ZXTP2012Z

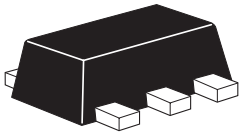
60V PNP LOW SATURATION MEDIUM POWER TRANSISTOR IN SOT89

SUMMARY

BV_{CEO} = -60V : R_{SAT} = 32mΩ; I_C = -4.3A

DESCRIPTION

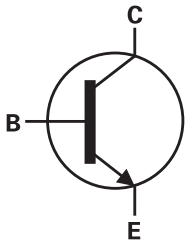
Packaged in the SOT89 outline this new low saturation 60V PNP transistor offers low on state losses making it ideal for use in DC-DC circuits, line switching and various driving and power management functions.



SOT89

FEATURES

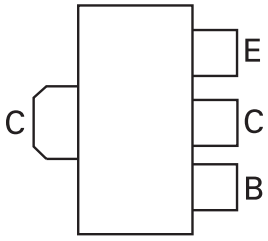
- Extremely low equivalent on-resistance; **R_{SAT} = 32mV at 5A**
- 4.3 amps continuous current
- Up to 15 amps peak current
- Very low saturation voltages
- Excellent gain characteristics specified up to 10 amps



APPLICATIONS

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

PINOUT



TOP VIEW

ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXTP2012ZTA	7”	12mm embossed	1,000 units

DEVICE MARKING

951

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Collector-base voltage	BV_{CBO}	-100	V
Collector-emitter voltage	BV_{CEO}	-60	V
Emitter-base voltage	BV_{EBO}	-7	V
Continuous collector current [(a)]	I_C	-4.3	A
Peak pulse current	I_{CM}	-15	A
Power dissipation at T_A =25°C [(a)]	P_D	1.5	W
Linear derating factor		12	mW/°C
Power dissipation at T_A =25°C [(b)]	P_D	2.1	W
Linear derating factor		16.8	mW/°C
Operating and storage temperature range	T_j, T_{stg}	-55 to +150	°C

THERMAL RESISTANCE

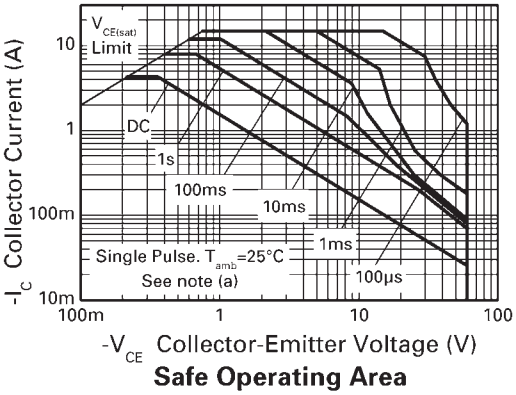
PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient [(a)]	$R_{\Theta JA}$	83	°C/W
Junction to ambient [(b)]	$R_{\Theta JA}$	60	°C/W

NOTES

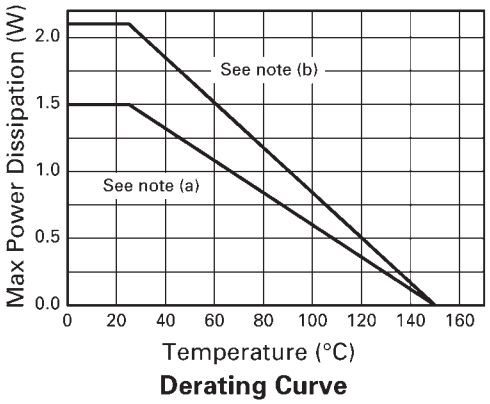
(a) For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(b) For a device surface mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

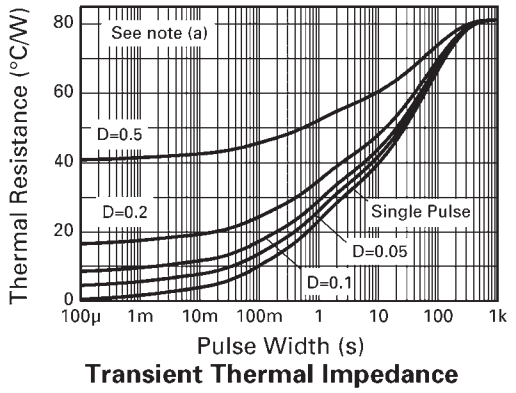
CHARACTERISTICS



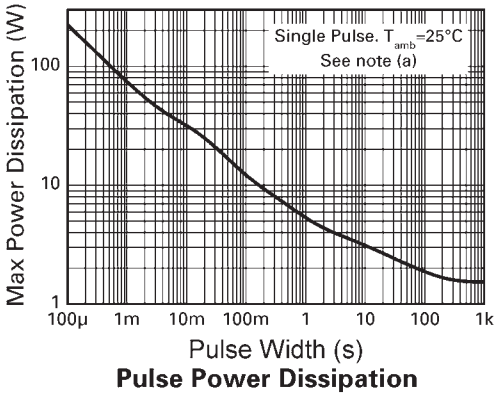
Safe Operating Area



Derating Curve



Transient Thermal Impedance



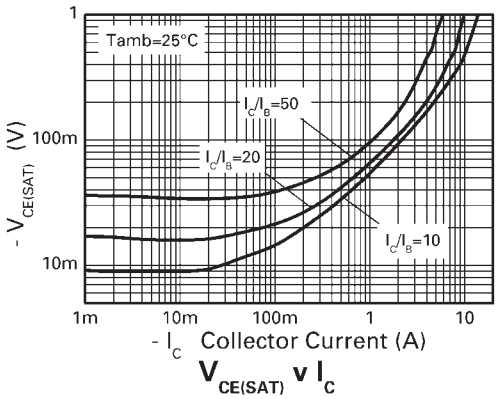
Pulse Power Dissipation

ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated)

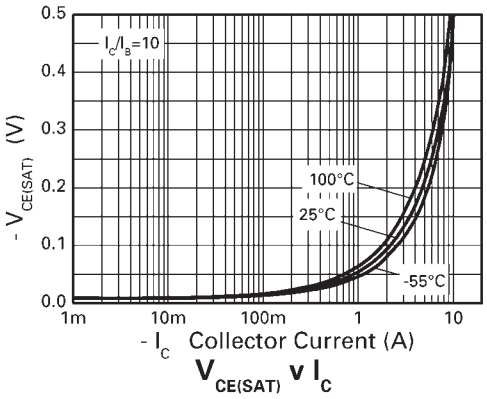
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Collector-base breakdown voltage	BV_{CBO}	-100	-120		V	I_C=-100μA
Collector-emitter breakdown voltage	BV_{CER}	-100	-120		V	I_C=-1μA, RB≤1kΩ
Collector-emitter breakdown voltage	BV_{CEO}	-60	-80		V	I_C=-10mA*
Emitter-base breakdown voltage	BV_{EBO}	-7	-8.1		V	I_E=-100μA
Collector cut-off current	I_{CBO}		<1	-20	nA	V_{CB}=-80V
				-0.5	μA	V_{CB}=-80V,T_{amb}=100°C
Collector cut-off current	I_{CER}		<1	-20	nA	V_{CB}=-80V
	R ≤ 1kΩ			-0.5	μA	V_{CB}=-80V,T_{amb}=100°C
Emitter cut-off current	I_{EBO}		<1	-10	nA	V_{EB}=-6V
Collector-emitter saturation voltage	$V_{CE(SAT)}$		-14	-20	mV	I_C=-0.1A, I_B=-10mA*
			-50	-65	mV	I_C=-1A, I_B=-100mA*
			-75	-110	mV	I_C=-2A, I_B=-200mA*
			-160	-215	mV	I_C=-5A, I_B=-500mA*
Base-emitter saturation voltage	$V_{BE(SAT)}$		-950	-1050	mV	I_C=-5A, I_B=-500mA*
Base-emitter turn-on voltage	$V_{BE(ON)}$		-840	-950	mV	I_C=-5A, V_{CE}=-1V*
Static forward current transfer ratio	H_{FE}	100	250			I_C=-10mA, V_{CE}=-1V*
		100	200	300		I_C=-2A, V_{CE}=-1V*
		45	90			I_C=-5A, V_{CE}=-1V*
		10	25			I_C=-10A, V_{CE}=-1V*
Transition frequency	f_T		120		MHz	I_C=-100mA, V_{CE}=-10V
						f=50MHz
Output capacitance	C_{OBO}		48		pF	V_{CB}=-10V, f=1MHz*
Switching times	t_{ON}		39		ns	I_C=-1A, V_{CC}=-10V,
	t_{OFF}		370			I_{B1}=I_{B2}=-100mA

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

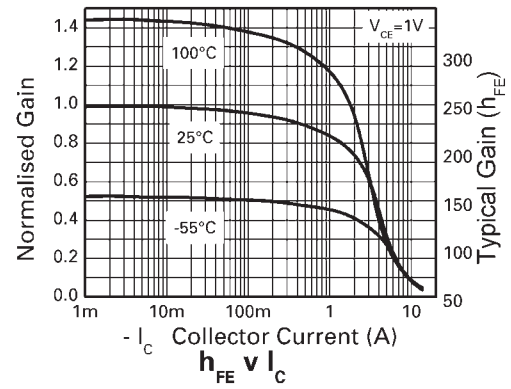
TYPICAL CHARACTERISTICS



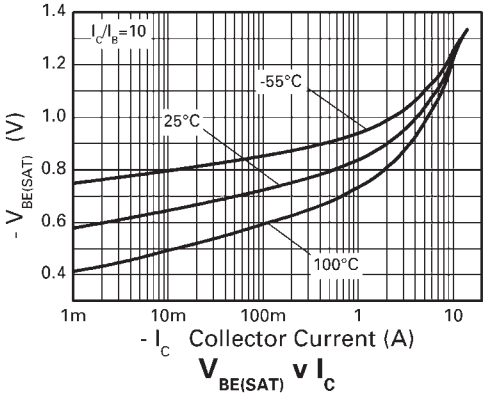
$V_{CE(SAT)}$ v I_C



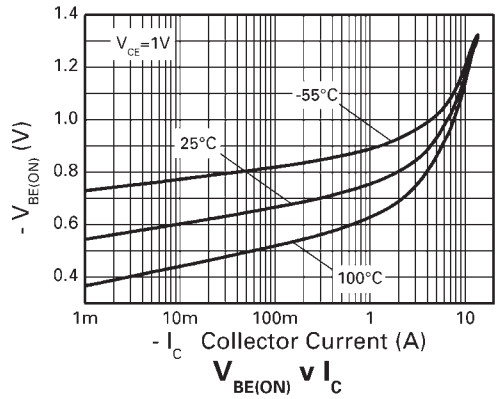
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C



$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C