

# ZXTP5401Z

## 150V, SOT89, PNP High voltage transistor

### Summary

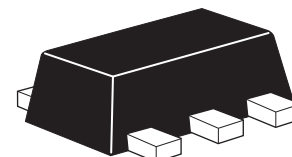
$BV_{CEO} > -150V$

$BV_{EBO} > -5V$

$I_{C(cont)} = -600mA$

$P_D = 1.2W$

Complementary part number ZXTN5551Z



### Description

A high voltage PNP transistor in a small outline surface mount package.

### Features

- 150V rating
- SOT89 package

### Applications

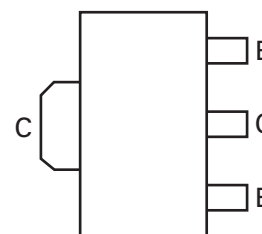
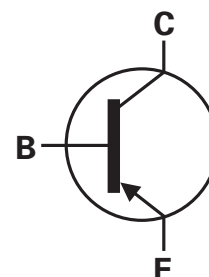
- High voltage amplification

### Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP5401ZTA	7	12	1000

### Device marking

P01



Pinout - top view

## Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-base voltage	$V_{CBO}$	-160	V
Collector-emitter voltage	$V_{CEO}$	-150	V
Emitter-base voltage	$V_{EBO}$	-5	V
Continuous collector current <sup>(a)</sup>	$I_C$	-600	mA
Pulsed collector current	$I_{CM}$	-2	A
Power dissipation at $T_A = 25^{\circ}\text{C}^{(a)}$	$P_D$	1.2	W
Linear derating factor		9.6	mW/ $^{\circ}\text{C}$
Operating and storage temperature range	$T_j, T_{stg}$	-55 to 150	$^{\circ}\text{C}$

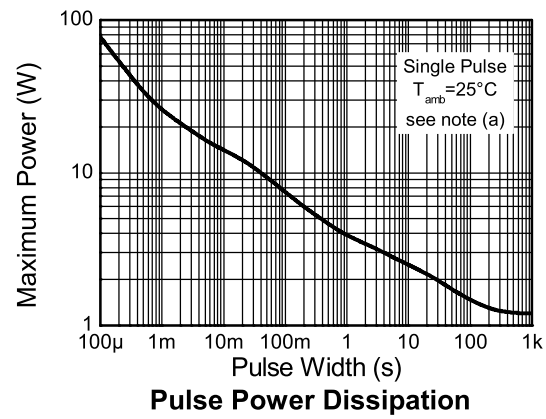
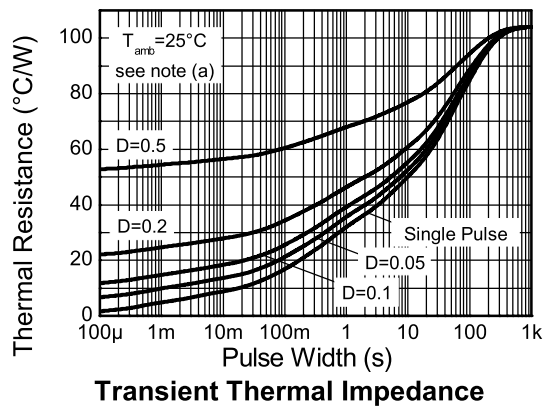
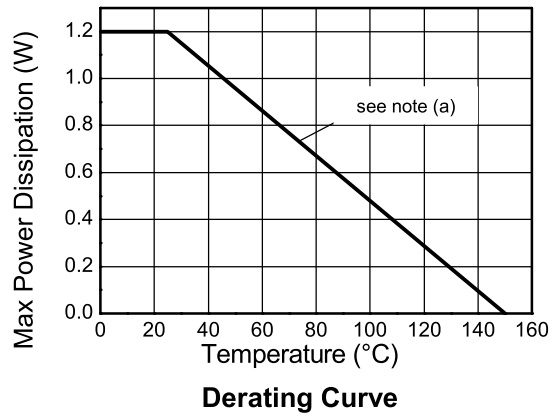
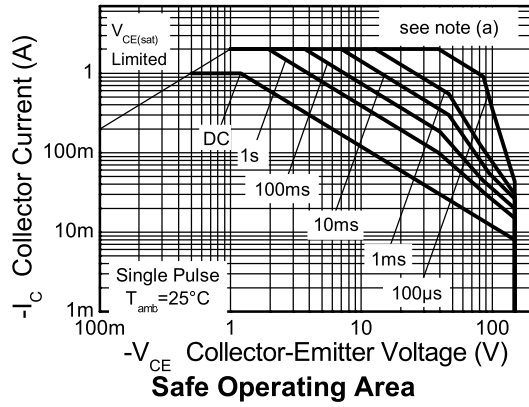
## Thermal resistance

Parameter	Symbol	Limit	Unit
Junction to ambient <sup>(a)</sup>	$R_{\theta JA}$		$^{\circ}\text{C}/\text{W}$

### NOTES:

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

## Typical characteristics



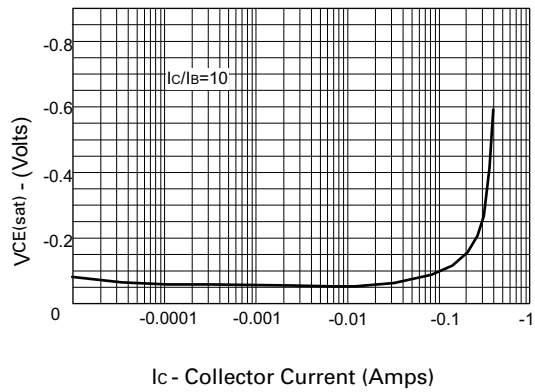
## Electrical characteristics (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CBO}$	-160	-270		V	$I_C = -100\mu\text{A}$
Collector-emitter breakdown voltage (base open)	$BV_{CEO}$	-150	-240		V	$I_C = -1\text{mA}^{(*)}$
Emitter-base breakdown voltage	$BV_{EBO}$	-5	-8.1		V	$I_E = -10\mu\text{A}$
Collector cut-off current	$I_{CBO}$		<-1	-50 -50	nA $\mu\text{A}$	$V_{CB} = -120\text{V}$ $V_{CB} = -120\text{V}, T_{amb} = 100^{\circ}\text{C}$
Collector-emitter saturation voltage	$V_{CE(sat)}$		-50 -70	-200 -500	mV mV	$I_C = -10\text{mA}, I_B = -1\text{mA}^{(*)}$ $I_C = -50\text{mA}, I_B = -5\text{mA}^{(*)}$
Base-emitter saturation voltage	$V_{BE(sat)}$		-700 -750	-1000 -1000	mV mV	$I_C = -10\text{mA}, I_B = -1\text{mA}^{(*)}$ $I_C = -50\text{mA}, I_B = -5\text{mA}^{(*)}$
Static forward current transfer ratio	$h_{FE}$	50 60 50	135 135 130	240		$I_C = -1\text{mA}, V_{CE} = -5\text{V}^{(*)}$ $I_C = -10\text{mA}, V_{CE} = -5\text{V}^{(*)}$ $I_C = -50\text{mA}, V_{CE} = -5\text{V}^{(*)}$
Transition frequency	$f_T$		100		MHz	$I_C = -10\text{mA}, V_{CE} = -10\text{V}$ $f = 100\text{MHz}$
Output capacitance	$C_{OBO}$			6	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}^{(*)}$
Delay time	$t_{(d)}$		386		ns	$V_{CC} = -10\text{V}, I_C = -100\text{mA},$ $I_{B1} = I_{B2} = -10\text{mA}$
Rise time	$t_{(r)}$		202		ns	
Storage time	$t_{(s)}$		1720		ns	
Fall time	$t_{(f)}$		275		ns	

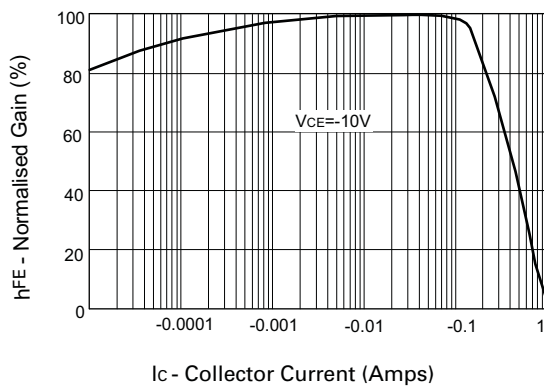
### NOTES:

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

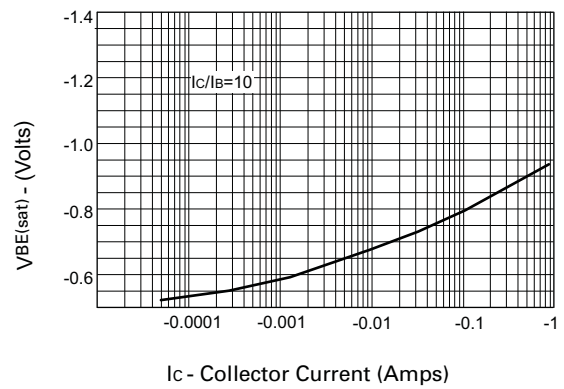
## Charateristics



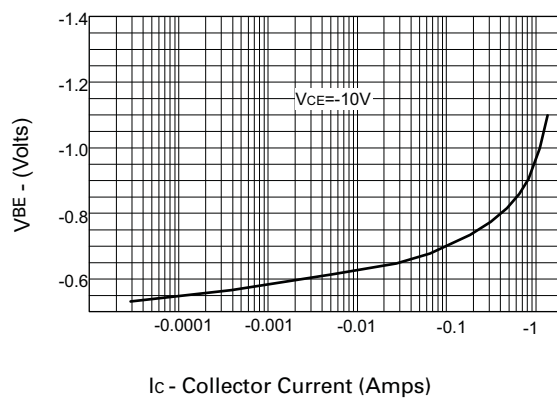
**$V_{CE(sat)}$  v  $I_C$**



**$h_{FE}$  v  $I_C$**



**$V_{BE(sat)}$  v  $I_C$**

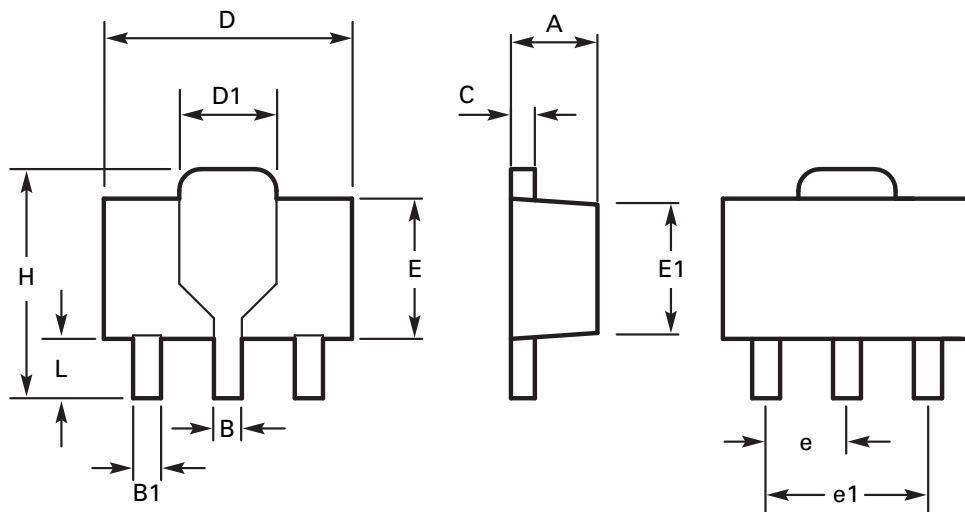


**$V_{BE(on)}$  v  $I_C$**

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# ZXTP5401Z

## Package outline - SOT89



DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	1.40	1.60	0.550	0.630	E	2.29	2.60	0.090	0.102
B	0.44	0.56	0.017	0.022	E1	2.13	2.29	0.084	0.090
B1	0.36	0.48	0.014	0.019	e	1.50 BSC		0.059 BSC	
C	0.35	0.44	0.014	0.017	e1	3.00 BSC		0.118 BSC	
D	4.40	4.60	0.173	0.181	H	3.94	4.25	0.155	0.167
D1	1.52	1.83	0.064	0.072	L	0.89	1.20	0.035	0.047

**Note:** Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

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