

ZXTP2008Z

30V PNP LOW SATURATION MEDIUM POWER TRANSISTOR IN SOT89

SUMMARY

$BV_{CEO} = -30V$; $R_{SAT} = 24m\Omega$; $I_C = -5.5A$

DESCRIPTION

Packaged in the SOT89 outline this new low saturation 30V PNP transistor offers low on state losses making it ideal for use in DC-DC circuits, line switching and various driving and power management functions.



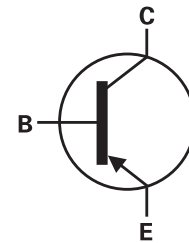
SOT89

FEATURES

- 5.5 amps continuous current
- Up to 20 amps peak current
- Very low saturation voltages
- Exceptional gain linearity down to 10mA
- Excellent high current gain hold up

APPLICATIONS

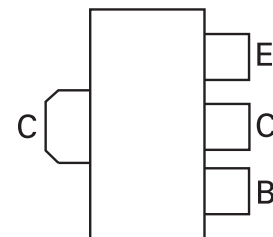
- DC - DC converters
- MOSFET gate drivers
- Charging circuits
- Power switches
- Motor control



ORDERING INFORMATION

| DEVICE | REEL SIZE | TAPE WIDTH | QUANTITY PER REEL |
|-------------|-----------|---------------|-------------------|
| ZXTP2008ZTA | 7" | 12mm embossed | 1000 units |

PINOUT



TOP VIEW

DEVICE MARKING

949

ZXTP2008Z

ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | LIMIT | UNIT |
|--|----------------|------------|-------|
| Collector-base voltage | BV_{CBO} | -50 | V |
| Collector-emitter voltage | BV_{CEO} | -30 | V |
| Emitter-base voltage | BV_{EBO} | -7 | V |
| Continuous collector current ^(a) | I_C | -5.5 | A |
| Peak pulse current | I_{CM} | -20 | A |
| Power dissipation at $T_A = 25^\circ\text{C}$ ^(a) | P_D | 1.5 | W |
| Linear derating factor | | 12 | mW/°C |
| Power dissipation at $T_A = 25^\circ\text{C}$ ^(b) | P_D | 2.1 | W |
| Linear derating factor | | 16.8 | mW/°C |
| Operating and storage temperature range | T_j, T_{stg} | -55 to 150 | °C |

THERMAL RESISTANCE

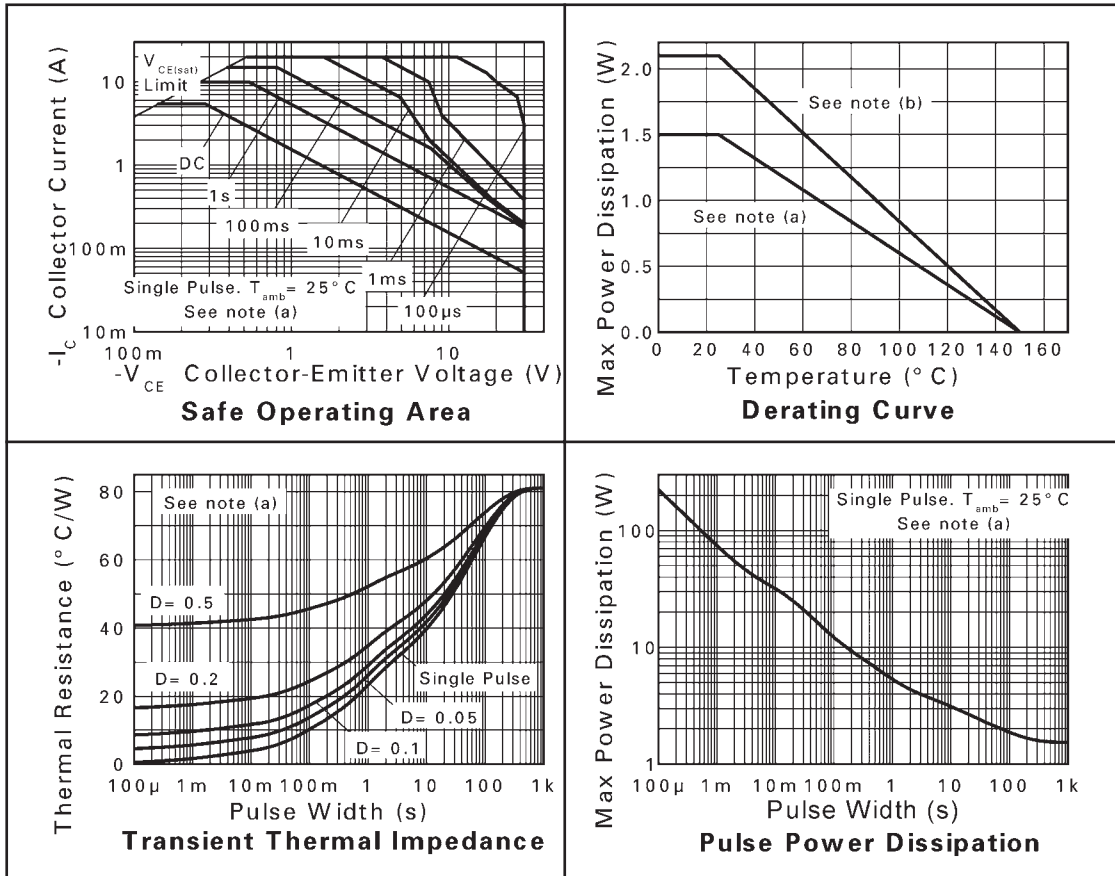
| PARAMETER | SYMBOL | VALUE | UNIT |
|------------------------------------|-----------------|-------|------|
| Junction to Ambient ^(a) | $R_{\theta JA}$ | 83 | °C/W |
| Junction to Ambient ^(b) | $R_{\theta JA}$ | 60 | °C/W |

NOTES

(a) For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(b) For a device surface mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

CHARACTERISTICS



ZXTP2008Z

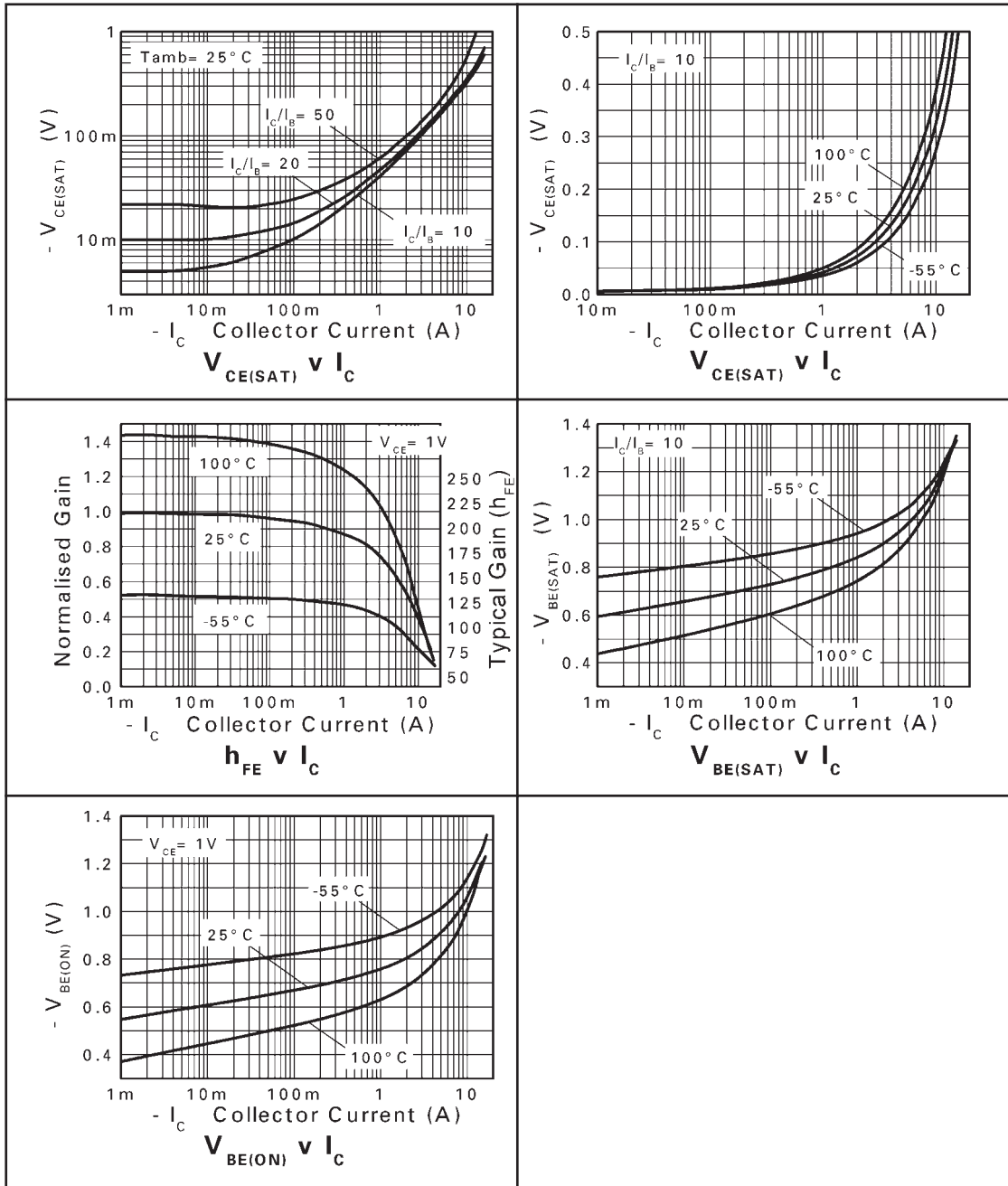
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS |
|---------------------------------------|------------------------------------|------------------------|----------------------------------|----------------------------------|----------------------------|--|
| Collector-base breakdown voltage | BV_{CBO} | -50 | -70 | | V | $I_C = -100\mu\text{A}$ |
| Collector-emitter breakdown voltage | BV_{CER} | -50 | -70 | | V | $I_C = -1\mu\text{A}$, $R_B < 1\text{k}\Omega$ |
| Collector-emitter breakdown voltage | BV_{CEO} | -30 | -40 | | V | $I_C = -10\text{mA}$ * |
| Emitter-base breakdown voltage | BV_{EBO} | -7.0 | -8.0 | | V | $I_E = -100\mu\text{A}$ |
| Collector cut-off current | I_{CBO} | | <-1 | -20 -0.5 | nA μA | $V_{CB} = -40\text{V}$ $V_{CB} = -40\text{V}$, $T_{amb} = 100^{\circ}\text{C}$ |
| Collector cut-off current | I_{CER} $R < 1\text{k}\Omega$ | | <-1 | -20 -0.5 | nA μA | $V_{CB} = -40\text{V}$ $V_{CB} = -40\text{V}$, $T_{amb} = 100^{\circ}\text{C}$ |
| Emitter cut-off current | I_{EBO} | | <-1 | -10 | nA | $V_{EB} = -6\text{V}$ |
| Collector-emitter saturation voltage | $V_{CE(SAT)}$ | | -25 -35 -55 -55 -130 | -40 -55 -80 -80 -175 | mV mV mV mV mV | $I_C = -0.5\text{A}$, $I_B = -20\text{mA}$ * $I_C = -1\text{A}$, $I_B = -100\text{mA}$ * $I_C = -1\text{A}$, $I_B = -20\text{mA}$ * $I_C = -2\text{A}$, $I_B = -200\text{mA}$ * $I_C = -5.5\text{A}$, $I_B = -500\text{mA}$ * |
| Base-emitter saturation voltage | $V_{BE(SAT)}$ | | -970 | -1070 | mV | $I_C = -5.5\text{A}$, $I_B = -500\text{mA}$ * |
| Base-emitter turn-on voltage | $V_{BE(ON)}$ | | -860 | -960 | mV | $I_C = -5.5\text{A}$, $V_{CE} = -1\text{V}$ * |
| Static forward current transfer ratio | h_{FE} | 100 100 70 10 | 225 200 145 20 | 300 | | $I_C = -10\text{mA}$, $V_{CE} = -1\text{V}$ * $I_C = -1\text{A}$, $V_{CE} = -1\text{V}$ * $I_C = -5\text{A}$, $V_{CE} = -1\text{V}$ * $I_C = -20\text{A}$, $V_{CE} = -1\text{V}$ * |
| Transition frequency | f_T | | 110 | | MHz | $I_C = -100\text{mA}$, $V_{CE} = -10\text{V}$ $f = 50\text{MHz}$ |
| Output capacitance | C_{OBO} | | 83 | | pF | $V_{CB} = -10\text{V}$, $f = 1\text{MHz}$ * |
| Switching times | t_{ON} t_{OFF} | | 43 230 | | ns | $I_C = -1\text{A}$, $V_{CC} = -10\text{V}$, $I_{B1} = -I_{B2} = -100\text{mA}$ |

NOTES

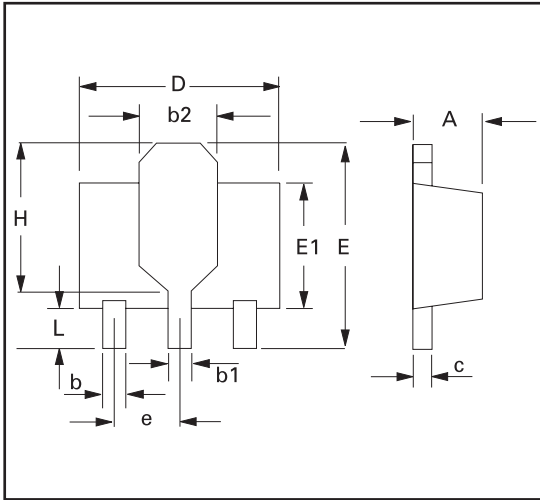
* Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.

TYPICAL CHARACTERISTICS

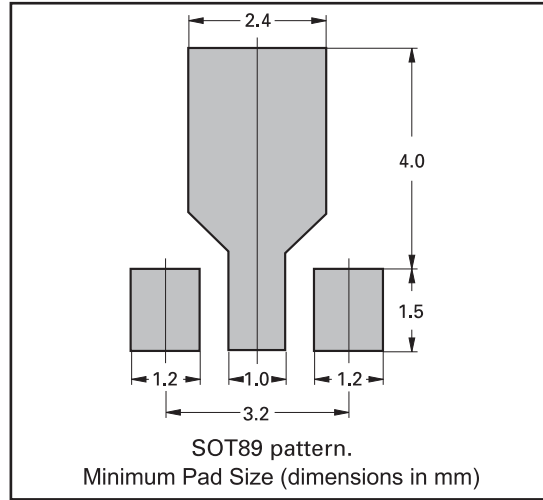


ZXTP2008Z

PACKAGE OUTLINE



PAD LAYOUT DETAILS



Controlling dimensions are in millimeters. Approximate conversions are given in inches

PACKAGE DIMENSIONS

| DIM | Millimeters | | Inches | | DIM | Millimeters | | Inches | |
|-----|-------------|------|--------|-------|-----|-------------|------|--------|-------|
| | Min | Max | Min | Max | | Min | Max | Min | Max |
| A | 1.40 | 1.60 | 0.550 | 0.630 | e | 1.40 | 1.50 | 0.055 | 0.059 |
| b | 0.38 | 0.48 | 0.015 | 0.019 | E | 3.75 | 4.25 | 0.150 | 0.167 |
| b1 | - | 0.53 | - | 0.021 | E1 | - | 2.60 | - | 0.102 |
| b2 | 1.50 | 1.80 | 0.060 | 0.071 | G | 2.90 | 3.00 | 0.114 | 0.118 |
| c | 0.28 | 0.44 | 0.011 | 0.017 | H | 2.60 | 2.85 | 0.102 | 0.112 |
| D | 4.40 | 4.60 | 0.173 | 0.181 | - | - | - | - | - |

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