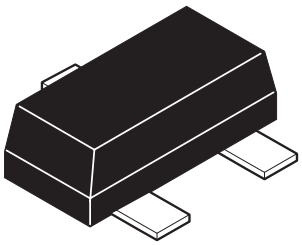
ZXTP19100CFF
100V, SOT23F, PNP medium power transistor

Summary



BV_{CEO} > -100V

BV_{ECO} > -7V

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

$V_{CE(sat)}$ < 120mV @ 1A

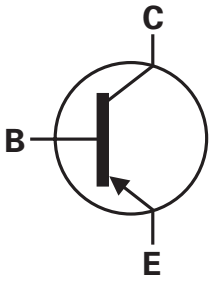
$R_{CE(sat)}$ = 95mΩ

P_D = 1.5W

Complementary part number: ZXTN19100CFF

Description

Packaged in the SOT23 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.

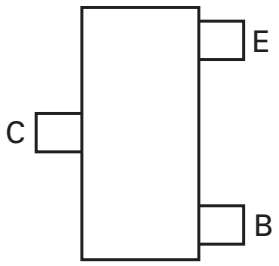


Features

- 2 amps continuous current
- Very low saturation voltages

Applications

- Emergency lighting circuits
- Motor driving (including DC fans)
- Solenoid, relay and actuator drivers
- DC-DC modules
- Backlight inverters
- Power switches
- MOSFET gate drivers



Top view

Ordering information

DEVICE	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP19100CFFTA	7	8	3000

Device marking

1E1

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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
Peak pulse current	I_{CM}	-3	A
Base current	I_B	-1	A
Power dissipation at T_A =25°C(a) Linear derating factor	P_D	0.84	W mW/°C
Power dissipation at T_A =25°C(b) Linear derating factor	P_D	1.34	W mW/°C
Power dissipation at T_A =25°C(c) Linear derating factor	P_D	1.5	W mW/°C
Power dissipation at T_A =25°C(d) Linear derating factor	P_D	2	W mW/°C
Operating and storage temperature range	T_j, T_{stg}	-55 to 150	°C

Thermal resistance

Parameter	Symbol	Value	Unit
Junction to Ambient(a)	$R_{\theta JA}$	149.3	°C/W
Junction to Ambient(b)	$R_{\theta JA}$	93.4	°C/W
Junction to Ambient(c)	$R_{\theta JA}$	83.3	°C/W
Junction to Ambient(d)	$R_{\theta JA}$	60	°C/W
Junction to Case(e)	$R_{\theta JC}$	38	°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

(e) Junction to Case from Collector Tab.

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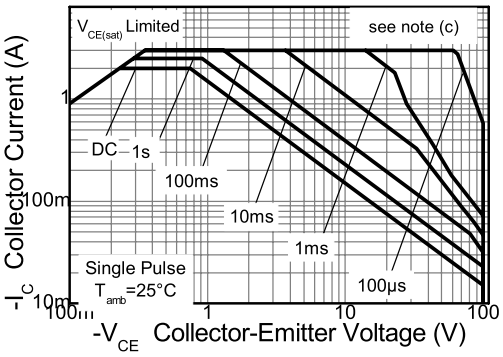
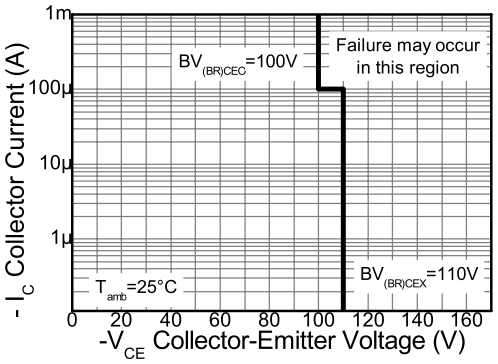
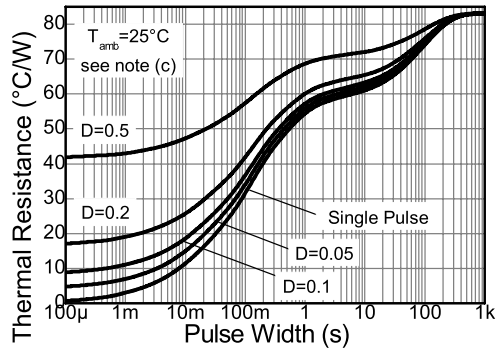
Thermal characteristics



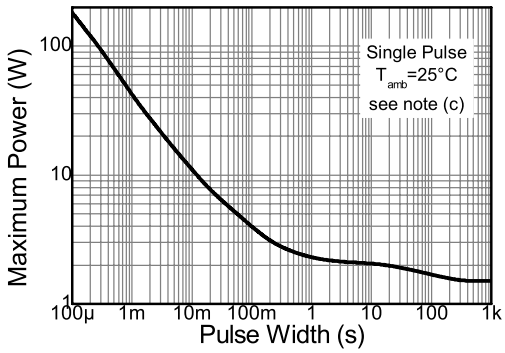
Safe Operating Area



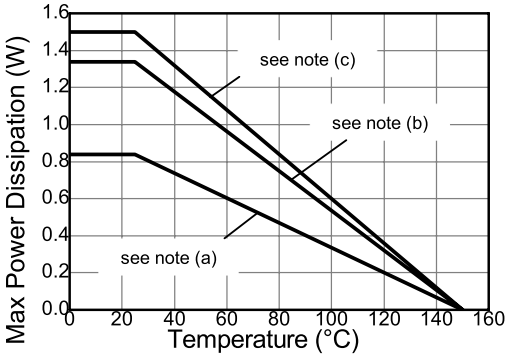
Safe Operating Area



Transient Thermal Impedance



Pulse Power Dissipation



Derating Curve

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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 (Base open)	BV_{CEX}	-110	-135		V	I_C = -100μA, R_{BC} < 1kΩ or 0.25V > V_{BC} > -0.25V
Collector-Emitter Breakdown Voltage (Base open)	BV_{CEO}	-100	-135		V	I_C = -10mA (*)
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.3		V	I_E = -100μA
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 (Base open)	BV_{ECO}	-7	-8.7		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-Base Cut-Off Current	I_{EBO}		<-1	-50	nA	V_{EB} = -5.6V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-100 -95 -175 -215	-130 -120 -225 -275	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	$V_{BE(sat)}$		-870	-950	mV	I_C = -2A, I_B = -200mA(*)
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-810	-900	mV	I_C = -2A, V_{CE} = -2V(*)
Static Forward Current Transfer Ratio	h_{FE}	200 70 20	330 135 30	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		pF	V_{CB} = -10V, f = 1MHz(*)
Delay Time	t_d		24.7		ns	I_C = -500mA, V_{CC} = -10V I_{B1} = $-I_{B2}$= -50mA
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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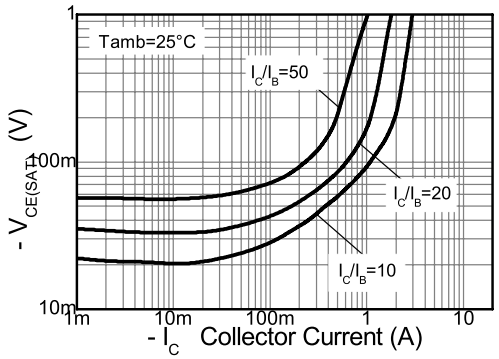
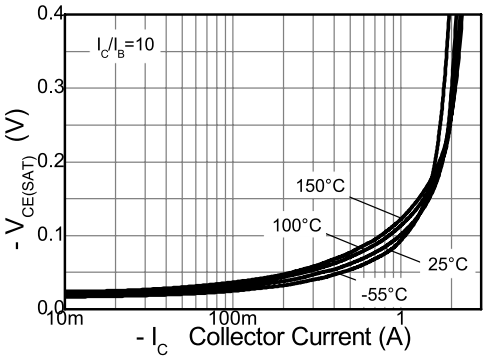
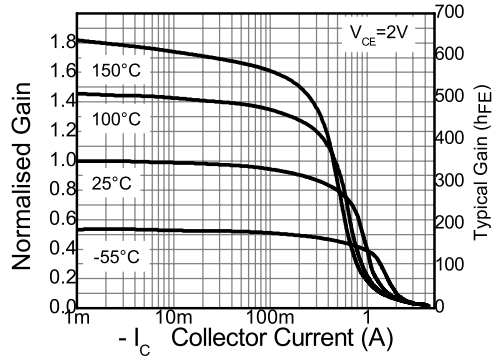
Typical characteristics



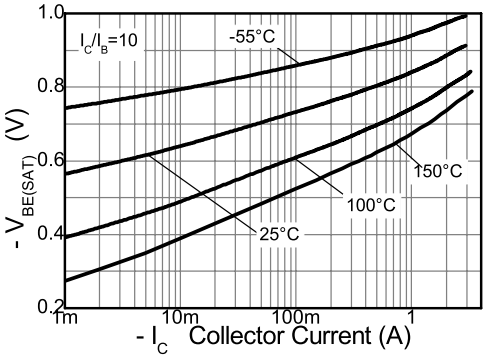
$V_{CE(SAT)}$ v I_C



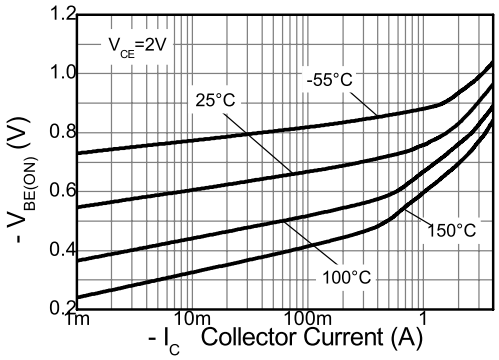
$V_{CE(SAT)}$ v I_C



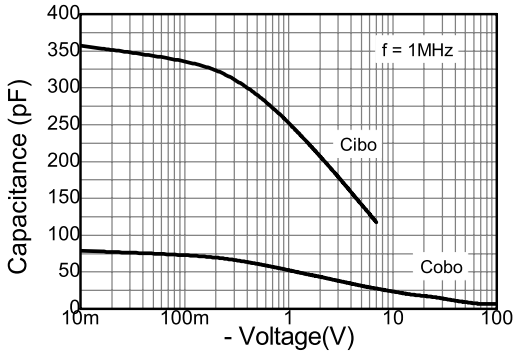
h_{FE} v I_C



$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C



Capacitance v Voltage

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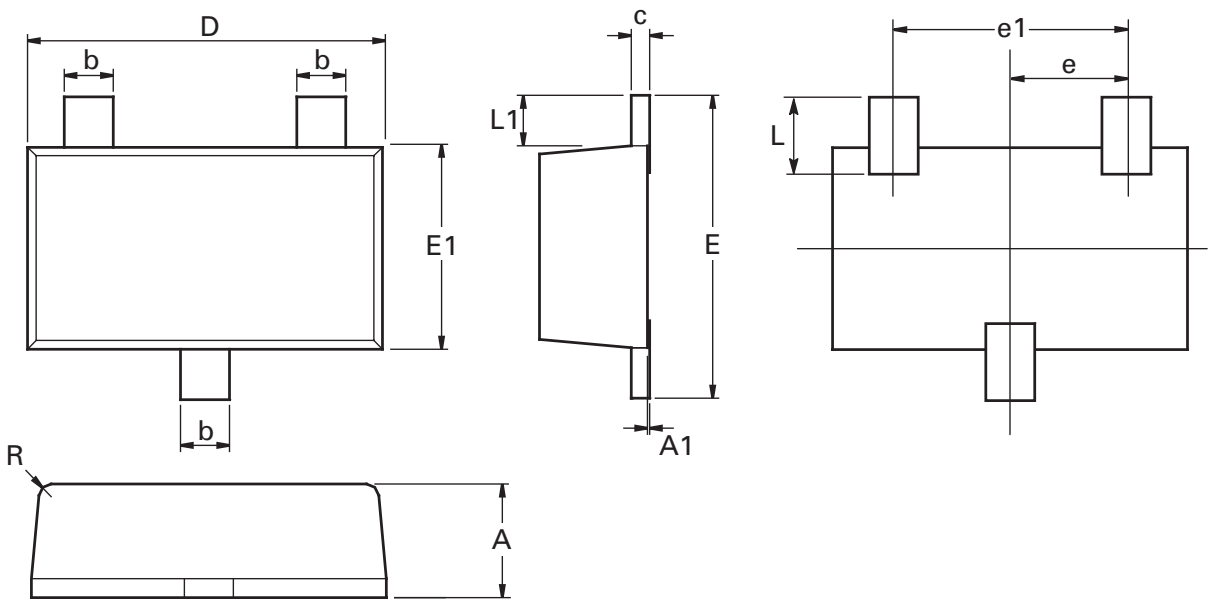
Package outline - SOT23F



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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