8 (SWP) (Type UX) | | | |
|----------------------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | 0.75 | 0.85 | 0.80 |
| A1 | 0.00 | 0.05 | -- |
| b | 0.25 | 0.40 | 0.32 |
| c | 0.10 | 0.25 | 0.15 |
| D | 3.20 | 3.40 | 3.30 |
| D1 | 2.95 | 3.15 | 3.05 |
| D2 | 2.30 | 2.70 | 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 <https://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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