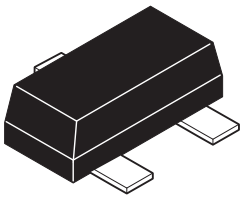
ZXTP19060CFF
60V, SOT23F, PNP medium power transistor

Summary



BV_{CEO} > -60V

BV_{ECO} > -7V

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

$V_{CE(sat)}$ < 75mV @ 100mA

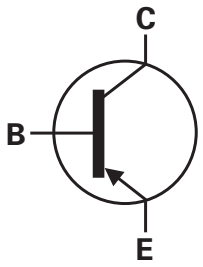
$R_{CE(sat)}$ = 45mΩ

P_D = 1.5 W

Complementary part number ZXTN19060CFF

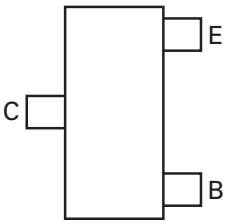
Description

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



Pinout - top view

Applications

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

Ordering information

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

Device marking

1D9

Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-base voltage	V_{CBO}	-60	V
Collector-emitter voltage	V_{CEO}	-60	V
Emitter-collector voltage (reverse blocking)	V_{ECO}	-7	V
Emitter-base voltage	V_{EBO}	-7	V
Continuous collector current[c]	I_C	-4	A
Peak pulse current	I_{CM}	-7	A
Base current	I_B	-1	A
Power dissipation at T_{amb} =25°C[a]	P_D	0.84	W
Linear derating factor		6.72	mW/°C
Power dissipation at T_{amb} =25°C[b]	P_D	1.34	W
Linear derating factor		10.72	mW/°C
Power dissipation at T_{amb} =25°C[c]	P_D	1.5	W
Linear derating factor		12	mW/°C
Power dissipation at T_{amb} =25°C[d]	P_D	2	W
Linear derating factor		16	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]	$R_{\Theta JA}$	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:

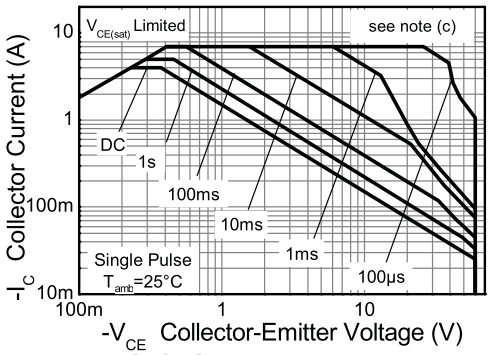
(a) For a device surface mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(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.

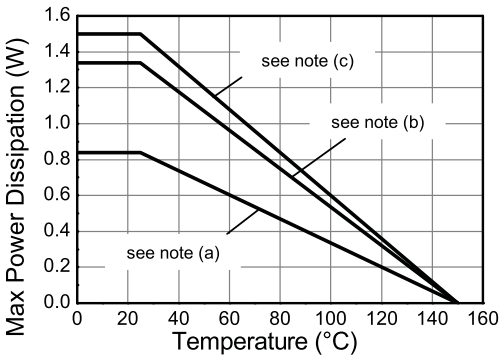
(c) Mounted on 50mm x 50mm x 1.6mm FR4 PCB with a high coverage of single sided 2 oz copper in still air conditions.

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

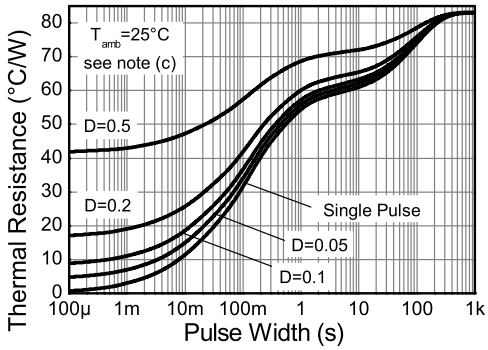
Characteristics



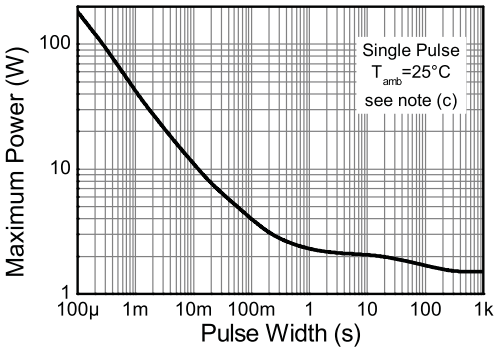
Safe Operating Area



Derating Curve



Transient Thermal Impedance



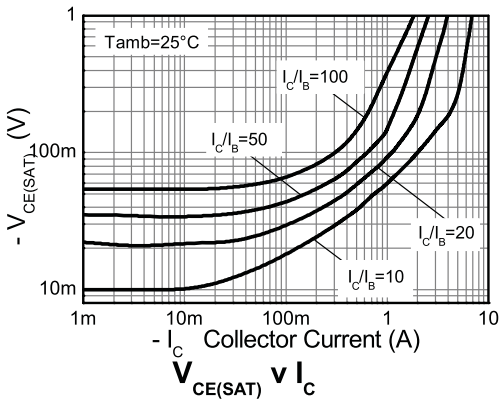
Pulse Power Dissipation

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

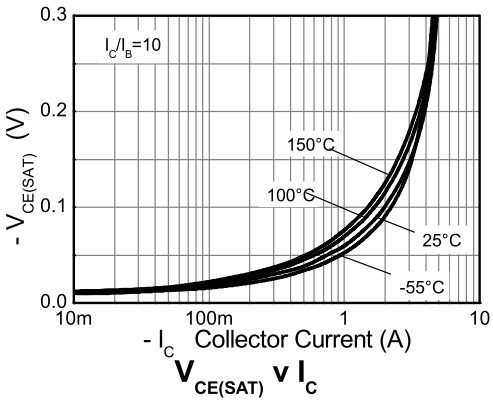
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-60	-110		V	I_C = -100μA
Collector-emitter breakdown voltage (base open)	BV_{CEO}	-60	-90		V	I_C = -10mA (*)
Emitter-base breakdown voltage	BV_{EBO}	-7	-8.4		V	I_E = -100μA
Emitter-collector breakdown voltage (reverse blocking)	BV_{ECX}	-7	-8.4		V	I_E = -100μA, R_{BC} < 1kΩ or 0.25V > V_{BC} > -0.25V
Emitter-collector breakdown voltage (base open)	BV_{ECO}	-7	-8.8		V	I_E = -100μA,
Collector-base cut-off current	I_{CBO}		<-1	-50	nA	V_{CB} = -60V
				-0.5	μA	V_{CB} = -60V, T_{amb}= 100°C
Emitter-base cut-off current	I_{EBO}		<-1	-50	nA	V_{EB} = -5.6V
Collector-emitter saturation voltage	$V_{CE(sat)}$		-60	-75	mV	I_C = -1A, I_B = -100mA(*)
			-140	-200	mV	I_C = -1A, I_B = -20mA(*)
			-180	-270	mV	I_C = -4A, I_B = -400mA(*)
Base-emitter saturation voltage	$V_{BE(sat)}$		-935	-1050	mV	I_C = -4A, I_B = -400mA(*)
Base-emitter turn-on voltage	$V_{BE(on)}$		-835	-950	mV	I_C = -4A, V_{CE} = -2V(*)
Static forward current transfer ratio	h_{FE}	200	350	500		I_C = -100mA, V_{CE} = -2V(*)
		160	280			I_C = -1A, V_{CE} = -2V(*)
		30	50			I_C = -4A, V_{CE} = -2V(*)
Transition frequency	f_T		180		MHz	I_C = -50mA, V_{CE} = -10V f = 50MHz
Output capacitance	C_{obo}		29.5	40	pF	V_{CB} = -10V, f = 1MHz(*)
Delay time	t_d		24.3		ns	V_{CC} = -10V. I_C = -500mA, I_{B1} = -50mA, I_{B2}= -50mA.
Rise time	t_r		13.2		ns	
Storage time	t_s		456		ns	
Fall time	t_f		68.2		ns	

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

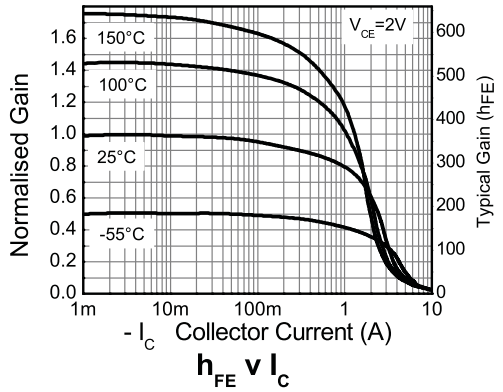
Typical characteristics



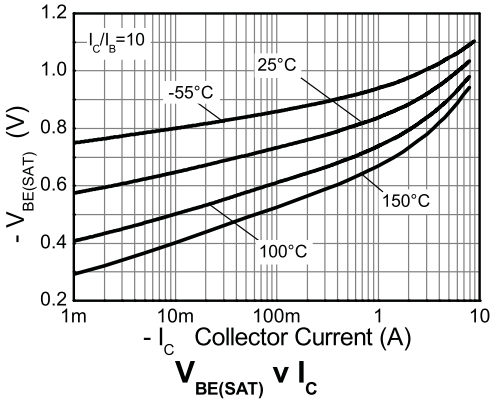
$V_{CE(SAT)}$ v I_C



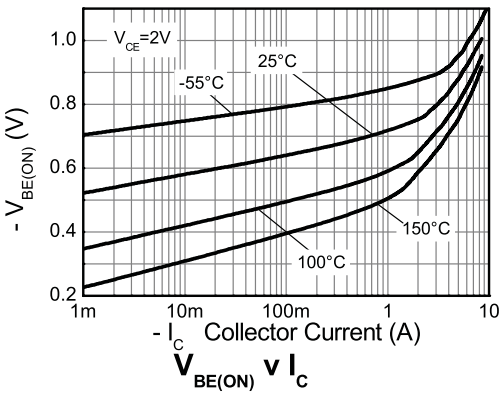
$V_{CE(SAT)}$ v I_C



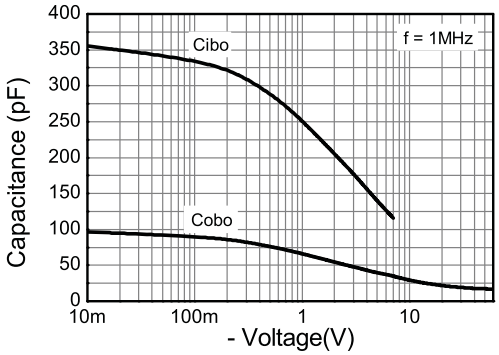
h_{FE} v I_C



$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C



Capacitance v Voltage

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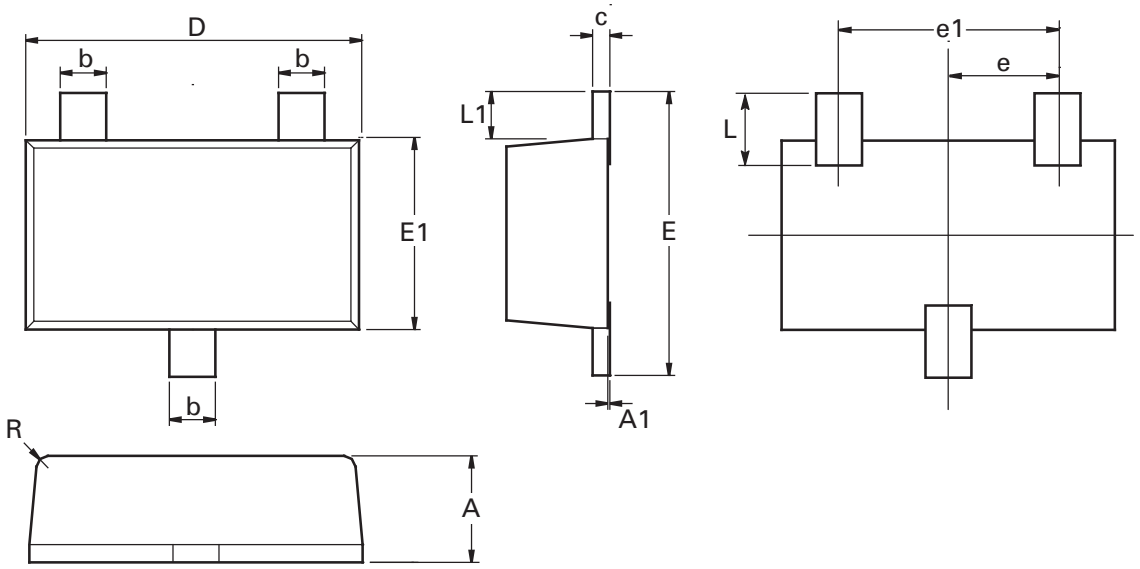
Package outline - SOT23F



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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