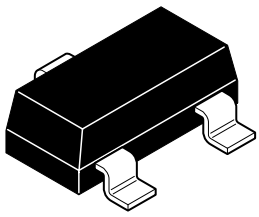
ZXTP25015DFH
15V, SOT23, PNP medium power transistor

Summary



BV_{CEO} > -15V

BV_{ECO} > -3V

$I_{C(cont)}$ = -4A

$R_{CE(sat)}$ = 33mΩ

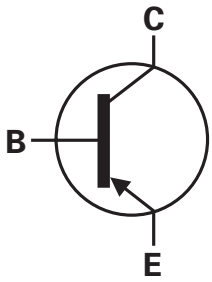
$V_{CE(sat)}$ < -55mV @ 1A

P_D = 1.25W

Complementary part number ZXTN25015DFH

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.

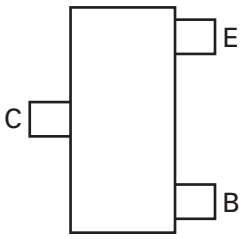


Features

- High power dissipation SOT23 package
- High peak current
- Low saturation voltage
- 15V forward blocking voltage
- 3V reverse blocking voltage

Applications

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



Pinout - top view

Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP25015DFHTA	7	8	3,000

Device marking

1A7

Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-base voltage	V_{CBO}	-15	V
Collector-emitter voltage	V_{CEO}	-15	V
Emitter-collector voltage (reverse blocking)	V_{ECO}	-3	V
Emitter-base voltage	V_{EBO}	-7	V
Continuous collector current[b]	I_C	-4	A
Base current	I_B	-1	A
Peak pulse current	I_{CM}	-10	A
Power dissipation at T_{amb} =25°C[a]	P_D	0.73	W
Linear derating factor		5.84	mW/°C
Power dissipation at T_{amb} =25°C[b]	P_D	1.05	W
Linear derating factor		8.4	mW/°C
Power dissipation at T_{amb} =25°C[d]	P_D	1.25	W
Linear derating factor		9.6	mW/°C
Power dissipation at T_{amb} =25°C[d]	P_D	1.81	W
Linear derating factor		14.5	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:

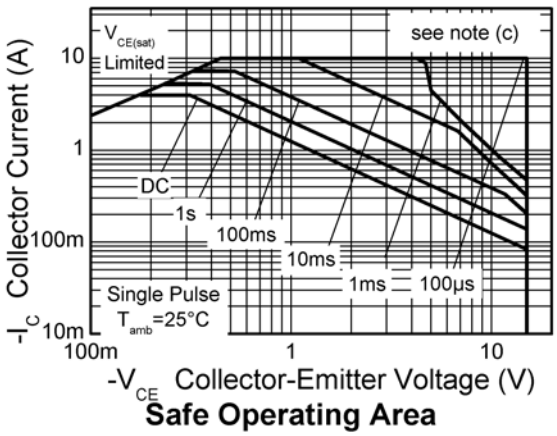
(a) For a device surface mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(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.

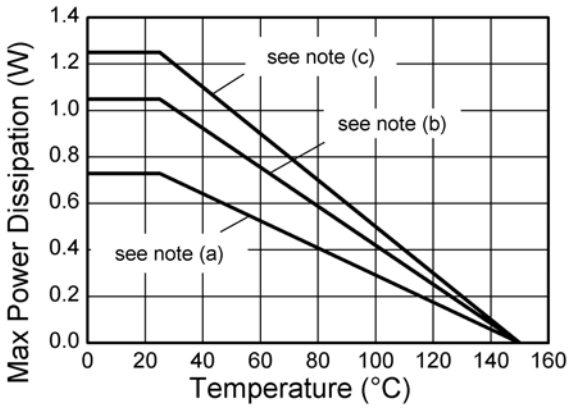
(c) Mounted on 50mm x 50mm x 1.6mm FR4 PCB with a high coverage of single sided 2 oz copper in still air conditions.

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

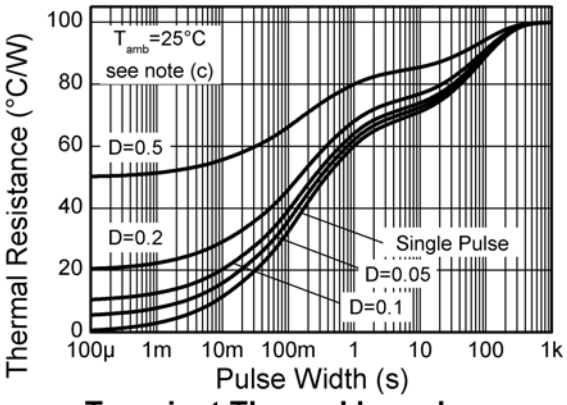
Characteristics



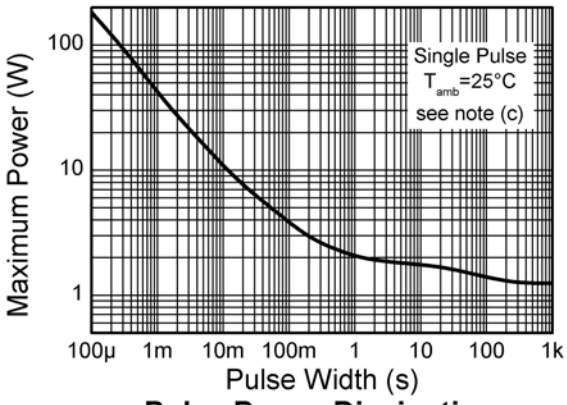
Safe Operating Area



Derating Curve



Transient Thermal Impedance



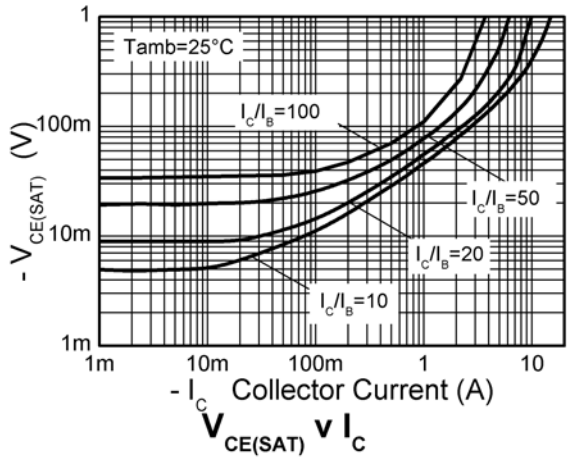
Pulse Power Dissipation

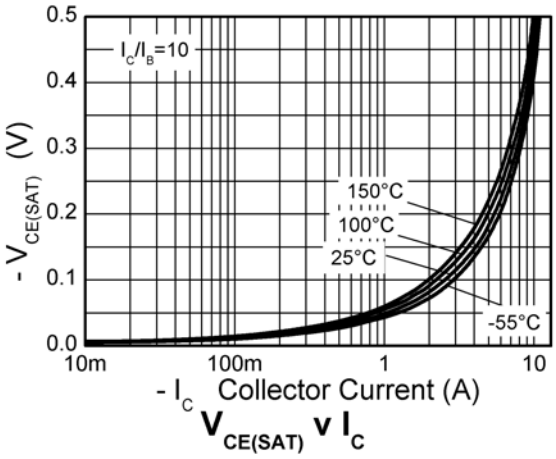
Electrical characteristics (at T_{amb} = 25°C unless otherwise stated)

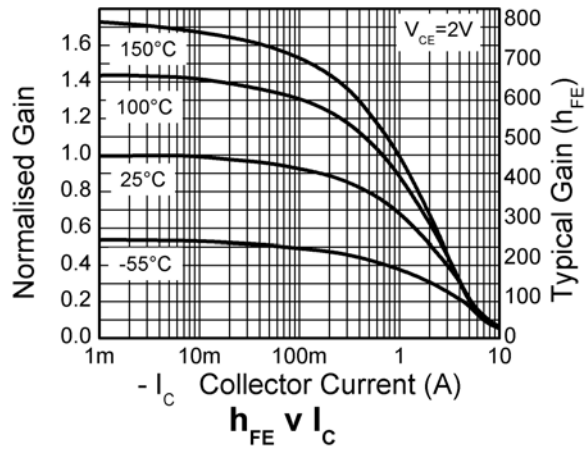
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-15	-35		V	I_C = -100μA
Collector-emitter breakdown voltage (base open)	BV_{CEO}	-15	-30		V	I_C = -10mA (*)
Emitter-base breakdown voltage	BV_{EBO}	-7	-8.4		V	I_E = -100μA
Emitter-collector breakdown voltage (base open)	BV_{ECO}	-3	-8.2		V	I_E = -100μA(*)
Collector-base cut-off current	I_{CBO}		<-1	-50 -20	nA μA	V_{CB} = -12V V_{CB} = -12V, T_{amb}= 100°C
Emitter-base cut-off current	I_{EBO}		<-1	-50	nA	V_{EB} = -5.6V
Collector-emitter saturation voltage	$V_{CE(sat)}$		-45 -110 -130 -160 -165	-55 -150 -175 -210 -220	mV mV mV mV mV	I_C = -1A, I_B = -100mA(*) I_C = -1A, I_B = -10mA(*) I_C = -2A, I_B = -40mA(*) I_C = -4A, I_B = -200mA(*) I_C = -5A, I_B = -500mA(*)
Base-emitter saturation voltage	$V_{BE(sat)}$		-930	-1050	mV	I_C = -4A, I_B = -200mA(*)
Base-emitter turn-on voltage	$V_{BE(on)}$		-810	-900	mV	I_C = -4A, V_{CE} = -2V(*)
Static forward current transfer ratio	h_{FE}	300 200 90	450 315 145 30	900		I_C = -10mA, V_{CE} = -2V(*) I_C = -1A, V_{CE} = -2V(*) I_C = -4A, V_{CE} = -2V(*) I_C = -10A, V_{CE} = -2V(*)
Transition frequency	f_T		295		MHz	I_C = -50mA, V_{CE} = -10V f = 100MHz
Output capacitance	C_{OBO}		25	30	pF	V_{CB} = -10V, f = 1MHz(*)
Delay time	t_d		33.8		ns	V_{CC} = -15V. I_C = -750mA, I_{B1} = I_{B2}= -15mA
Rise time	t_r		43.5		ns	
Storage time	t_s		196		ns	
Fall time	t_f		51.7		ns	

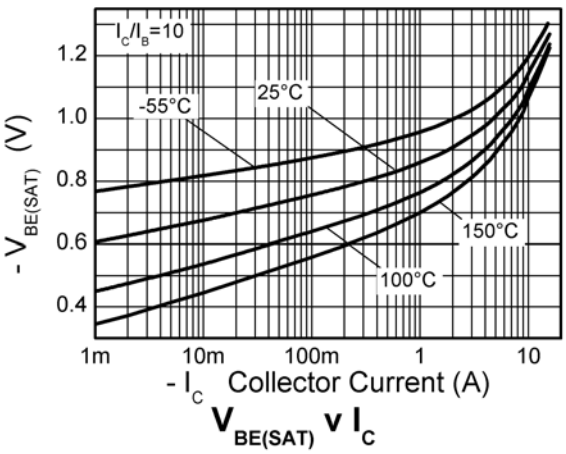
NOTES:
(*) Measured under pulsed conditions. Pulse width ≤ 300μs; duty cycle ≤ 2%.

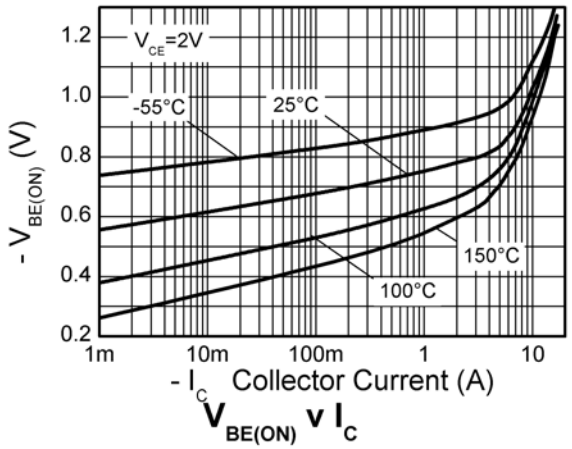
Typical characteristics



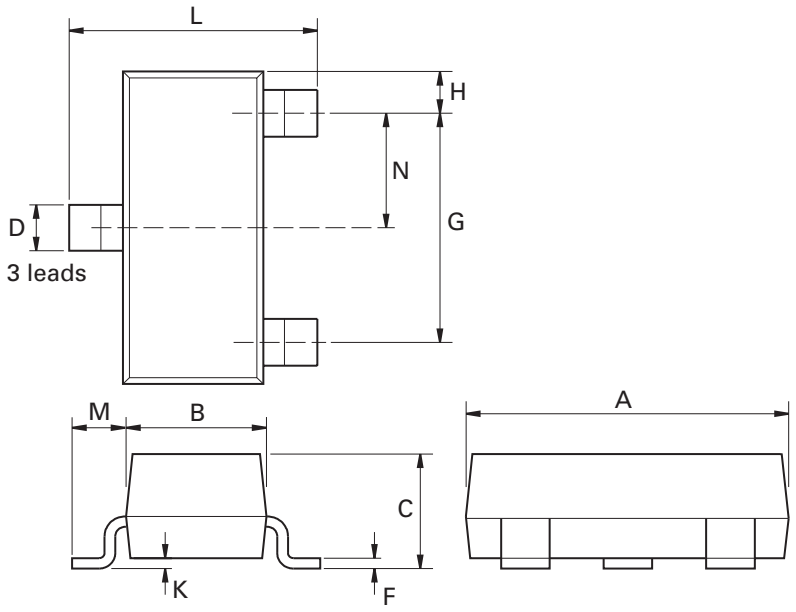








Package outline - SOT23



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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