

# ZXTP2014G

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## 140V PNP MEDIUM POWER LOW SATURATION TRANSISTOR IN SOT223

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### SUMMARY

$BV_{CEO} = -140V$  ;  $R_{SAT} = 92m\Omega$ ;  $I_C = -4A$

### DESCRIPTION

Packaged in the SOT223 outline this new low saturation 140V PNP transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



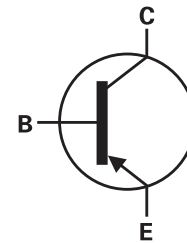
SOT223

### FEATURES

- 4 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)

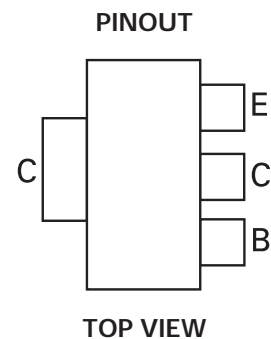


### ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXTP2014GTA	7"	12mm embossed	1,000 units
ZXTP2014GTC	13"		4,000 units

### DEVICE MARKING

ZXTP  
2014



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## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Collector-base voltage	$BV_{CBO}$	-180	V
Collector-emitter voltage	$BV_{CEO}$	-140	V
Emitter-base voltage	$BV_{EBO}$	-7	V
Continuous collector current <sup>(a)</sup>	$I_C$	-4	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

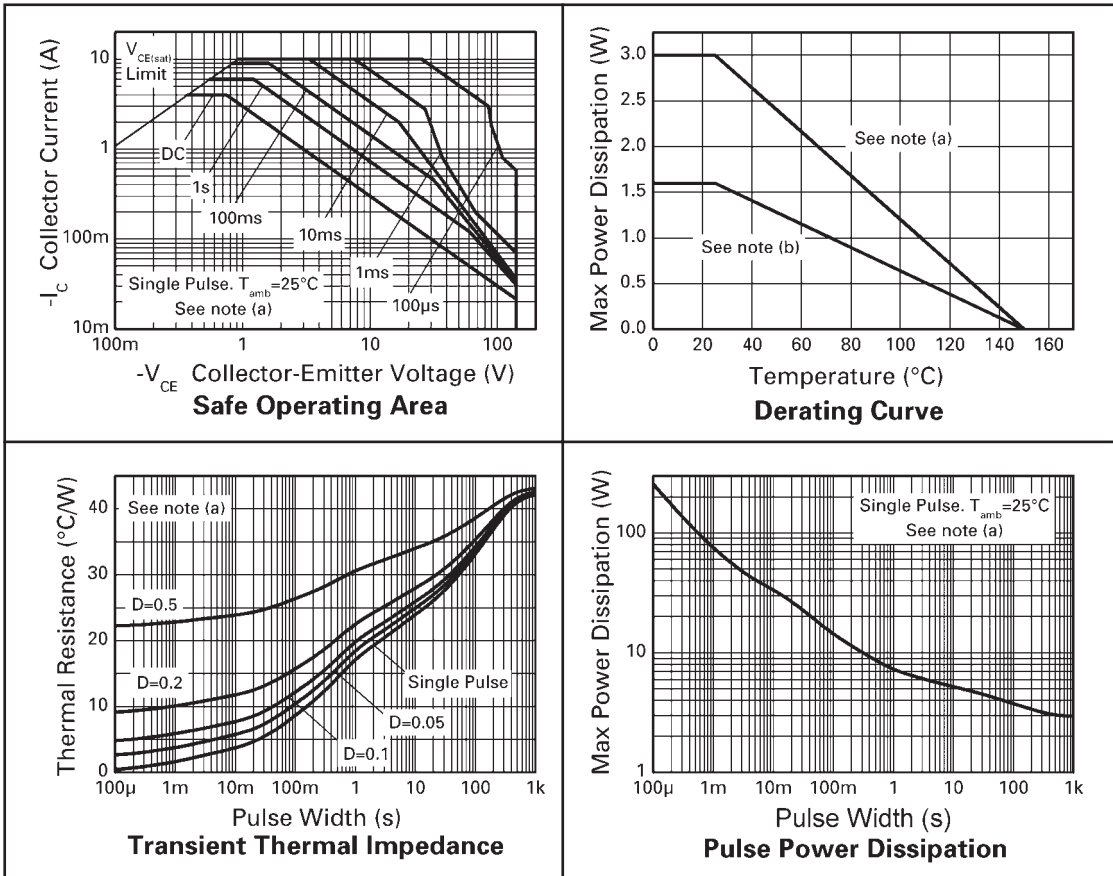
PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient <sup>(a)</sup>	$R_{\theta JA}$	42	$^\circ\text{C/W}$
Junction to ambient <sup>(b)</sup>	$R_{\theta JA}$	78	$^\circ\text{C/W}$

### 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



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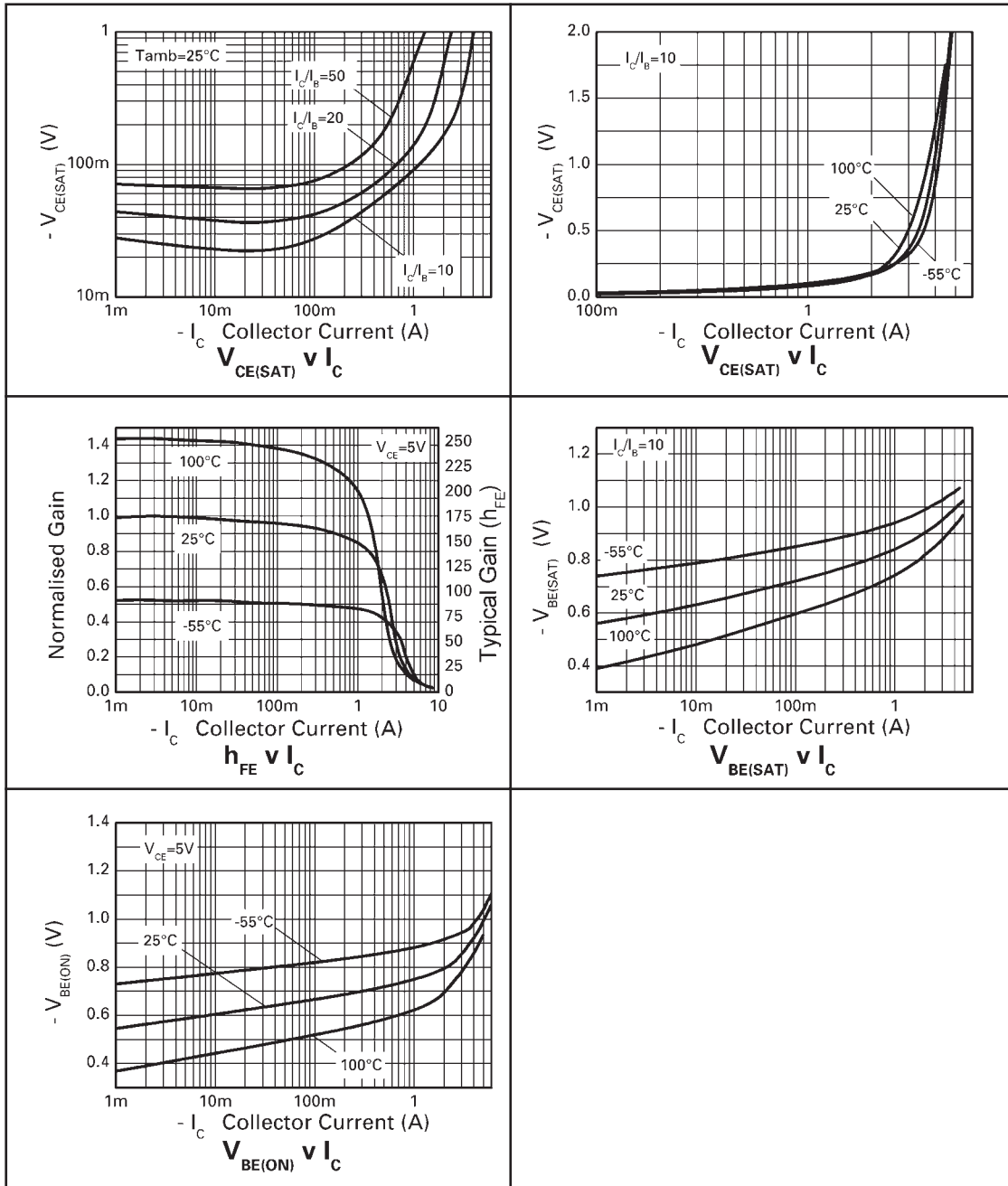
## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Collector-base breakdown voltage	$BV_{CBO}$	-180	-200		V	$I_C = -100\mu\text{A}$
Collector-emitter breakdown voltage	$BV_{CER}$	-180	-200		V	$I_C = -1\mu\text{A}$ , $R_B \leq 1\text{k}\Omega$
Collector-emitter breakdown voltage	$BV_{CEO}$	-140	-160		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 $\mu\text{A}$	$V_{CB} = -150\text{V}$ $V_{CB} = -150\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$
Collector cut-off current	$I_{CER}$ $R \leq 1\text{k}\Omega$		<1	-20 -0.5	nA $\mu\text{A}$	$V_{CB} = -150\text{V}$ $V_{CB} = -150\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$
Emitter cut-off current	$I_{EBO}$		<1	-10	nA	$V_{EB} = -6\text{V}$
Collector-emitter saturation voltage	$V_{CE(SAT)}$		-40 -55 -85 -275	-60 -80 -120 -360	mV mV mV mV	$I_C = -0.1\text{A}$ , $I_B = -5\text{mA}^*$ $I_C = -0.5\text{A}$ , $I_B = -50\text{mA}^*$ $I_C = -1\text{A}$ , $I_B = -100\text{mA}^*$ $I_C = -3\text{A}$ , $I_B = -300\text{mA}^*$
Base-emitter saturation voltage	$V_{BE(SAT)}$		-940	-1040	mV	$I_C = -3\text{A}$ , $I_B = -300\text{mA}^*$
Base-emitter turn-on voltage	$V_{BE(ON)}$		-830	-930	mV	$I_C = -3\text{A}$ , $V_{CE} = -5\text{V}^*$
Static forward current transfer ratio	$H_{FE}$	100 100 45	225 200 100	300		$I_C = -10\text{mA}$ , $V_{CE} = -5\text{V}^*$ $I_C = -1\text{A}$ , $V_{CE} = -5\text{V}^*$ $I_C = -3\text{A}$ , $V_{CE} = -5\text{V}^*$ $I_C = -10\text{A}$ , $V_{CE} = -5\text{V}^*$
Transition frequency	$f_T$		120		MHz	$I_C = -100\text{mA}$ , $V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Output capacitance	$C_{OBO}$		33		pF	$V_{CB} = -10\text{V}$ , $f = 1\text{MHz}^*$
Switching times	$t_{ON}$ $t_{OFF}$		42 636		ns	$I_C = -1\text{A}$ , $V_{CC} = -50\text{V}$ , $I_{B1} = -I_{B2} = -100\text{mA}$

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

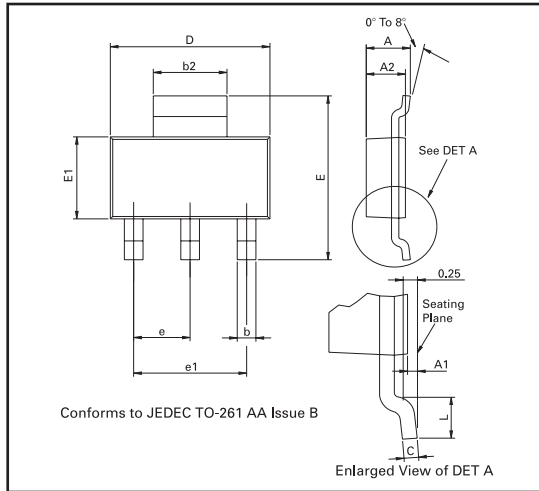
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## TYPICAL CHARACTERISTICS

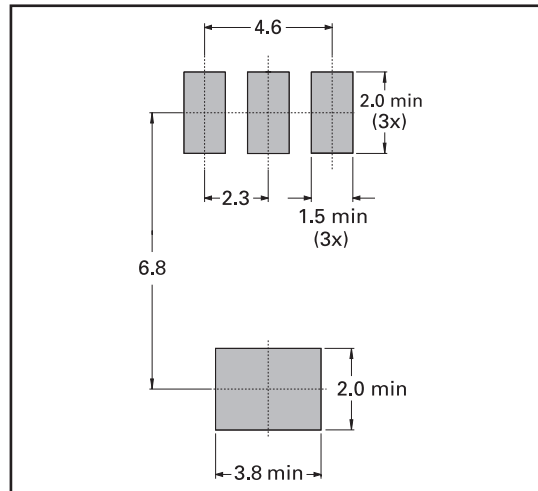


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## PACKAGE OUTLINE



## 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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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 <a href="mailto:europa.sales@zetex.com">europa.sales@zetex.com</a>	Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 <a href="mailto:usa.sales@zetex.com">usa.sales@zetex.com</a>	Telephone: (852) 26100 611 Fax: (852) 24250 494 <a href="mailto:asia.sales@zetex.com">asia.sales@zetex.com</a>	Telephone (44) 161 622 4444 Fax: (44) 161 622 4446 <a href="mailto:hq@zetex.com">hq@zetex.com</a>

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