## ELECTRICAL CHARACTERISTICS (at $T_{amb}$ = 25°C)

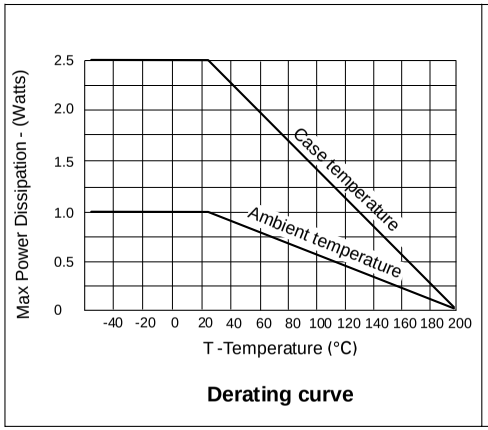
| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS. |
|---|---|---|---|---|---|---|
| Transition Frequency | $f_T$ | 130 | | | MHz | $I_C$=50mA, $V_{CE}$=5V f=50MHz |
| Input Capacitance | $C_{ibo}$ | | 200 | | pF | $V_{EB}$=0.5V, f=1MHz |
| Output Capacitance | $C_{obo}$ | | 9 | | pF | $V_{CB}$=10V, f=1MHz |
| Switching Times | $t_{on}$<br>$t_{off}$ | | 80<br>2900 | | ns<br>ns | $I_C$=100mA, $I_{B!}$=10mA<br>$I_{B2}$=10mA, $V_{CC}$=50V |

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

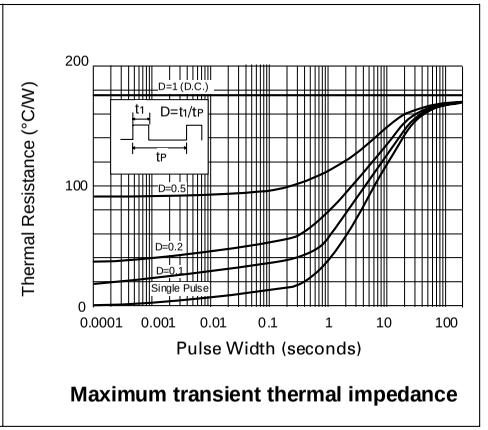
## THERMAL CHARACTERISTICS

| PARAMETER | SYMBOL | MAX. | UNIT |
|---|---|---|---|
| Thermal Resistance:Junction to Ambient$_1$<br>Junction to Ambient$_2$<br>Junction to Case | $R_{th(j-amb)1}$<br>$R_{th(j-amb)2}$†<br>$R_{th(j-case)}$ | 175<br>116<br>70 | °C/W<br>°C/W<br>°C/W |

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




**Derating curve**




**Maximum transient thermal impedance**



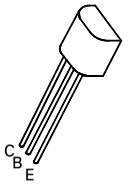
# NPN SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

ZTX694B

**ISSUE 1 – APRII 94**

FEATURES
* 120 Volt $V_{CEO}$
* Gain of 400 at $I_C$=200mA
* Very low saturation voltage

APPLICATIONS
* Darlington replacement
* Relay / solenoid driver
* Battery powered circuits
* Motor drivers




**E-Line**
**TO92 Compatible**

## ABSOLUTE MAXIMUM RATINGS.

| PARAMETER | SYMBOL | VALUE | UNIT |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 120 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 120 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 5 | V |
| Peak Pulse Current | $I_{CM}$ | 1 | A |
| Continuous Collector Current | $I_C$ | 0.5 | A |
| Practical Power Dissipation* | $P_{totp}$ | 1.5 | W |
| Power Dissipation $T_{amb}$=25°C<br>derate above 25°C | $P_{tot}$ | 1<br>5.7 | W<br>mW/°C |
| Operating and Storage Temperature Range | $T_j$:$T_{stg}$ | -55 to +200 | °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°C)

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS. |
|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | 120 | | | V | $I_C$=100μA |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | 120 | | | V | $I_C$=10mA* |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | 5 | | | V | $I_E$=100μA |
| Collector Cut-Off Current | $I_{CBO}$ | | | 0.1 | μA | $V_{CB}$=100V |
| Emitter Cut-Off Current | $I_{EBO}$ | | | 0.1 | μA | $V_{EB}$=4V |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | | | 0.25<br>0.5 | V<br>V | $I_C$=100mA, $I_B$=0.5mA*<br>$I_C$=400mA, $I_B$=5mA* |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | | | 0.9 | V | $I_C$=1A, $I_B$=10mA* |
| Base-Emitter Turn-On Voltage | $V_{BE(on)}$ | | | 0.9 | V | IC=1A, $V_{CE}$=2V* |
| Static Forward Current Transfer Ratio | $h_{FE}$ | 500<br>400<br>150 | | | | $I_C$=100mA, $V_{CE}$=2V*<br>$I_C$=200mA, $V_{CE}$=2V*<br>$I_C$=400mA, $V_{CE}$=2V* |

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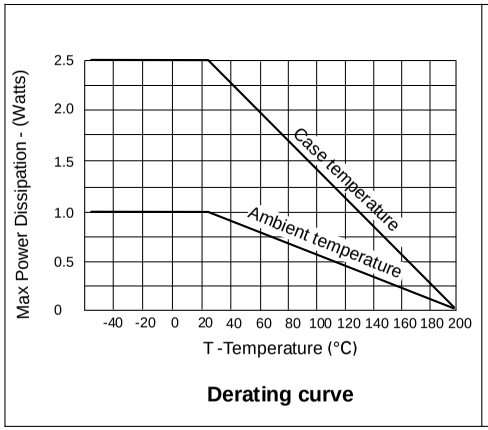
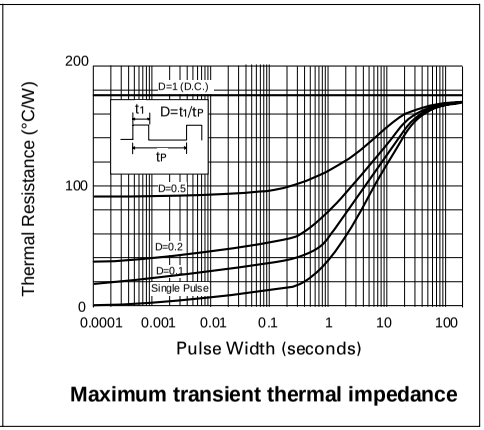



**Derating curve**

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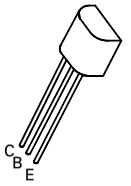


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| Peak Pulse Current | $I_{CM}$ | 1 | A |
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| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | 5 | | | V | $I_E$=100μA |
| Collector Cut-Off Current | $I_{CBO}$ | | | 0.1 | μA | $V_{CB}$=100V |
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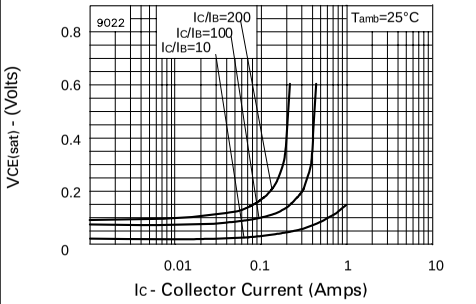
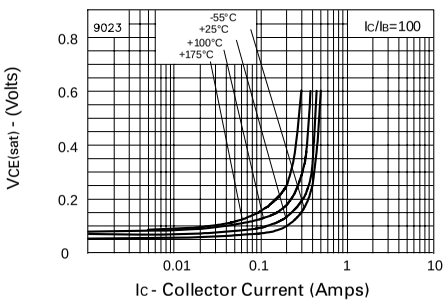
| Static Forward Current Transfer Ratio | $h_{FE}$ | 500<br>400<br>150 | | | | $I_C$=100mA, $V_{CE}$=2V*<br>$I_C$=200mA, $V_{CE}$=2V*<br>$I_C$=400mA, $V_{CE}$=2V* |

# ZTX694B

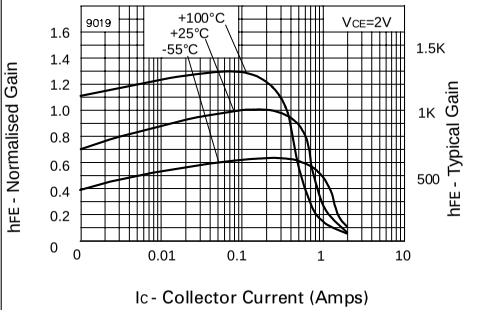
## TYPICAL CHARACTERISTICS



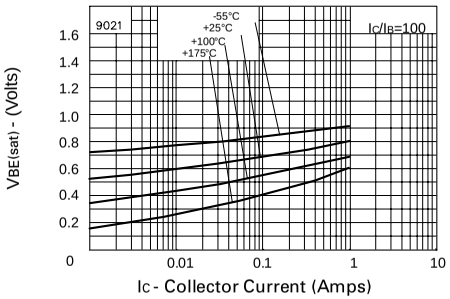

**VCE(sat) v IC**



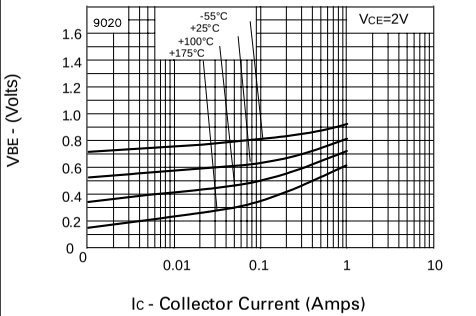

**VCE(sat) v IC**



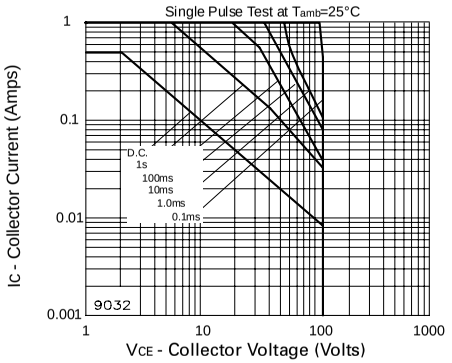

**hFE v IC**




**VBE(sat) v IC**




**VBE(on) v IC**




**Safe Operating Area**