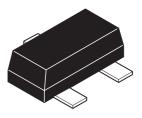


ZXTN19100CFF 100V, SOT23F, NPN high gain power transistor

Summary

 $BV_{CEX} > 200V$ $BV_{CEO} > 100V$ $BV_{ECO} > 5V$ $I_{C(cont)} = 4.5A$ $V_{CE(sat)} < 60mV @ 1A$ $R_{CE(sat)} = 38m\Omega$ $P_D = 1.5W$



Complementary part number ZXTP19100CFF

Description

Advanced process capability has been used to maximise the performance of this transistor. The SOT23F package is compatible with the industry standard SOT23 footprint but offers lower profile and higher dissipation for applications where power density is of utmost importance

Features

- High forward blocking voltage
- Low saturation voltage
- High gain
- Low profile high dissipation package

Applications

- Relay and solenoid driving
- DC fans
- · Industrial and automotive switching

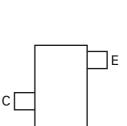
Ordering information

Device	Reel size	Tape width	Quantity
	(inches)	(mm)	per reel
ZXTN19100CFFTA	7	8	3000

Device marking

1E5

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С

Pinout - top view

В

Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-base voltage	V _{CBO}	200	V
Collector-emitter voltage (forward blocking)	V _{CEX}	200	V
Collector-emitter voltage	V _{CEO}	100	V
Emitter-collector voltage (reverse blocking)	V _{ECO}	5	V
Emitter-base voltage	V _{EBO}	7	V
Continuous collector current ^(c)	Ι _C	4.5	А
Base current	Ι _Β	1	А
Peak pulse current	I _{CM}	6	А
Power dissipation at $T_{amb} = 25^{\circ}C^{(a)}$		0.84	
Linear derating factor	P _D	6.72	W
Power dissipation at $T_{amb} = 25^{\circ}C^{(b)}$		1.34	mW/°C
Linear derating factor	PD	10.72	W
Power dissipation at $T_{amb} = 25^{\circ}C^{(C)}$		1.5	mW/°C
Linear derating factor	P _D	12.0	W
Power dissipation at $T_{amb} = 25^{\circ}C^{(d)}$		2	mW/°C
Linear derating factor	PD	16.0	W
Operating and storage temperature range	T _j , T _{stg}	- 55 to 150	°C

Thermal resistance

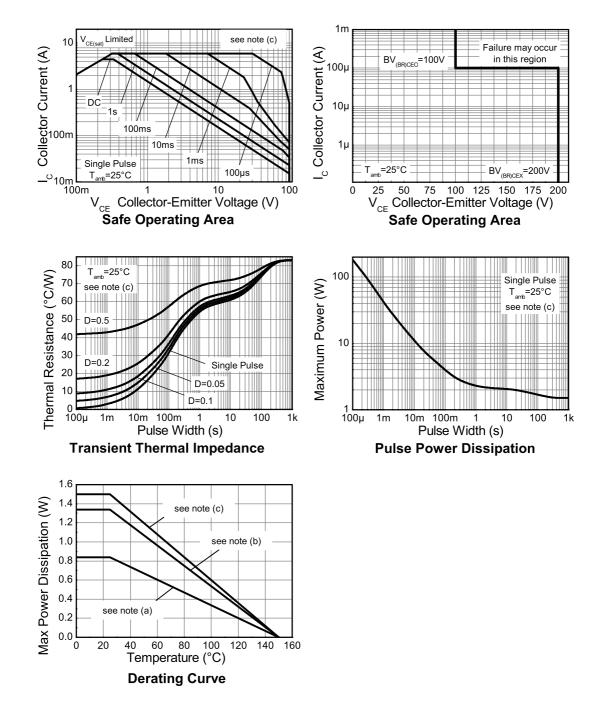
Parameter	Symbol	Limit	Unit
Junction to ambient ^(a)	$R_{\Theta JA}$	149.3	°C/W
Junction to ambient ^(b)	$R_{\Theta JA}$	93.4	°C/W
Junction to ambient ^(c)	$R_{\Theta JA}$	83.3	°C/W
Junction to ambient ^(d)	$R_{\Theta JA}$	60	°C/W

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



Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CBO}	200	240		V	I _C = 100μA
Collector-emitter breakdown voltage (forward blocking)	BV _{CEX}	200	240		V	$\label{eq:lc} \begin{split} I_C &= 100 \mu A, R_{BE} < 1 k \Omega \text{ or} \\ -1 V < V_{BE} &< 0.25 V \end{split}$
Collector-emitter breakdown voltage (base open)	BV _{CEO}	100	120		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}	6	8.3		V	$I_{E} = 100 \mu A, R_{BC} < 1 k \Omega \text{ or}$ 0.25V > V_{BC} > -0.25V
Emitter-collector breakdown voltage (base open)	BV _{ECO}	5	8		V	I _E = 100μA,
Collector-base cut-off current	I _{CBO}		<1	50	nA	V _{CB} = 160V
				20	μA	V _{CB} = 160V, T _{amb} = 100°C
Collector-emitter cut-off current	I _{CEX}		<1	100	nA	V_{CE} = 160V, R_{BE} < 1k Ω or -1V < V_{BE} < 0.25V
Emitter-base cut-off current	I _{EBO}		<1	50	nA	V _{EB} = 5.6V
Collector-emitter saturation	V _{CE(sat)}		45	60	mV	l _C = 1A, l _B = 100mA ^(*)
voltage			105	135	mV	l _C = 1A, l _B = 20mA ^(*)
			170	235	mV	l _C = 4.5A, l _B = 450mA ^(*)
Base-emitter saturation voltage	$V_{BE(sat)}$		950	1050	mV	I _C = 4.5A, I _B = 450mA ^(*)
Base-emitter turn-on voltage	V _{BE(on)}		880	1000	mV	I_{C} = 4.5A, V_{CE} = 2V ^(*)
Static forward current transfer	h _{FE}	200	350	500		$I_{C} = 0.1A, V_{CE} = 2V^{(*)}$
ratio		130	250			$I_{C} = 1A, V_{CE} = 2V^{(*)}$
			25			$I_{C} = 5A, V_{CE} = 2V^{(*)}$
Transition frequency	f _T		150		MHz	I _C = 100mA, V _{CE} = 10V f =50MHz
Input capacitance	C _{ibo}		305		pF	V _{EB} = 0.5V, f = 1MHz ^(*)
Output capacitance	C _{obo}		15.7	25	pF	V _{CB} = 10V, f = 1MHz ^(*)
Delay time	t _d		28.3		ns	V _{CC} = 10V.
Rise time	t _r		23.6		ns	$I_{\rm C} = 500 {\rm mA},$
Storage time	t _s		962		ns	I _{B1} = I _{B2} = 50mA.
Fall time	t _f		133		ns	

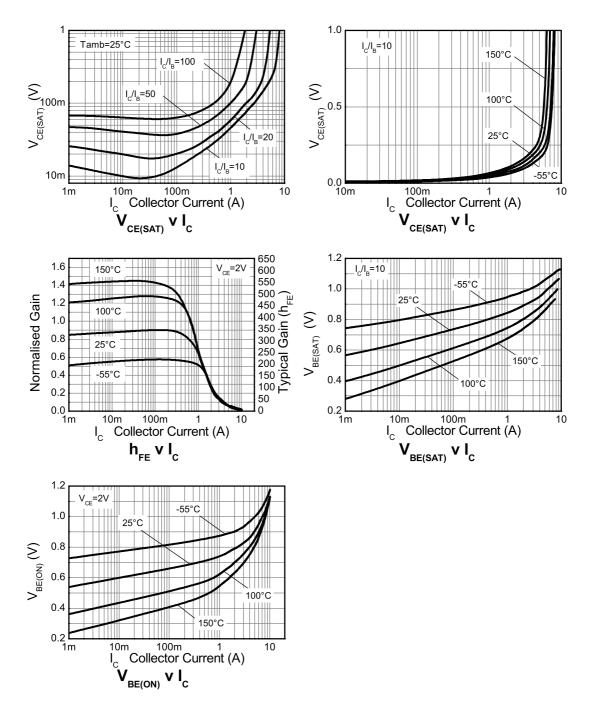
Electrical characteristics (at T_{amb} = 25°C unless otherwise stated)

NOTES:

(*) Measured under pulsed conditions. Pulse width ${\leq}300\mu s;$ duty cycle ${\leq}2\%.$

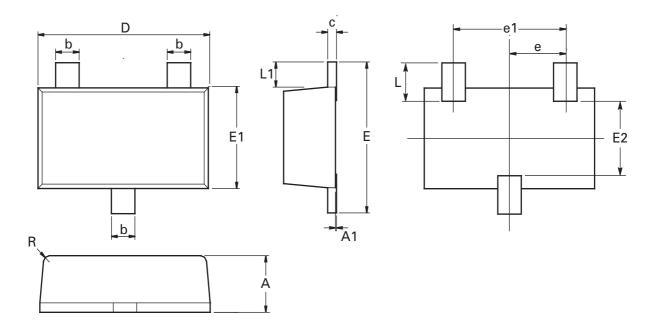
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Typical characteristics



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Package outline - SOT23F



Dim.	Millim	lillimeters Inches		Dim.	Millimeters		Inches		
	Min.	Max.	Min.	Max.		Min.	Max.	Max.	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	E2	1.10	1.26	0.0433	0.0496
С	0.10	0.20	0.0043	0.0079	L	0.48	0.68	0.0189	0.0268
D	2.80	3.00	0.1102	0.1181	L1	0.30	0.50	0.0153	0.0161
е	0.95	ref	0.037	74 ref	R	0.05	0.15	0.0019	0.0059
e1	1.80	2.00	0.0709	0.0787	0	0°	12°	0°	12°

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

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