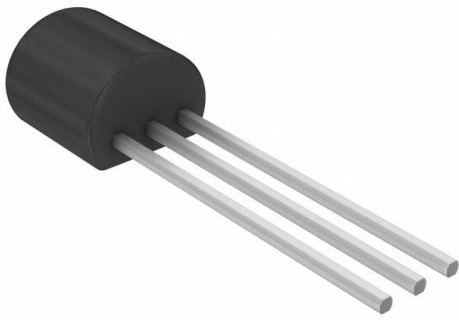


# ZTX789ASTZ Datasheet

[www.digi-electronics.com](http://www.digi-electronics.com)



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	ZTX789ASTZ-DG
Manufacturer	<a href="#">Diodes Incorporated</a>
Manufacturer Product Number	ZTX789ASTZ
Description	TRANS PNP 25V 3A E-LINE
Detailed Description	Bipolar (BJT) Transistor PNP 25 V 3 A 100MHz 1 W Th rough Hole E-Line (TO-92 compatible)



Tel: +00 852-30501935

RFQ Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)

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## Purchase and inquiry

Manufacturer Product Number:

ZTX789ASTZ

Series:

-

Transistor Type:

PNP

Voltage - Collector Emitter Breakdown (Max):

25 V

Current - Collector Cutoff (Max):

100nA (ICBO)

Power - Max:

1 W

Operating Temperature:

-55°C ~ 200°C (TJ)

Package / Case:

E-Line-3, Formed Leads

Base Product Number:

ZTX789

Manufacturer:

Diodes Incorporated

Product Status:

Active

Current - Collector (Ic) (Max):

3 A

Vce Saturation (Max) @ Ib, Ic:

500mV @ 100mA, 3A

DC Current Gain (hFE) (Min) @ Ic, Vce:

300 @ 10mA, 2V

Frequency - Transition:

100MHz

Mounting Type:

Through Hole

Supplier Device Package:

E-Line (TO-92 compatible)

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.29.0075

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

# PNP SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

## ZTX789A

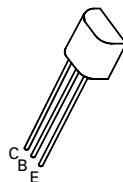
ISSUE 2 – APRIL 94

### 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**

### 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	$V_{CE(sat)}$			-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	$V_{BE(sat)}$			-1.0	V	$I_C=1\text{A}, I_B=10\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-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		$I_C=10\text{mA}, V_{CE}=-2\text{V}$ $I_C=1\text{A}, V_{CE}=-2\text{V}^*$ $I_C=2\text{A}, V_{CE}=-2\text{V}^*$ $I_C=6\text{A}, V_{CE}=-2\text{V}^*$

# ZTX789A

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

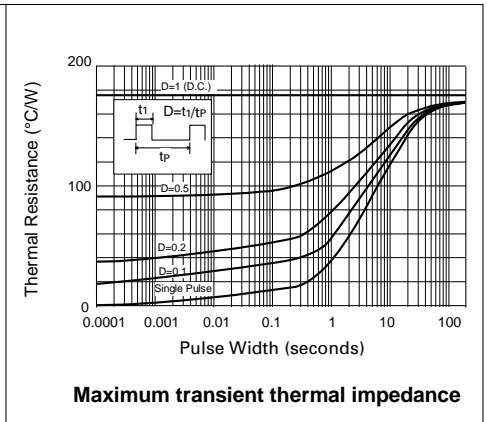
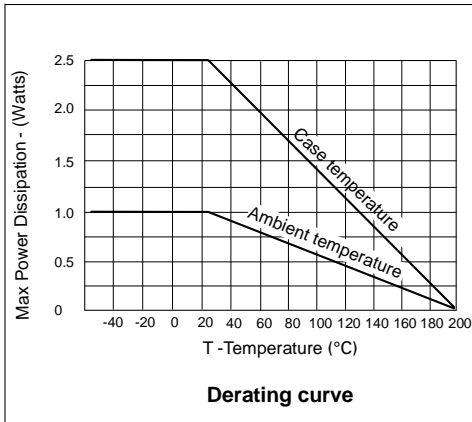
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Transition Frequency	$f_T$	100			MHz	$I_C = -50\text{mA}$ , $V_{CE} = -5\text{V}$ $f = 50\text{MHz}$
Input Capacitance	$C_{ibo}$		225		pF	$V_{EB} = -0.5\text{V}$ , $f = 1\text{MHz}$
Output Capacitance	$C_{obo}$		25		pF	$V_{CB} = -10\text{V}$ , $f = 1\text{MHz}$
Switching Times	$t_{on}$ $t_{off}$		35 400		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 $\mu\text{s}$ . Duty cycle  $\leq 2\%$

## THERMAL CHARACTERISTICS

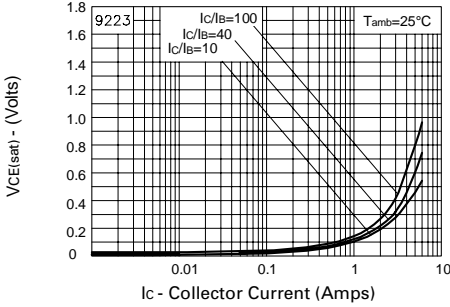
PARAMETER	SYMBOL	MAX.	UNIT
Thermal Resistance: Junction to Ambient <sub>1</sub>	$R_{th(j-amb)1}$	175	$^{\circ}\text{C/W}$
Junction to Ambient <sub>2</sub>	$R_{th(j-amb)2} \dagger$	116	$^{\circ}\text{C/W}$
Junction to Case	$R_{th(j-case)}$	70	$^{\circ}\text{C/W}$

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

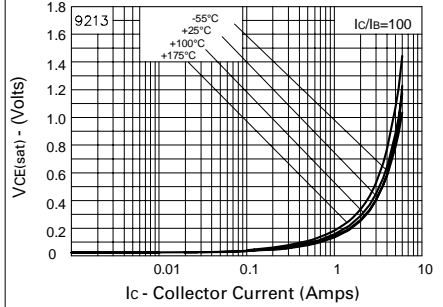


# ZTX789A

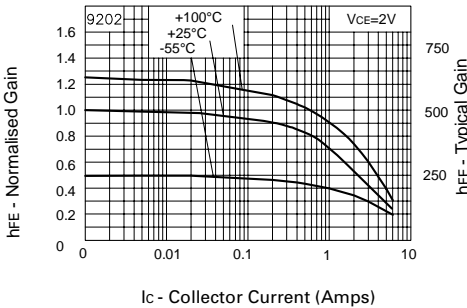
## TYPICAL CHARACTERISTICS



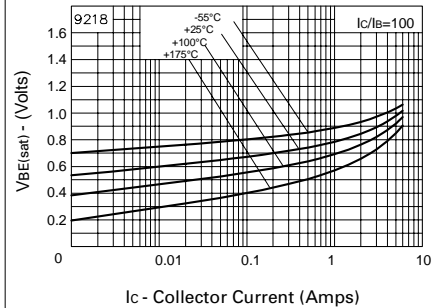
**$V_{CE(sat)}$  v  $I_C$**



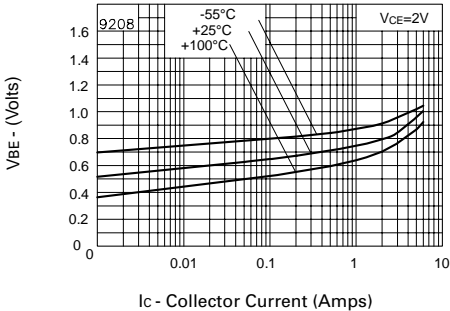
**$V_{CE(sat)}$  v  $I_C$**



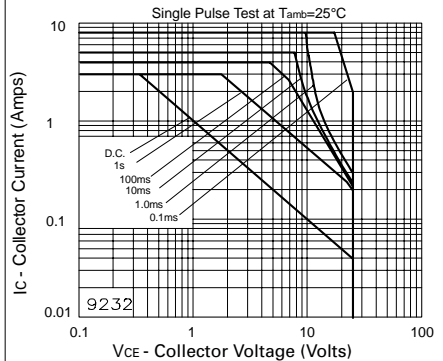
**$h_{FE}$  v  $I_C$**



**$V_{BE(sat)}$  v  $I_C$**



**$V_{BE(on)}$  v  $I_C$**



**Safe Operating Area**



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