

ZXTP08400BFF

400V, SOT23F, PNP medium power high voltage transistor

Summary;

$BV_{CEO} > -400V$

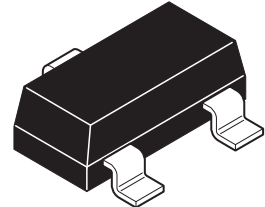
$BV_{ECO} > -6V$

$I_{C(cont)} = -0.2A$

$V_{CE(sat)} < 220mV @ 100mA$

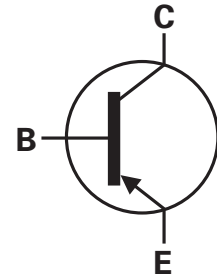
$P_D = 1.5W$

Complementary part number ZXTN08400BFF



Description

This PNP transistor has been designed for applications requiring high blocking voltage. The SOT23F package is pin compatible with the industry standard SOT23 footprint but offers lower profile and higher dissipation for applications where power density is of utmost importance.

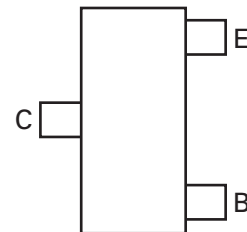


Features

- High voltage
- Low saturation voltage

Applications

- Telecoms switching



Pinout - top view

Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP08400BFFTA	7	8	3000

Device marking

1D6

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Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-base voltage	V_{CBO}	-400	V
Collector-emitter voltage	V_{CEO}	-400	V
Emitter-collector voltage (reverse blocking)	V_{ECO}	-6	V
Emitter-base voltage	V_{EBO}	-7	V
Continuous collector current ^(c)	I_C	-0.2	A
Peak pulse current	I_{CM}	-1	A
Base current	I_B	-0.2	A
Power dissipation at $T_{amb} = 25^\circ\text{C}^{(a)}$		0.84	W
Linear derating factor	P_D	6.72	mW/°C
Power dissipation at $T_{amb} = 25^\circ\text{C}^{(b)}$		1.34	W
Linear derating factor	P_D	10.72	mW/°C
Power dissipation at $T_{amb} = 25^\circ\text{C}^{(c)}$		1.50	W
Linear derating factor	P_D	12.0	mW/°C
Power dissipation at $T_{amb} = 25^\circ\text{C}^{(d)}$		2.0	W
Linear derating factor	P_D	16.0	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)	$R_{\theta JA}$	149	°C/W
Junction to ambient ^(b)	$R_{\theta JA}$	93	°C/W
Junction to ambient ^(c)	$R_{\theta JA}$	83	°C/W
Junction to ambient ^(d)	$R_{\theta JA}$	60	°C/W

NOTES:

(a) For a device surface mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

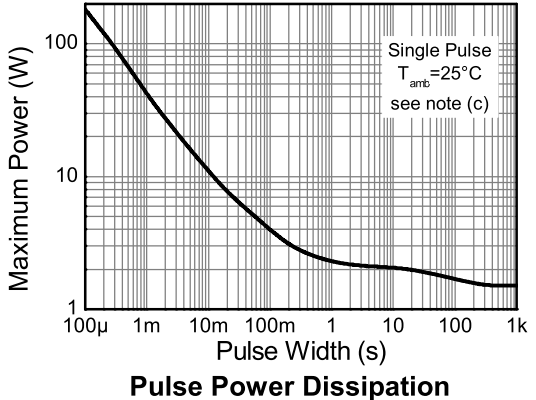
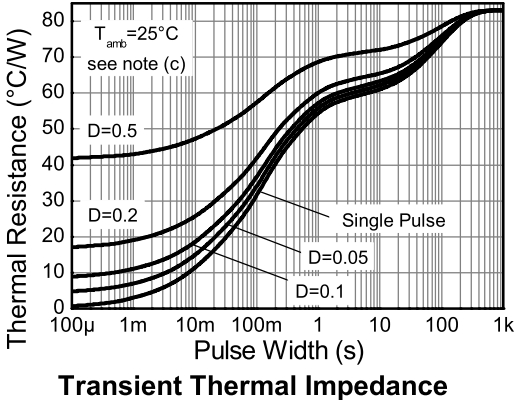
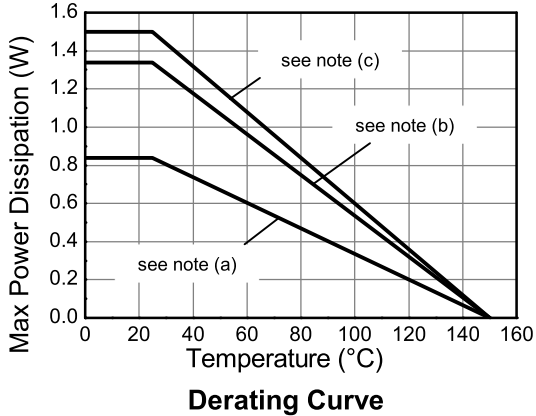
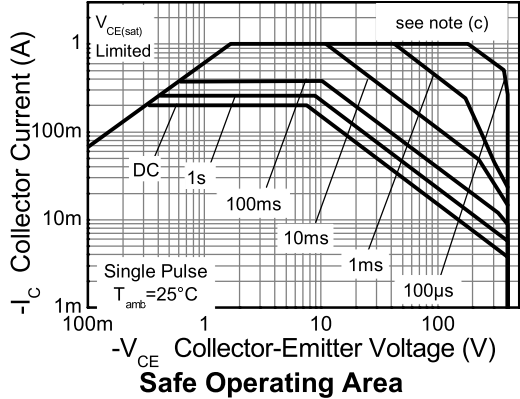
(b) Mounted on 25mm x 25mm x 1.6mm FR4 PCB with a high coverage of single sided 2 oz copper in still air conditions.

(c) Mounted on 50mm x 50mm x 1.6mm FR4 PCB with a high coverage of single sided 2 oz copper in still air conditions.

(d) As (c) above measured at $t < 5$ secs.

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Characteristics



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

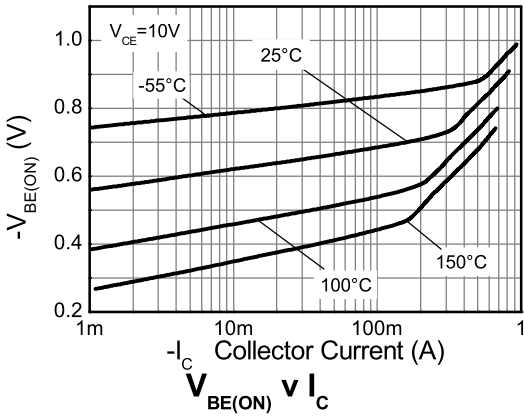
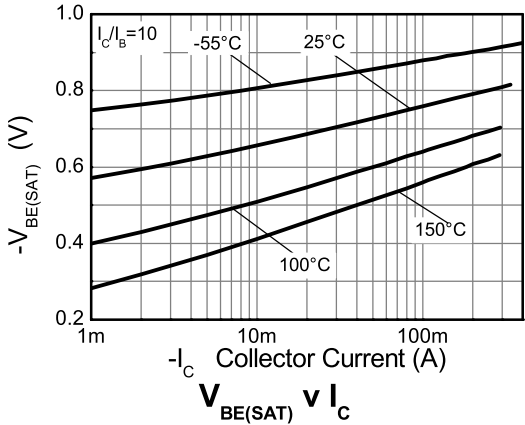
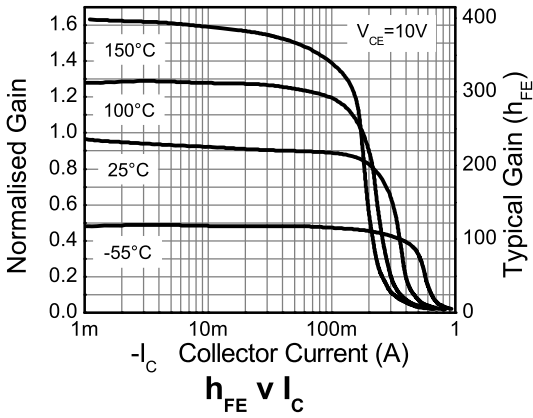
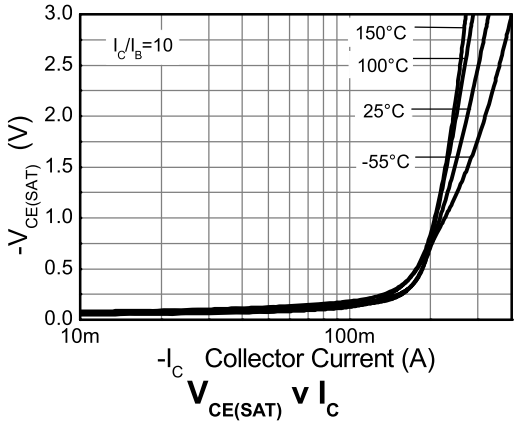
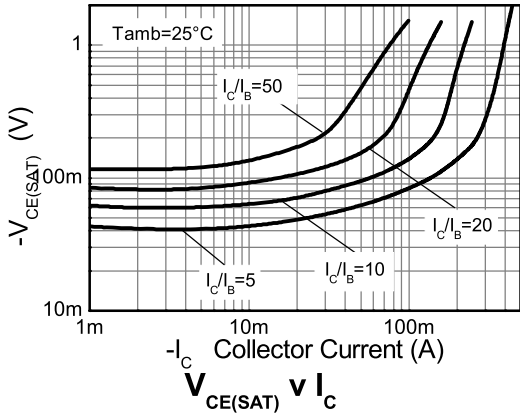
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-400	-500		V	$I_C = -100\mu\text{A}$
Collector-emitter breakdown voltage (base open)	BV_{CEO}	-400	-480		V	$I_C = -10\text{mA}^{(*)}$
Emitter-base breakdown voltage	BV_{EBO}	-7	-8.1		V	$I_E = -100\mu\text{A}$
Emitter-collector breakdown voltage (reverse blocking)	BV_{ECX}	-6	-8.2		V	$I_E = -100\mu\text{A}$, $R_{BC} < 1\text{k}\Omega$ or $0.25\text{V} > V_{BC} > -0.25\text{V}$
Emitter-collector breakdown voltage (base open)	BV_{ECO}	-6	-8.6		V	$I_E = -100\mu\text{A}$,
Collector-base cut-off current	I_{CBO}		<-1	-50 -20	nA μA	$V_{CB} = -320\text{V}$ $V_{CB} = -320\text{V}$, $T_{amb} = 100^{\circ}\text{C}$
Emitter-base cut-off current	I_{EBO}		<-1	-50	nA	$V_{EB} = -5.6\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$		-10	-145	mV	$I_C = -20\text{mA}$, $I_B = -1\text{mA}^{(*)}$
			-95	-125	mV	$I_C = -50\text{mA}$, $I_B = -5\text{mA}^{(*)}$
			-140	-220	mV	$I_C = -100\text{mA}$, $I_B = -10\text{mA}^{(*)}$
			-140	-190	mV	$I_C = -200\text{mA}$, $I_B = -40\text{mA}^{(*)}$
Base-emitter saturation voltage	$V_{BE(sat)}$		-810	-900	mV	$I_C = -200\text{mA}$, $I_B = -40\text{mA}^{(*)}$
Base-emitter turn-on voltage	$V_{BE(on)}$		-705	-800	mV	$I_C = -200\text{mA}$, $V_{CE} = -10\text{V}^{(*)}$
Static forward current transfer ratio	h_{FE}	100	220			$I_C = -1\text{mA}$, $V_{CE} = -5\text{V}^{(*)}$
		100	200	300		$I_C = -50\text{mA}$, $V_{CE} = -5\text{V}^{(*)}$
		100	200			$I_C = -200\text{mA}$, $V_{CE} = -10\text{V}^{(*)}$
Transition frequency	f_T	50	70		MHz	$I_C = -20\text{mA}$, $V_{CE} = -20\text{V}$ $f = 20\text{MHz}$
Output capacitance	C_{obo}		12.9	20	pF	$V_{CB} = -20\text{V}$, $f = 1\text{MHz}^{(*)}$
Delay time	t_d		95		ns	$V_{CC} = -100\text{V}$.
Rise time	t_r		73.8		ns	$I_C = -100\text{mA}$, $I_{B1} = 10\text{mA}$, $I_{B2} = -20\text{mA}$.
Storage time	t_s		1790		ns	
Fall time	t_f		153.8		ns	

NOTES:

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

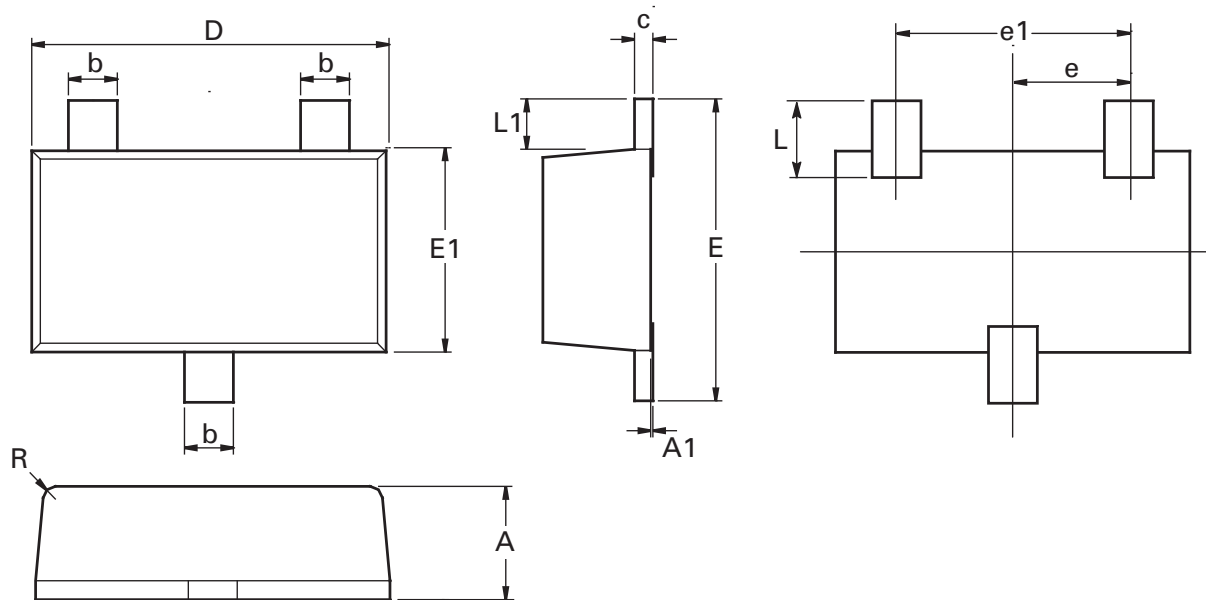
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Typical characteristics



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Package outline - SOT23F



Dim.	Millimeters		Inches		Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.80	1.00	0.0315	0.0394	E	2.30	2.50	0.0906	0.0984
A1	0.00	0.10	0.00	0.0043	E1	1.50	1.70	0.0590	0.0669
b	0.35	0.45	0.0153	0.0161	L	0.48	0.68	0.0189	0.0268
c	0.10	0.20	0.0043	0.0079	L1	0.30	0.50	0.0153	0.0161
D	2.80	3.00	0.1102	0.1181	R	0.05	0.15	0.0019	0.0059
e	0.95 ref		0.0374 ref		O	0°	12°	0°	12°
e1	1.80	2.00	0.0709	0.0787	-	-	-	-	-

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

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Zetex sales offices

Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Kustermann-park Balanstraße 59 D-81541 München Germany Telephone: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europe.sales@zetex.com	Zetex Inc 700 Veterans Memorial Highway Hauppauge, NY 11788 USA Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Zetex (Asia Ltd) 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Zetex Semiconductors plc Zetex Technology Park, Chadderton Oldham, OL9 9LL United Kingdom Telephone: (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com

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Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А