ZX5T955Z.
140V PNP Low saturation medium power transistor in SOT89

Summary

BV_{CEO} = -140V : R_{SAT} = 85mΩ; I_C = -3A

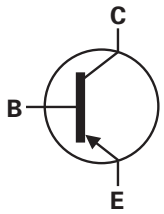
Description

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



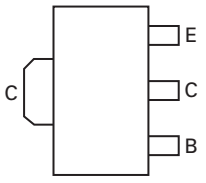
- Motor driving
- Line switching
- High side switches
- Subscriber line interface cards (SLIC)

Ordering Information

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

Device Marking

955



Pinout - top view

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[a]	I_C	-3	A
Peak pulse current	I_{CM}	-10	A
Power dissipation at T_{amb}=25°C[a] Linear derating factor	P_D	1.5 12	W mW/°C
Power dissipation at T_{amb}=25°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

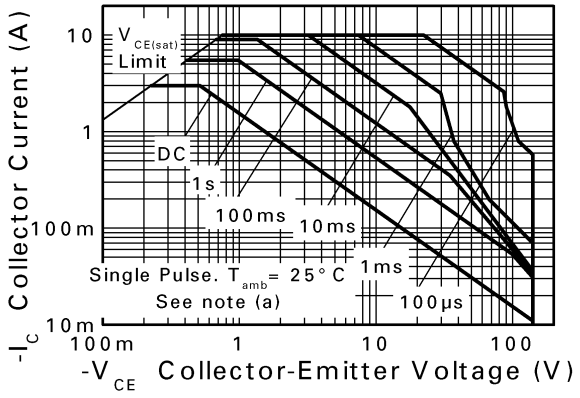
Thermal resistance

Parameter	Symbol	Limit	Unit
Junction to ambient[a]	$R_{\Theta JA}$	83	°C/W
Junction to ambient[b]	$R_{\Theta JA}$	60	°C/W

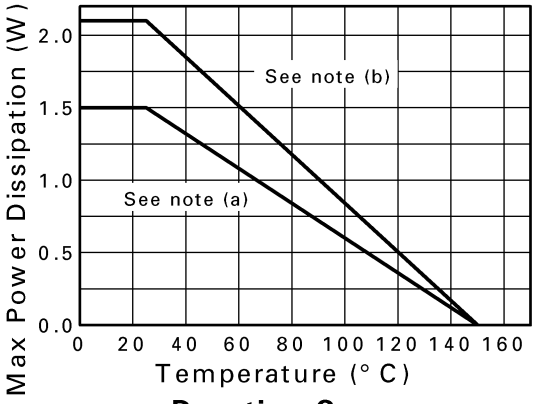
(a) For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(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.

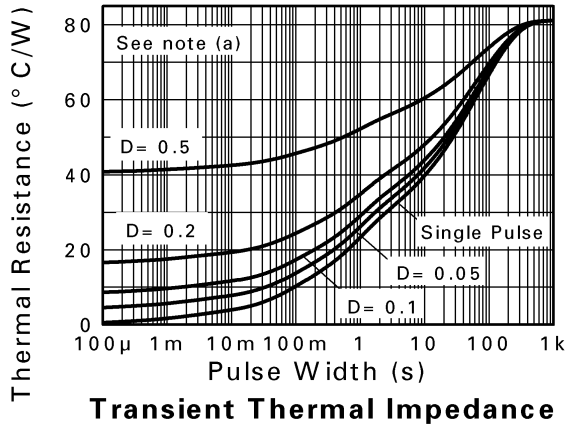
Characteristics



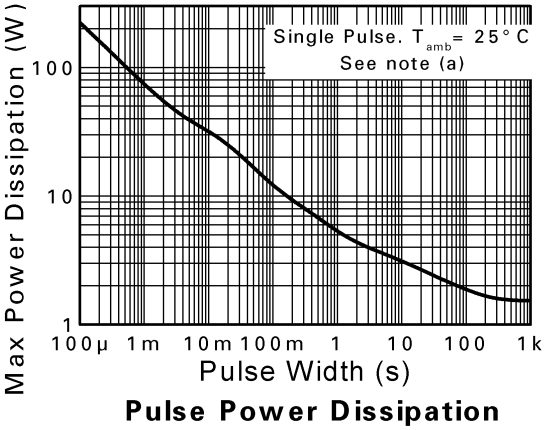
Safe Operating Area



Derating Curve



Transient Thermal Impedance



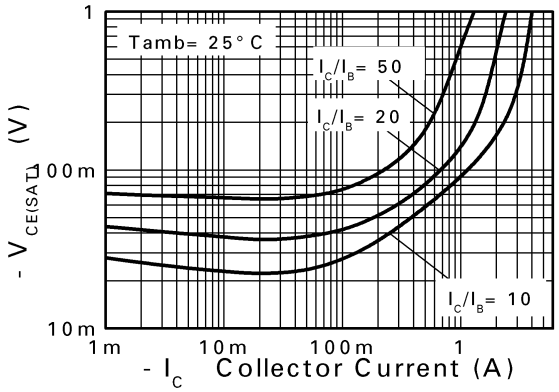
Pulse Power Dissipation

Electrical Characteristics (at T_{amb} =25°C unless otherwise stated)

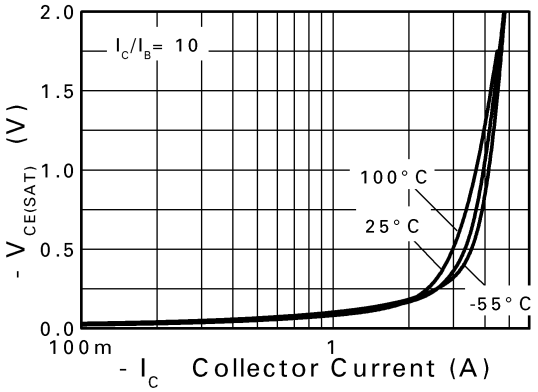
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-Base breakdown voltage	BV_{CBO}	-180	-200		V	I_C = -100μA
Collector-Emitter breakdown voltage	BV_{CER}	-180	-200		V	I_C = -100μA, RB<1kΩ
Collector-Emitter breakdown voltage	BV_{CEO}	-140	-160		V	I_C = -10mA (*)
Emitter-Base breakdown voltage	BV_{EBO}	-7.0	-8.0		V	I_E = -100μA
Collector cut-off current	I_{CBO}		<1 	-20 -0.5	nA μA	V_{CB} = -150V V_{CB} = -150V, Tamb =100°C
Collector cut-off current	I_{CER} R<1kΩ		<1 	-20 -0.5	nA μA	V_{CB} = -150V V_{CB} = -150V, Tamb =100°C
Emitter cut-off current	I_{EBO}		<1	-10	nA	V_{EB} = -6V
Collector-Emitter saturation voltage	$V_{CE(sat)}$		-37 -50 -80 -255	-60 -75 -115 -330	mV mV mV mV	I_C = -0.1A, I_B = -5mA(*) I_C = -0.5A, I_B = -50mA(*) I_C = -1A, I_B = -100mA(*) I_C = -3A, I_B = -300mA(*)
Base-emitter saturation voltage	$V_{BE(sat)}$		-910	-1010	mV	I_C = -3A, I_B = -300mA(*)
Base-emitter turn-on voltage	$V_{BE(on)}$		-800	-900	mV	I_C = -3A, V_{CE} = -5V(*)
Static forward current transfer ratio	h_{FE}	100 100 45 	225 200 100 5	 300 		I_C = -10mA, V_{CE} = -5V(*) I_C = -1A, V_{CE} = -5V(*) I_C = -3A, V_{CE} = -5V(*) I_C = -10A, V_{CE} = -5V(*)
Transition frequency	f_T		120		MHz	I_C = -100mA, V_{CE} = -10V f = 50MHz
Output capacitance	C_{OBO}		33		pF	V_{CB} = -10V, f = 1MHz(*)
Switching times	t_{on} t_{off}		42 636		ns ns	I_C = -1A, V_{CC} = -50V, I_{B1} = -I_{B2} = -100mA

NOTES:
(*) Measured under pulsed conditions. Pulse width ≤300μs; duty cycle ≤2%.

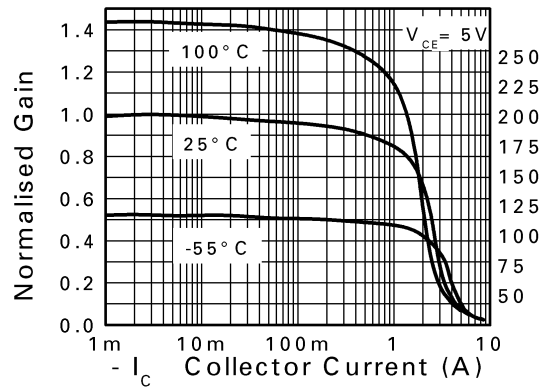
Typical characteristics



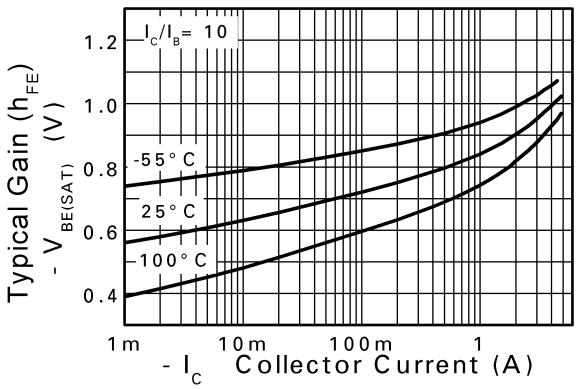
$V_{CE(SAT)}$ v I_C



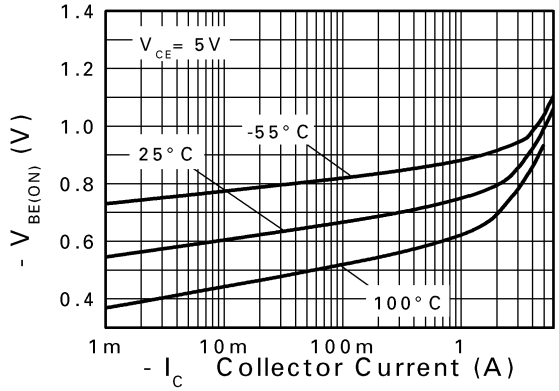
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C

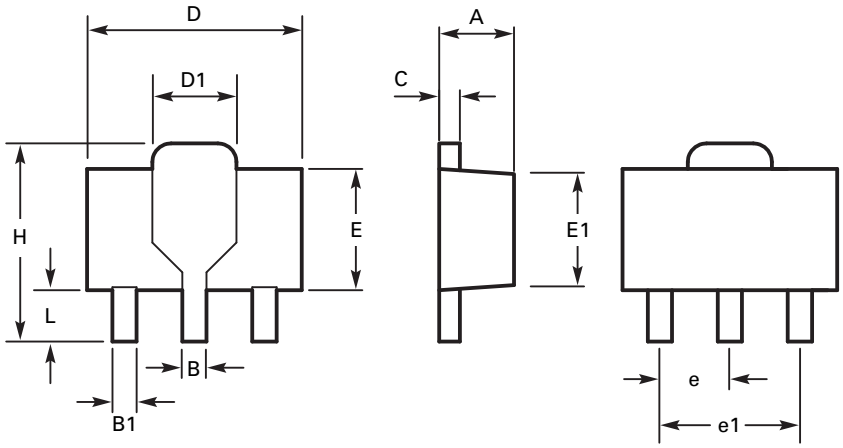


$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C

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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