# NPN SILICON PLANAR MEDIUM POWER HIGH CURRENT TRANSISTOR

**ZTX851** 

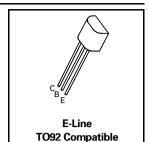
#### ISSUE 2 – AUGUST 94

#### **FEATURES**

- \* 60 Volt V<sub>CEO</sub>
- \* 5 Amps continuous current
- \* Up to 20 Amps peak current
- \* Very low saturation voltage
- \* P<sub>tot</sub>=1.2 Watts

## **APPLICATIONS**

Emergency lighting circuits



#### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V <sub>CBO</sub>	150	V
Collector-Emitter Voltage	V <sub>CEO</sub>	60	V
Emitter-Base Voltage	V <sub>EBO</sub>	6	V
Peak Pulse Current	I <sub>CM</sub>	20	Α
Continuous Collector Current	Ic	5	А
Practical Power Dissipation*	P <sub>totp</sub>	1.58	W
Power Dissipation at T <sub>amb</sub> =25°C	P <sub>tot</sub>	1.2	W
Operating and Storage Temperature Range	T <sub>j</sub> :T <sub>stg</sub>	-55 to +200	°C

<sup>\*</sup>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<sub>amb</sub> = 25°C unless otherwise stated)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	150	220		V	I <sub>C</sub> =100μA
Collector-Emitter Breakdown Voltag	V <sub>(BR)CER</sub>	150	220		V	IC=1μA, RB ≤1KΩ
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	60	85		V	I <sub>C</sub> =10mA*
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	6	8		V	I <sub>E</sub> =100μA
Collector Cut-Off Current	I <sub>CBO</sub>			50 1	nA μA	V <sub>CB</sub> =120V V <sub>CB</sub> =120V, T <sub>amb</sub> =100°C
Collector Cut-Off Current	I <sub>CER</sub> R≤1KΩ			50 1	nA μA	V <sub>CB</sub> =120V V <sub>CB</sub> =120V, T <sub>amb</sub> =100°C
Emitter Cut-Off Current	I <sub>EBO</sub>			10	nA	V <sub>EB</sub> =6V
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>		10 50 100 200	50 100 150 250	mV mV mV	I <sub>C</sub> =0.1A, I <sub>B</sub> =5mA* I <sub>C</sub> =1A, I <sub>B</sub> =50mA* I <sub>C</sub> =2A, I <sub>B</sub> =50mA* I <sub>C</sub> =5A, I <sub>B</sub> =200mA*
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>		920	1050	mV	I <sub>C</sub> =4A, I <sub>B</sub> =200mA*

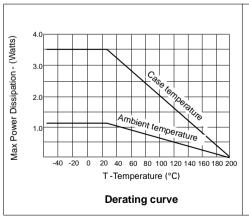
## ELECTRICAL CHARACTERISTICS (at T<sub>amb</sub> = 25°C)

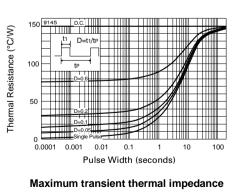
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Base-Emitter Turn-On Voltage	V <sub>BE(on)</sub>		840	950	mV	IC=4A, V <sub>CE</sub> =1V*
Static Forward Current Transfer Ratio	h <sub>FE</sub>	100 100 75 25	200 200 120 50	300		I <sub>C</sub> =10mA, V <sub>CE</sub> =1V I <sub>C</sub> =2A, V <sub>CE</sub> =1V* I <sub>C</sub> =5A, V <sub>CE</sub> =1V* I <sub>C</sub> =10A, V <sub>CE</sub> =1V*
Transition Frequency	f <sub>T</sub>		130		MHz	I <sub>C</sub> =100mA, V <sub>CE</sub> =10V f=50MHz
Output Capacitance	C <sub>obo</sub>		45		pF	V <sub>CB</sub> =10V, f=1MHz
Switching Times	t <sub>on</sub> t <sub>off</sub>		45 1100		ns ns	I <sub>C</sub> =1A, I <sub>B!</sub> =100mA I <sub>B2</sub> =100mA, V <sub>CC</sub> =10V

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

## THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	MAX.	UNIT
Thermal Resistance: Junction to Ambient	R <sub>th(j-amb)</sub>	150	%C/W
Junction to Case	R <sub>th(j-case)</sub>	50	%C/W





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## **TYPICAL CHARACTERISTICS**

