ZXTP25040DFH
40V SOT23 PNP medium power transistor

Summary



BV_{CEO} > -40V

BV_{ECO} > -3V ;

$I_{C(CONT)}$ = -3A

$R_{CE(sat)}$ = 55 mΩ ;

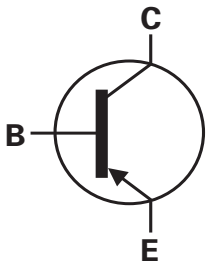
$V_{CE(sat)}$ < -85mV @ 1A ;

P_D = 1.25W

Complementary part number ZXTN25040DFH

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.

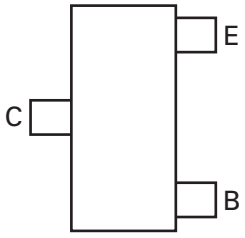


Features

- High power dissipation SOT23 package
- High peak current
- Low saturation voltage
- 3V reverse blocking voltage

Applications

- MOSFET and IGBT gate driving
- DC - DC converters
- Motor drive
- High side driver



Pinout - top view

Ordering information

Device	Reel size (inches)	Tape width	Quantity per reel
ZXTP25040DFHTA	7	8mm	3000

Device marking

024

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Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-base voltage	V_{CBO}	-45	V
Collector-emitter voltage (forward blocking)	V_{CEO}	-40	V
Emitter-collector voltage (reverse blocking)	V_{ECO}	-3	V
Emitter-base voltage	V_{EBO}	-7	V
Continuous collector current (b)	I_C	-3	A
Peak pulse current	I_{CM}	-9	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.

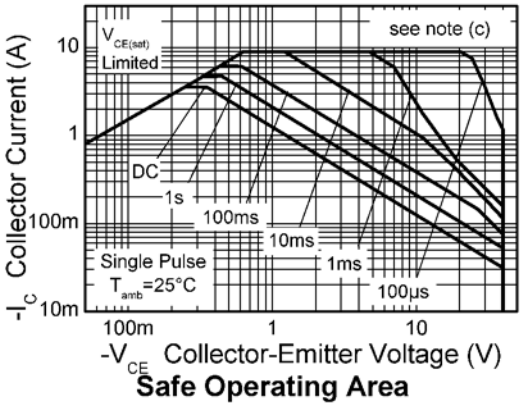
(b) Mounted on 25mm x 25mm x 1.6mm FR4 PCB with a high coverage of single sided 2 oz copper in still air conditions.

(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.

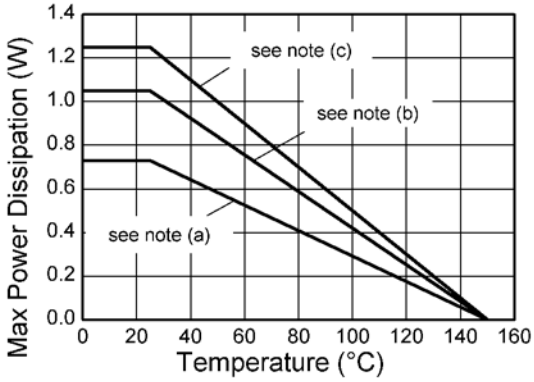
(d) As (c) above measured at t<5sec.

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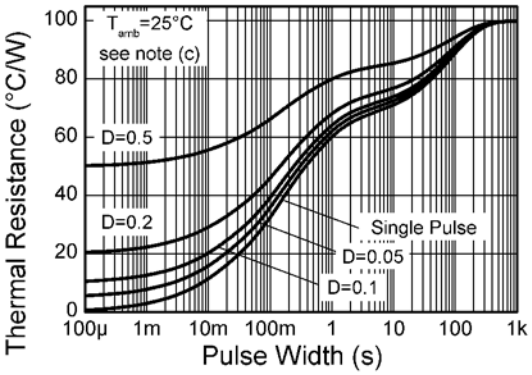
Characteristics



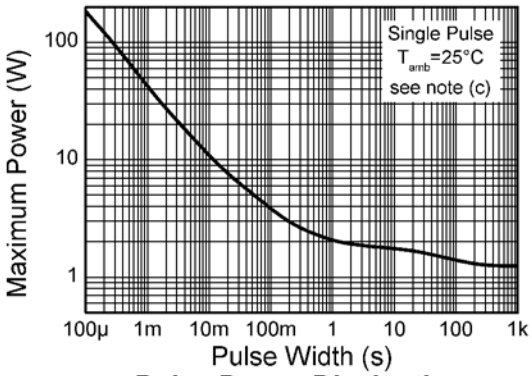
Safe Operating Area



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

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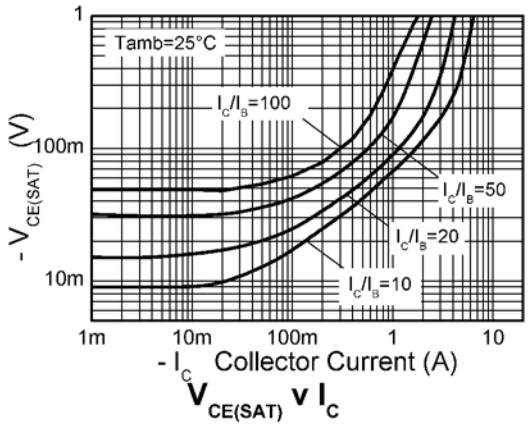
Electrical characteristics (at T_{AMB} = 25°C unless otherwise stated)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-45	-75		V	I_C = -100μA
Collector-emitter breakdown voltage (base open)	BV_{CEO}	-40	-65		V	I_C = -10mA (*)
Emitter-collector breakdown voltage (reverse blocking)	BV_{ECO}	-3	-8.7		V	I_E = -100uA
Emitter-base breakdown voltage	BV_{EBO}	-7	-8.2		V	I_E = -100μA
Collector cut-off current	I_{CBO}		<-1	-50 -0.5	nA μA	V_{CB} = -45V V_{CB} = -45V, T_{amb}= 100°C
Emitter cut-off current	I_{EBO}		<-1	-50	nA	V_{EB} = -5.6V
Collector-emitter saturation voltage	$V_{CE(sat)}$		-170 -65 -165	-260 -85 -220	mV mV mV	I_C = -1A, I_B = -20mA (*) I_C = -1A, I_B = -100mA (*) I_C = -3A, I_B = -300mA (*)
Base-emitter saturation voltage	$V_{BE(sat)}$		-930	-1000	mV	I_C = -3A, I_B = -300mA (*)
Base-emitter turn-on voltage	$V_{BE(on)}$		-830	-900	mV	I_C = -3A, V_{CE} = -2V (*)
Static forward current transfer ratio	h_{FE}	300 200 30	450 300 60	900		I_C = -10mA, V_{CE} = -2V (*) I_C = -1A, V_{CE} = -2V (*) I_C = -3A, V_{CE} = -2V (*)
Transition frequency	f_T		270		MHz	I_C = -50mA, V_{CE} = -10V f = 100MHz
Output capacitance	C_{OBO}		17.4		pF	V_{CB} = -10V, f = 1MHz (*)
Turn-on time	$t_{(on)}$		75.5		ns	V_{CC} = -15V. I_C = -750mA, I_{B1} = I_{B2}= -15mA.
Turn-off time	$t_{(off)}$		320		ns	

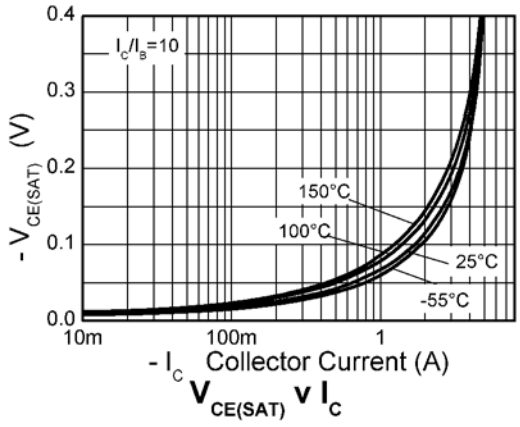
NOTES:
(*) Measured under pulsed conditions. Pulse width ≤300μs; duty cycle ≤2%.

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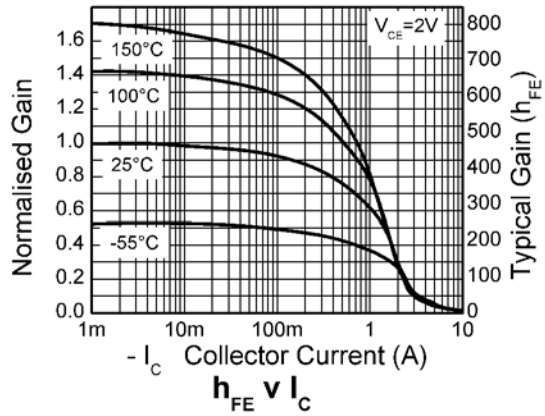
Typical characteristics



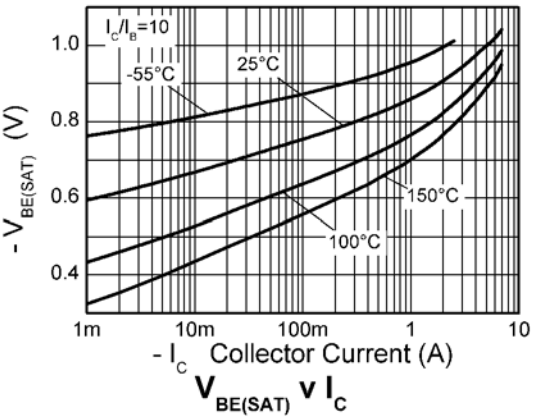
$V_{CE(SAT)}$ v I_C



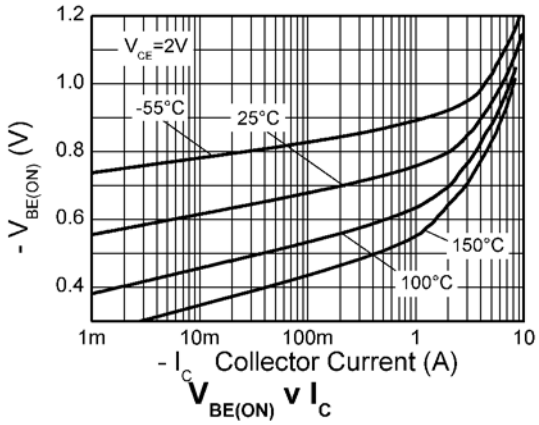
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C



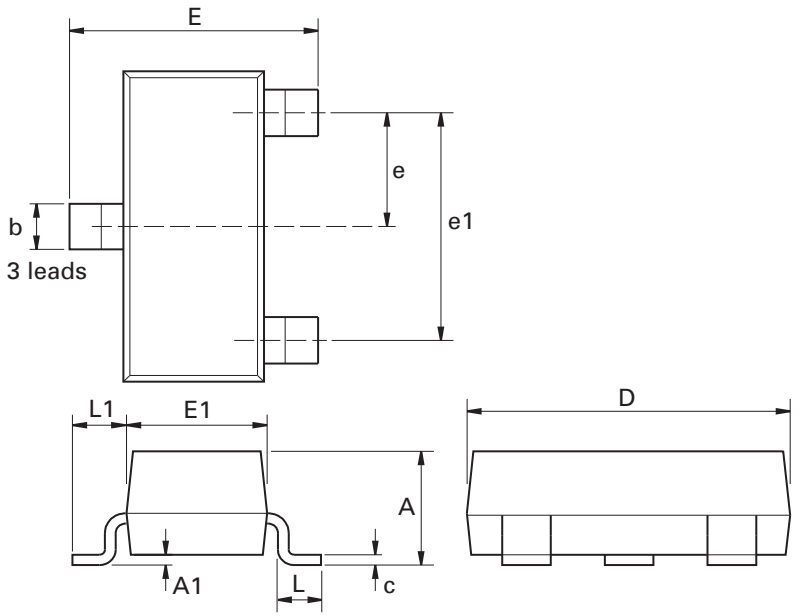
$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C

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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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