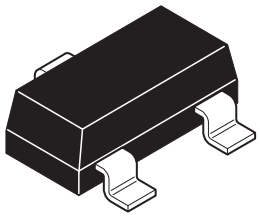
ZXTP08400BFF
400V, SOT23F, PNP medium power high voltage transistor



Summary;

BV_{CEO} > -400V

BV_{ECO} > -6V

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

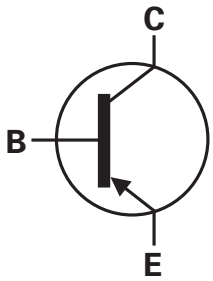
$V_{CE(sat)}$ < 220mV @ 100mA

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.

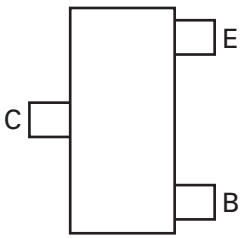


Features

- 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

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°C[a]		0.84	W
Linear derating factor	P_D	6.72	mW/°C
Power dissipation at T_{amb} =25°C[b]		1.34	W
Linear derating factor	P_D	10.72	mW/°C
Power dissipation at T_{amb} =25°C[c]		1.50	W
Linear derating factor	P_D	12.0	mW/°C
Power dissipation at T_{amb} =25°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 resistamce

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:

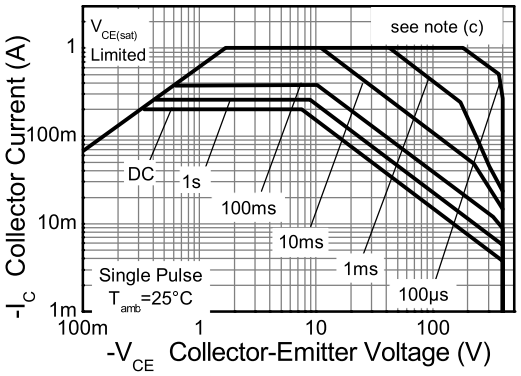
(a) For a device surface mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(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.

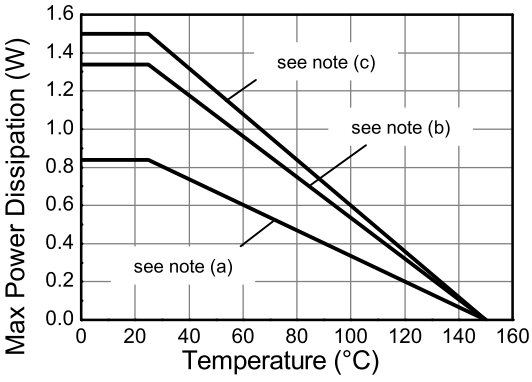
(c) Mounted on 50mm x 50mm x 1.6mm FR4 PCB with a high coverage of single sided 2 oz copper in still air conditions.

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

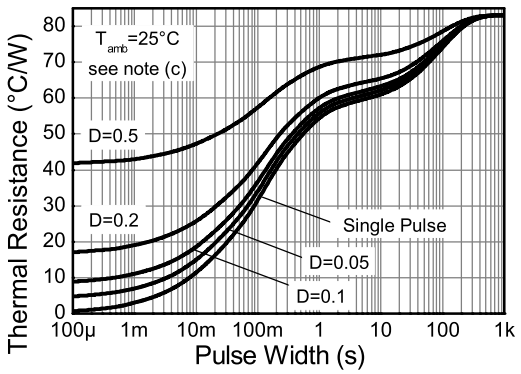
Characteristics



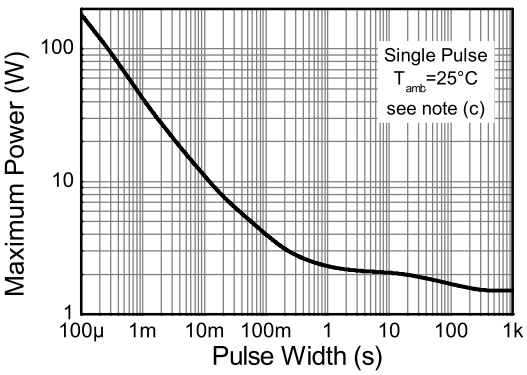
Safe Operating Area



Derating Curve



Transient Thermal Impedance



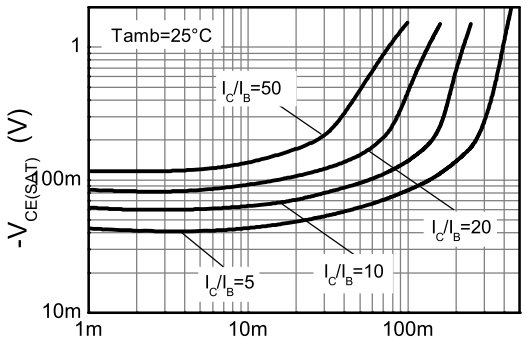
Pulse Power Dissipation

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

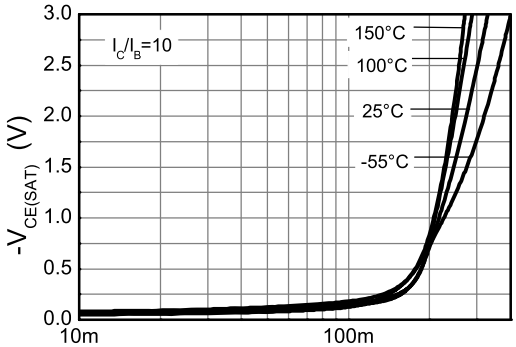
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-400	-500		V	I_C = -100μA
Collector-emitter breakdown voltage (base open)	BV_{CEO}	-400	-480		V	I_C = -10mA (*)
Emitter-base breakdown voltage	BV_{EBO}	-7	-8.1		V	I_E = -100μA
Emitter-collector breakdown voltage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

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

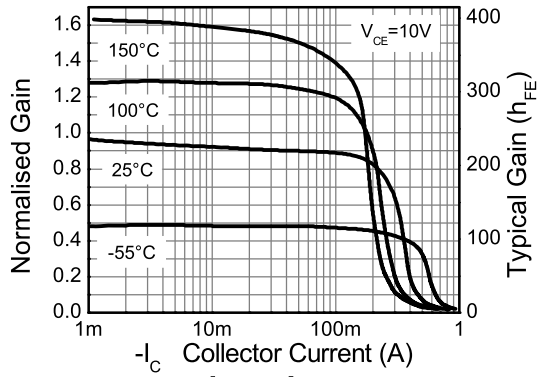
Typical characteristics



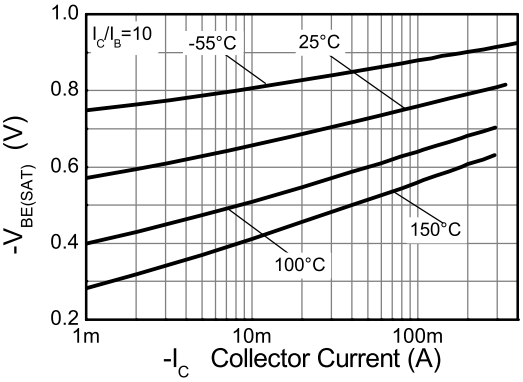
$V_{CE(SAT)}$ v I_C



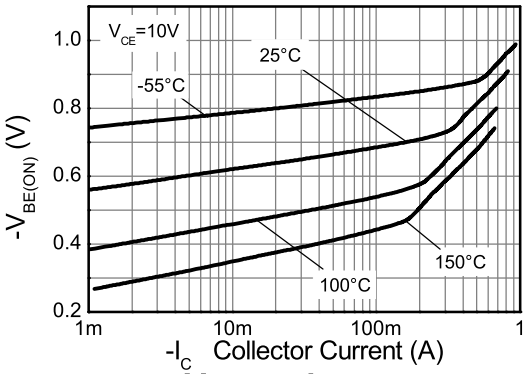
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C

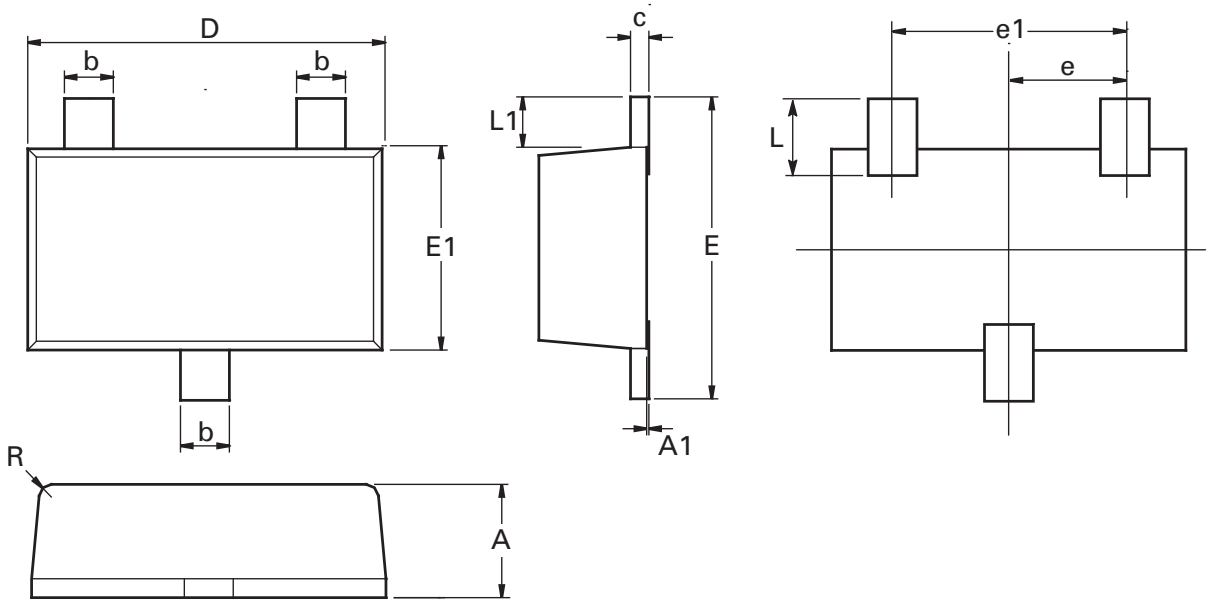


$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C

Package outline - 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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