

# PNP SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

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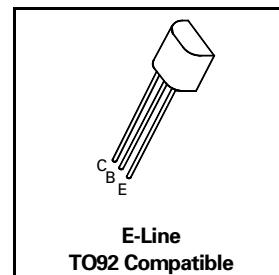
## FEATURES

- \* 25 Volt  $V_{CEO}$
- \* Gain of 200 at  $I_C=2$  Amps
- \* Very low saturation voltage

## APPLICATIONS

- \* Darlington replacement
- \* Battery powered circuits
- \* Motor drivers

**ZTX789A**



## 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 $T_{amb}=25^\circ\text{C}$ derate above $25^\circ\text{C}$	$P_{tot}$	1 5.7	W mW/ $^\circ\text{C}$
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +200	$^\circ\text{C}$

\*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 $T_{amb}=25^\circ\text{C}$ )

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

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

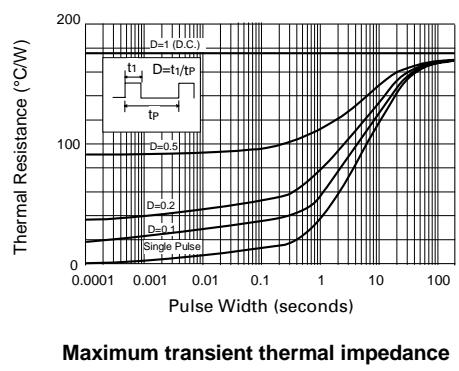
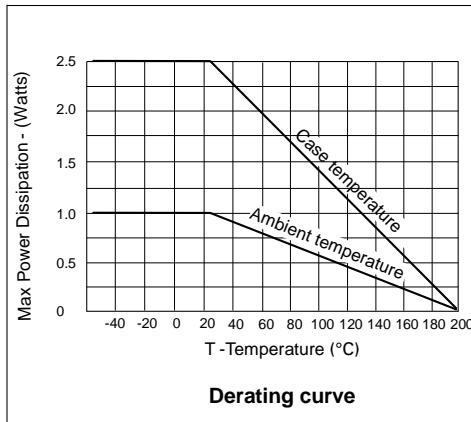
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Transition Frequency	$f_T$	100			MHz	$I_C=50mA, V_{CE}=5V$ $f=50MHz$
Input Capacitance	$C_{ibo}$		225		pF	$V_{EB}=-0.5V, f=1MHz$
Output Capacitance	$C_{obo}$		25		pF	$V_{CB}=-10V, f=1MHz$
Switching Times	$t_{on}$ $t_{off}$		35 400		ns ns	$I_C=500mA, I_{B1}=-50mA$ $I_{B2}=-50mA, V_{CC}=10V$

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

**THERMAL CHARACTERISTICS**

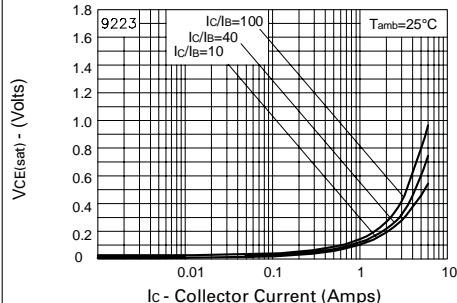
PARAMETER	SYMBOL	MAX.	UNIT
Thermal Resistance: Junction to Ambient <sub>1</sub>	$R_{th(j-amb)1}$	175	°C/W
Junction to Ambient <sub>2</sub>	$R_{th(j-amb)2}\dagger$	116	°C/W
Junction to Case	$R_{th(j-case)}$	70	°C/W

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

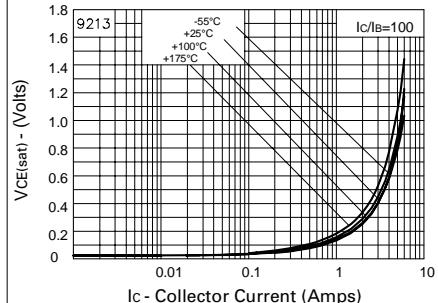


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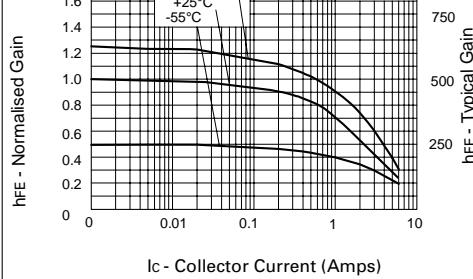
## TYPICAL CHARACTERISTICS



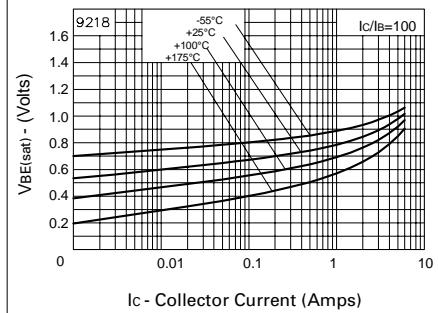
$V_{CE(sat)} v I_C$



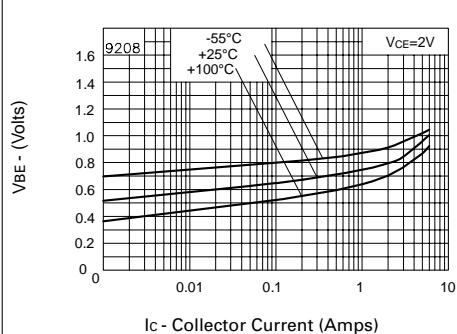
$V_{CE(sat)} v I_C$



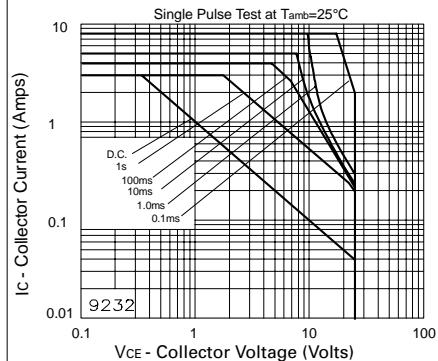
$h_{FE} v I_C$



$V_{BE(sat)} v I_C$



$V_{BE(on)} v I_C$



**Safe Operating Area**