

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.



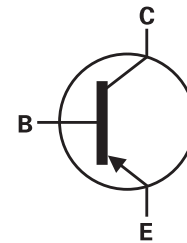
SOT223

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)



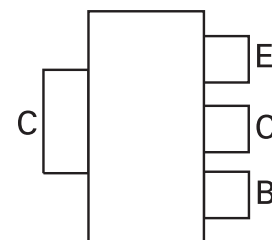
ORDERING INFORMATION

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 ^(a)	I_C	-5	A
Peak pulse current	I_{CM}	-10	A
Power dissipation at $T_A = 25^\circ\text{C}$ ^(a)	P_D	3.0	W
Linear derating factor		24	mW/°C
Power dissipation at $T_A = 25^\circ\text{C}$ ^(b)	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 ^(a)	$R_{\theta JA}$	42	°C/W

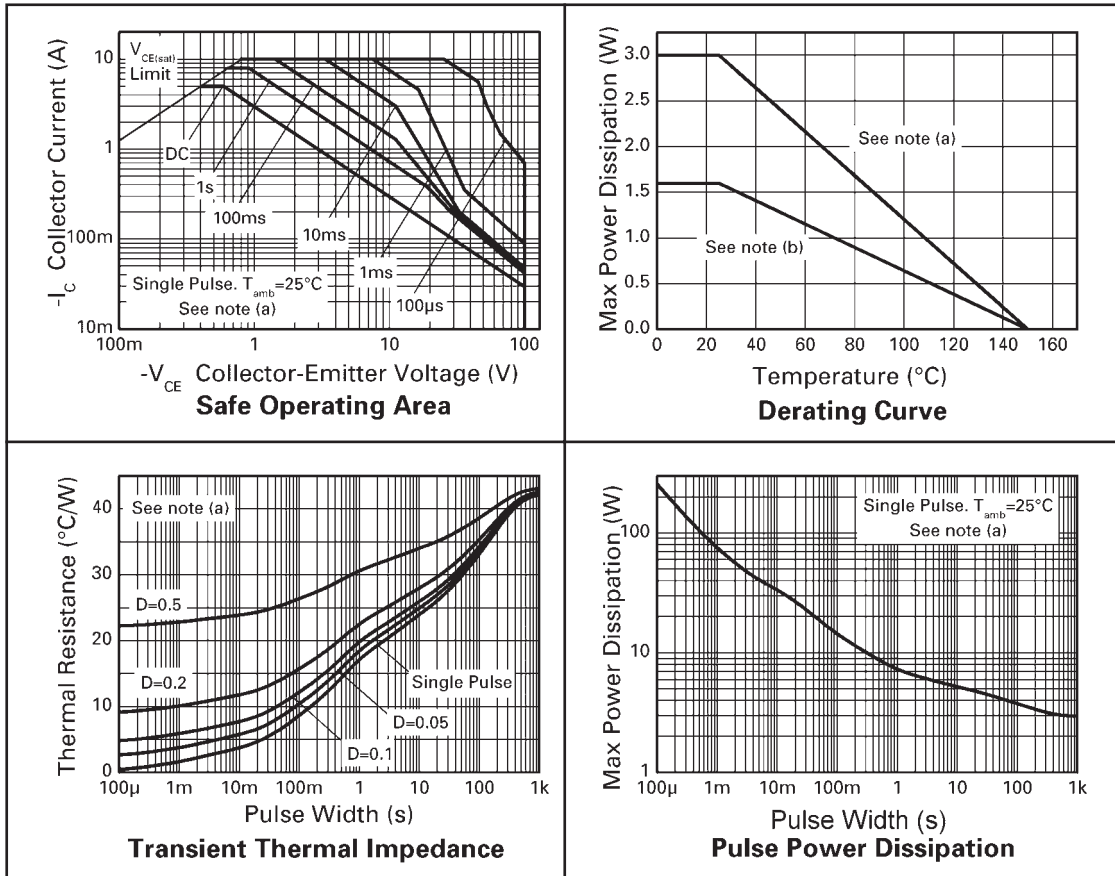
NOTES

(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.

ZXTP2013G

CHARACTERISTICS



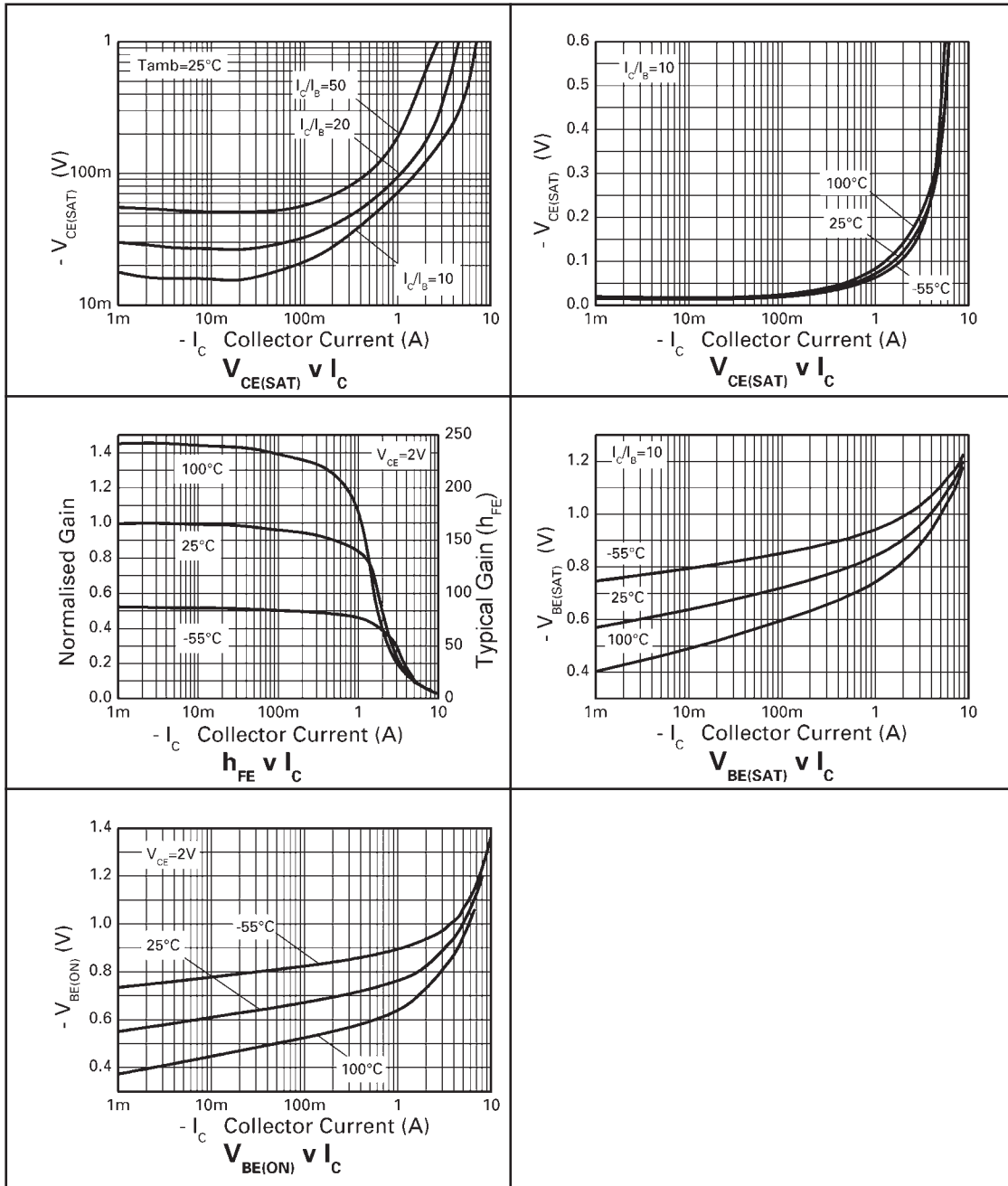
ZXTP2013G

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 -0.5	nA μA	$V_{CB} = -100\text{V}$ $V_{CB} = -100\text{V}$, $T_{amb} = 100^{\circ}\text{C}$
Collector cut-off current	I_{CER} $R \leq 1\text{k}\Omega$		<1	-20 -0.5	nA μA	$V_{CB} = -100\text{V}$ $V_{CB} = -100\text{V}$, $T_{amb} = 100^{\circ}\text{C}$
Emitter cut-off current	I_{EBO}		<1	-10	nA	$V_{EB} = -6\text{V}$
Collector-emitter saturation voltage	$V_{CE(SAT)}$		-20 -70 -120 -240	-30 -90 -150 -340	mV	$I_C = -0.1\text{A}$, $I_B = -10\text{mA}^*$ $I_C = -1\text{A}$, $I_B = -100\text{mA}^*$ $I_C = -2\text{A}$, $I_B = -200\text{mA}^*$ $I_C = -4\text{A}$, $I_B = -400\text{mA}^*$
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}	100 100 25 15	250 200 50 30 5	300		$I_C = -10\text{mA}$, $V_{CE} = -1\text{V}^*$ $I_C = -1\text{A}$, $V_{CE} = -1\text{V}^*$ $I_C = -3\text{A}$, $V_{CE} = -1\text{V}^*$ $I_C = -4\text{A}$, $V_{CE} = -1\text{V}^*$ $I_C = -10\text{A}$, $V_{CE} = -1\text{V}^*$
Transition frequency	f_T		125		MHz	$I_C = -100\text{mA}$, $V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Output capacitance	C_{OBO}		42		pF	$V_{CB} = -10\text{V}$, $f = 1\text{MHz}^*$
Switching times	t_{ON} t_{OFF}		42 540		ns	$I_C = -1\text{A}$, $V_{CC} = -10\text{V}$, $I_{B1} = I_{B2} = -100\text{mA}$

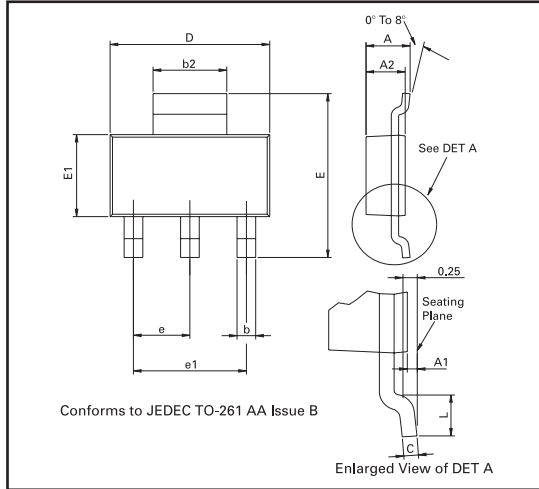
* Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.

TYPICAL CHARACTERISTICS

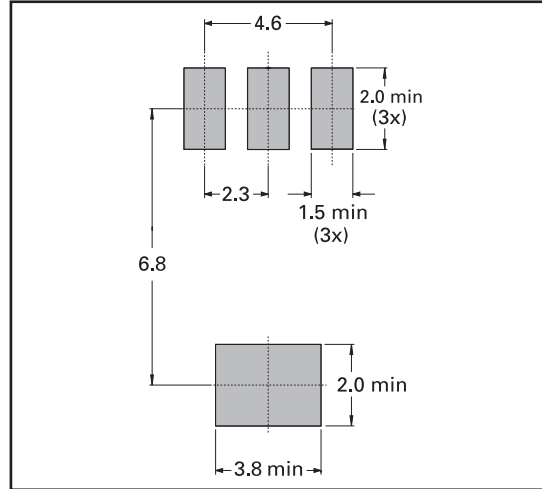


ZXTP2013G

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

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



ISSUE 1 - JUNE 2005