

# SOT223 PNP SILICON PLANAR HIGH CURRENT (HIGH PERFORMANCE) TRANSISTORS

ISSUE 3 – MARCH 2005

FZT955  
FZT956

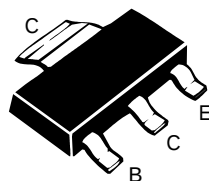
## FEATURES

- \* 4 Amps continuous current (10 Amps peak current)
- \* Very low saturation voltages
- \* Excellent gain characteristics specified up to 3 Amps

PARTMARKING DETAILS – DEVICE TYPE IN FULL

COMPLEMENTARY TYPES – FZT955 - FZT855

FZT956 - N/A



## ABSOLUTE MAXIMUM RATINGS.

| PARAMETER                                  | SYMBOL         | FZT955      | FZT956 | UNIT        |
|--------------------------------------------|----------------|-------------|--------|-------------|
| Collector-Base Voltage                     | $V_{CBO}$      | -180        | -220   | V           |
| Collector-Emitter Voltage                  | $V_{CEO}$      | -140        | -200   | V           |
| Emitter-Base Voltage                       | $V_{EBO}$      | -6          |        | V           |
| Peak Pulse Current                         | $I_{CM}$       | -10         | -5     | A           |
| Continuous Collector Current               | $I_C$          | -4          | -2     | A           |
| Power Dissipation at $T_{amb}=25^{\circ}C$ | $P_{tot}$      | 3           |        | W           |
| Operating and Storage Temperature Range    | $T_j; T_{stg}$ | -55 to +150 |        | $^{\circ}C$ |

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

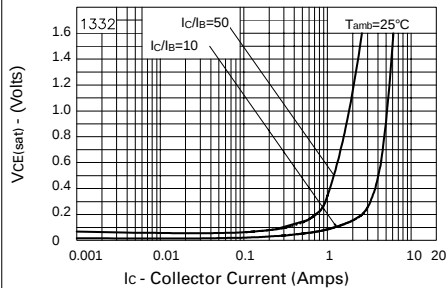
# FZT955

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

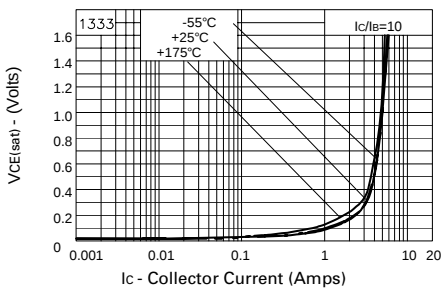
| PARAMETER                             | SYMBOL                                | MIN.             | TYP.                       | MAX.                        | UNIT                 | CONDITIONS.                                                                                                                                                                                     |
|---------------------------------------|---------------------------------------|------------------|----------------------------|-----------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Collector-Base Breakdown Voltage      | $V_{(BR)CBO}$                         | -180             | -210                       |                             | V                    | $I_C = -100\mu\text{A}$                                                                                                                                                                         |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CER}$                         | -180             | -210                       |                             | V                    | $I_C = -1\mu\text{A}$ , $R_B \leq 1\text{k}\Omega$                                                                                                                                              |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CEO}$                         | -140             | -170                       |                             | 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<br>-1                   | nA<br>$\mu\text{A}$  | $V_{CB} = -150\text{V}$<br>$V_{CB} = -150\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$                                                                                                            |
| Collector Cut-Off Current             | $I_{CER}$<br>$R \leq 1\text{k}\Omega$ |                  |                            | -50<br>-1                   | nA<br>$\mu\text{A}$  | $V_{CB} = -150\text{V}$<br>$V_{CB} = -150\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$                                                                                                            |
| Emitter Cut-Off Current               | $I_{EBO}$                             |                  |                            | -10                         | nA                   | $V_{EB} = -6\text{V}$                                                                                                                                                                           |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$                         |                  | -30<br>-70<br>-110<br>-275 | -60<br>-120<br>-150<br>-370 | mV<br>mV<br>mV<br>mV | $I_C = -100\text{mA}$ , $I_B = -5\text{mA}^*$<br>$I_C = -500\text{mA}$ , $I_B = -50\text{mA}^*$<br>$I_C = -1\text{A}$ , $I_B = -100\text{mA}^*$<br>$I_C = -3\text{A}$ , $I_B = -300\text{mA}^*$ |
| Base-Emitter Saturation Voltage       | $V_{BE(sat)}$                         |                  | -970                       | -1110                       | mV                   | $I_C = -3\text{A}$ , $I_B = -300\text{mA}^*$                                                                                                                                                    |
| Base-Emitter Turn-On Voltage          | $V_{BE(on)}$                          |                  | -830                       | -950                        | mV                   | $I_C = -3\text{A}$ , $V_{CE} = -5\text{V}^*$                                                                                                                                                    |
| Static Forward Current Transfer Ratio | $h_{FE}$                              | 100<br>100<br>75 | 200<br>200<br>140<br>10    | 300                         |                      | $I_C = -10\text{mA}$ , $V_{CE} = -5\text{V}^*$<br>$I_C = -1\text{A}$ , $V_{CE} = -5\text{V}^*$<br>$I_C = -3\text{A}$ , $V_{CE} = -5\text{V}^*$<br>$I_C = -10\text{A}$ , $V_{CE} = -5\text{V}^*$ |
| Transition Frequency                  | $f_T$                                 |                  | 110                        |                             | MHz                  | $I_C = -100\text{mA}$ , $V_{CE} = -10\text{V}$<br>$f = 50\text{MHz}$                                                                                                                            |
| Output Capacitance                    | $C_{obo}$                             |                  | 40                         |                             | pF                   | $V_{CB} = -20\text{V}$ , $f = 1\text{MHz}$                                                                                                                                                      |
| Switching Times                       | $t_{on}$<br>$t_{off}$                 |                  | 68<br>1030                 |                             | ns<br>ns             | $I_C = -1\text{A}$ , $I_{B1} = -100\text{mA}$<br>$I_{B2} = 100\text{mA}$ , $V_{CC} = -50\text{V}$                                                                                               |

\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$   
Spice parameter data is available upon request for this device

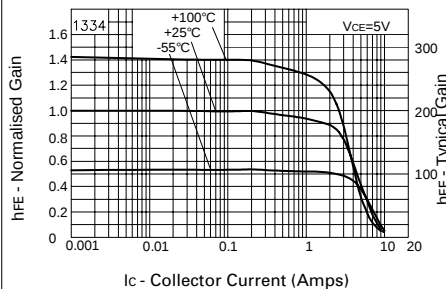
TYPICAL CHARACTERISTICS



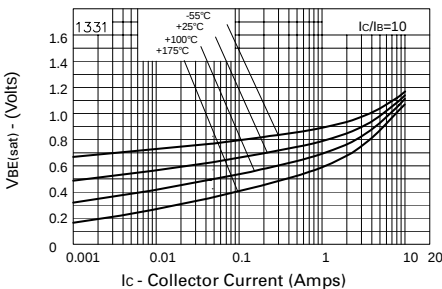
$V_{CE(sat)}$  v  $I_C$



$V_{CE(sat)}$  v  $I_C$

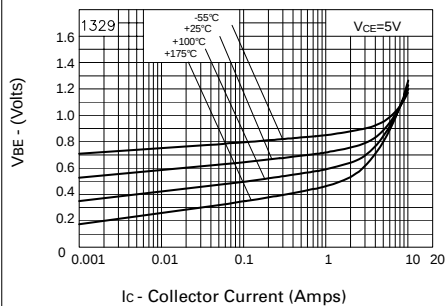


$h_{FE}$  v  $I_C$

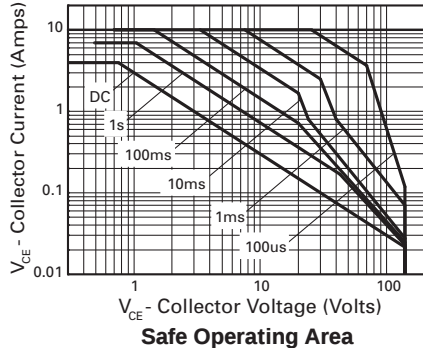


V

$BE(sat)$  v  $I_C$



$V_{BE(on)}$  v  $I_C$



Safe Operating Area

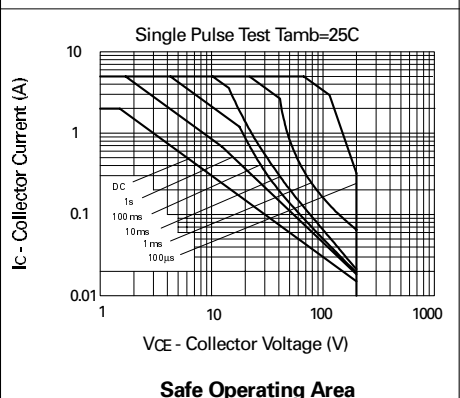
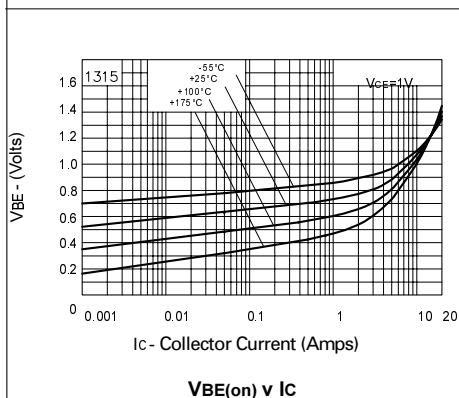
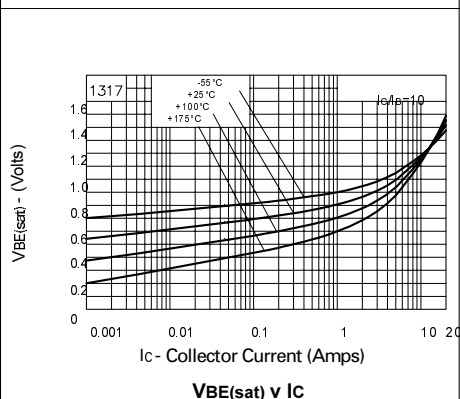
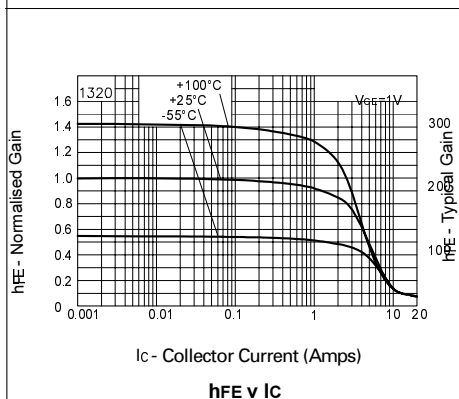
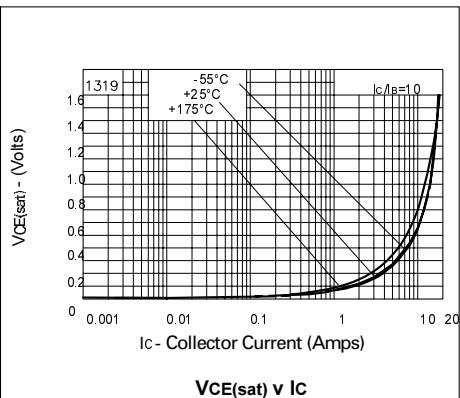
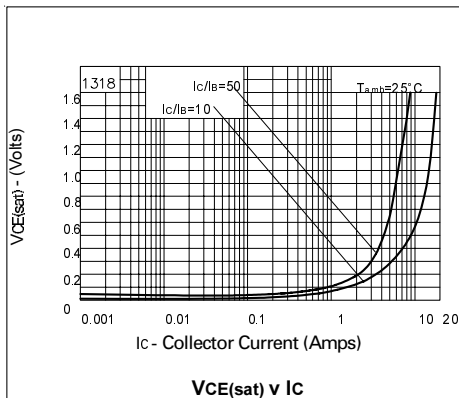
## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

| PARAMETER                             | SYMBOL                                | MIN.             | TYP.                    | MAX.                | UNIT                | CONDITIONS.                                                                                                                                                                                    |
|---------------------------------------|---------------------------------------|------------------|-------------------------|---------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Collector-Base Breakdown Voltage      | $V_{(BR)CBO}$                         | -220             | -300                    |                     | V                   | $I_C = -100\mu\text{A}$                                                                                                                                                                        |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CER}$                         | -220             | -300                    |                     | V                   | $I_C = -1\mu\text{A}$ , $R_B \leq 1\text{k}\Omega$                                                                                                                                             |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CEO}$                         | -200             | -240                    |                     | 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<br>-1           | nA<br>$\mu\text{A}$ | $V_{CB} = -200\text{V}$<br>$V_{CB} = -200\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$                                                                                                           |
| Collector Cut-Off Current             | $I_{CER}$<br>$R \leq 1\text{k}\Omega$ |                  |                         | -50<br>-1           | nA<br>$\mu\text{A}$ | $V_{CB} = -200\text{V}$<br>$V_{CB} = -200\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$                                                                                                           |
| Emitter Cut-Off Current               | $I_{EBO}$                             |                  |                         | -10                 | nA                  | $V_{EB} = -6\text{V}$                                                                                                                                                                          |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$                         |                  | -30<br>-120<br>-168     | -50<br>-165<br>-275 | mV<br>mV<br>mV      | $I_C = -100\text{mA}$ , $I_B = -10\text{mA}^*$<br>$I_C = -1\text{A}$ , $I_B = -100\text{mA}^*$<br>$I_C = -2\text{A}$ , $I_B = -400\text{mA}^*$                                                 |
| Base-Emitter Saturation Voltage       | $V_{BE(sat)}$                         |                  | -970                    | -1110               | mV                  | $I_C = -2\text{A}$ , $I_B = -400\text{mA}$                                                                                                                                                     |
| Base-Emitter Turn-On Voltage          | $V_{BE(on)}$                          |                  | -810                    | -950                | mV                  | $I_C = -2\text{A}$ , $V_{CE} = -5\text{V}^*$                                                                                                                                                   |
| Static Forward Current Transfer Ratio | $h_{FE}$                              | 100<br>100<br>50 | 200<br>200<br>150<br>10 | 300                 |                     | $I_C = -10\text{mA}$ , $V_{CE} = -5\text{V}^*$<br>$I_C = -1\text{A}$ , $V_{CE} = -5\text{V}^*$<br>$I_C = -2\text{A}$ , $V_{CE} = -5\text{V}^*$<br>$I_C = -5\text{A}$ , $V_{CE} = -5\text{V}^*$ |
| Transition Frequency                  | $f_T$                                 |                  | 110                     |                     | MHz                 | $I_C = -100\text{mA}$ , $V_{CE} = -10\text{V}$<br>$f = 50\text{MHz}$                                                                                                                           |
| Output Capacitance                    | $C_{obo}$                             |                  | 32                      |                     | pF                  | $V_{CB} = -20\text{V}$ , $f = 1\text{MHz}$                                                                                                                                                     |
| Switching Times                       | $t_{on}$<br>$t_{off}$                 |                  | 67<br>1140              |                     | ns<br>ns            | $I_C = -1\text{A}$ , $I_{B1} = -100\text{mA}$<br>$I_{B2} = 100\text{mA}$ , $V_{CC} = -50\text{V}$                                                                                              |

\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$   
Spice parameter data is available upon request for this device

# FZT956

## TYPICAL CHARACTERISTICS



## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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