

PNP SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

ISSUE 2 – APRIL 94

ZTX790A

FEATURES

- * 40 Volt V_{CEO}
- * Gain of 200 at $I_C=1$ Amps
- * Very low saturation voltage

APPLICATIONS

- * Darlington replacement
- * Siren driver
- * Battery powered circuits
- * Motor drivers



E-Line
TO92 Compatible

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-5	V
Peak Pulse Current	I_{CM}	-6	A
Continuous Collector Current	I_C	-2	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 5.7	W mW/ $^{\circ}C$
Operating and Storage Temperature Range	$T_j; T_{stg}$	-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	$V_{(BR)CBO}$	-50			V	$I_C=-100\mu A$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-40			V	$I_C=-10mA^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5			V	$I_E=-100\mu A$
Collector Cut-Off Current	I_{CBO}			-0.1	μA	$V_{CB}=-30V$
Emitter Cut-Off Current	I_{EBO}			-0.1	μA	$V_{EB}=4V$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			-0.25 -0.45 -0.75	V V V	$I_C=500mA, I_B=5mA^*$ $I_C=1A, I_B=10mA^*$ $I_C=2A, I_B=50mA^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			-1.0	V	$I_C=1A, I_B=10mA^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-0.75		V	$I_C=-1A, V_{CE}=-2V^*$
Static Forward Current Transfer Ratio	h_{FE}	300 250 200 150		800		$I_C=10mA, V_{CE}=2V$ $I_C=500mA, V_{CE}=2V^*$ $I_C=1A, V_{CE}=2V^*$ $I_C=2A, V_{CE}=2V^*$

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

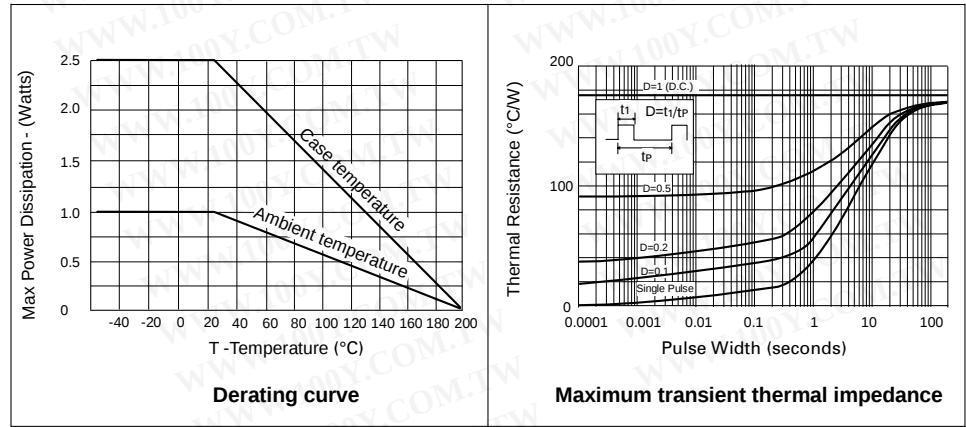
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Transition Frequency	f_T	100			MHz	$I_C = 50\text{mA}$, $V_{CE} = 5\text{V}$ $f = 50\text{MHz}$
Input Capacitance	C_{ibo}		225		pF	$V_{EB} = 0.5\text{V}$, $f = 1\text{MHz}$
Output Capacitance	C_{obo}		24		pF	$V_{CB} = 10\text{V}$, $f = 1\text{MHz}$
Switching Times	t_{on} t_{off}		35 600		ns ns	$I_C = 500\text{mA}$, $I_{B1} = 50\text{mA}$ $I_{B2} = 50\text{mA}$, $V_{CC} = 10\text{V}$

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

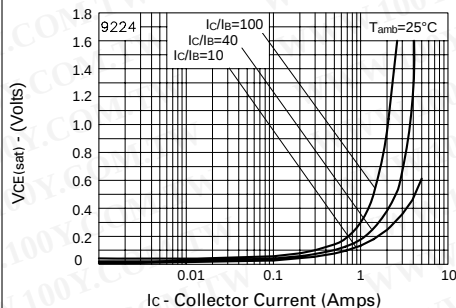
THERMAL CHARACTERISTICS

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

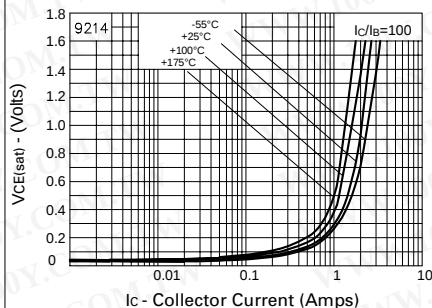
$\dagger$ Device mounted on P.C.B. with copper equal to 1 sq. Inch minimum.



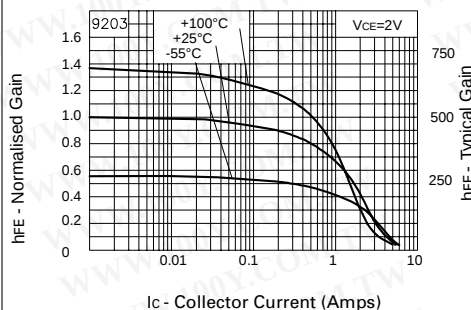
TYPICAL CHARACTERISTICS



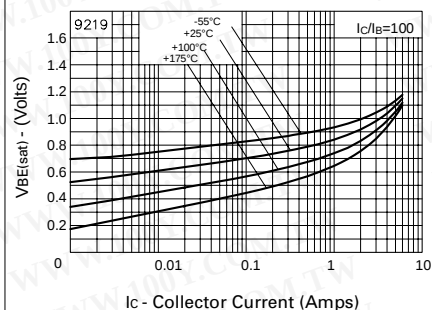
VCE(sat) v IC



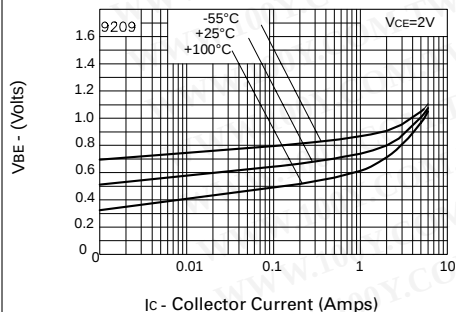
VCE(sat) v IC



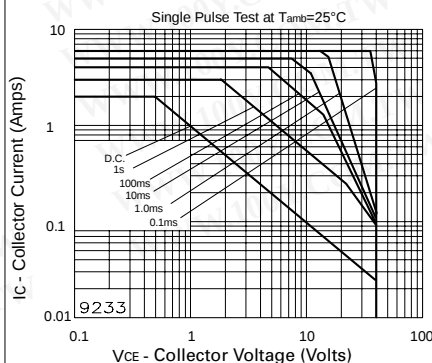
hFE v IC



VBE(sat) v IC



VBE(on) v IC



Safe Operating Area