

# ZX5T955Z.

## 140V PNP Low saturation medium power transistor in SOT89

### Summary

$BV_{CEO} = -140V$  ;  $R_{SAT} = 85m\Omega$ ;  $I_C = -3A$

### Description

Packaged in the SOT89 outline this new 5th generation low saturation 140V 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.

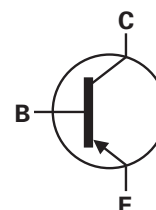


### Features

- 3 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)

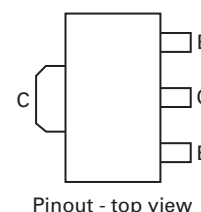


### Ordering Information

Device	Reel Size	Tape Width	Quantity Per Reel
ZX5T955TA	7"	12mm	1000

### Device Marking

955



**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>	$I_C$	-3	A
Peak pulse current	$I_{CM}$	-10	A
Power dissipation at $T_{amb}=25^{\circ}C^{(a)}$ Linear derating factor	$P_D$	1.5 12	W mW/°C
Power dissipation at $T_{amb}=25^{\circ}C^{(b)}$ Linear derating factor	$P_D$	2.1 16.8	W mW/°C
Operating and storage temperature range	$T_j, T_{stg}$	-55 to 150	°C

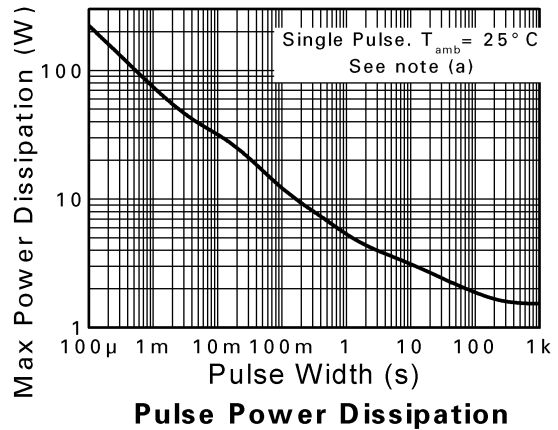
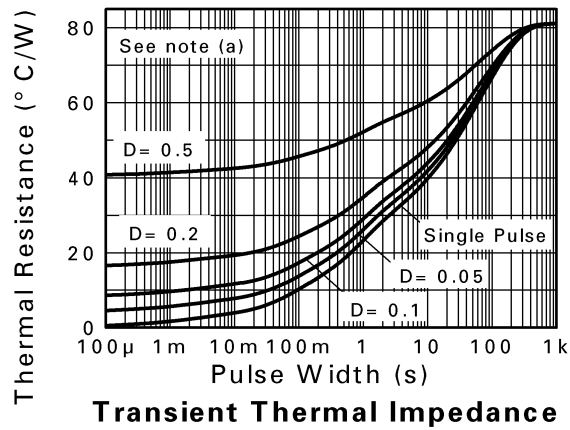
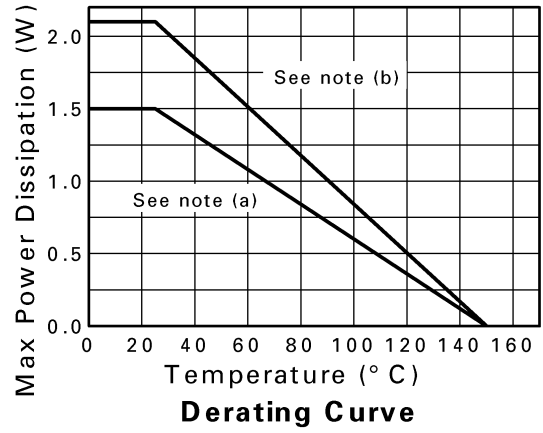
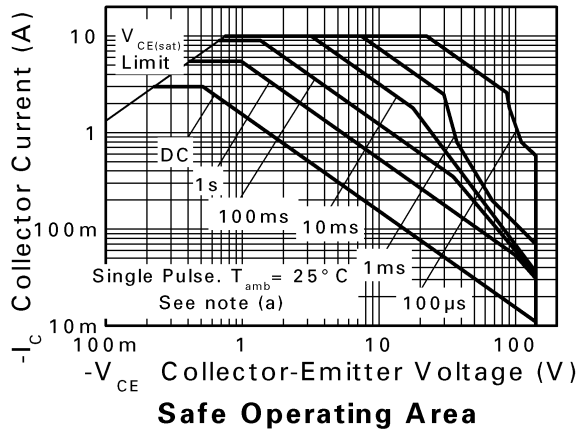
**Thermal resistance**

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

(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



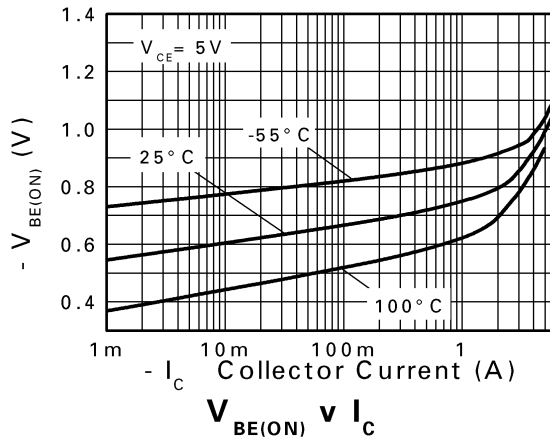
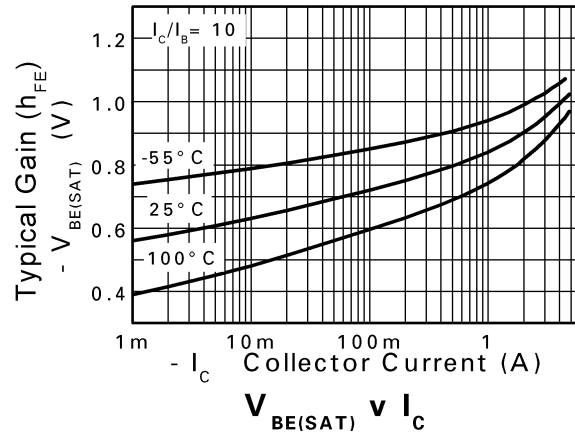
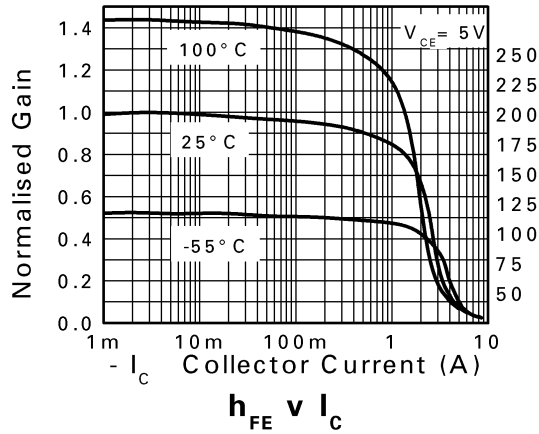
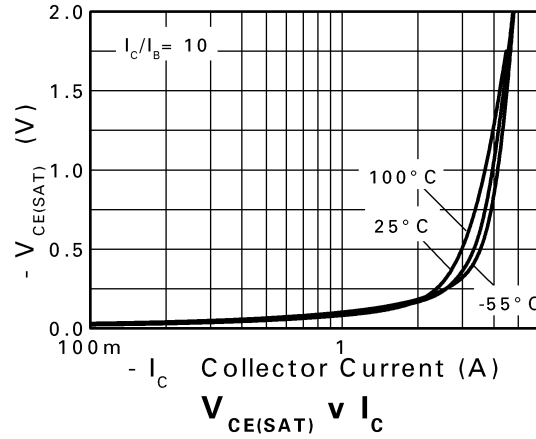
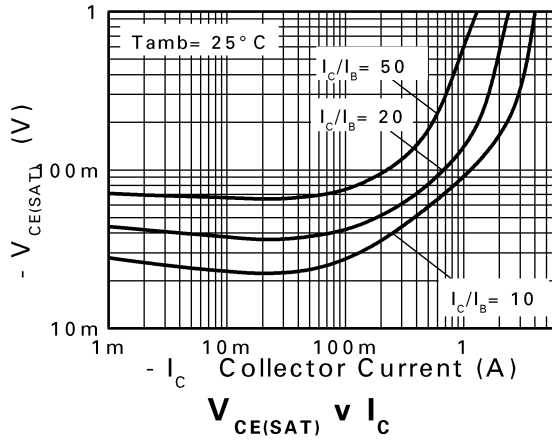
## Electrical Characteristics (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

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	$I_C = -100\mu\text{A}$ , $R_B < 1\text{k}\Omega$
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	$I_{CER}$ $R < 1\text{k}\Omega$		<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	$V_{CE(sat)}$		-37	-60	mV	$I_C = -0.1\text{A}$ , $I_B = -5\text{mA}$ (*)
			-50	-75	mV	$I_C = -0.5\text{A}$ , $I_B = -50\text{mA}$ (*)
			-80	-115	mV	$I_C = -1\text{A}$ , $I_B = -100\text{mA}$ (*)
			-255	-330	mV	$I_C = -3\text{A}$ , $I_B = -300\text{mA}$ (*)
Base-emitter saturation voltage	$V_{BE(sat)}$		-910	-1010	mV	$I_C = -3\text{A}$ , $I_B = -300\text{mA}$ (*)
Base-emitter turn-on voltage	$V_{BE(on)}$		-800	-900	mV	$I_C = -3\text{A}$ , $V_{CE} = -5\text{V}$ (*)
Static forward current transfer ratio	$h_{FE}$	100	225			$I_C = -10\text{mA}$ , $V_{CE} = -5\text{V}$ (*)
		100	200	300		$I_C = -1\text{A}$ , $V_{CE} = -5\text{V}$ (*)
		45	100			$I_C = -3\text{A}$ , $V_{CE} = -5\text{V}$ (*)
			5			$I_C = -10\text{A}$ , $V_{CE} = -5\text{V}$ (*)
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	$t_{on}$		42		ns	$I_C = -1\text{A}$ , $V_{CC} = -50\text{V}$ ,
	$t_{off}$		636		ns	$I_{B1} = -I_{B2} = -100\text{mA}$

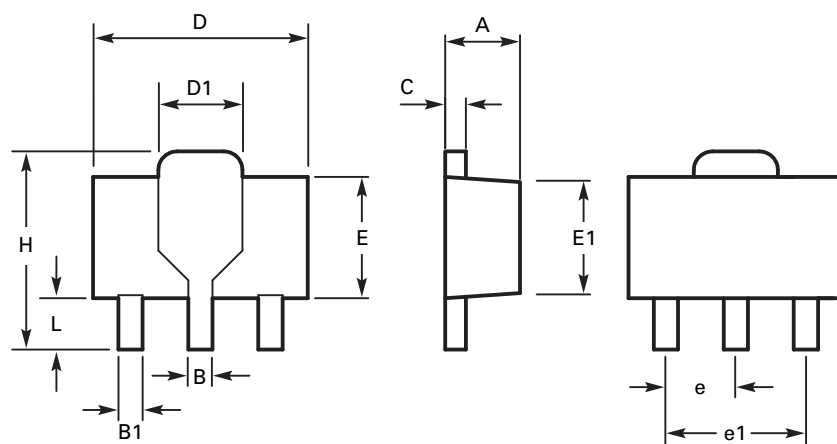
### NOTES:

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

## Typical characteristics



## Package Outline



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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