

SOT223 PNP SILICON PLANAR HIGH CURRENT (HIGH PERFORMANCE) TRANSISTORS

FZT951
FZT953

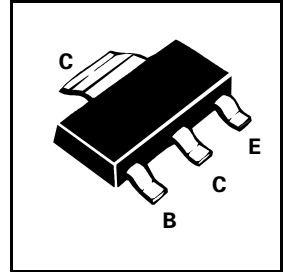
ISSUE 3 - APRIL 2000

FEATURES

- * 5 Amps continuous current , up to 15 Amps peak current
- * Very low saturation voltages
- * Excellent gain characteristics specified up to 10 Amps
- * **$P_{tot} = 3 \text{ watts}$**
- * FZT951 exhibits extremely low equivalent on resistance;
 $R_{CE(sat)} = 55\text{m}\Omega \text{ at } 4\text{A}$

COMPLEMENTARY TYPES - FZT951 = FZT851
FZT953 = FZT853

PARTMARKING DETAILS - DEVICE TYPE IN FULL



ABSOLUTE MAXIMUM RATINGS.

| PARAMETER | SYMBOL | FZT951 | FZT953 | UNIT |
|---|----------------|-------------|--------|------------------|
| Collector-Base Voltage | V_{CBO} | -100 | -140 | V |
| Collector-Emitter Voltage | V_{CEO} | -60 | -100 | V |
| Emitter-Base Voltage | V_{EBO} | -6 | | V |
| Peak Pulse Current | I_{CM} | -15 | -10 | A |
| Continuous Collector Current | I_C | -5 | | A |
| Power Dissipation at $T_{amb}=25^\circ\text{C}$ | P_{tot} | 3 | | W |
| Operating and Storage Temperature Range | $T_j; T_{stg}$ | -55 to +150 | | $^\circ\text{C}$ |

*The power which can be dissipated assuming the device is mounted in a typical manner on a P.C.B. with copper equal to 4 square inch minimum

FZT951

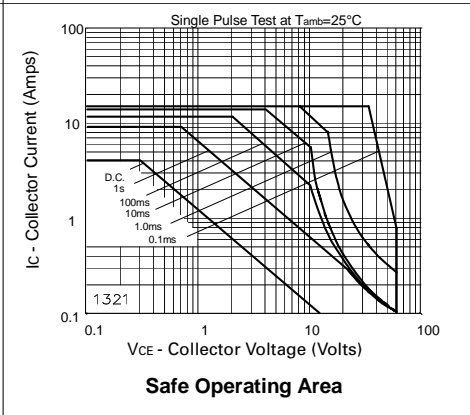
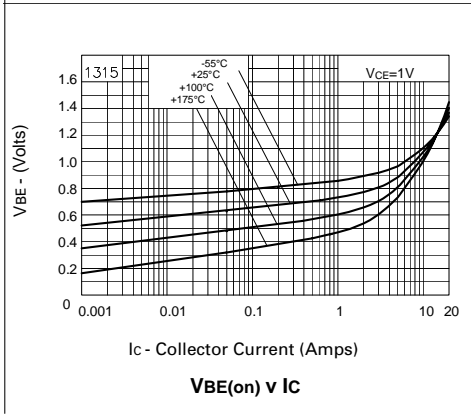
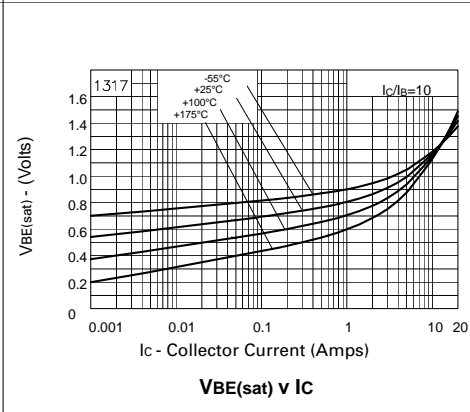
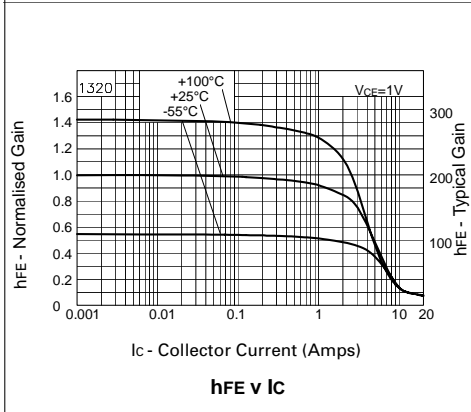
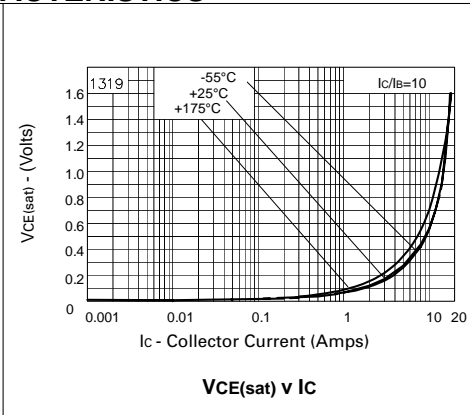
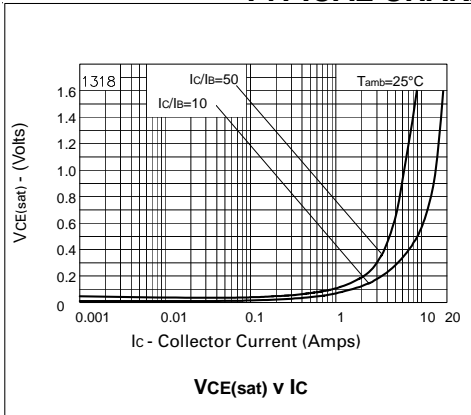
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS. |
|---------------------------------------|---------------------------------------|------------------------|----------------------------|-----------------------------|----------------------|---|
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | -100 | -140 | | V | $I_C = -100\mu\text{A}$ |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CER}$ | -100 | -140 | | V | $I_C = -1\mu\text{A}$, $R_B \leq 1\text{k}\Omega$ |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | -60 | -90 | | V | $I_C = -10\text{mA}^*$ |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | -6 | -8 | | V | $I_E = -100\mu\text{A}$ |
| Collector Cut-Off Current | I_{CBO} | | | -50 -1 | nA μA | $V_{CB} = -80\text{V}$ $V_{CB} = -80\text{V}$, $T_{amb} = 100^{\circ}\text{C}$ |
| Collector Cut-Off Current | I_{CER} $R \leq 1\text{k}\Omega$ | | | -50 -1 | nA μA | $V_{CB} = -80\text{V}$ $V_{CB} = -80\text{V}$, $T_{amb} = 100^{\circ}\text{C}$ |
| Emitter Cut-Off Current | I_{EBO} | | | -10 | nA | $V_{EB} = -6\text{V}$ |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | | -20 -85 -155 -370 | -50 -140 -210 -460 | mV mV mV mV | $I_C = -100\text{mA}$, $I_B = -10\text{mA}^*$ $I_C = -1\text{A}$, $I_B = -100\text{mA}^*$ $I_C = -2\text{A}$, $I_B = -200\text{mA}^*$ $I_C = -5\text{A}$, $I_B = -500\text{mA}^*$ |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | | -1080 | -1240 | mV | $I_C = -5\text{A}$, $I_B = -500\text{mA}^*$ |
| Base-Emitter Turn-On Voltage | $V_{BE(on)}$ | | -935 | -1070 | mV | $I_C = -5\text{A}$, $V_{CE} = -1\text{V}^*$ |
| Static Forward Current Transfer Ratio | h_{FE} | 100 100 75 10 | 200 200 90 25 | 300 | | $I_C = -10\text{mA}$, $V_{CE} = -1\text{V}^*$ $I_C = -2\text{A}$, $V_{CE} = -1\text{V}^*$ $I_C = -5\text{A}$, $V_{CE} = -1\text{V}^*$ $I_C = -10\text{A}$, $V_{CE} = -1\text{V}^*$ |
| 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 $\leq 2\%$
Spice parameter data is available upon request for this device

FZT951

TYPICAL CHARACTERISTICS



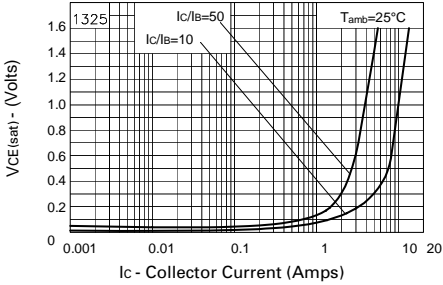
FZT953

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

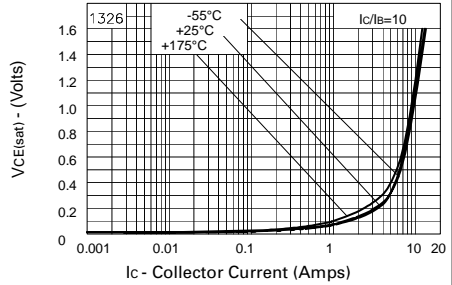
| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS. |
|--------------------------------------|---------------------------------------|------------------------|------------------------------|-----------------------------|----------------------|---|
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | -140 | -170 | | V | $I_C = -100\mu\text{A}$ |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CER}$ | -140 | -170 | | V | $I_C = -1\mu\text{A}$, $R_B \leq 1\text{k}\Omega$ |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | -100 | -120 | | V | $I_C = -10\text{mA}^*$ |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | -6 | -8 | | V | $I_E = -100\mu\text{A}$ |
| Collector Cut-Off Current | I_{CBO} | | | -50 -1 | nA μA | $V_{CB} = -100\text{V}$ $V_{CB} = -100\text{V}$, $T_{amb} = 100^{\circ}\text{C}$ |
| Collector Cut-Off Current | I_{CER} $R \leq 1\text{k}\Omega$ | | | -50 -1 | nA μA | $V_{CB} = -100\text{V}$ $V_{CB} = -100\text{V}$, $T_{amb} = 100^{\circ}\text{C}$ |
| Emitter Cut-Off Current | I_{EBO} | | | -10 | nA | $V_{EB} = -6\text{V}$ |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | | -20 -90 -160 -300 | -50 -115 -220 -420 | mV mV mV mV | $I_C = -100\text{mA}$, $I_B = -10\text{mA}^*$ $I_C = -1\text{A}$, $I_B = -100\text{mA}^*$ $I_C = -2\text{A}$, $I_B = -200\text{mA}^*$ $I_C = -4\text{A}$, $I_B = -400\text{mA}^*$ |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | | -1010 | -1170 | mV | $I_C = -4\text{A}$, $I_B = -400\text{mA}^*$ |
| Base-Emitter Turn-On Voltage | $V_{BE(on)}$ | | -925 | -1160 | mV | $I_C = -4\text{A}$, $V_{CE} = -1\text{V}^*$ |
| Static Forward Current Transfer | h_{FE} | 100 100 50 30 | 200 200 90 50 15 | 300 | | $I_C = -10\text{mA}$, $V_{CE} = -1\text{V}^*$ $I_C = -1\text{A}$, $V_{CE} = -1\text{V}^*$ $I_C = -3\text{A}$, $V_{CE} = -1\text{V}^*$ $I_C = -4\text{A}$, $V_{CE} = -1\text{V}^*$ $I_C = -10\text{A}$, $V_{CE} = -1\text{V}^*$ |
| Transition Frequency | f_T | | 125 | | MHz | $I_C = -100\text{mA}$, $V_{CE} = -10\text{V}$ $f = 50\text{MHz}$ |
| Output Capacitance | C_{obo} | | 65 | | pF | $V_{CB} = -10\text{V}$, $f = 1\text{MHz}$ |
| Switching Times | t_{on} t_{off} | | 110 460 | | 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 $\leq 2\%$
Spice parameter data is available upon request for this device

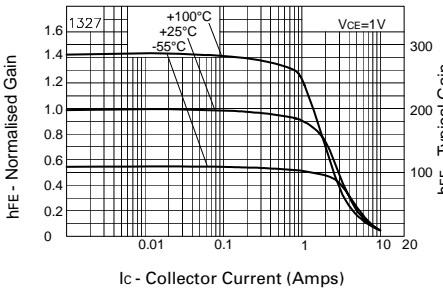
TYPICAL CHARACTERISTICS



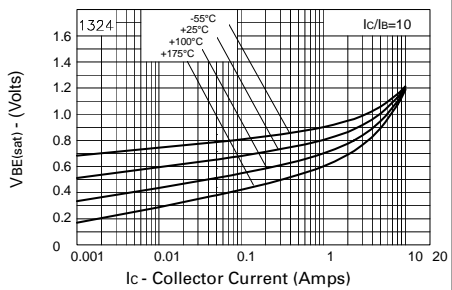
VCE(sat) v IC



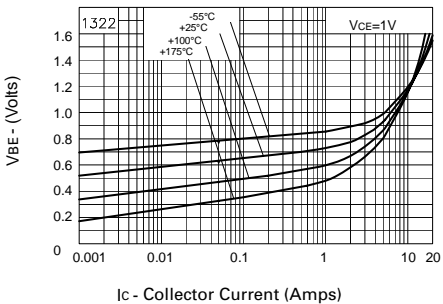
VCE(sat) v IC



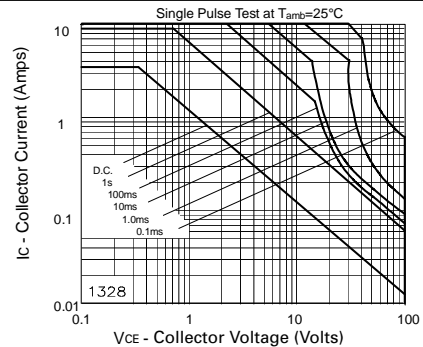
hFE v IC



VBE(sat) v IC



VBE(on) v IC



Safe Operating Area

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Diodes Incorporated:](#)

[FZT951TA](#)