

# ZXTP2013Z

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## 100V PNP LOW SATURATION MEDIUM POWER TRANSISTOR IN SOT89

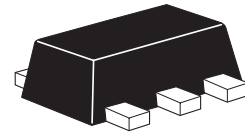
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### SUMMARY

$BV_{CEO} = -100V$  ;  $R_{SAT} = 57m\Omega$  ;  $I_C = -3.5A$

### DESCRIPTION

Packaged in the SOT89 outline this new low saturation 100V 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.



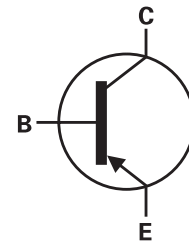
SOT89

### FEATURES

- 3.5 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)



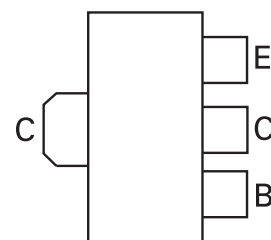
### ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXTP2013ZTA	7"	12mm embossed	1,000 units

### DEVICE MARKING

953

### PINOUT



VIEW

# ZXTP2013Z

## 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>	$I_C$	-3.5	A
Peak pulse current	$I_{CM}$	-10	A
Power dissipation at $T_A=25^\circ\text{C}$ <sup>(a)</sup>	$P_D$	1.5	W
Linear derating factor		12	mW/°C
Power dissipation at $T_A=25^\circ\text{C}$ <sup>(b)</sup>	$P_D$	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

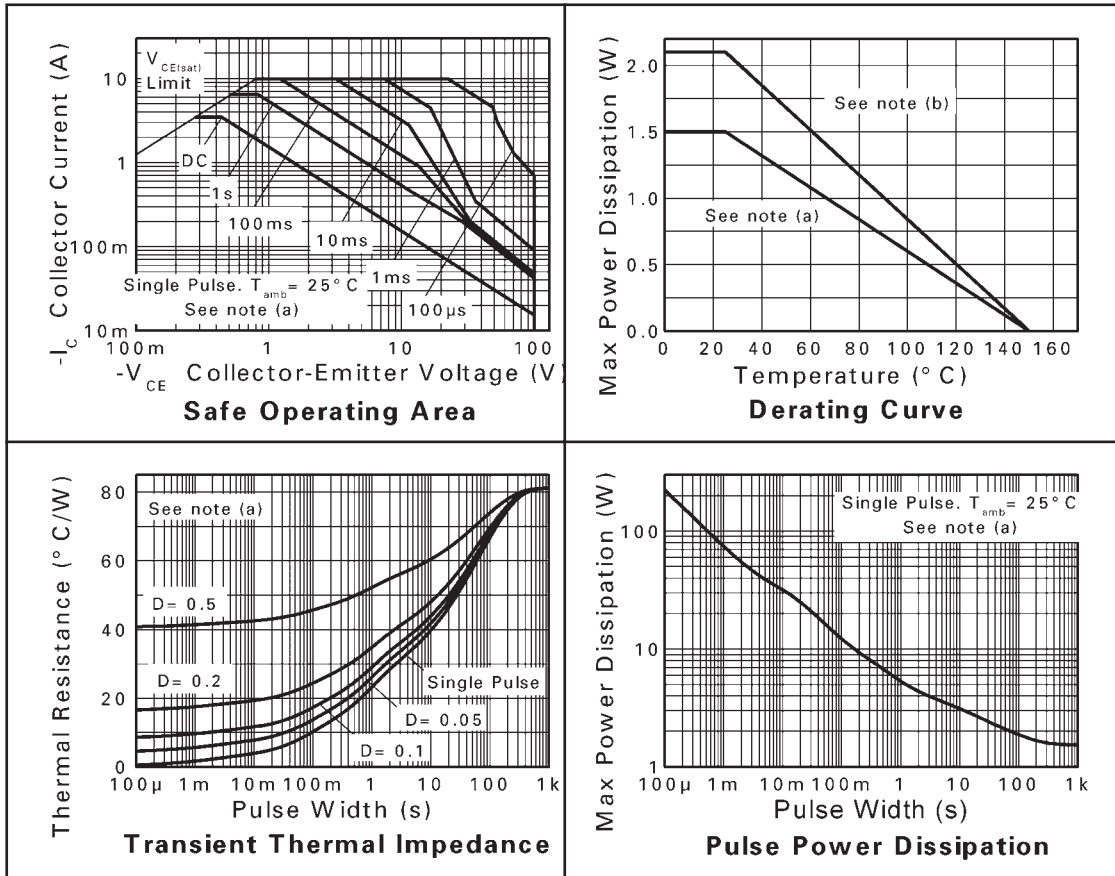
PARAMETER	SYMBOL	LIMIT	UNIT
Junction to ambient <sup>(a)</sup>	$R_{\theta JA}$	83	°C/W
Junction to ambient <sup>(b)</sup>	$R_{\theta JA}$	60	°C/W

### 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



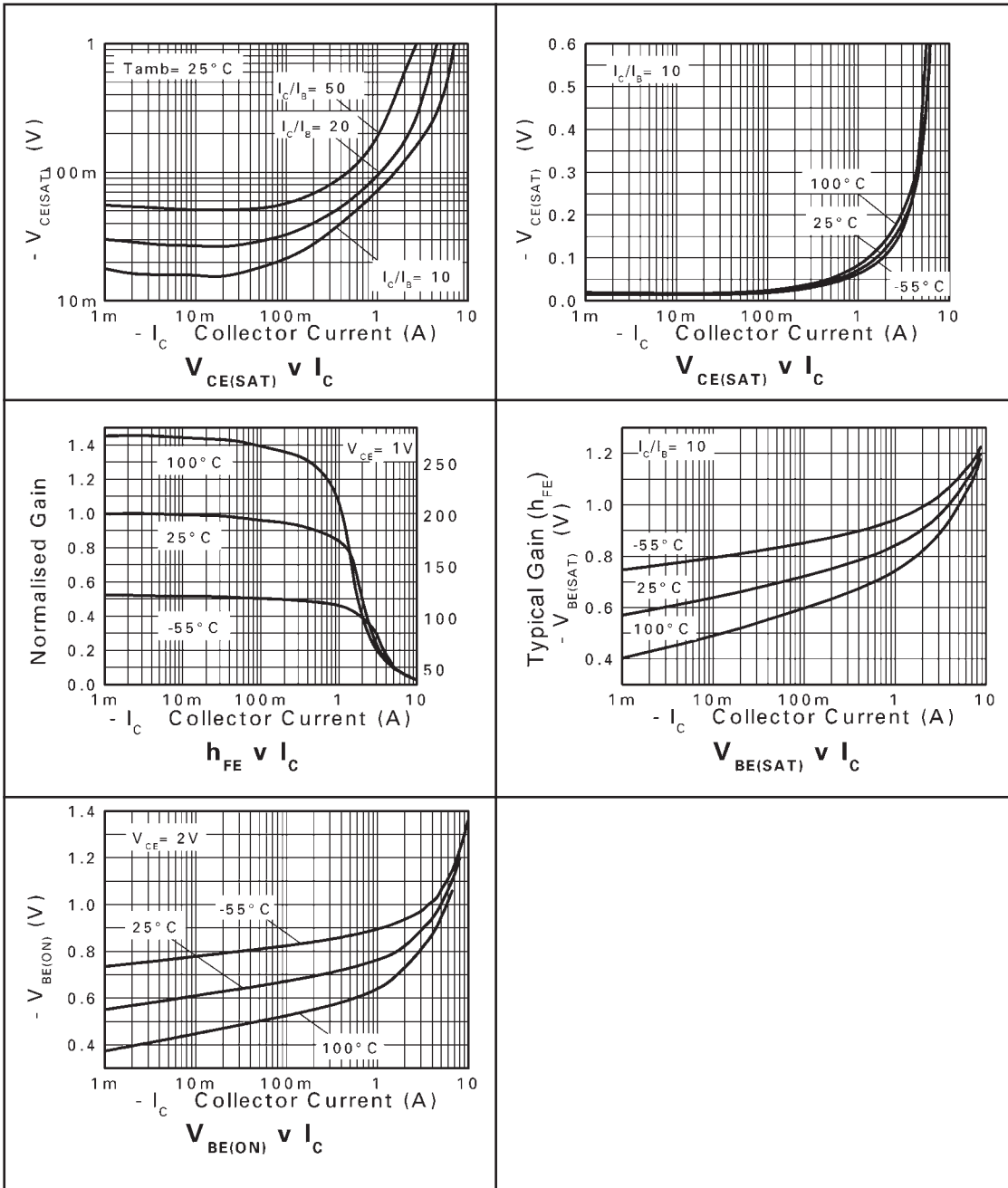
# ZXTP2013Z

## 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 $\mu\text{A}$	$V_{CB} = -100\text{V}$ $V_{CB} = -100\text{V}$ , $T_{amb}=100^{\circ}\text{C}$
Collector cut-off current	$I_{CER}$ $R \leq 1\text{k}\Omega$		<1	-20 -0.5	nA $\mu\text{A}$	$V_{CB} = -100\text{V}$ $V_{CB} = -100\text{V}$ , $T_{amb}=100^{\circ}\text{C}$
Emitter cut-off current	$I_{EBO}$		<1	-10	nA	$V_{EB} = -6\text{V}$
Collector-emitter saturation voltage	$V_{CE(SAT)}$		-20 -65 -110 -230	-30 -85 -135 -300	mV mV mV 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	$V_{BE(SAT)}$		-970	-1060	mV	$I_C = -4\text{A}$ , $I_B = -400\text{mA}^*$
Base-emitter turn on voltage	$V_{BE(ON)}$		-910	-1030	mV	$I_C = -4\text{A}$ , $V_{CE} = -1\text{V}^*$
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	$I_C = 1\text{A}$ , $V_{CC} = 10\text{V}$ , $I_{B1} = I_{B2} = 100\text{mA}$

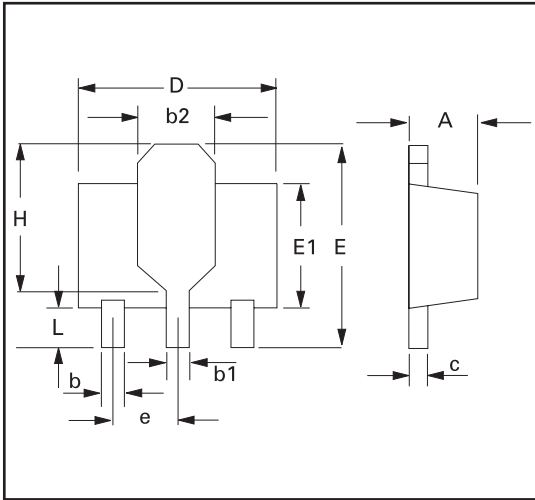
\* Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ ; duty cycle  $\leq 2\%$ .

TYPICAL CHARACTERISTICS



# ZXTP2013Z

## PACKAGE OUTLINE



## 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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