

# ZXTP2013G

---

## 100V PNP MEDIUM POWER LOW SATURATION TRANSISTOR IN SOT223

---

### SUMMARY

$BV_{CEO} = -100V$  ;  $R_{SAT} = 60m\Omega$ ;  $I_C = -5A$

### DESCRIPTION

Packaged in the SOT223 outline this new low saturation 100V PNP transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



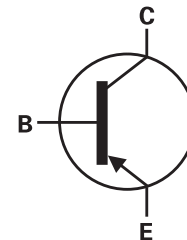
SOT223

### FEATURES

- 5 amps continuous current
- Up to 10 amps peak current
- Very low saturation voltages

### APPLICATIONS

- Motor driving
- Line switching
- High side switches
- Subscriber line interface cards (SLIC)



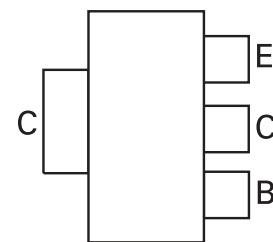
### ORDERING INFORMATION

| DEVICE      | REEL SIZE | TAPE WIDTH | QUANTITY PER REEL |
|-------------|-----------|------------|-------------------|
| ZXTP2013GTA | 7"        | 12mm       | 1,000 units       |
| ZXTP2013GTC | 13"       | embossed   | 4,000 units       |

### DEVICE MARKING

ZXTP  
2013

### PINOUT



TOP VIEW

# ZXTP2013G

## ABSOLUTE MAXIMUM RATINGS

| PARAMETER  | SYMBOL         | LIMIT       | UNIT                 |
|--|----------------|-------------|----------------------|
| Collector-base voltage                                       | $BV_{CBO}$     | -140        | V                    |
| Collector-emitter voltage                                    | $BV_{CEO}$     | -100        | V                    |
| Emitter-base voltage   | $BV_{EBO}$     | -7          | V                    |
| Continuous collector current <sup>(a)</sup>                  | $I_C$          | -5          | A                    |
| Peak pulse current   | $I_{CM}$       | -10         | A                    |
| Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(a)</sup> | $P_D$          | 3.0         | W                    |
| Linear derating factor                                       |                | 24          | mW/ $^\circ\text{C}$ |
| Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(b)</sup> | $P_D$          | 1.6         | W                    |
| Linear derating factor                                       |                | 12.8        | mW/ $^\circ\text{C}$ |
| Operating and storage temperature range                      | $T_j, T_{stg}$ | -55 to +150 | $^\circ\text{C}$     |

## THERMAL RESISTANCE

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

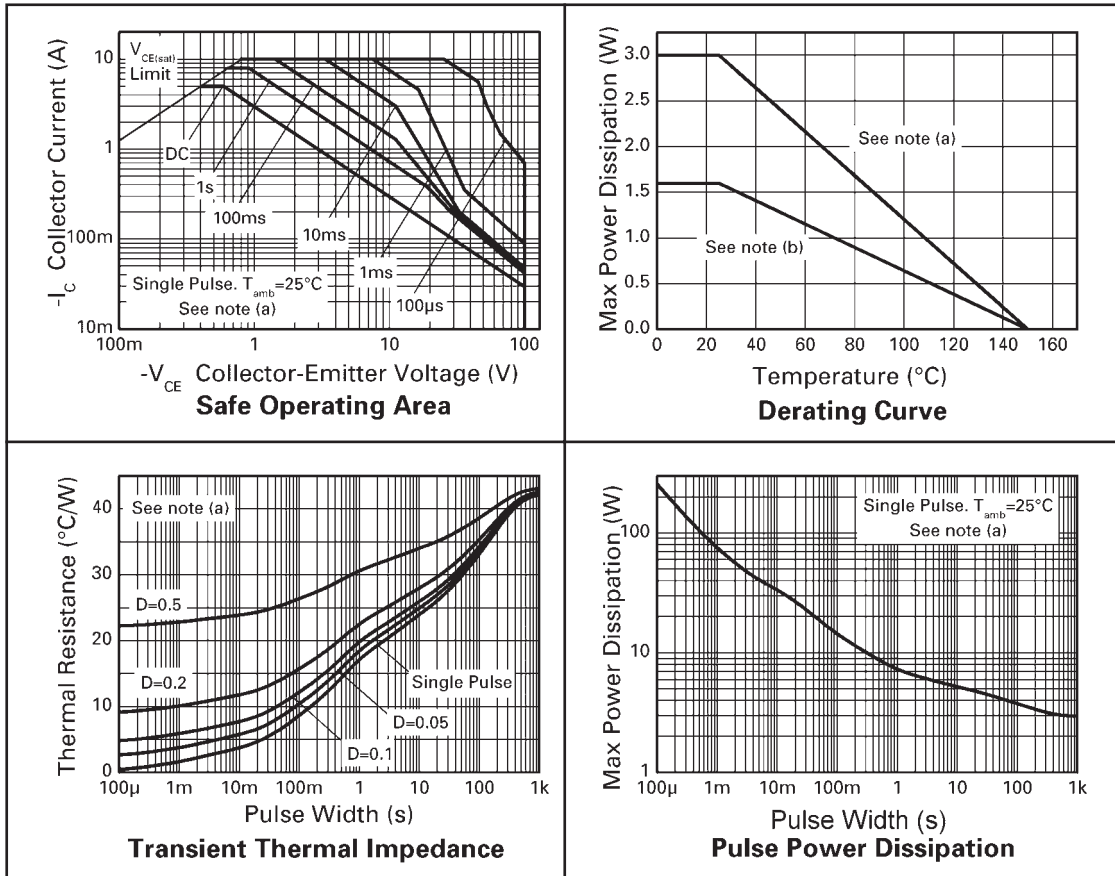
### NOTES

(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.

# ZXTP2013G

## CHARACTERISTICS



# ZXTP2013G

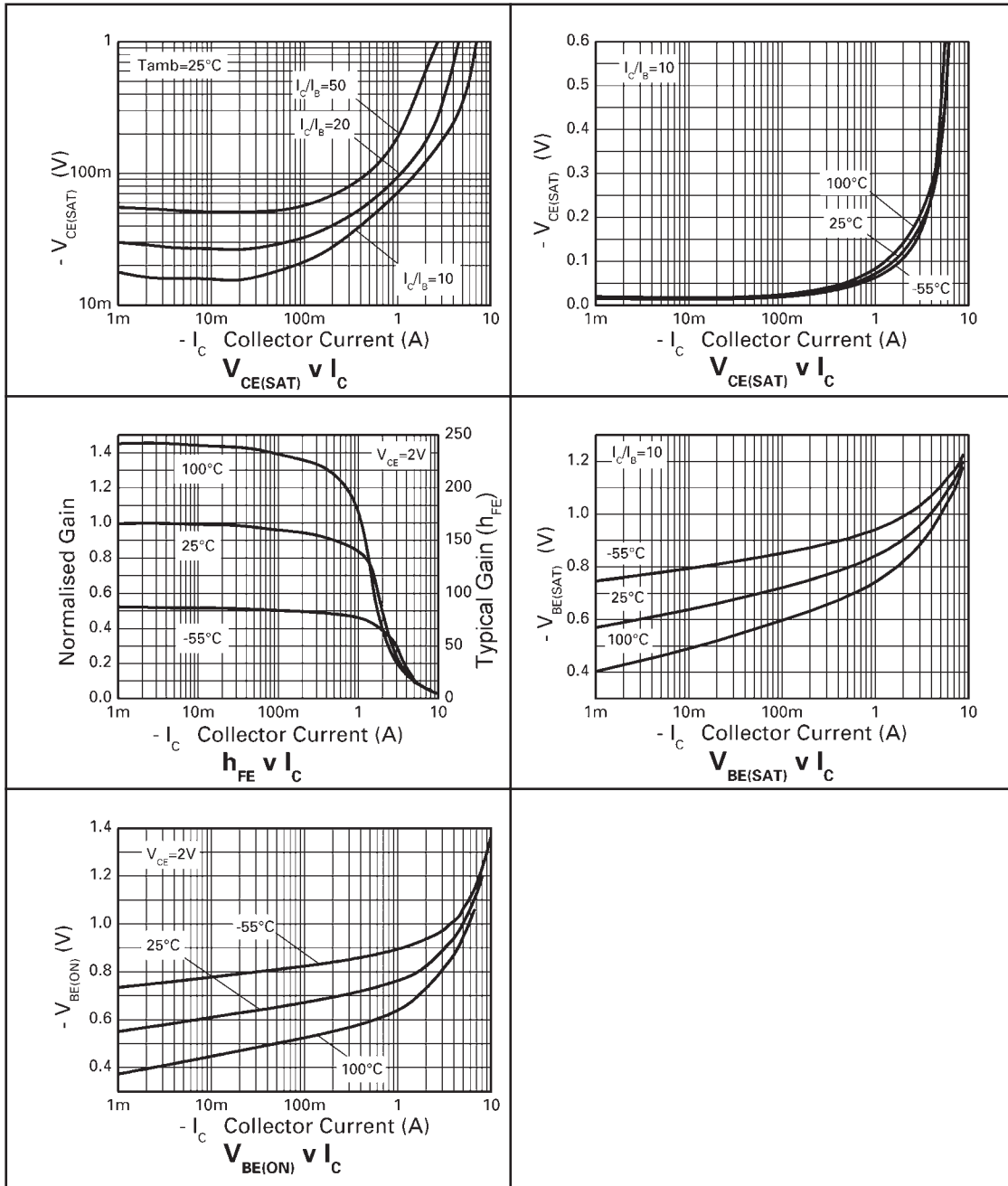
## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

| PARAMETER                             | SYMBOL                                | MIN.                   | TYP.                        | MAX.                       | UNIT                | CONDITIONS  |
|---------------------------------------|---------------------------------------|------------------------|-----------------------------|----------------------------|---------------------|---|
| Collector-base breakdown voltage      | $BV_{CBO}$                            | -140                   | -160                        |                            | V                   | $I_C = -100\mu\text{A}$   |
| Collector-emitter breakdown voltage   | $BV_{CER}$                            | -140                   | -160                        |                            | V                   | $I_C = -1\mu\text{A}$ , $R_B \leq 1\text{k}\Omega$  |
| Collector-emitter breakdown voltage   | $BV_{CEO}$                            | -100                   | -115                        |                            | V                   | $I_C = -10\text{mA}^*$  |
| Emitter-base breakdown voltage        | $BV_{EBO}$                            | -7                     | -8.1                        |                            | V                   | $I_E = -100\mu\text{A}$   |
| Collector cut-off current             | $I_{CBO}$                             |                        | <1                          | -20<br>-0.5                | nA<br>$\mu\text{A}$ | $V_{CB} = -100\text{V}$<br>$V_{CB} = -100\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$  |
| Collector cut-off current             | $I_{CER}$<br>$R \leq 1\text{k}\Omega$ |                        | <1                          | -20<br>-0.5                | nA<br>$\mu\text{A}$ | $V_{CB} = -100\text{V}$<br>$V_{CB} = -100\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$  |
| Emitter cut-off current               | $I_{EBO}$                             |                        | <1                          | -10                        | nA                  | $V_{EB} = -6\text{V}$   |
| Collector-emitter saturation voltage  | $V_{CE(SAT)}$                         |                        | -20<br>-70<br>-120<br>-240  | -30<br>-90<br>-150<br>-340 | mV                  | $I_C = -0.1\text{A}$ , $I_B = -10\text{mA}^*$<br>$I_C = -1\text{A}$ , $I_B = -100\text{mA}^*$<br>$I_C = -2\text{A}$ , $I_B = -200\text{mA}^*$<br>$I_C = -4\text{A}$ , $I_B = -400\text{mA}^*$   |
| Base-emitter saturation voltage       | $V_{BE(SAT)}$                         |                        | -985                        | -1100                      | mV                  | $I_C = -4\text{A}$ , $I_B = -400\text{mA}^*$  |
| Base-emitter turn-on voltage          | $V_{BE(ON)}$                          |                        | -920                        | -1050                      | mV                  | $I_C = -4\text{A}$ , $V_{CE} = -2\text{V}^*$  |
| Static forward current transfer ratio | $H_{FE}$                              | 100<br>100<br>25<br>15 | 250<br>200<br>50<br>30<br>5 | 300                        |                     | $I_C = -10\text{mA}$ , $V_{CE} = -1\text{V}^*$<br>$I_C = -1\text{A}$ , $V_{CE} = -1\text{V}^*$<br>$I_C = -3\text{A}$ , $V_{CE} = -1\text{V}^*$<br>$I_C = -4\text{A}$ , $V_{CE} = -1\text{V}^*$<br>$I_C = -10\text{A}$ , $V_{CE} = -1\text{V}^*$ |
| Transition frequency                  | $f_T$                                 |                        | 125                         |                            | MHz                 | $I_C = -100\text{mA}$ , $V_{CE} = -10\text{V}$<br>$f = 50\text{MHz}$  |
| Output capacitance                    | $C_{OBO}$                             |                        | 42                          |                            | pF                  | $V_{CB} = -10\text{V}$ , $f = 1\text{MHz}^*$  |
| Switching times                       | $t_{ON}$<br>$t_{OFF}$                 |                        | 42<br>540                   |                            | ns                  | $I_C = -1\text{A}$ , $V_{CC} = -10\text{V}$ ,<br>$I_{B1} = I_{B2} = -100\text{mA}$  |

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

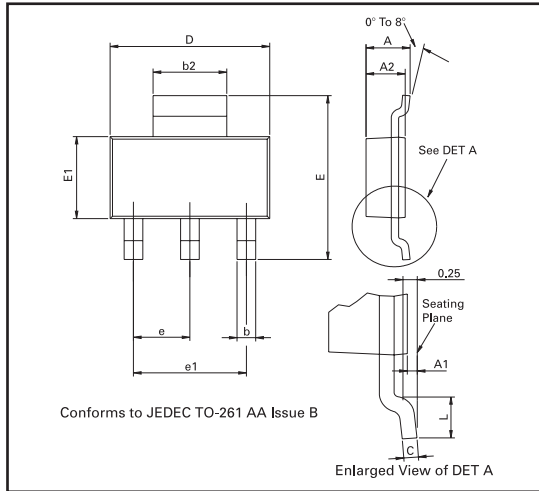
# ZXTP2013G

## TYPICAL CHARACTERISTICS

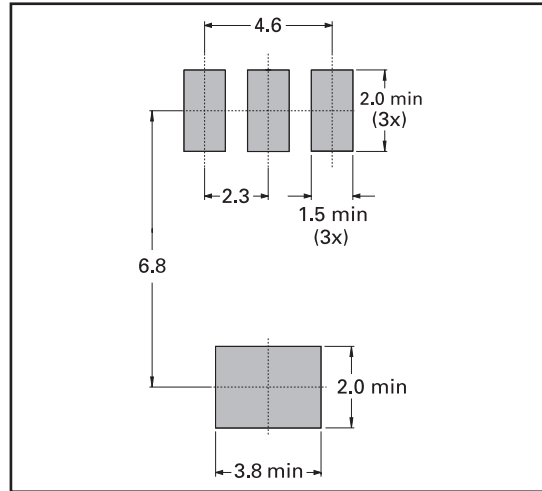


# ZXTP2013G

## 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 | -   | -           | -    | -          | -     |

© Zetex Semiconductors plc 2005

| Europe  | Americas   | Asia Pacific   | Corporate Headquarters  |
|---|--|--|---|
| Zetex GmbH<br>Streitfeldstraße 19<br>D-81673 München<br>Germany   | Zetex Inc<br>700 Veterans Memorial Hwy<br>Hauppauge, NY 11788<br>USA   | Zetex (Asia) Ltd<br>3701-04 Metroplaza Tower 1<br>Hing Fong Road, Kwai Fong<br>Hong Kong                             | Zetex Semiconductors plc<br>Zetex Technology Park<br>Chadderton, Oldham, OL9 9LL<br>United Kingdom      |
| Telefon: (49) 89 45 49 49 0<br>Fax: (49) 89 45 49 49 49<br><a href="mailto:europa.sales@zetex.com">europa.sales@zetex.com</a> | Telephone: (1) 631 360 2222<br>Fax: (1) 631 360 8222<br><a href="mailto:usa.sales@zetex.com">usa.sales@zetex.com</a> | Telephone: (852) 26100 611<br>Fax: (852) 24250 494<br><a href="mailto:asia.sales@zetex.com">asia.sales@zetex.com</a> | Telephone (44) 161 622 4444<br>Fax: (44) 161 622 4446<br><a href="mailto:hq@zetex.com">hq@zetex.com</a> |

These offices are supported by agents and distributors in major countries world-wide.

This publication is issued to provide outline information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned. The Company reserves the right to alter without notice the specification, design, price or conditions of supply of any product or service.

For the latest product information, log on to [www.zetex.com](http://www.zetex.com)



ISSUE 1 - JUNE 2005



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.