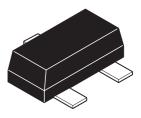


# ZXTP19060CFF 60V, SOT23F, PNP medium power transistor

### Summary

BV<sub>CEO</sub> > -60V BV<sub>ECO</sub> > -7V I<sub>C(cont)</sub> = -4A V<sub>CE(sat)</sub> < 75mV @ 100mA R<sub>CE(sat)</sub> = 45mΩ P<sub>D</sub> = 1.5 W



С

Complementary part number ZXTN19060CFF

## Description

This medium voltage PNP transistor has been designed for applications requiring high gain and low saturation voltage. The SOT23F package is PIN compatible with the industry standard SOT23 footprint whilst offering a lower profile and higher power dissipation for applications where power density is of utmost importance.

### Features

- High gain
- Low saturation voltage
- Low profile small outline package

## Applications

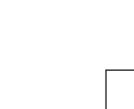
- · High-side driver
- Motor drive
- Load disconnect switch

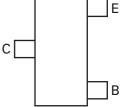
## Ordering information

Device Reel size		Tape width	Quantity	
(inches)		(mm)	per reel	
ZXTP19060CFFTA	7	8	3000	

## **Device marking**

1D9





Pinout - top view

## Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-base voltage	V <sub>CBO</sub>	-60	V
Collector-emitter voltage	V <sub>CEO</sub>	-60	V
Emitter-collector voltage (reverse blocking)	V <sub>ECO</sub>	-7	V
Emitter-base voltage	V <sub>EBO</sub>	-7	V
Continuous collector current <sup>(c)</sup>	Ι <sub>C</sub>	-4	А
Peak pulse current	I <sub>CM</sub>	-7	А
Base current	Ι <sub>Β</sub>	-1	А
Power dissipation at T <sub>amb</sub> =25°C <sup>(a)</sup>	PD	0.84	W
Linear derating factor		6.72	mW/°C
Power dissipation at T <sub>amb</sub> =25°C <sup>(b)</sup>	PD	1.34	W
Linear derating factor		10.72	mW/°C
Power dissipation at T <sub>amb</sub> =25°C <sup>(c)</sup>	PD	1.5	W
Linear derating factor		12	mW/°C
Power dissipation at T <sub>amb</sub> =25°C <sup>(d)</sup>	PD	2	W
Linear derating factor		16	mW/°C
Operating and storage temperature range	T <sub>j</sub> , T <sub>stg</sub>	-55 to 150	°C

### **Thermal resistance**

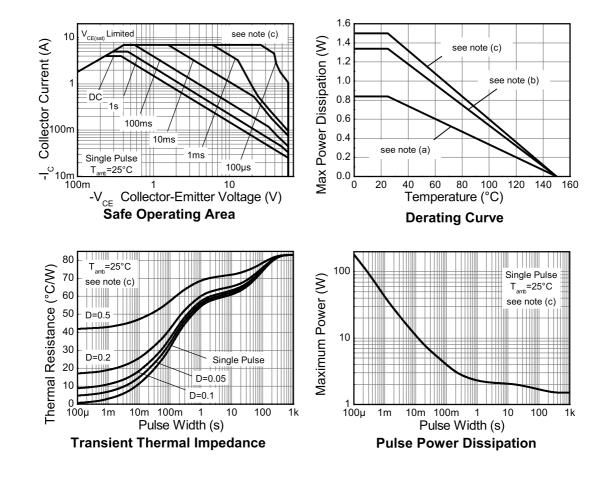
Parameter	Symbol	Limit	Unit
Junction to ambient <sup>(a)</sup>	$R_{\Theta JA}$	149.3	°C/W
Junction to ambient <sup>(b)</sup>	$R_{\Theta JA}$	93.4	°C/W
Junction to ambient <sup>(c)</sup>	$R_{\Theta JA}$	83.3	°C/W
Junction to ambient <sup>(d)</sup>	$R_{\Theta JA}$	60	°C/W

### 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



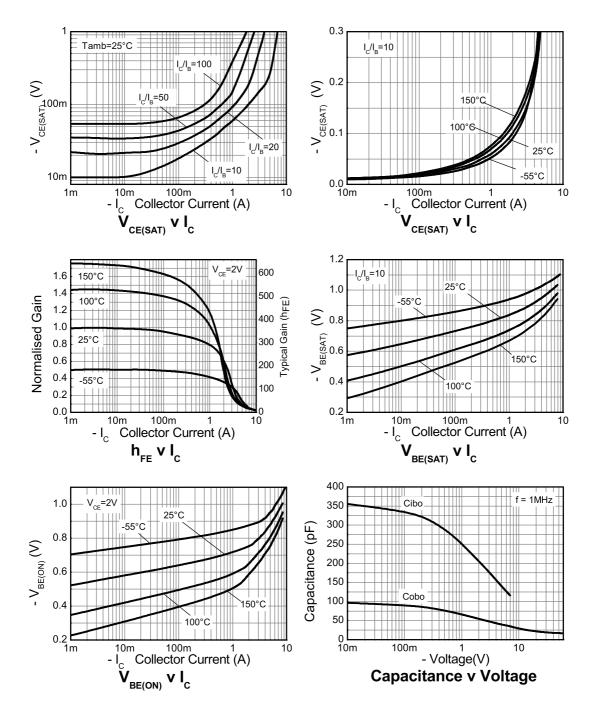
Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CBO</sub>	-60	-110		V	I <sub>C</sub> = -100μA
Collector-emitter breakdown voltage (base open)	BV <sub>CEO</sub>	-60	-90		V	I <sub>C</sub> = -10mA <sup>(*)</sup>
Emitter-base breakdown voltage	BV <sub>EBO</sub>	-7	-8.4		V	I <sub>E</sub> = -100μA
Emitter-collector breakdown voltage (reverse blocking)	BV <sub>ECX</sub>	-7	-8.4		V	I <sub>E</sub> = -100μA, R <sub>BC</sub> < 1k $\Omega$ or 0.25V > V <sub>BC</sub> > -0.25V
Emitter-collector breakdown voltage (base open)	BV <sub>ECO</sub>	-7	-8.8		V	I <sub>E</sub> = -100μA,
Collector-base cut-off current	I <sub>CBO</sub>		<-1	-50	nA	V <sub>CB</sub> = -60V
				-0.5	μA	$V_{CB}$ = -60V, $T_{amb}$ = 100°C
Emitter-base cut-off current	I <sub>EBO</sub>		<-1	-50	nA	V <sub>EB</sub> = -5.6V
Collector-emitter saturation	V <sub>CE(sat)</sub>		-60	-75	mV	$I_{C} = -1A, I_{B} = -100 \text{mA}^{(*)}$
voltage			-140	-200	mV	$I_{C} = -1A$ , $I_{B} = -20mA^{(*)}$
			-180	-270	mV	$I_{C} = -4A, I_{B} = -400 \text{mA}^{(*)}$
Base-emitter saturation voltage	V <sub>BE(sat)</sub>		-935	-1050	mV	$I_{C} = -4A, I_{B} = -400 \text{mA}^{(*)}$
Base-emitter turn-on voltage	V <sub>BE(on)</sub>		-835	-950	mV	$I_{C} = -4A, V_{CE} = -2V^{(*)}$
Static forward current transfer	h <sub>FE</sub>	200	350	500		$I_{C} = -100 \text{mA}, V_{CE} = -2V^{(*)}$
ratio		160	280			$I_{C} = -1A, V_{CE} = -2V^{(*)}$
		30	50			$I_{C} = -4A, V_{CE} = -2V^{(*)}$
Transition frequency	f <sub>T</sub>		180		MHz	I <sub>C</sub> = -50mA, V <sub>CE</sub> = -10V f = 50MHz
Output capacitance	C <sub>obo</sub>		29.5	40	pF	V <sub>CB</sub> = -10V, f = 1MHz <sup>(*)</sup>
Delay time	t <sub>d</sub>		24.3		ns	V <sub>CC</sub> = -10V.
Rise time	t <sub>r</sub>		13.2		ns	$I_{\rm C} = -500 {\rm mA},$
Storage time	t <sub>s</sub>		456		ns	I <sub>B1</sub> = -50mA, I <sub>B2</sub> = -50mA.
Fall time	t <sub>f</sub>		68.2		ns	

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

### NOTES:

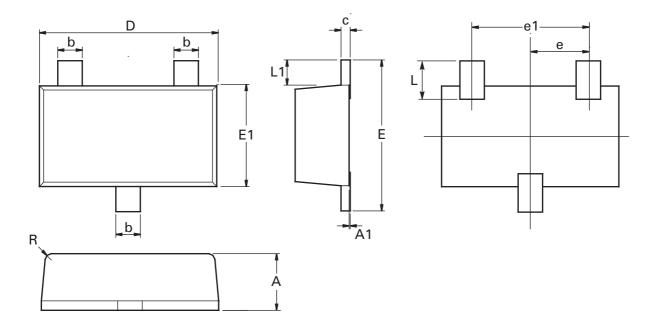
(\*) Measured under pulsed conditions. Pulse width  ${\leq}300\mu s;$  duty cycle  ${\leq}2\%.$ 

## **Typical characteristics**



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## Package outline - SOT23F



Dim.	Millimeters		Inches		Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
Α	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
С	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
е	0.95	ref	0.037	74 ref	0	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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### Zetex sales offices

Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Kustermann-park Balanstraße 59 D-81541 München Germany	Zetex Inc 700 Veterans Memorial Highway Hauppauge, NY 11788 USA	Zetex (Asia Ltd) 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong	Zetex Semiconductors plc Zetex Technology Park, Chadderton Oldham, OL9 9LL United Kingdom
Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europe.sales@zetex.com	Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Telephone: (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com

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