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# ZXTP5401FL

## 150V, SOT23, PNP High voltage transistor

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### Summary

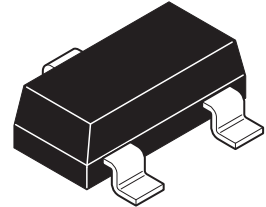
$BV_{CEO} > -150V$

$BV_{EBO} > -5V$

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

$P_D = 330mW$

Complementary part number ZXTN5551FL

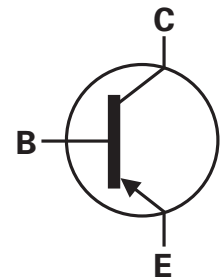


### Description

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

### Features

- 150V rating
- SOT23 package

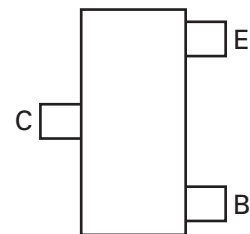


### Applications

- High voltage amplification

### Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP5401FLTA	7	8	3000



Pinout - top view

### Device marking

P01

# ZXTP5401FL

## 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	$I_{CM}$	-1	A
Power dissipation at $T_{amb} = 25^\circ\text{C}^{(a)}$	$P_D$	330	mW
Linear derating factor		2.64	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>	$R_{\theta JA}$	379	°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 weight copper, in still air conditions.

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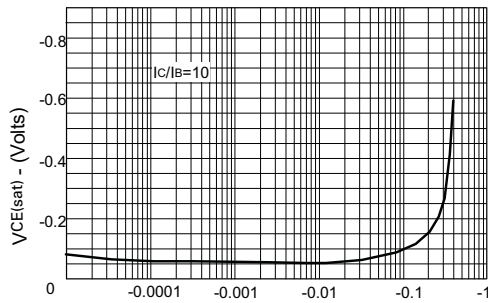
## Electrical characteristics (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CBO}$	-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	$C_{OBO}$			10	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}^{(*)}$
Delay time	$t_{(d)}$		386		ns	$V_{CC} = -50\text{V}, I_C = 100\text{mA},$ $I_{B1} = I_{B2} = -10\text{mA}.$
Rise time	$t_{(r)}$		202		ns	
Storage time	$t_{(s)}$		1720		ns	
Fall time	$t_{(f)}$		275		ns	

### NOTES:

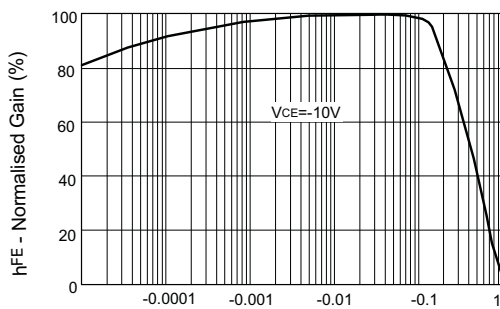
(\*) Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ ; duty cycle  $\leq 2\%$ .

## Typical characteristics



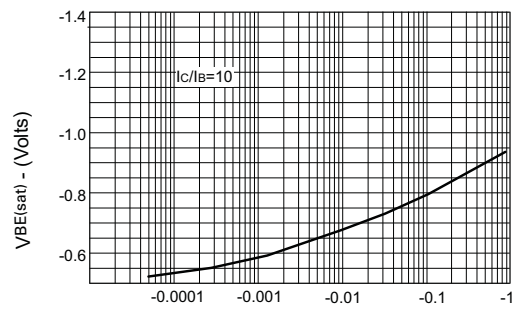
IC - Collector Current (Amps)

**VCE(sat) v IC**



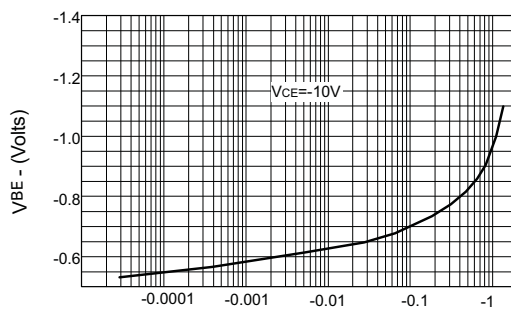
IC - Collector Current (Amps)

**hFE v IC**



IC - Collector Current (Amps)

**VBE(sat) v IC**



IC - Collector Current (Amps)

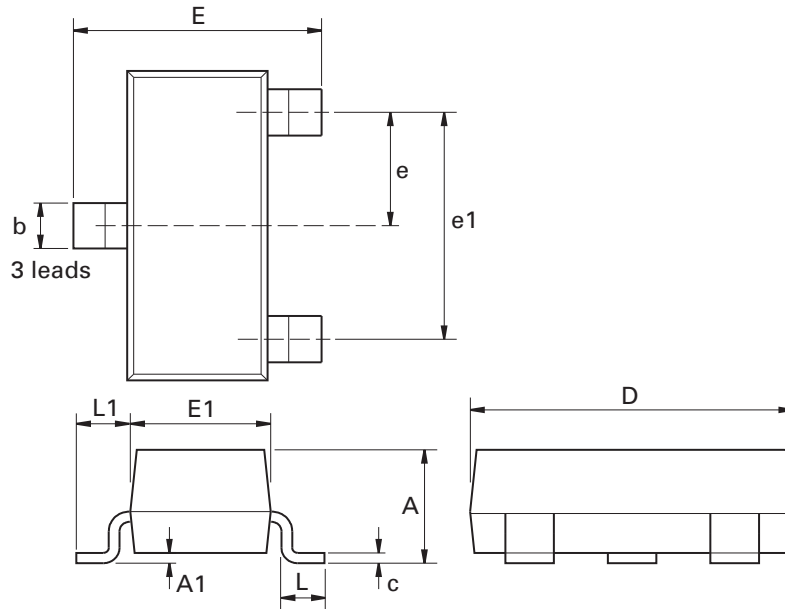
**VBE(on) v IC**

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# ZXTP5401FL

## Package outline - SOT23



Dim.	Millimeters		Inches		Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	-	1.12	-	0.044	e1	1.90 NOM		0.075 NOM	
A1	0.01	0.10	0.0004	0.004	E	2.10	2.64	0.083	0.104
b	0.30	0.50	0.012	0.020	E1	1.20	1.40	0.047	0.055
c	0.085	0.20	0.003	0.008	L	0.25	0.60	0.0098	0.0236
D	2.80	3.04	0.110	0.120	L1	0.45	0.62	0.018	0.024
e	0.95 NOM		0.037 NOM		-	-	-	-	-

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

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