



ZTX789A

ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$)

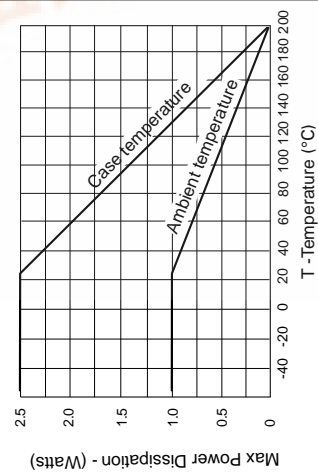
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Transition Frequency	f_t	100			MHz	$I_C=50mA, V_{CE}=5V, f=50MHz$
Input Capacitance	C_{ibo}		225		pF	$V_{EB}=-0.5V, f=1MHz$
Output Capacitance	C_{obo}		25		pF	$V_{CB}=-10V, f=1MHz$
Switching Times	t_{on}		35		ns	$I_C=500mA, I_B=50mA$
	t_{off}		400		ns	$I_B=50mA, V_{CC}=-10V$

Measured under pulsed conditions. Pulse width=300us. Duty cycle $\leq 2\%$

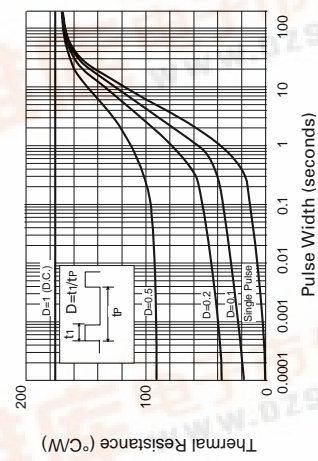
HERMAL CHARACTERISTICS

PARAMETER	SYMBOL	MAX.	UNIT
Thermal Resistance: Junction to Ambient ₁	$R_{th(j-amb)1}$	175	$^{\circ}C/W$
Junction to Ambient ₂	$R_{th(j-amb)2}$	116	$^{\circ}C/W$
Junction to Case	$R_{th(j-case)}$	70	$^{\circ}C/W$

Device mounted on P.C.B. with copper equal to 1 sq. Inch minimum.



Derating curve



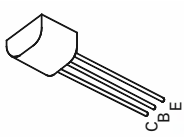
Maximum transient thermal impedance

PNP SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

ISSUE 2 - APRIL 94

FEATURES

- * 25 Volt V_{CEO}
 - * Gain of 200 at $I_C=2$ Amps
 - * Very low saturation voltage
- APPLICATIONS
- * Darlington replacement
 - * Battery powered circuits
 - * Motor drivers



E-Line
TO92 Compatible

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ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	-25	V
Collector-Emitter Voltage	V_{CEO}	-25	V
Emitter-Base Voltage	V_{EBO}	-5	V
Peak Pulse Current	I_{CM}	-8	A
Continuous Collector Current	I_C	-3	A
Practical Power Dissipation*	P_{totp}	1.5	W
Power Dissipation at $T_{amb}=25^{\circ}C$ derate above $25^{\circ}C$	P_{tot}	1	W
	T_j, T_{stg}	5.7	$mW/^{\circ}C$
Operating and Storage Temperature Range		-55 to +200	$^{\circ}C$

*The power which can be dissipated assuming the device is mounted in a typical manner on a P.C.B. with copper equal to 1 inch square minimum

ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-25			V	$I_C=100\mu A$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-25			V	$I_C=10mA^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5			V	$I_E=100\mu A$
					μA	$V_{CB}=-15V$
Collector Cut-Off Current	I_{CBO}			-0.1	μA	$V_{EB}=-4V$
Emitter Cut-Off Current	I_{EBO}			-0.1	μA	$I_C=1A, I_B=10mA^*$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-0.25			V	$I_C=2A, I_B=20mA^*$
		-0.45			V	$I_C=3A, I_B=100mA^*$
		-0.5			V	$I_C=1A, I_B=10mA^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			-1.0	V	$I_C=1A, I_B=10mA^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-0.8		V	$I_C=1A, V_{CE}=2V^*$
Static Forward Current Transfer Ratio	h_{FE}	300		800		$I_C=10mA, V_{CE}=2V$
		250				$I_C=1A, V_{CE}=2V^*$
		200				$I_C=2A, V_{CE}=2V^*$
		100				$I_C=6A, V_{CE}=2V^*$

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

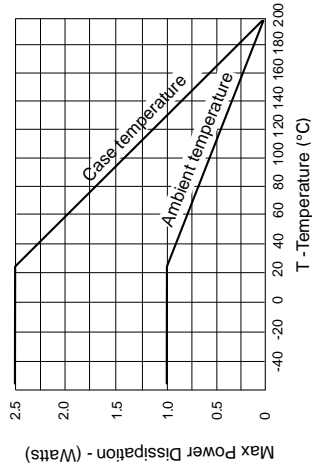
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Input Capacitance	C _{ibo}		225		pF	V _{EB} =-0.5V, f=1MHz
Output Capacitance	C _{obo}		25		pF	V _{CB} =-10V, f=1MHz
Switching Times	t _{on}		35		ns	I _C =-500mA, I _B =-50mA
	t _{off}		400		ns	I _{BZ} =-50mA, V _{CC} =-10V

Measured under pulsed conditions. Pulse width=300µs. Duty cycle ≤2%

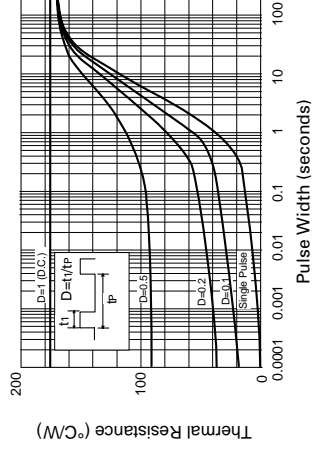
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	R _{th(j-amb)2}	116	°C/W
	R _{th(j-case)}	70	°C/W

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Derating curve



Maximum transient thermal impedance

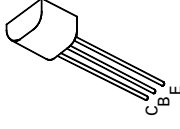
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HIGH GAIN TRANSISTOR**

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Emitter-Base Voltage	V _{EBO}	-5	V
Peak Pulse Current	I _{CM}	-8	A
Continuous Collector Current	I _C	-3	A
Practical Power Dissipation*	P _{totp}	1.5	W
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	T _J : T _{stg}	5.7	mW/°C
Operating and Storage Temperature Range		-55 to +200	°C

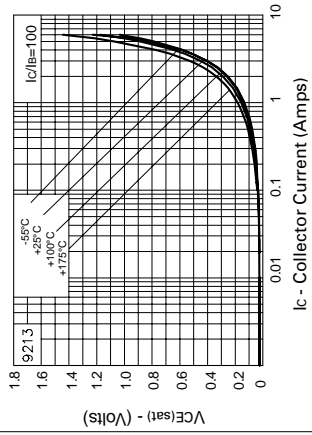
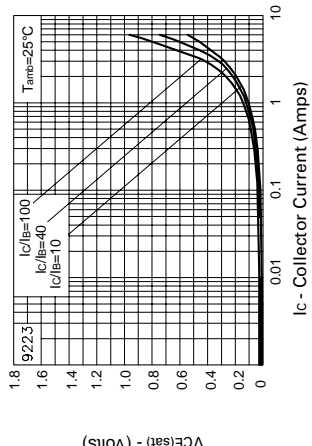
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ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	V _{(BR)CBO}	-25			V	I _C =-100µA
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	-25			V	I _C =-10mA*
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	-5			V	I _E =-100µA
Collector Cut-Off Current	I _{CBO}			-0.1	µA	V _{CB} =-15V
Emitter Cut-Off Current	I _{EBO}			-0.1	µA	V _{EB} =-4V
Collector-Emitter Saturation Voltage	V _{CE(sat)}		-0.25		V	I _C =-1A, I _B =-10mA*
			-0.45		V	I _C =-2A, I _B =-20mA*
			-0.5		V	I _C =-3A, I _B =-100mA*
Base-Emitter Saturation Voltage	V _{BE(sat)}			-1.0	V	I _C =-1A, I _B =-10mA*
Base-Emitter Turn-On Voltage	V _{BE(on)}		-0.8		V	I _C =-1A, V _{CE} =-2V*
Static Forward Current Transfer Ratio	h _{FE}	300		800		I _C =-10mA, V _{CE} =-2V
		250				I _C =-1A, V _{CE} =-2V*
		200				I _C =-2A, V _{CE} =-2V*
		100				I _C =-6A, V _{CE} =-2V*

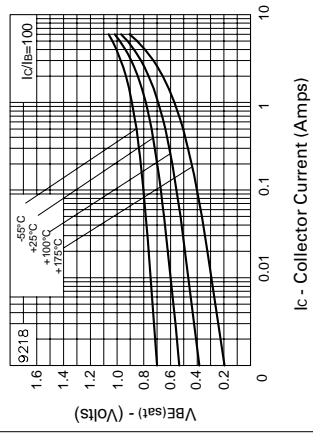
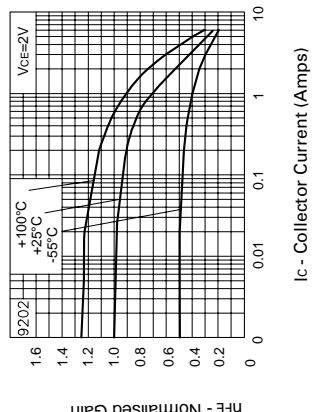
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TYPICAL CHARACTERISTICS



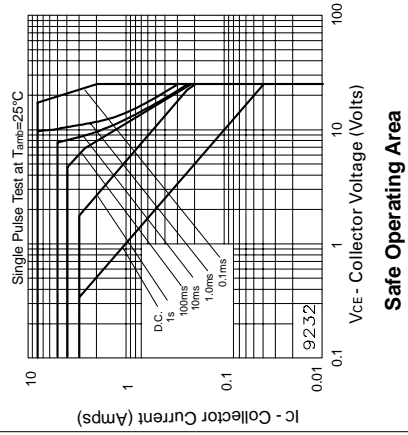
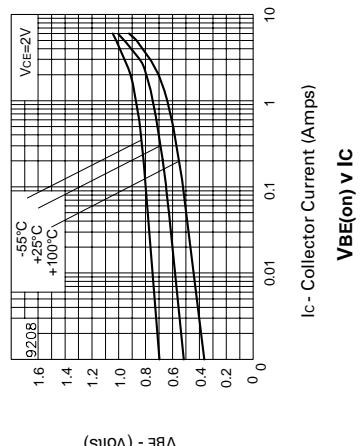
VCE(sat) v IC

VCE(sat) v IC



hFE v IC

VBE(sat) v IC



Safe Operating Area