

ZXTP25100CFH
100V PNP MEDIUM POWER TRANSISTOR IN SOT23
Features

- $BV_{CEO} > -100V$
- Maximum Continuous Collector Current $I_C = -1A$
- $V_{CE(sat)} < -220mV @ -1A$
- $R_{CE(sat)} = 150m\Omega$
- 7V reverse blocking voltage
- High peak current
- Complementary part number ZXTN25100CFH
- **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: SOT23
- UL Flammability Rating 94V-0
- Case material: molded Plastic.
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish; Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.008 grams (Approximate)

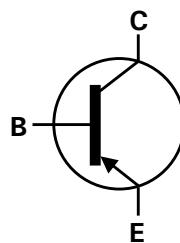
Applications

- MOSFET and IGBT gate driving
- DC – DC converters
- Motor drive
- High side driver

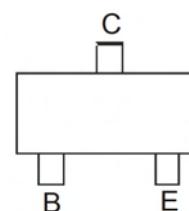
SOT23



Top View



Device Symbol

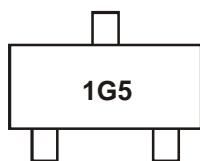

 Top View
 Pin-Out

Ordering Information (Note 4)

| Product | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|----------------|---------|--------------------|-----------------|-------------------|
| ZXTP25100CFHTA | 1G5 | 7 | 8 | 3,000 |

Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See <http://www.diodes.com> 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>

Marking Information


1G5 = Product Type Marking Code

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

| Characteristic | Symbol | Value | Unit |
|--|-----------|-------|------|
| Collector-Base Voltage | V_{CBO} | -115 | V |
| Collector-Emitter Voltage | V_{CEO} | -100 | V |
| Emitter-collector voltage (reverse blocking) | V_{ECO} | -7 | V |
| Emitter-Base Voltage | V_{EBO} | -7 | V |
| Continuous Collector Current (Note 5) | I_C | -1 | A |
| Base Current | I_B | -500 | mA |
| Peak Pulse Current | I_{CM} | -3 | A |

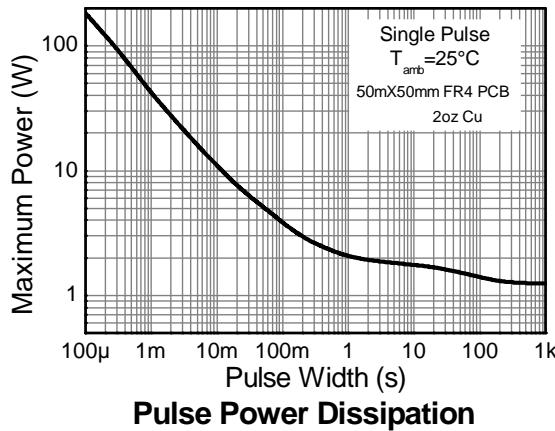
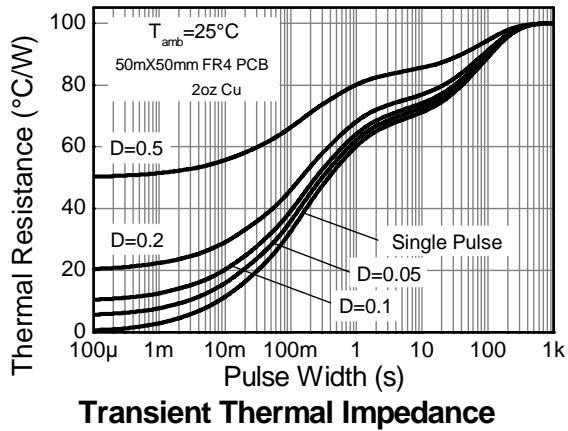
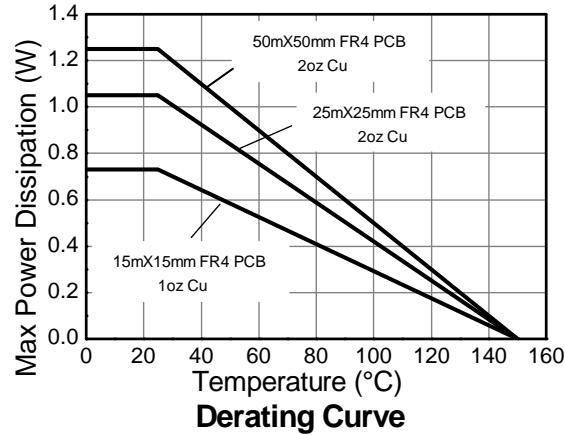
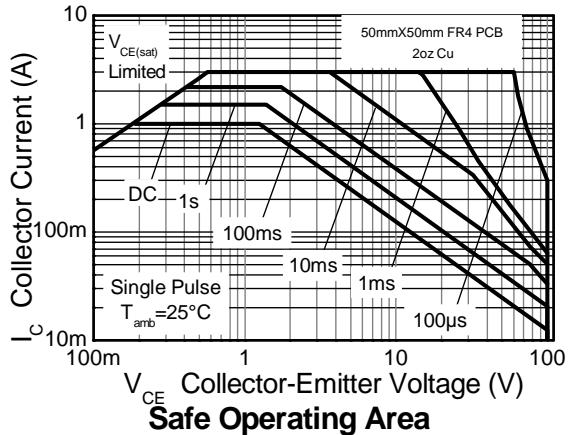
Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------|------|
| Collector Power Dissipation | P_D | 0.73 | W |
| | | 1.05 | |
| | | 1.25 | |
| | | 1.81 | |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 171 | °C/W |
| | | 119 | |
| | | 100 | |
| | | 69 | |
| Thermal Resistance, Junction to Leads | $R_{\theta JL}$ | 75.25 | °C/W |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | °C |

Notes:

- 5. For the device mounted on 15mm X 15mm X 1.6mm FR4 PCB with high coverage of single sided 1oz copper in still air condition;
- 6. Mounted on 25mm X 25mm X 1.6mm FR4 PCB with high coverage of single sided 2oz copper in still air condition
- 7. Mounted on 25mm X 25mm X 1.6mm FR4 PCB with high coverage of single sided 2oz copper in still air condition
- 8. As Note 7 above, measured at $t < 5$ secs.
- 9. Thermal resistance from junction to solder-point (at the end of the collector lead).

Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

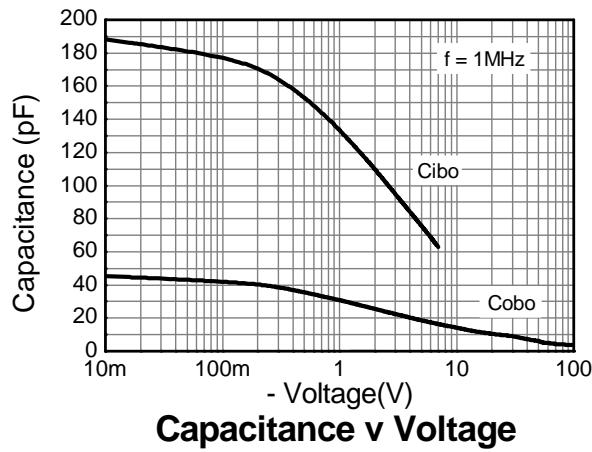
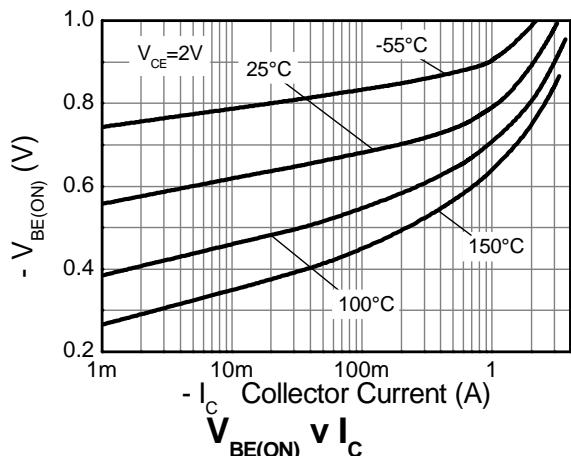
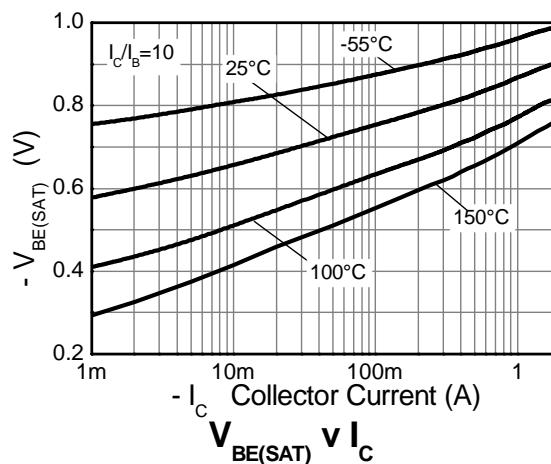
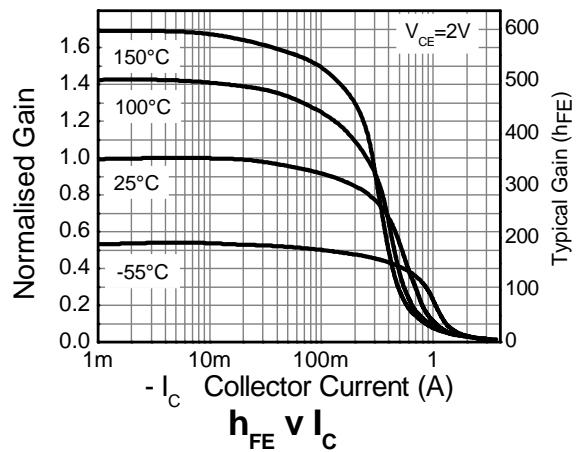
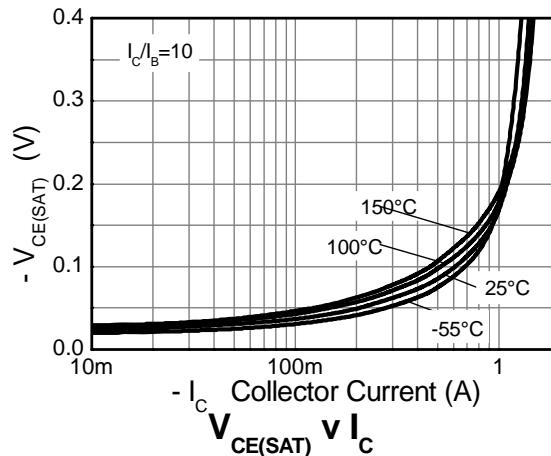
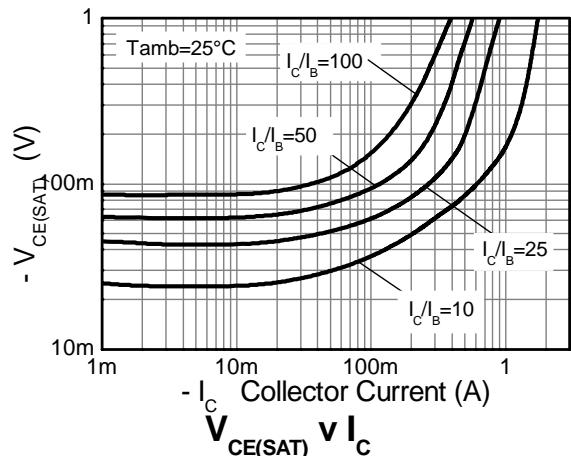


Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|-----------------------------|------|------|------|---------------|---|
| Collector-Base Breakdown Voltage | BV_{CBO} | -115 | -180 | - | V | $I_C = -100\mu\text{A}$ |
| Collector-Emitter Breakdown Voltage (Note 10) | BV_{CEO} | -100 | -140 | - | V | $I_C = -10\text{mA}$ |
| Emitter-Base Breakdown Voltage | BV_{EBO} | -7 | -8.4 | - | V | $I_E = -100\mu\text{A}$ |
| Emitter-Base Breakdown Voltage | BV_{ECX} | -7 | -8.3 | - | V | $I_E = -100\mu\text{A}, R_{BC} < 1\text{k}\Omega$ or $-0.25 < V_{BC} < 0.25\text{V}$ |
| Emitter-Base Breakdown Voltage | BV_{ECO} | -7 | -8.8 | - | V | $I_E = -100\mu\text{A}$ |
| Collector-Base Cutoff Current | I_{CBO} | - | < -1 | -50 | nA | $V_{CB} = -115\text{V}$ |
| | | - | - | -0.5 | μA | $V_{CB} = -115\text{V}, T_{\text{amb}} = 100^\circ\text{C}$ |
| Collector-Emitter Cutoff Current | I_{CEX} | - | - | -100 | nA | $V_{CE} = -90\text{V}, R_{BE} < 1\text{k}\Omega$ or $-0.25\text{V} < V_{BE} < 1\text{V}$ |
| Emitter-Base Cutoff Current | I_{EBO} | - | < -1 | -50 | nA | $V_{EB} = -5.6\text{V}$ |
| Static Forward Current Transfer Ratio (Note 10) | h_{FE} | 200 | 350 | 500 | - | $I_C = -10\text{mA}, V_{CE} = -2\text{V}$ |
| | | 180 | 320 | - | | $I_C = -100\text{mA}, V_{CE} = -2\text{V}$ |
| | | 110 | 190 | - | | $I_C = -500\text{mA}, V_{CE} = -2\text{V}$ |
| | | 20 | 35 | - | | $I_C = -1\text{A}, V_{CE} = -2\text{V}$ |
| Collector-Emitter Saturation Voltage (Note 10) | $V_{\text{CE}(\text{sat})}$ | - | -140 | -210 | mV | $I_C = -100\text{mA}, I_B = -1\text{mA}$ |
| | | - | -80 | -110 | | $I_C = -500\text{mA}, I_B = -50\text{mA}$ |
| | | - | -180 | -310 | | $I_C = -500\text{mA}, I_B = -20\text{mA}$ |
| | | - | -150 | -220 | | $I_C = -1\text{A}, I_B = -100\text{mA}$ |
| Base-Emitter Saturation Voltage (Note 10) | $V_{\text{BE}(\text{sat})}$ | - | -849 | -950 | mV | $I_C = -1\text{A}, I_B = -100\text{mA}$ |
| Base-Emitter Saturation Voltage (Note 10) | $V_{\text{BE}(\text{on})}$ | - | -790 | -900 | mV | $I_C = -1\text{A}, V_{CE} = -2\text{V}$ |
| Output Capacitance | C_{obo} | - | 14.1 | 20 | pF | $V_{CB} = -10\text{V}, f = 1\text{MHz}$ |
| Transition Frequency | f_T | - | 180 | - | MHz | $V_{CE} = -15\text{V}, I_C = -20\text{mA}, f = 100\text{MHz}$ |
| Delay Time | $t_{(\text{d})}$ | - | 15.8 | - | ns | |
| Rise Time | $t_{(\text{r})}$ | - | 41 | - | ns | |
| Storage Time | $t_{(\text{s})}$ | - | 411 | - | ns | |
| Fall Time | $t_{(\text{f})}$ | - | 89 | - | ns | |

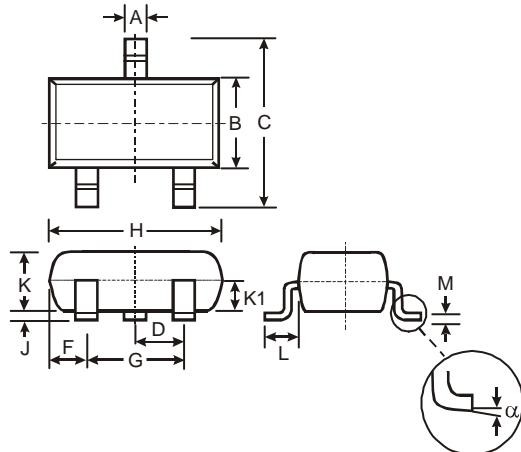
Notes: 10. Measured under pulsed conditions. Pulse width $\leq 300\text{ }\mu\text{s}$. Duty cycle $\leq 2\%$

Typical Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified



Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.

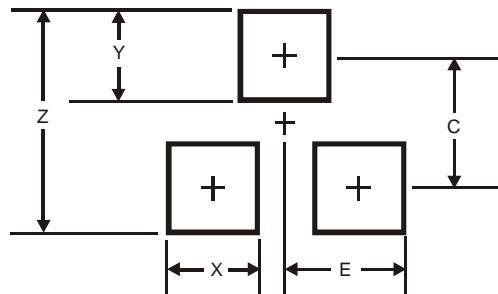


| SOT23 | | | |
|-----------|-------|------|-------|
| Dim | Min | Max | Typ |
| A | 0.37 | 0.51 | 0.40 |
| B | 1.20 | 1.40 | 1.30 |
| C | 2.30 | 2.50 | 2.40 |
| D | 0.89 | 1.03 | 0.915 |
| F | 0.45 | 0.60 | 0.535 |
| G | 1.78 | 2.05 | 1.83 |
| H | 2.80 | 3.00 | 2.90 |
| J | 0.013 | 0.10 | 0.05 |
| K | 0.903 | 1.10 | 1.00 |
| K1 | - | - | 0.400 |
| L | 0.45 | 0.61 | 0.55 |
| M | 0.085 | 0.18 | 0.11 |
| α | 0° | 8° | - |

All Dimensions in mm

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| Z | 2.9 |
| X | 0.8 |
| Y | 0.9 |
| C | 2.0 |
| E | 1.35 |

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