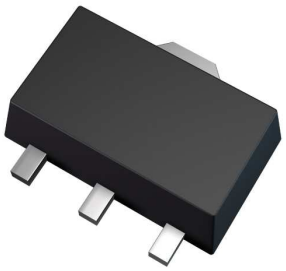
ZXTP19100CZ
100V PNP medium power transistor in SOT89

Summary



BV_{CEO} > -100V

BV_{ECO} > -7V

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

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

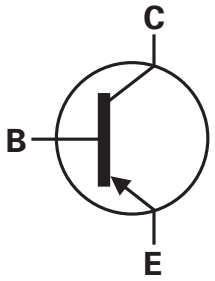
$R_{CE(sat)}$ = 100mΩ

P_D = 2.4W

Complementary part number ZXTN19100CZ

Description

Packaged in the SOT89 outline this new low saturation 100V PNP transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions

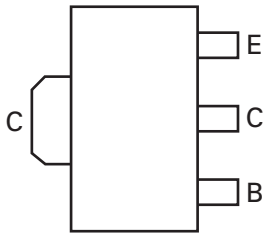


Features

- High gain
- Low saturation voltage
- High peak current

Applications

- High side driver
- Motor drive
- Load disconnect switch



Pinout - top view

Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP19100CZTA	7	12	1000

Device marking

1M3

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Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-Base voltage	V_{CBO}	-110	V
Collector-Emitter voltage (forward blocking)	V_{CEX}	-110	V
Collector-Emitter voltage	V_{CEO}	-100	V
Emitter-Collector voltage (reverse blocking)	V_{ECO}	-7	V
Emitter-Base voltage	V_{EBO}	-7	V
Continuous Collector current[c]	I_C	-2	A
Base current	I_B	-1	A
Peak pulse current	I_{CM}	-3	A
Power dissipation at T_A =25°C[a] Linear derating factor	P_D	1.1 8.8	W mW/°C
Power dissipation at T_A =25°C[b] Linear derating factor	P_D	1.8 14.4	W mW/°C
Power dissipation at T_A =25°C[c] Linear derating factor	P_D	2.4 19.2	W mW/°C
Power dissipation at T_A =25°C[d] Linear derating factor	P_D	4.46 35.7	W mW/°C
Power dissipation at T_C =25°C[e] Linear derating factor	P_D	26.3 213	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]	$R_{\Theta JA}$	117	°C/W
Junction to ambient[b]	$R_{\Theta JA}$	68	°C/W
Junction to ambient[c]	$R_{\Theta JA}$	51	°C/W
Junction to ambient[d]	$R_{\Theta JA}$	28	°C/W
Junction to case[e]	$R_{\Theta JC}$	4.5	°C/W

NOTES:

(a) For a device surface mounted on 15mm x 15mm x 0.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(b) Mounted on 25mm x 25mm x 0.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

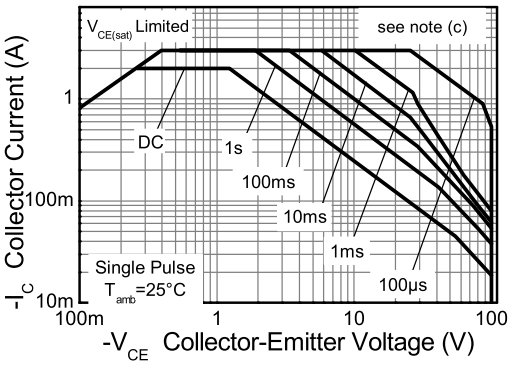
(c) Mounted on 50mm x 50mm x 0.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions.

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

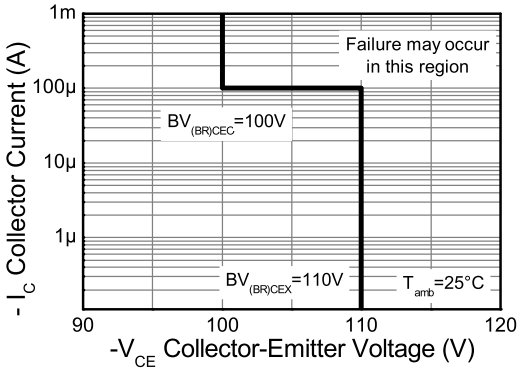
(e) Junction to case (collector tab).Typical

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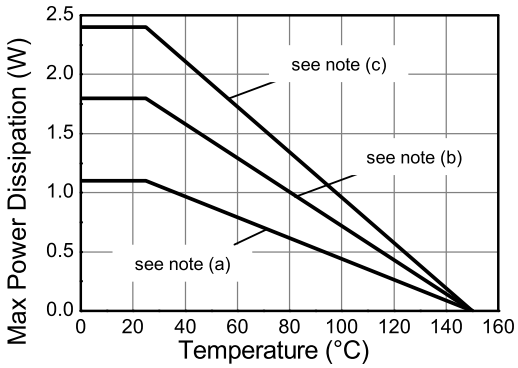
Thermal characteristics



Safe Operating Area



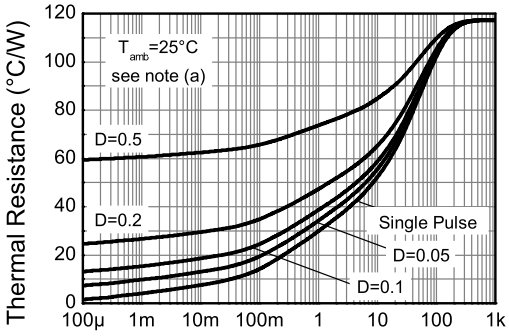
Safe Operating Area



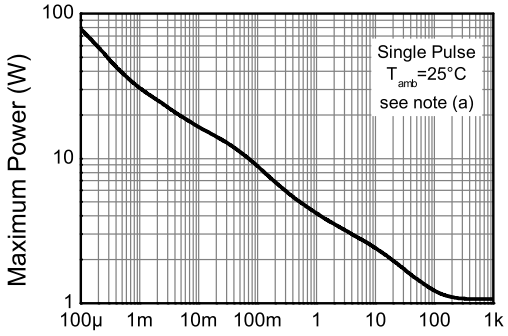
Derating Curve

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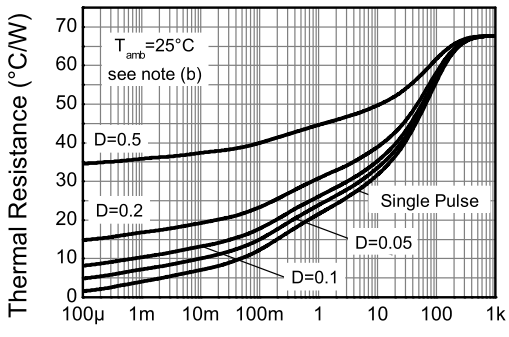
Thermal characteristics



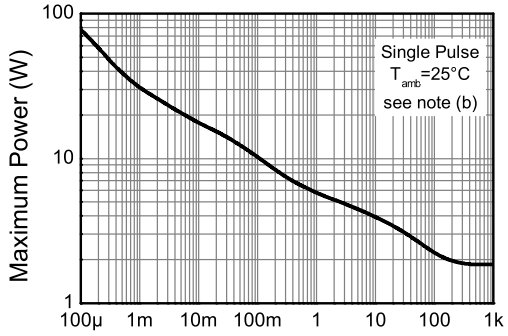
Transient Thermal Impedance



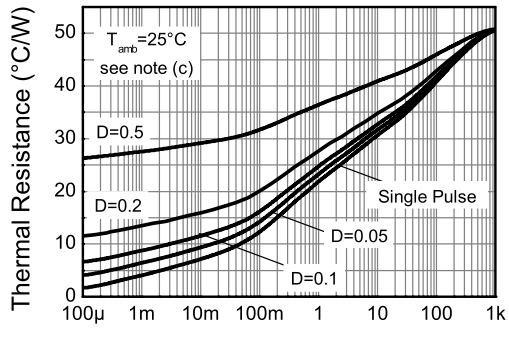
Pulse Power Dissipation



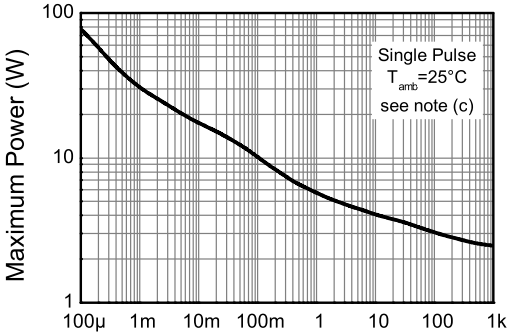
Transient Thermal Impedance



Pulse Power Dissipation



Transient Thermal Impedance



Pulse Power Dissipation

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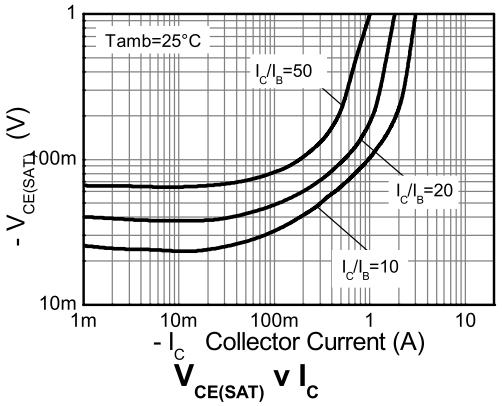
Electrical characteristics (at T_{amb} = 25°C unless otherwise stated)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-Base breakdown voltage	BV_{CBO}	-110	-135		V	I_C = -100µA
Collector-Emitter breakdown voltage	BV_{CEX}	-110	-135		V	I_E = -100µA, R_{BC} < 1kΩ or 0.25V > V_{BC} > -0.25V
Collector-Emitter breakdown voltage	BV_{CEO}	-100	-130		V	I_C= -10mA (*)
Emitter-Collector breakdown voltage (reverse blocking)	BV_{ECX}	-7	-8.3		V	I_E = -100µA, R_{BC} < 1kΩ or 0.25V > V_{BC} > -0.25V
Emitter-Collector breakdown voltage (reverse blocking)	BV_{ECO}	-7	-8.7		V	I_E = -100µA
Emitter-Base breakdown voltage	BV_{EBO}	-7	-8.3		V	I_E = -100µA
Collector-Base cut-off current	I_{CBO}		<1 	-50 -0.5	nA µA	V_{CB} = -110V V_{CB} = -110V, T_{amb}=100°C
Emitter cut-off current	I_{EBO}		<1	-50	nA	V_{EB} = -5.6V
Collector-Emitter saturation voltage	$V_{CE(sat)}$		-100 -100 -180 -220	-130 -125 -230 -295	mV mV mV mV	I_C = -0.5A, I_B = -20mA(*) I_C = -1A, I_B = -100mA(*) I_C = -1A, I_B = -50mA(*) I_C = -2A, I_B = -200mA(*)
Base-Emitter saturation voltage	$V_{BE(sat)}$		-890	-1000	mV	I_C = -2A, I_B = -200mA(*)
Base-Emitter turn-on voltage	$V_{BE(on)}$		-840	-950	mV	I_C = -2A, V_{CE} = -2V(*)
Static forward current transfer ratio	h_{FE}	200 70 20	300 130 25	500		I_C = -100mA, V_{CE} = -2V(*) I_C = -1A, V_{CE} = -2V(*) I_C = -2A, V_{CE} = -2V(*)
Transition frequency	f_T		142		MHz	I_C = -100mA, V_{CE} = -10V f = 50MHz
Input capacitance	C_{ibo}		291	400	pF	V_{EB} = -0.5V, f = 1MHz(*)
Output capacitance	C_{obo}		23.5	40	pF	V_{CB} = -10V, f = 1MHz(*)
Delay time	t_d		24.7		ns	I_C = -500mA, V_{CC} = -10V, I_{B1} = -I_{B2} = -50mA R_b=100Ω, R_c=20Ω
Rise time	t_r		22.4		ns	
Storage time	t_s		660		ns	
Fall time	t_f		107		ns	

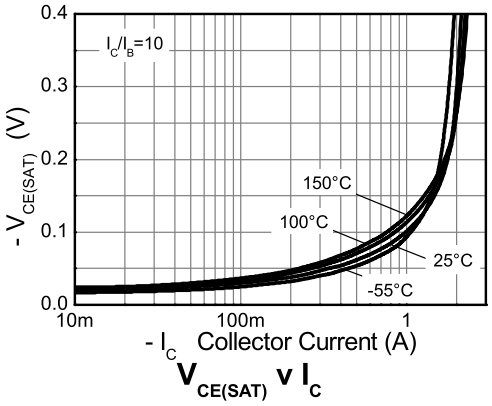
NOTES:
(*) Measured under pulsed conditions. Pulse width ≤ 300µs; duty cycle ≤ 2%.

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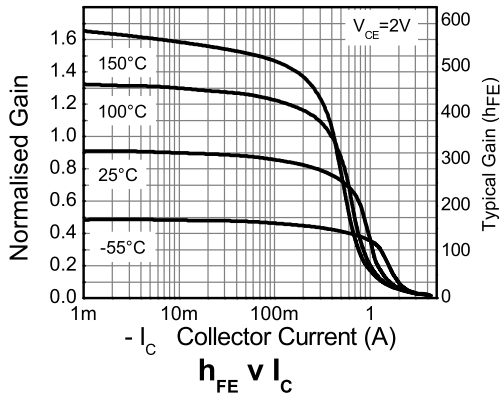
Typical characteristics



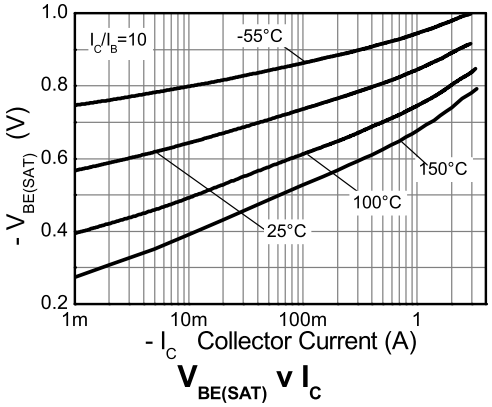
$V_{CE(SAT)}$ v I_C



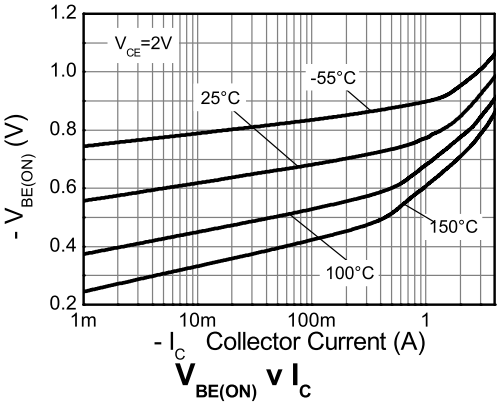
$V_{CE(SAT)}$ v I_C



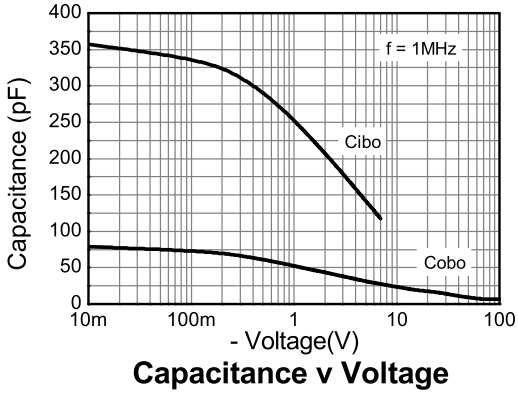
h_{FE} v I_C



$V_{BE(SAT)}$ v I_C



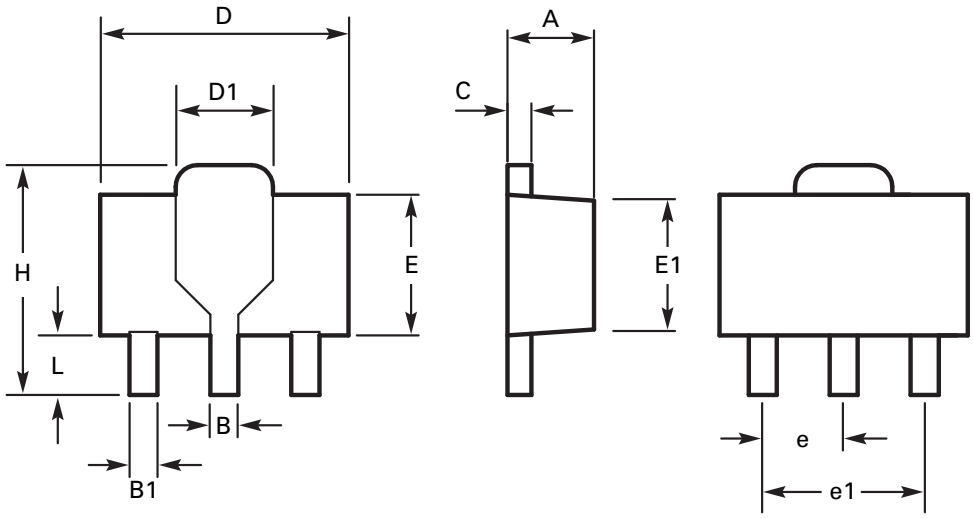
$V_{BE(ON)}$ v I_C



Capacitance v Voltage

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Package outline - SOT89



DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	1.40	1.60	0.550	0.630	E	2.29	2.60	0.090	0.102
B	0.44	0.56	0.017	0.022	E1	2.13	2.29	0.084	0.090
B1	0.36	0.48	0.014	0.019	e	1.50 BSC		0.059 BSC	
C	0.35	0.44	0.014	0.017	e1	3.00 BSC		0.118 BSC	
D	4.40	4.60	0.173	0.181	H	3.94	4.25	0.155	0.167
D1	1.52	1.83	0.064	0.072	L	0.89	1.20	0.035	0.047

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

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