



# THE DATASHEET OF ZTX789A



# ZTX789A

## PNP SILICON PLANAR ME HIGH GAIN TRANSISTOR

ISSUE 2 – APRIL 94

### FEATURES

- \* 25 Volt  $V_{CE0}$
- \* Gain of 200 at  $I_C=2$  Amps
- \* Very low saturation voltage

### APPLICATIONS

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

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	
Collector-Base Voltage	
Collector-Emitter Voltage	
Emitter-Base Voltage	
Peak Pulse Current	
Continuous Collector Current	
Practical Power Dissipation*	
Power Dissipation at $T_{amb}=25^{\circ}C$ derate above $25^{\circ}C$	
Operating and Storage Temperature Range	

\*The power which can be dissipated as P.C.B. with copper equal to 1 inch square

### ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$
Collector Cut-Off Current	$I_{CBO}$
Emitter Cut-Off Current	$I_{EBO}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$
Static Forward Current Transfer Ratio	$h_{FE}$

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

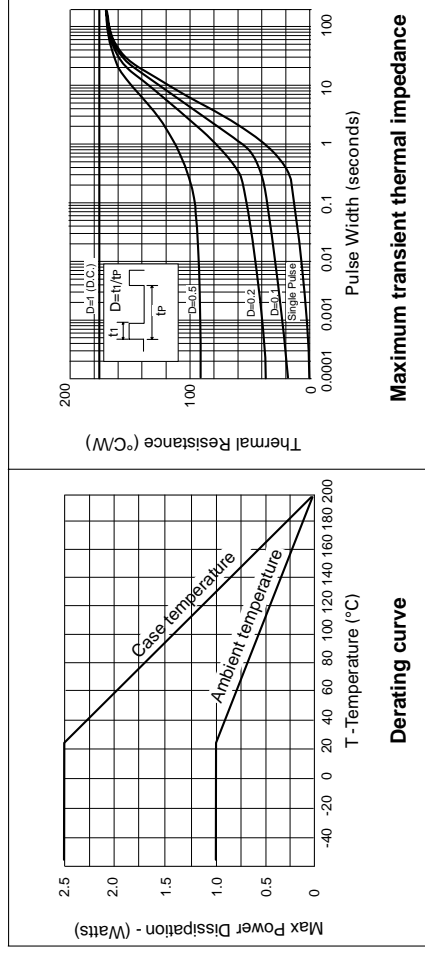
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Transition Frequency	$f_T$	100			MHz	$I_C=50mA, V_{CE}=5V$ $f=50MHz$
Input Capacitance	$C_{ibo}$		225		pF	$V_{EB}=0.5V, f=1MHz$
Output Capacitance	$C_{obo}$		25		pF	$V_{CB}=-10V, f=1MHz$
Switching Times	$t_{on}$		35		ns	$I_C=500mA, I_B=50mA$
	$t_{off}$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

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

### THERMAL CHARACTERISTICS

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

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



# ZTX789A

## PNP SILICON PLANAR ME HIGH GAIN TRANSISTOR

ISSUE 2 – APRIL 94

### FEATURES

- \* 25 Volt  $V_{CE0}$
- \* Gain of 200 at  $I_C=2$  Amps
- \* Very low saturation voltage

### APPLICATIONS

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

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	
Collector-Base Voltage	
Collector-Emitter Voltage	
Emitter-Base Voltage	
Peak Pulse Current	
Continuous Collector Current	
Practical Power Dissipation*	
Power Dissipation at $T_{amb}=25^{\circ}C$ derate above $25^{\circ}C$	
Operating and Storage Temperature Range	

\*The power which can be dissipated as P.C.B. with copper equal to 1 inch square

### ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$
Collector Cut-Off Current	$I_{CBO}$
Emitter Cut-Off Current	$I_{EBO}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$
Static Forward Current Transfer Ratio	$h_{FE}$

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

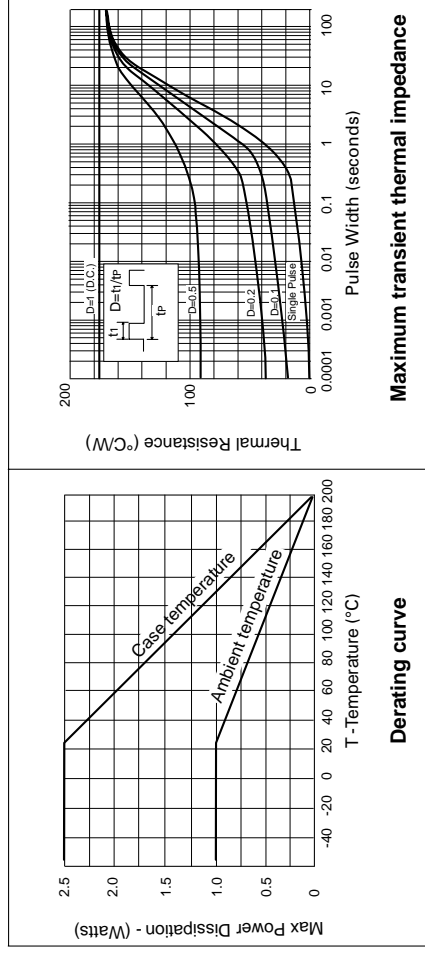
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Transition Frequency	$f_T$	100			MHz	$I_C=50mA, V_{CE}=5V$ $f=50MHz$
Input Capacitance	$C_{ibo}$		225		pF	$V_{EB}=0.5V, f=1MHz$
Output Capacitance	$C_{obo}$		25		pF	$V_{CB}=-10V, f=1MHz$
Switching Times	$t_{on}$		35		ns	$I_C=500mA, I_B=50mA$
	$t_{off}$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

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

### THERMAL CHARACTERISTICS

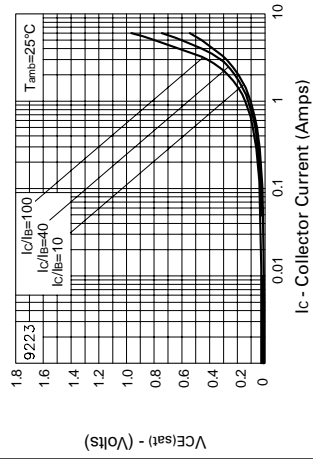
PARAMETER	SYMBOL	MAX.	UNIT
Thermal Resistance: Junction to Ambient <sub>1</sub> Junction to Ambient <sub>2</sub> Junction to Case	$R_{th(j-amb)1}$	175	$^{\circ}C/W$
	$R_{th(j-amb)2} \dagger$	116	$^{\circ}C/W$
	$R_{th(j-case)}$	70	$^{\circ}C/W$

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

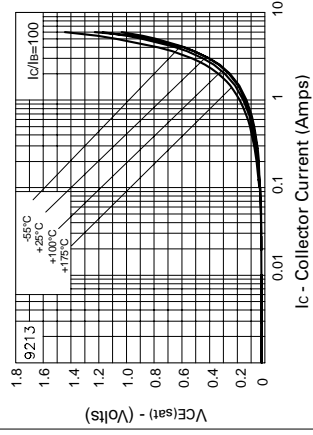


# ZTX789A

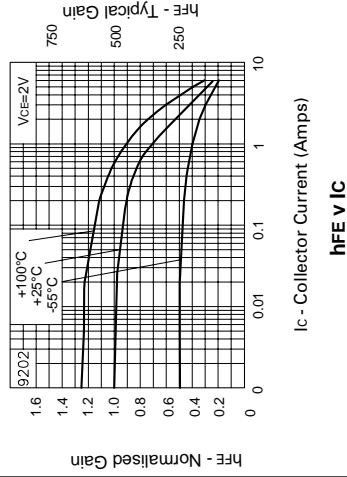
## TYPICAL CHARACTERISTICS



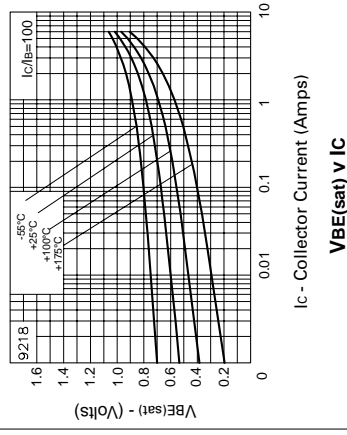
VCE(sat) v IC



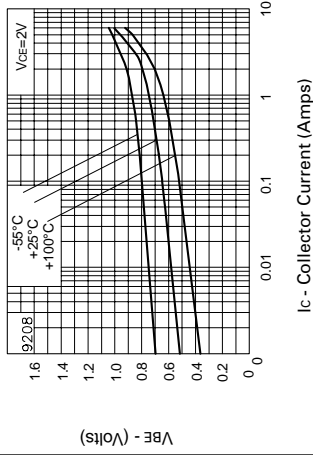
VCE(sat) v IC



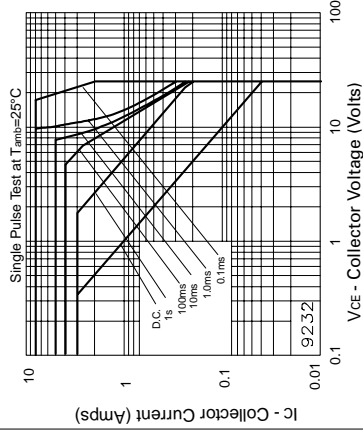
hFE v IC



VBE(sat) v IC





VBE(on) v IC



Safe Operating Area

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

-  [View ZTX789A on WIN SOURCE](#)
-  [Diodes Incorporated Information](#)

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management