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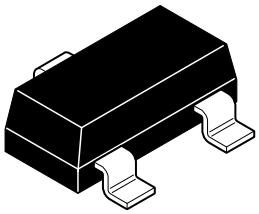
ZXTP25100BFH
100V, SOT23, PNP medium power transistor

Summary



$BV_{(BR)CEX}$ > -140V, $BV_{(BR)CEO}$ > -100V

$BV_{(BR)ECX}$ > -7V ;

$I_{C(cont)}$ = -2A

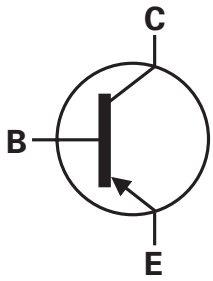
$V_{CE(sat)}$ < -130mV @ -1A

$R_{CE(sat)}$ = 108mΩ typical

P_D = 1.25W

Complementary part number ZXTN25100BFH

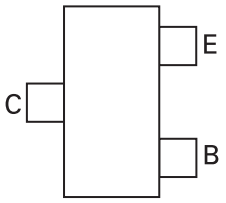
Description



Advanced process capability and package design have been used to maximize the power handling and performance of this small outline transistor. The compact size and ratings of this device make it ideally suited to applications where space is at a premium.

Features

- High power dissipation SOT23 package
- High peak current
- Low saturation voltage
- 140V forward blocking voltaget
- 7V reverse blocking voltage



Pinout - top view

Applications

- MOSFET and IGBT gate driving
- DC - DC converters
- Motor drive
- Relay, lamp, and solenoid drive

Ordering information

Device	Reel size (inches)	Tape width	Quantity per reel
ZXTP25100BFHTA	7	8mm	3,000

Device marking

056

Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-base voltage	V_{CBO}	-140	V
Collector-emitter voltage (forward blocking)	V_{CEX}	-140	V
Collector-emitter voltage	V_{CEO}	-100	V
Emitter-collector voltage (reverse blocking)	V_{ECX}	-7	V
Emitter-base voltage	V_{EBO}	-7	V
Continuous collector current (b)	I_C	-2	A
Peak pulse current	I_{CM}	-5	A
Power dissipation at T_A =25°C (a) Linear derating factor	P_D	0.73 5.84	W mW/°C
Power dissipation at T_A =25°C (b) Linear derating factor	P_D	1.05 8.4	W mW/°C
Power dissipation at T_A =25°C (c) Linear derating factor	P_D	1.25 9.6	W mW/°C
Power dissipation at T_A =25°C (d) Linear derating factor	P_D	1.81 14.5	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)	$R_{\Theta JA}$	171	°C/W
Junction to ambient (b)	$R_{\Theta JA}$	119	°C/W
Junction to ambient (c)	$R_{\Theta JA}$	100	°C/W
Junction to ambient (d)	$R_{\Theta JA}$	69	°C/W

NOTES:

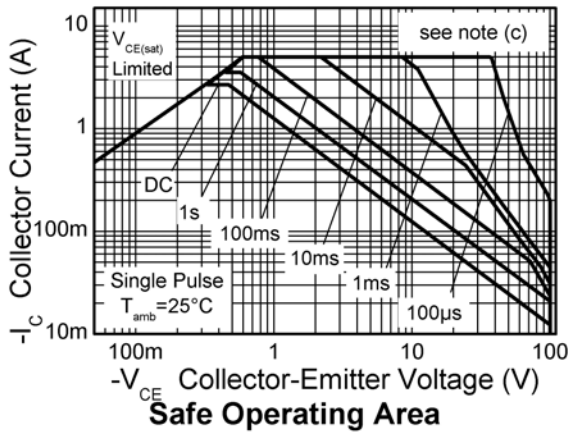
(a) For a device surface mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(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.

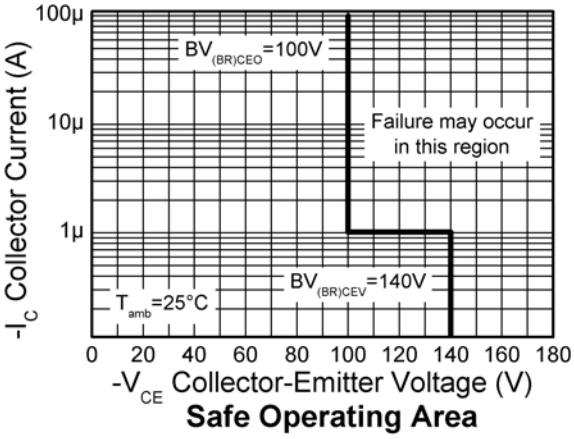
(c) Mounted on 50mm x 50mm x 1.6mm FR4 PCB with a high coverage of single sided 2 oz copper in still air conditions.

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

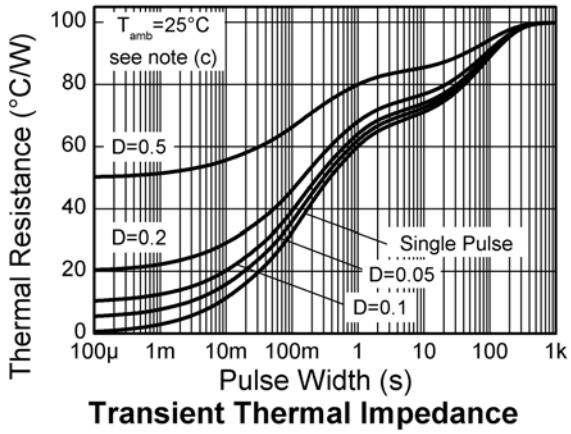
Characteristics



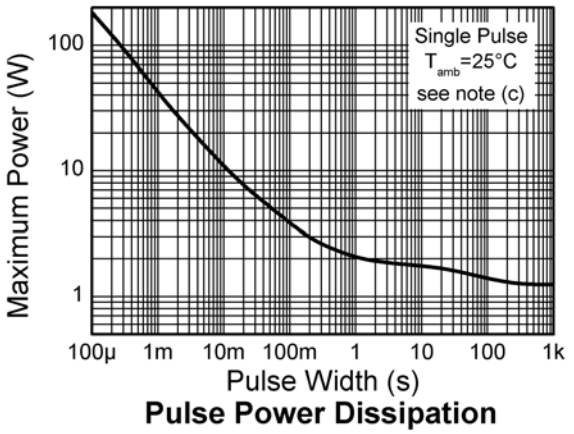
Safe Operating Area



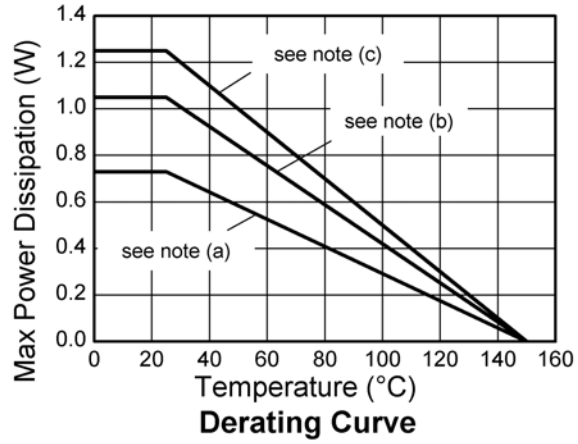
Safe Operating Area



Transient Thermal Impedance



Pulse Power Dissipation



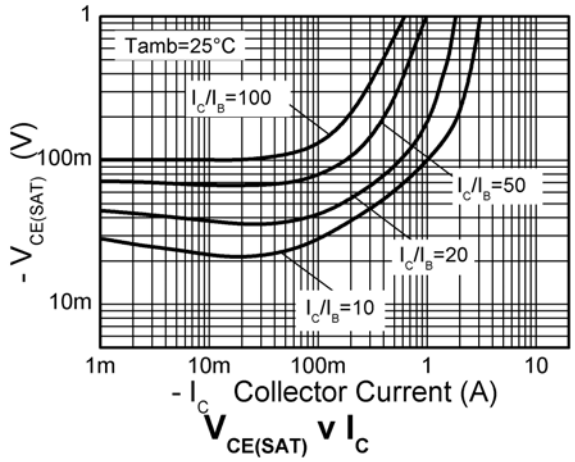
Derating Curve

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

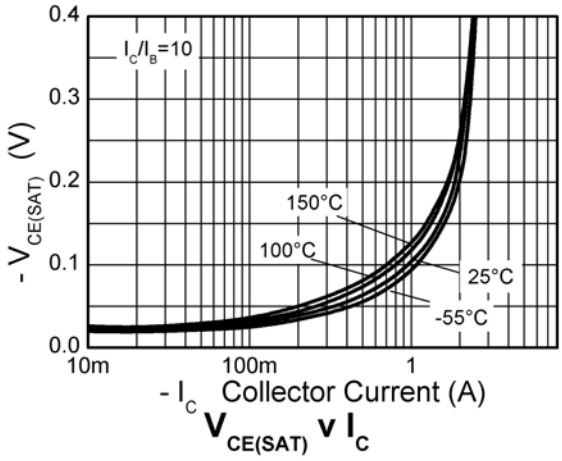
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-140	-165		V	I_C = -100μA
Collector-emitter breakdown voltage (forward blocking)	BV_{CEX}	-140	-165		V	I_C = -100μA, R_{BE} < 1kΩ or -0.25V < V_{BE} < 1V
Collector-emitter breakdown voltage (base open)	BV_{CEO}	-100	-125		V	I_C = -10mA (*)
Emitter-collector breakdown voltage (reverse blocking)	BV_{ECX}	-7	8.2		V	I_E = -100μA, R_{BC} < 1kΩ or -0.25V < V_{BC} < 0.25V
Emitter-base breakdown voltage	BV_{EBO}	-7	-8.2		V	I_E = -100μA
Collector cut-off current	I_{CBO}		<-1	-50 -20	nA μA	V_{CB} = -112V V_{CB} = -112V, T_{AMB}= 100°C
Collector emitter cut-off current	I_{CEX}		-	-100	nA	V_{CE} = -112V; R_{BE} < 1kΩ or -0.25V < V_{BE} < 1V
Emitter cut-off current	I_{EBO}		<-1	-50	nA	V_{EB} = -5.6V
Collector-emitter saturation voltage	$V_{CE(sat)}$		-60 -240 -100 -215	-90 -350 -130 -295	mV mV mV mV	I_C = -0.5A, I_B = -50mA (*) I_C = -0.5A, I_B = -10mA (*) I_C = -1A, I_B = -100mA (*) I_C = -2A, I_B = -200mA (*)
Base-emitter saturation voltage	$V_{BE(sat)}$		-900	-1000	mV	I_C = -2A, I_B = -200mA (*)
Base-emitter turn-on voltage	$V_{BE(on)}$		-830	-950	mV	I_C = -2A, V_{CE} = -2V (*)
Static forward current transfer ratio	h_{FE}	100 55 15	200 105 25	300		I_C = -10mA, V_{CE} = -2V (*) I_C = -1A, V_{CE} = -2V (*) I_C = -2A, V_{CE} = -2V (*)
Transition frequency	f_T		200		MHz	I_C = -100mA, V_{CE} = -5V f = 100MHz
Output capacitance	C_{OBO}		15	25	pF	V_{CB} = -10V, f = 1MHz (*)
Turn-on time	$t_{(on)}$		31		ns	V_{CC} = -10V, I_C = -500mA, I_{B1} = I_{B2}= -50mA
Turn-off time	$t_{(off)}$		384		ns	

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

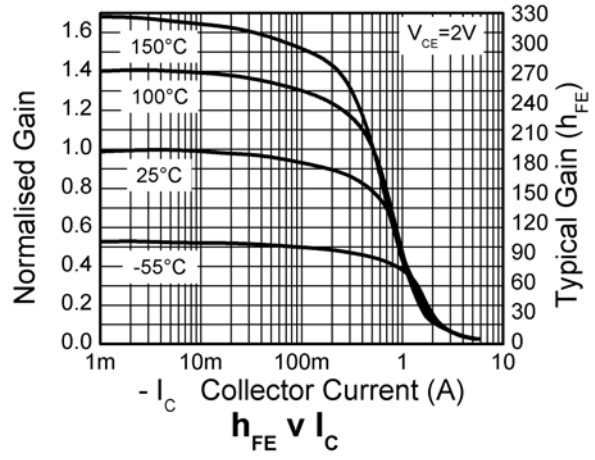
Typical characteristics



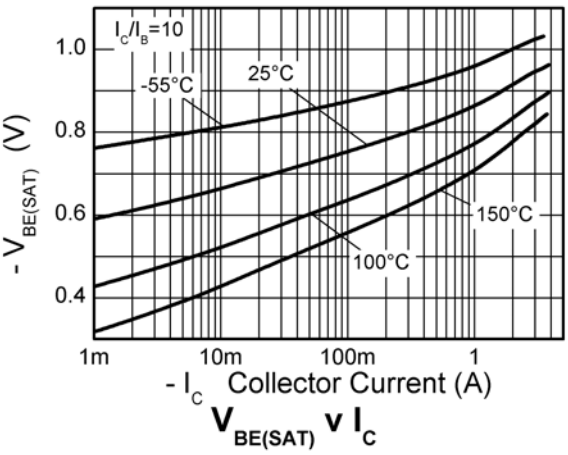
$V_{CE(SAT)}$ v I_C



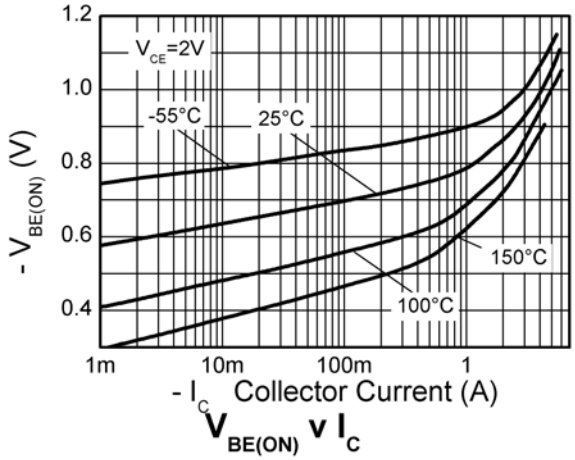
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C

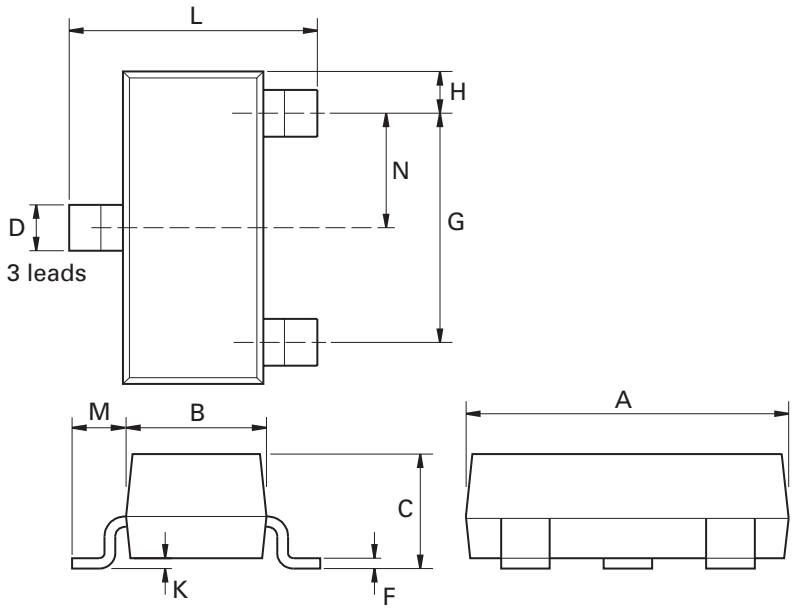


$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C

Package outline - SOT23



Dim.	Millimeters		Inches		Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Max.	Max.
A	2.67	3.05	0.105	0.120	H	0.33	0.51	0.013	0.020
B	1.20	1.40	0.047	0.055	K	0.01	0.10	0.0004	0.004
C	-	1.10	-	0.043	L	2.10	2.50	0.083	0.0985
D	0.37	0.53	0.015	0.021	M	0.45	0.64	0.018	0.025
F	0.085	0.15	0.0034	0.0059	N	0.95 NOM		0.0375 NOM	
G	1.90 NOM		0.075 NOM		-	-	-	-	-

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

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