

ZXTP19060CZ

60V PNP medium transistor in SOT89

Summary

$BV_{CEO} > -60V$

$BV_{ECO} > -7V$

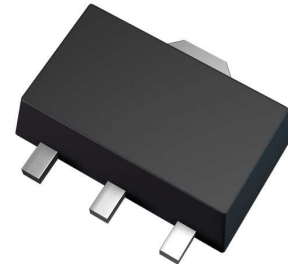
$I_{C(cont)} = 4.5A$

$V_{CE(sat)} < -80mV @ -1A$

$R_{CE(sat)} = 50m\Omega$

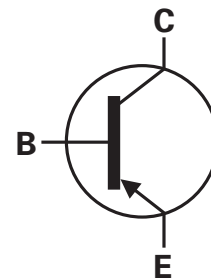
$P_D = 2.4W$

Complementary part number ZXTN19060CZ



Description

Packaged in the SOT89 outline this new low saturation 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

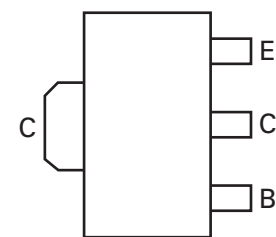
- High gain
- Low saturation voltage
- High peak current
- 7V reverse blocking voltage

Applications

- High side driver
- Motor drive
- Load disconnect switch

Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP19060CZTA	7	12	1000



Pinout - top view

Device marking

1M2

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_{ECX}	-7	V
Emitter-Base voltage	V_{EBO}	-7	V
Continuous Collector current ^(c)	I_C	-4.5	A
Base current	I_B	-1	A
Peak pulse current	I_{CM}	-7	A
Power dissipation at $T_A = 25^\circ\text{C}^{(a)}$	P_D	1.1	W
Linear derating factor		8.8	mW/°C
Power dissipation at $T_A = 25^\circ\text{C}^{(b)}$	P_D	1.8	W
Linear derating factor		14.4	mW/°C
Power dissipation at $T_A = 25^\circ\text{C}^{(c)}$	P_D	2.4	W
Linear derating factor		19.2	mW/°C
Power dissipation at $T_A = 25^\circ\text{C}^{(d)}$	P_D	4.46	W
Linear derating factor		35.7	mW/°C
Power dissipation at $T_C = 25^\circ\text{C}^{(e)}$	P_D	26.7	W
Linear derating factor		213	mW/°C
Operating and storage temperature range	T_j, T_{stg}	-55 to 150	°C

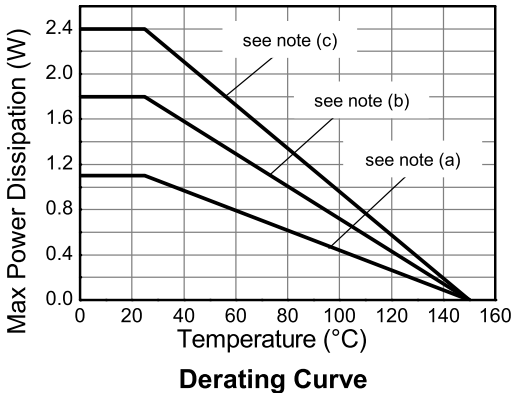
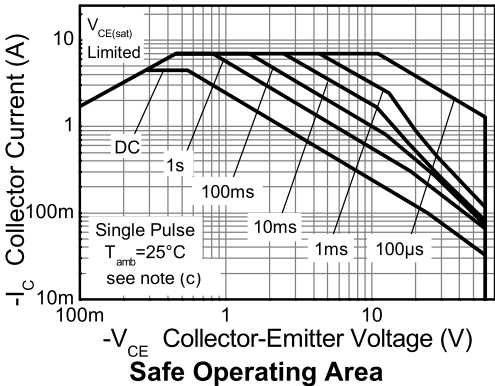
Thermal resistance

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)	$R_{\theta JC}$	4.69	°C/W

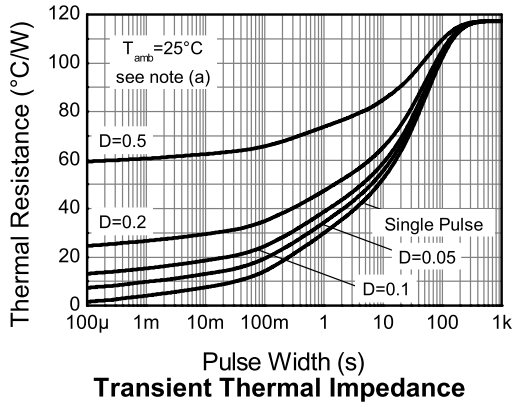
NOTES:

- (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 $t < 10$ seconds.
- (e) Junction to case (collector tab). Typical

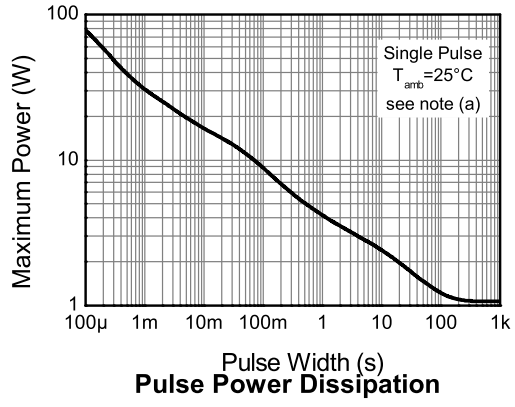
Thermal characteristics



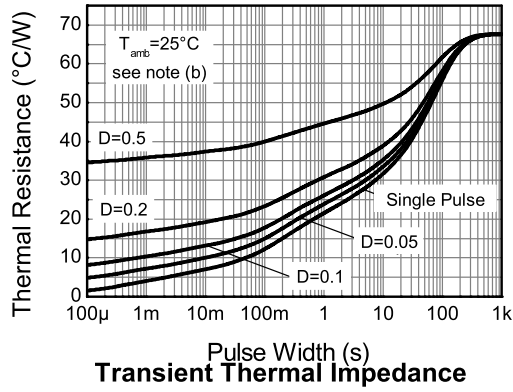
Thermal characteristics



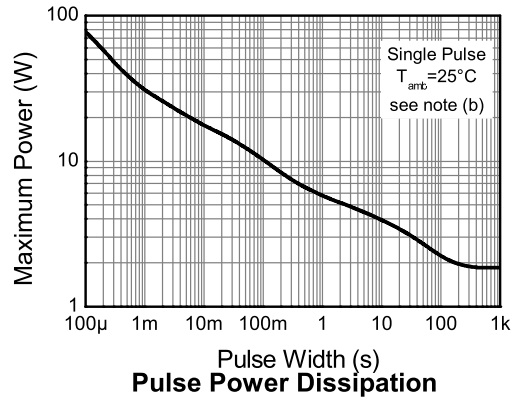
Transient Thermal Impedance



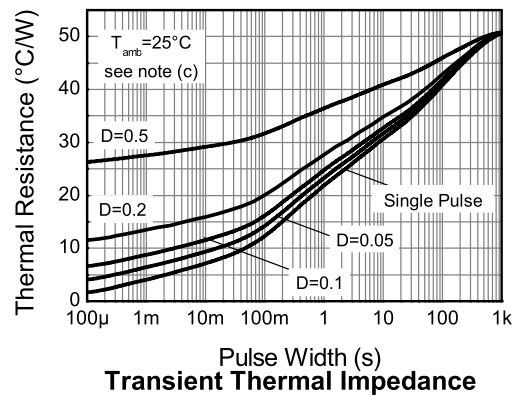
Pulse Power Dissipation



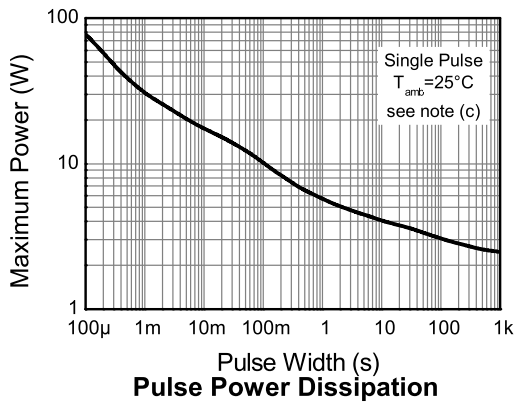
Transient Thermal Impedance



Pulse Power Dissipation



Transient Thermal Impedance



Pulse Power Dissipation

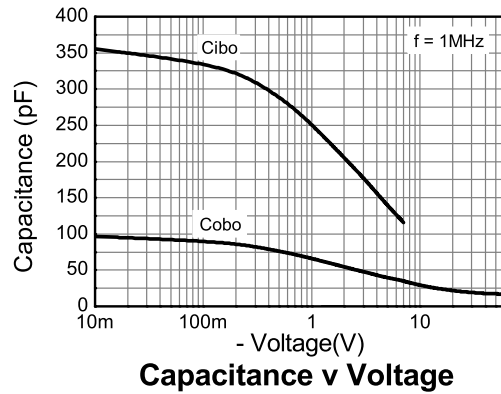
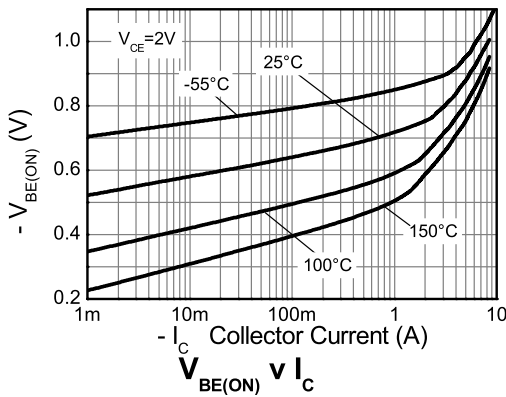
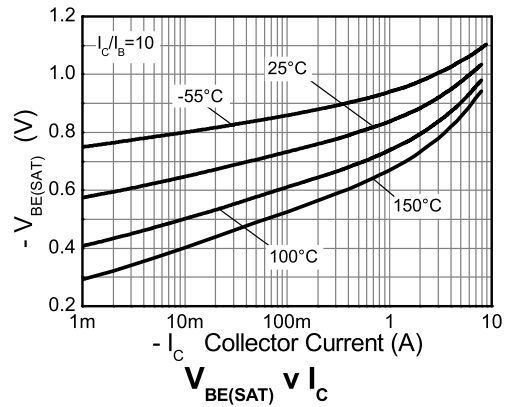
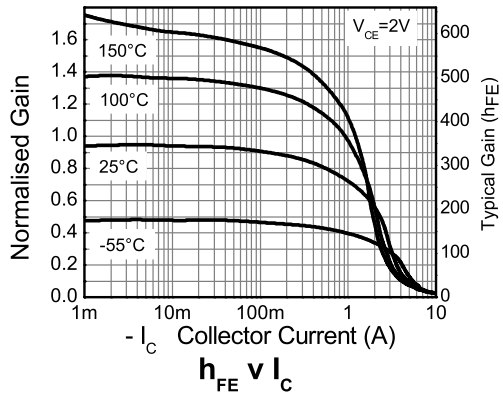
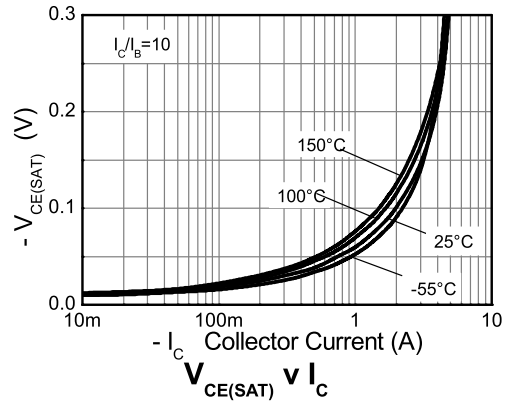
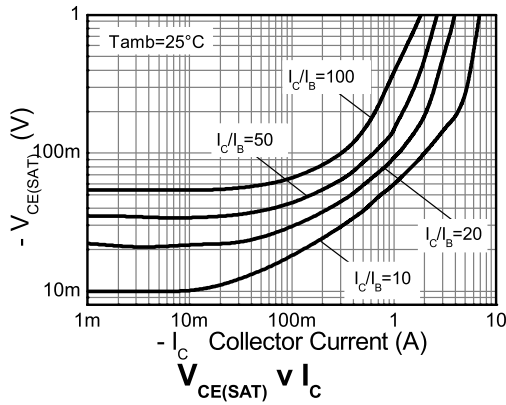
Electrical characteristics (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-Base breakdown voltage	BV_{CBO}	-60	-110		V	$I_C = -100\mu\text{A}$
Collector-Emitter breakdown voltage	BV_{CEO}	-60	-90		V	$I_C = -10\text{mA}^{(*)}$
Emitter-Collector breakdown voltage (reverse blocking)	BV_{ECX}	-7	-8.4		V	$I_E = -100\mu\text{A}$, $R_{BC} < 1\text{k}\Omega$ or $0.25\text{V} > V_{BC} > -0.25\text{V}$
Emitter-Collector breakdown voltage (reverse blocking)	BV_{ECO}	-7	-8.8		V	$I_E = -100\mu\text{A}$
Emitter-Base breakdown voltage	BV_{EBO}	-7	-8.4		V	$I_E = -100\mu\text{A}$
Collector-Base cut-off current	I_{CBO}		<1	-50 -0.5	nA μA	$V_{CB} = -60\text{V}$ $V_{CB} = -60\text{V}$, $T_{amb} = 100^{\circ}\text{C}$
Emitter cut-off current	I_{EBO}		<1	-50	nA	$V_{EB} = -5.6\text{V}$
Collector-Emitter saturation voltage	$V_{CE(sat)}$		-62 -150 -500 -105 -145 -240	-80 -205 -750 -165 -200 -410	mV mV mV mV mV mV	$I_C = -1\text{A}$, $I_B = -100\text{mA}^{(*)}$ $I_C = -1\text{A}$, $I_B = -20\text{mA}^{(*)}$ $I_C = -2\text{A}$, $I_B = -40\text{mA}^{(*)}$ $I_C = -2\text{A}$, $I_B = -200\text{mA}^{(*)}$ $I_C = -3\text{A}$, $I_B = -300\text{mA}^{(*)}$ $I_C = -4.5\text{A}$, $I_B = -450\text{mA}^{(*)}$
Base-Emitter saturation voltage	$V_{BE(sat)}$		-965	-1050	mV	$I_C = -4.5\text{A}$, $I_B = -450\text{mA}^{(*)}$
Base-Emitter turn-on voltage	$V_{BE(on)}$		-875	-1000	mV	$I_C = -4.5\text{A}$, $V_{CE} = -2\text{V}^{(*)}$
Static forward current transfer ratio	h_{FE}	200 160 25	330 260 45	500		$I_C = -100\text{mA}$, $V_{CE} = -2\text{V}^{(*)}$ $I_C = -1\text{A}$, $V_{CE} = -2\text{V}^{(*)}$ $I_C = -4.5\text{A}$, $V_{CE} = -2\text{V}^{(*)}$
Transition frequency	f_T		180		MHz	$I_C = -50\text{mA}$, $V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Input capacitance	C_{ibo}		280	400	pF	$V_{EB} = -0.5\text{V}$, $f = 1\text{MHz}^{(*)}$
Output capacitance	C_{obo}		29.5	40	pF	$V_{CB} = -10\text{V}$, $f = 1\text{MHz}^{(*)}$
Delay time	t_d		24.3		ns	$I_C = -500\text{mA}$, $V_{CC} = -10\text{V}$, $I_{B1} = -I_{B2} = -50\text{mA}$
Rise time	t_r		13.2		ns	
Storage time	t_s		456		ns	
Fall time	t_f		68.2		ns	

NOTES:

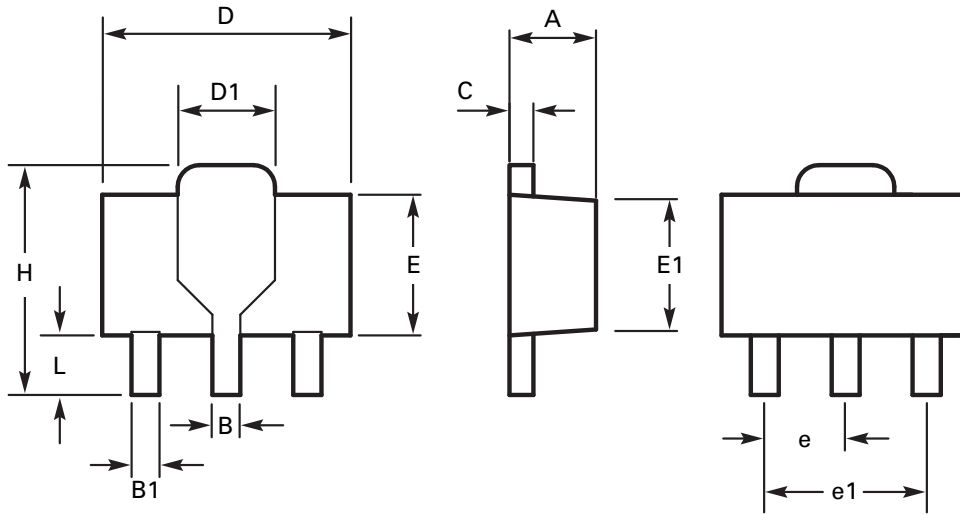
(*) Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.

Typical characteristics



ZXTP19060CZ

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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