

ZTX789A

PNP SILICON PLANAR MEDIUM POWER
HIGH GAIN TRANSISTOR

ISSUE 2 – APRIL 94

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}		35		ns	$I_C = 500\text{mA}$, $I_B = 50\text{mA}$, $V_{CE} = 10\text{V}$
	t_{off}		400		ns	

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

THERMAL CHARACTERISTICS

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

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

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

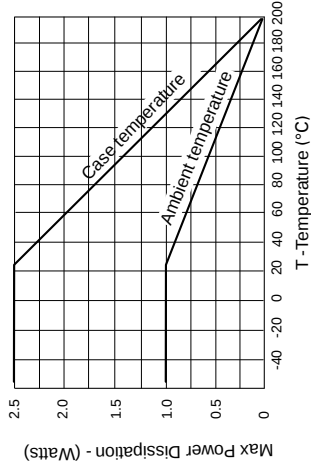
ABSOLUTE MAXIMUM RATINGS.

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°C	P_{tot}	1 5.7	W mW/ $^{\circ}\text{C}$
Operating and Storage Temperature Range	T_j, T_{sg}	-55 to +200	$^{\circ}\text{C}$

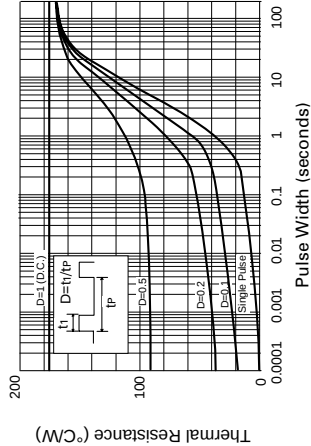
* The power which can be dissipated assuming the device is mounted in a typical manner on a P.C.B. with copper equal to 1 inch square minimum

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	μA	$V_{CB} = 15\text{V}$
Emitter Cut-Off Current	I_{EBO}			-0.1	μA	$V_{EB} = 4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			-0.25	V	$I_C = 1\text{A}$, $I_B = 10\text{mA}^*$
				-0.45	V	$I_C = 2\text{A}$, $I_B = 20\text{mA}^*$
				-0.5	V	$I_C = 3\text{A}$, $I_B = 100\text{mA}^*$
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				$I_C = 10\text{mA}$, $V_{CE} = 2\text{V}$
		250				$I_C = 1\text{A}$, $V_{CE} = 2\text{V}^*$
		200				$I_C = 2\text{A}$, $V_{CE} = 2\text{V}^*$
		100				$I_C = 6\text{A}$, $V_{CE} = 2\text{V}^*$



Derating curve



Maximum transient thermal impedance

ZTX789A

TYPICAL CHARACTERISTICS

