

ZTX958

PNP SILICON PLANAR MEDIUM POWER HIGH CURRENT TRANSISTOR

ISSUE 3 – JUNE 94

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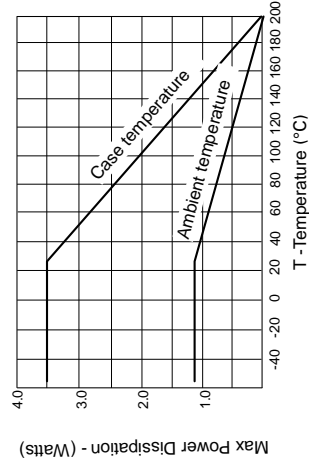
ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C)

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS. |
|---------------------------------------|-------------------------------------|------|------|------|------|--|
| Base-Emitter Turn-On Voltage | V _{BE(on)} | | -690 | -800 | mV | I _C =-500mA, V _{CE} =-10V* |
| Static Forward Current Transfer Ratio | h _{FE} | 100 | 200 | 300 | | I _C =-10mA, V _{CE} =-10V* |
| | | 100 | 200 | 300 | | I _C =-500mA, V _{CE} =-10V* |
| | | 10 | 20 | | | I _C =-1A, V _{CE} =-10V* |
| Transition Frequency | f _T | | 85 | | MHz | I _C =-100mA, V _{CE} =-10V, f=50MHz |
| Output Capacitance | C _{obbo} | | 19 | | pF | V _{CE} =-20V, f=1MHz |
| Switching Times | t _{on} t _{off} | | 104 | | ns | I _C =-500mA, I _B =-50mA |
| | | | 2400 | | ns | I _B =-50mA, V _{CE} =-100V |

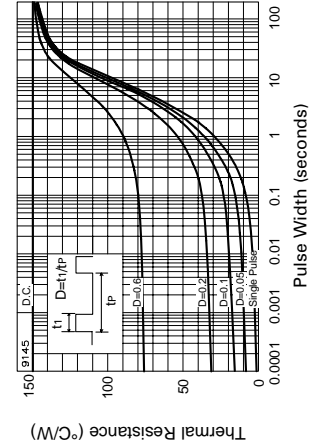
*Measured under pulsed conditions. Pulse width=300µs. Duty cycle ≤2%

THERMAL CHARACTERISTICS

| PARAMETER | SYMBOL | MAX. | UNIT |
|---|-------------------------|------|------|
| Thermal Resistance: Junction to Ambient Junction to Case | R _{th(j-amb)} | 150 | °C/W |
| | R _{th(j-case)} | 50 | °C/W |



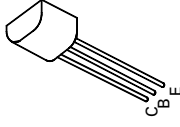
Derating curve



Maximum transient thermal impedance

FEATURES

- * 0.5 Amp continuous current
- * Up to 1.5 Amps peak current
- * Very low saturation voltage
- * Excellent gain characteristics up to 1 Amp
- * Spice model available



E-Line
TO92 Compatible

ABSOLUTE MAXIMUM RATINGS.

| PARAMETER | SYMBOL | VALUE | UNIT |
|---|----------------------------------|-------------|------|
| Collector-Base Voltage | V _{CB0} | -400 | V |
| Collector-Emitter Voltage | V _{CEO} | -400 | V |
| Emitter-Base Voltage | V _{EBO} | -6 | V |
| Peak Pulse Current | I _{CM} | -1.5 | A |
| Continuous Collector Current | I _C | -0.5 | A |
| Practical Power Dissipation* | P _{totp} | 1.58 | W |
| Power Dissipation at T _{amb} =25°C | P _{tot} | 1.2 | W |
| Operating and Storage Temperature Range | T _J ; T _{sg} | -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 unless otherwise stated)

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS. |
|--------------------------------------|---------------------------------------|------|------|-----------|----------|---|
| Collector-Base Breakdown Voltage | V _{(BR)CBO} | -400 | -600 | | V | I _C =-100µA |
| Collector-Emitter Breakdown Voltage | V _{(BR)CER} | -400 | -600 | | V | I _C =-1µA, R _B ≤1KΩ |
| Collector-Emitter Breakdown Voltage | V _{(BR)CEO} | -400 | -550 | | V | I _C =-10mA* |
| Emitter-Base Breakdown Voltage | V _{(BR)EBO} | -6 | -8 | | V | I _E =-100µA |
| Collector Cut-Off Current | I _{CBO} | | | -50 -1 | nA µA | V _{CB} =-300V V _{CB} =-300V, T _{amb} =100°C |
| Collector Cut-Off Current | I _{CER} R _{≤1KΩ} | | | -50 -1 | nA µA | V _{CB} =-300V V _{CB} =-300V, T _{amb} =100°C |
| Emitter Cut-Off Current | I _{EBO} | | | -10 | nA | V _{EB} =-6V |
| Collector-Emitter Saturation Voltage | V _{CE(sat)} | | -100 | -150 | mV | I _C =-10mA, I _B =-1mA* |
| | | | -150 | -200 | mV | I _C =-100mA, I _B =-10mA* |
| | | | -300 | -400 | mV | I _C =-500mA, I _B =-100mA* |
| Base-Emitter Saturation Voltage | V _{BE(sat)} | | -790 | -900 | mV | I _C =-500mA, I _B =-100mA* |

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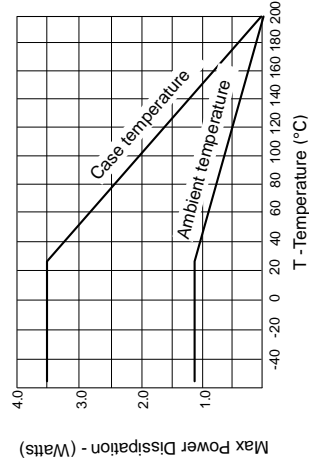
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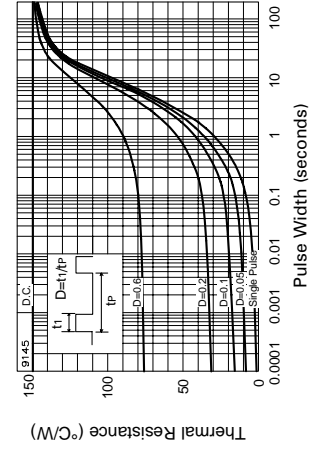
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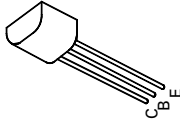
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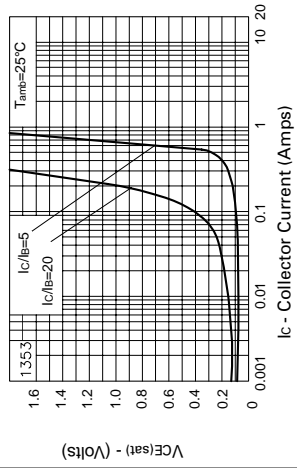
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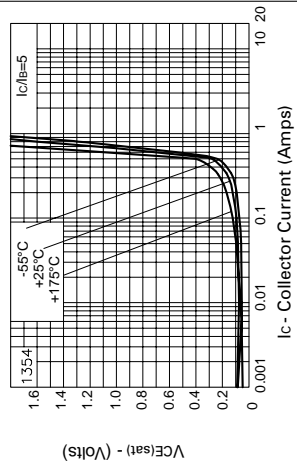
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| Emitter-Base Breakdown Voltage | V _{(BR)EBO} | -6 | -8 | | V | I _E =-100µA |
| Collector Cut-Off Current | I _{CBO} | | | -50 | nA | V _{CB} =-300V |
| | | | | -1 | µA | V _{CB} =-300V, T _{amb} =100°C |
| Collector Cut-Off Current | I _{CER} R ≤ 1KΩ | | | -50 | nA | V _{CB} =-300V |
| | | | | -1 | µA | V _{CB} =-300V, T _{amb} =100°C |
| Emitter Cut-Off Current | I _{EBO} | | | -10 | nA | V _{EB} =-6V |
| | | | | -150 | mV | I _C =-10mA, I _B =-1mA* |
| Collector-Emitter Saturation Voltage | V _{CE(sat)} | | | -200 | mV | I _C =-100mA, I _B =-10mA* |
| | | | | -400 | mV | I _C =-500mA, I _B =-100mA* |
| | | | | -900 | mV | I _C =-500mA, I _B =-100mA* |
| Base-Emitter Saturation Voltage | V _{BE(sat)} | | | -900 | mV | I _C =-500mA, I _B =-100mA* |

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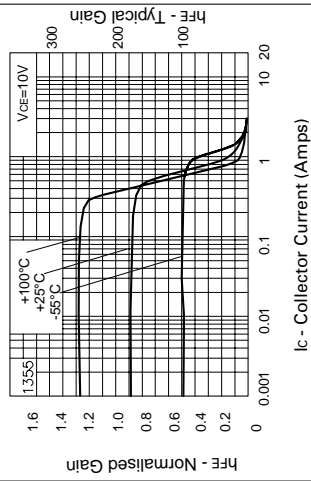
TYPICAL CHARACTERISTICS



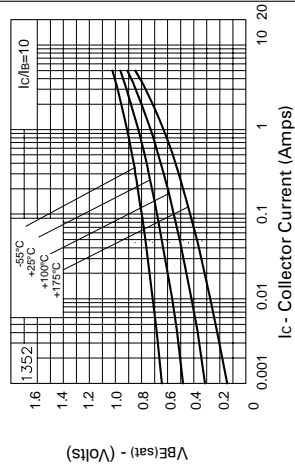
VCE(sat) v IC



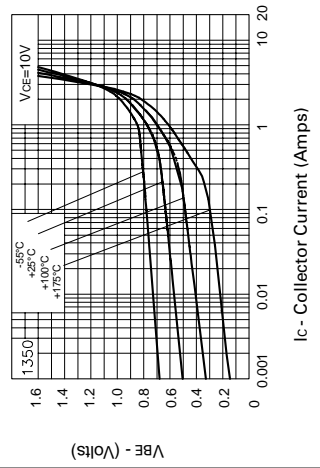
VCE(sat) v IC



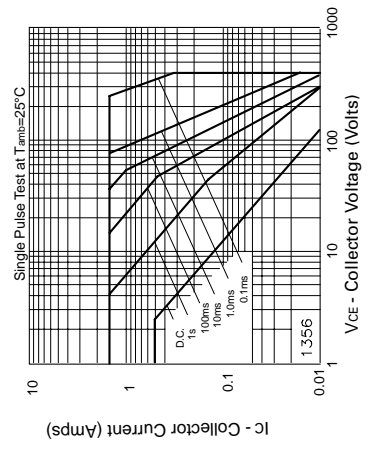
hFE v IC



VBE(sat) v IC



VBE(on) v IC



Safe Operating Area