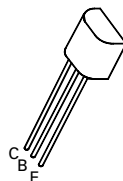


PNP SILICON PLANAR MEDIUM POWER HIGH CURRENT TRANSISTOR

ISSUE 4 – JUNE 94

ZTX951

- * 4 Amps continuous current
- * Up to 15 Amps peak current
- * Very low saturation voltage
- * Excellent gain up to 10 Amps
- * Spice model available



E-Line
TO92 Compatible

ABSOLUTE MAXIMUM RATINGS.

| PARAMETER | SYMBOL | VALUE | UNIT |
|--|----------------|-------------|-------------|
| Collector-Base Voltage | V_{CBO} | -100 | V |
| Collector-Emitter Voltage | V_{CEO} | -60 | V |
| Emitter-Base Voltage | V_{EBO} | -6 | V |
| Peak Pulse Current | I_{CM} | -15 | A |
| Continuous Collector Current | I_C | -4 | A |
| Practical Power Dissipation* | P_{totp} | 1.58 | W |
| Power Dissipation at $T_{amb}=25^{\circ}C$ | P_{tot} | 1.2 | W |
| Operating and Storage Temperature Range | $T_j; T_{stg}$ | -55 to +200 | $^{\circ}C$ |

*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 $T_{amb} = 25^{\circ}C$ unless otherwise stated)

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS. |
|--------------------------------------|--------------------------------|------|----------------------------|-----------------------------|----------------------|--|
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | -100 | -140 | | V | $I_C = -100\mu A$ |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CER}$ | -100 | -140 | | V | $I_C = -1\mu A, R_B \leq 1K\Omega$ |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | -60 | -90 | | V | $I_C = -10mA^*$ |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | -6 | -8 | | V | $I_E = -100\mu A$ |
| Collector Cut-Off Current | I_{CBO} | | | -50 -1 | nA μA | $V_{CB} = -80V$ $V_{CB} = -80V, T_{amb} = 100^{\circ}C$ |
| Collector Cut-Off Current | I_{CER} $R \leq 1K\Omega$ | | | -50 -1 | nA μA | $V_{CB} = -80V$ $V_{CB} = -80V, T_{amb} = 100^{\circ}C$ |
| Emitter Cut-Off Current | I_{EBO} | | | -10 | nA | $V_{EB} = -6V$ |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | | -15 -60 -120 -220 | -50 -100 -160 -300 | mV mV mV mV | $I_C = -100mA, I_B = -10mA^*$ $I_C = -1A, I_B = -100mA^*$ $I_C = -2A, I_B = -200mA^*$ $I_C = -4A, I_B = -400mA^*$ |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | | -960 | -1100 | mV | $I_C = -4A, I_B = -400mA^*$ |

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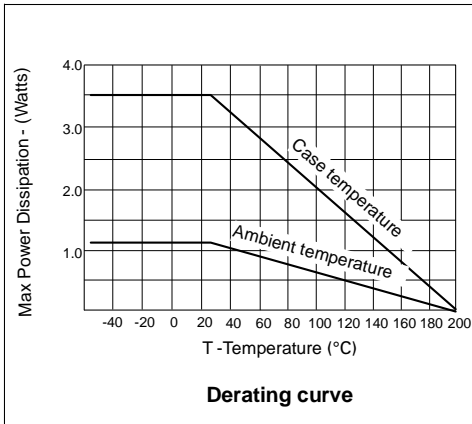
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$)

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS. |
|---------------------------------------|-----------------------|------------------------|-------------------------|-------|----------|---|
| Base-Emitter Turn-On Voltage | $V_{BE(on)}$ | | -850 | -1000 | mV | $I_C = -4\text{A}$, $V_{CE} = -1\text{V}^*$ |
| Static Forward Current Transfer Ratio | h_{FE} | 100 100 75 10 | 200 200 120 25 | 300 | | $I_C = -10\text{mA}$, $V_{CE} = -1\text{V}^*$ $I_C = -1\text{A}$, $V_{CE} = -1\text{V}^*$ $I_C = -4\text{A}$, $V_{CE} = -1\text{V}^*$ $I_C = -10\text{A}$, $V_{CE} = -1\text{V}^*$ |
| Transition Frequency | f_T | | 120 | | MHz | $I_C = -100\text{mA}$, $V_{CE} = -10\text{V}$ $f = 50\text{MHz}$ |
| Output Capacitance | C_{obo} | | 74 | | pF | $V_{CB} = -10\text{V}$, $f = 1\text{MHz}$ |
| Switching Times | t_{on} t_{off} | | 82 350 | | ns ns | $I_C = -2\text{A}$, $I_{B1} = -200\text{mA}$ $I_{B2} = -200\text{mA}$, $V_{CC} = -10\text{V}$ |

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

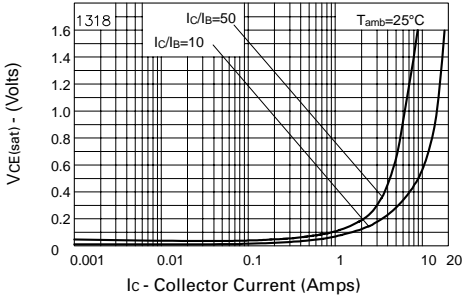
THERMAL CHARACTERISTICS

| PARAMETER | SYMBOL | MAX. | UNIT |
|---|-------------------------------------|-----------|--|
| Thermal Resistance: Junction to Ambient Junction to Case | $R_{th(j-amb)}$ $R_{th(j-case)}$ | 150 50 | $^{\circ}\text{C/W}$ $^{\circ}\text{C/W}$ |

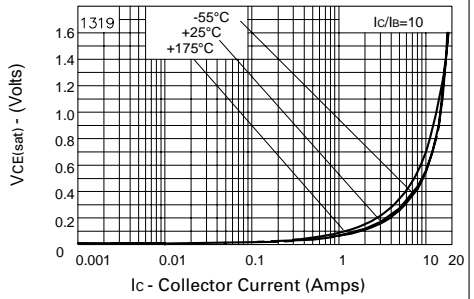


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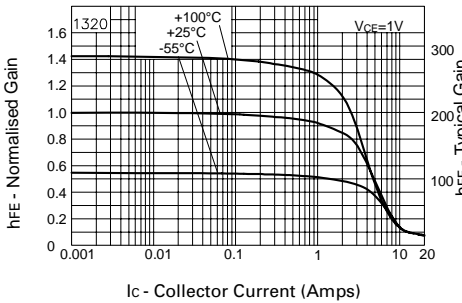
TYPICAL CHARACTERISTICS



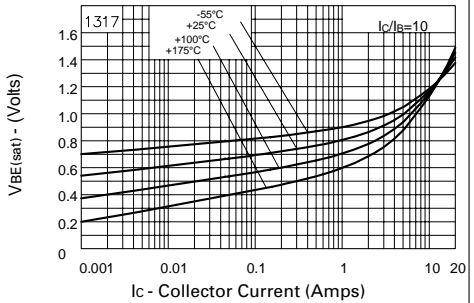
$V_{CE(sat)}$ v I_C



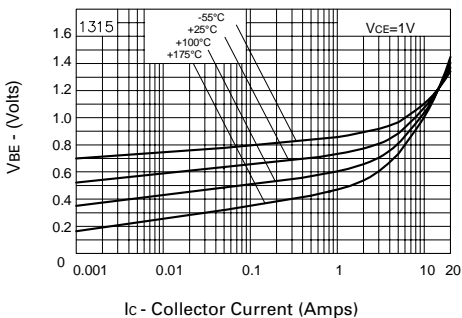
$V_{CE(sat)}$ v I_C



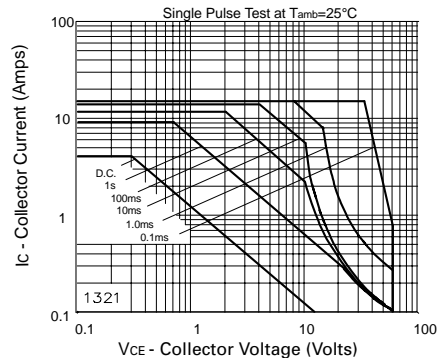
hFE v I_C



$V_{BE(sat)}$ v I_C



$V_{BE(on)}$ v I_C



Safe Operating Area