

# ZXTP2008G

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## 30V PNP LOW SATURATION TRANSISTOR IN SOT223

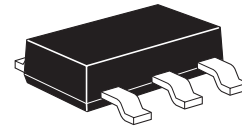
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### SUMMARY

$BV_{CEO} = -30V$  ;  $R_{SAT} = 31m\Omega$ ;  $I_C = -5.5A$

### DESCRIPTION

Packaged in the SOT223 outline this new low saturation 30V PNP transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



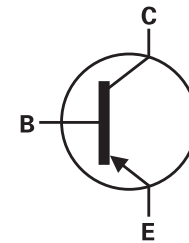
SOT223

### FEATURES

- 5.5 Amps continuous current
- Up to 20 amps peak current
- Very low saturation voltages
- Exceptional gain linearity down to 10mA

### APPLICATIONS

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



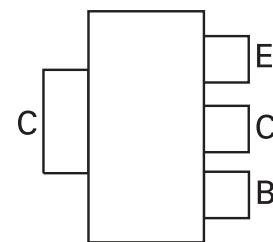
### ORDERING INFORMATION

| DEVICE      | REEL SIZE | TAPE WIDTH    | QUANTITY PER REEL |
|-------------|-----------|---------------|-------------------|
| ZXTP2008GTA | 7"        | 12mm embossed | 1,000 units       |
| ZXTP2008GTC | 13"       |               | 4,000 units       |

### DEVICE MARKING

ZXTP  
2008

### PINOUT



TOP VIEW

# ZXTP2008G

## 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 <sup>(a)</sup>                  | $I_C$          | -5.5       | A     |
| Peak pulse current   | $I_{CM}$       | -20        | A     |
| Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(a)</sup> | $P_D$          | 3.0        | W     |
| Linear derating factor                                       |                | 24         | mW/°C |
| Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(b)</sup> | $P_D$          | 1.6        | W     |
| Linear derating factor                                       |                | 12.8       | mW/°C |
| Operating and storage temperature range                      | $T_J, T_{stg}$ | -55 to 150 | °C    |

## THERMAL RESISTANCE

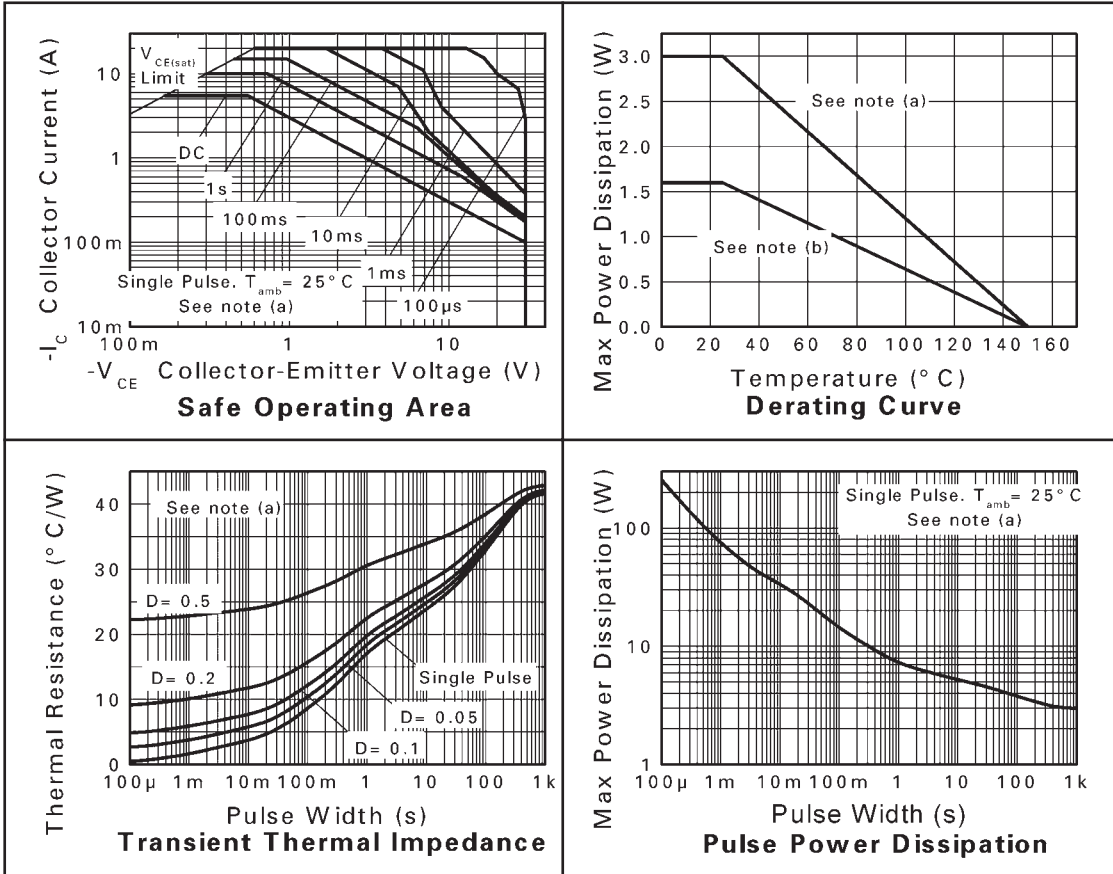
| PARAMETER                          | SYMBOL          | VALUE | UNIT |
|------------------------------------|-----------------|-------|------|
| Junction to ambient <sup>(a)</sup> | $R_{\theta JA}$ | 42    | °C/W |
| Junction to ambient <sup>(b)</sup> | $R_{\theta JA}$ | 78    | °C/W |

### NOTES

- (a) For a device surface mounted on 52mm x 52mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions.  
(b) 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.

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## CHARACTERISTICS



# ZXTP2008G

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

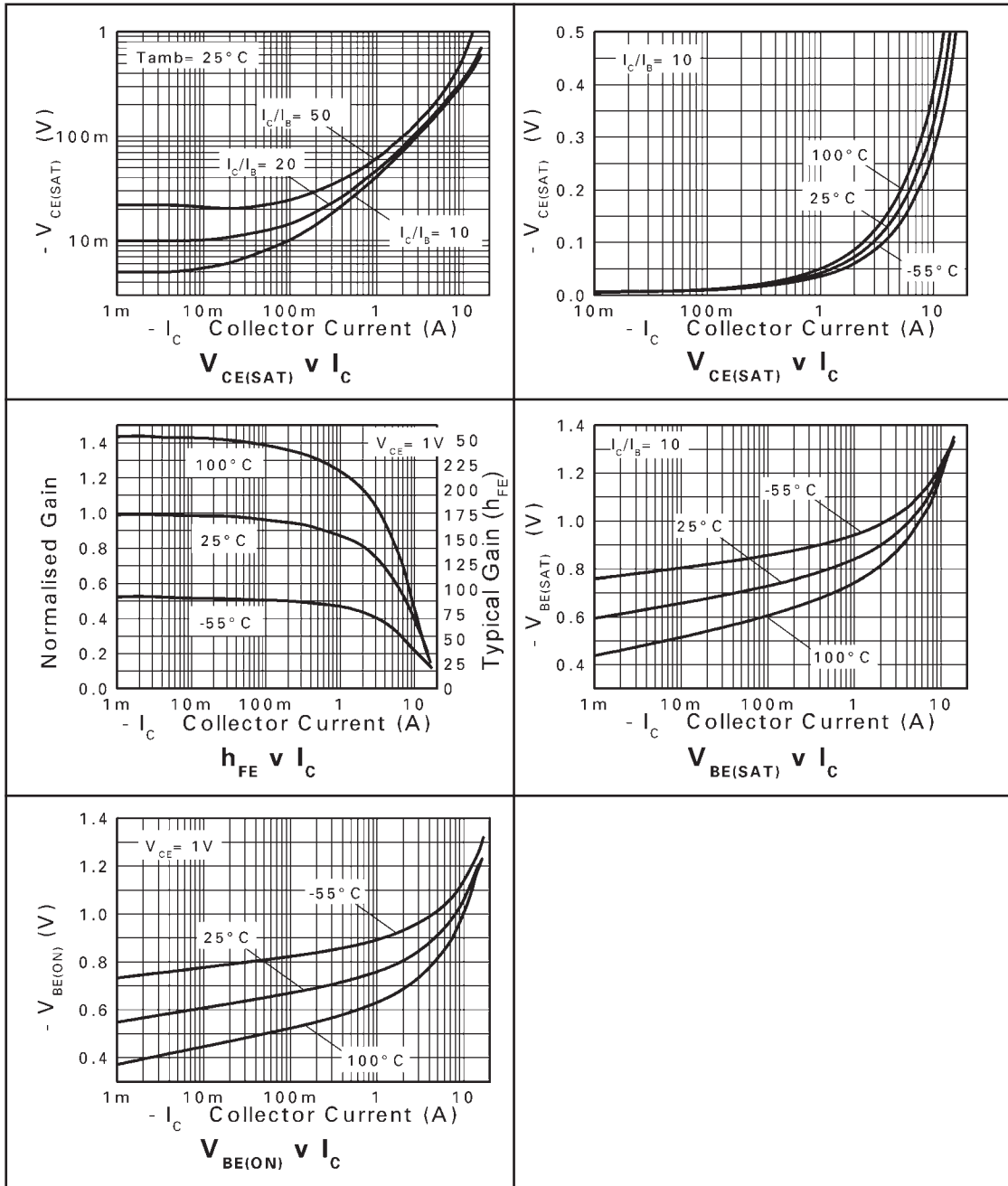
| PARAMETER                             | SYMBOL                             | MIN.                   | TYP.                             | MAX.                             | UNIT                       | CONDITIONS   |
|---------------------------------------|------------------------------------|------------------------|----------------------------------|----------------------------------|----------------------------|--|
| 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<br>-0.5                      | nA<br>$\mu\text{A}$        | $V_{CB} = -40\text{V}$<br>$V_{CB} = -40\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$   |
| Collector cut-off current             | $I_{CER}$<br>$R < 1\text{k}\Omega$ |                        | <1                               | -20<br>-0.5                      | nA<br>$\mu\text{A}$        | $V_{CB} = -40\text{V}$<br>$V_{CB} = -40\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$   |
| Emitter cut-off current               | $I_{EBO}$                          |                        | <1                               | -10                              | nA                         | $V_{EB} = -6\text{V}$  |
| Collector-emitter saturation voltage  | $V_{CE(SAT)}$                      |                        | -30<br>-40<br>-60<br>-70<br>-170 | -45<br>-60<br>-85<br>-90<br>-210 | mV<br>mV<br>mV<br>mV<br>mV | $I_C = -0.5\text{A}$ , $I_B = -20\text{mA}$ *<br>$I_C = -1\text{A}$ , $I_B = -100\text{mA}$ *<br>$I_C = -1\text{A}$ , $I_B = -20\text{mA}$ *<br>$I_C = -2\text{A}$ , $I_B = -200\text{mA}$ *<br>$I_C = -5.5\text{A}$ , $I_B = -500\text{mA}$ * |
| Base-emitter saturation voltage       | $V_{BE(SAT)}$                      |                        | -1030                            | -1130                            | mV                         | $I_C = -5.5\text{A}$ , $I_B = -500\text{mA}$ *   |
| Base-emitter turn-on voltage          | $V_{BE(ON)}$                       |                        | -900                             | -1000                            | mV                         | $I_C = -5.5\text{A}$ , $V_{CE} = -1\text{V}$ *   |
| Static forward current transfer ratio | $h_{FE}$                           | 100<br>100<br>70<br>10 | 225<br>200<br>145<br>20          | 300                              |                            | $I_C = -10\text{mA}$ , $V_{CE} = -1\text{V}$ *<br>$I_C = -1\text{A}$ , $V_{CE} = -1\text{V}$ *<br>$I_C = -5\text{A}$ , $V_{CE} = -1\text{V}$ *<br>$I_C = -20\text{A}$ , $V_{CE} = -1\text{V}$ *  |
| Transition frequency                  | $f_T$                              |                        | 110                              |                                  |                            | $I_C = -100\text{mA}$ , $V_{CE} = -10\text{V}$<br>$f = 50\text{MHz}$   |
| Output capacitance                    | $C_{OBO}$                          |                        | 83                               |                                  | pF                         | $V_{CB} = -10\text{V}$ , $f = 1\text{MHz}$ *   |
| Switching times                       | $t_{ON}$<br>$t_{OFF}$              |                        | 43<br>230                        |                                  | ns                         | $I_C = -1\text{A}$ , $V_{CC} = -10\text{V}$ ,<br>$I_{B1} = I_{B2} = -100\text{mA}$   |

### NOTES

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

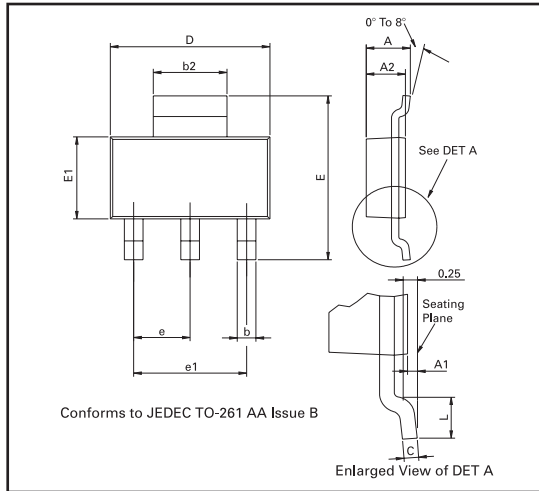
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## TYPICAL CHARACTERISTICS

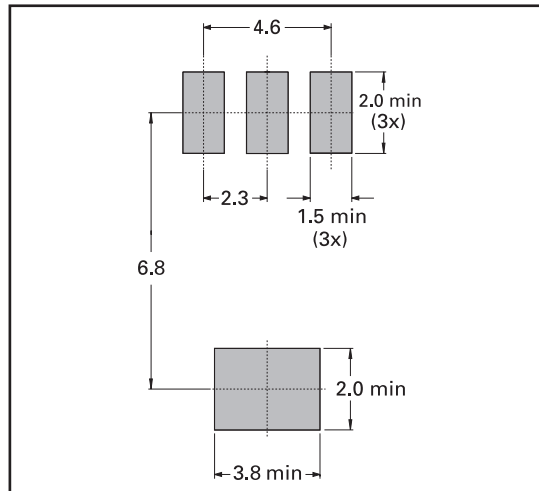


# ZXTP2008G

## 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   | -           | 1.80 | -      | 0.071 | e   | 2.30 BSC    |      | 0.0905 BSC |       |
| A1  | 0.02        | 0.10 | 0.0008 | 0.004 | e1  | 4.60 BSC    |      | 0.181 BSC  |       |
| b   | 0.66        | 0.84 | 0.026  | 0.033 | E   | 6.70        | 7.30 | 0.264      | 0.287 |
| b2  | 2.90        | 3.10 | 0.114  | 0.122 | E1  | 3.30        | 3.70 | 0.130      | 0.146 |
| C   | 0.23        | 0.33 | 0.009  | 0.013 | L   | 0.90        | -    | 0.355      | -     |
| D   | 6.30        | 6.70 | 0.248  | 0.264 | -   | -           | -    | -          | -     |

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ISSUE 1 - JUNE 2005