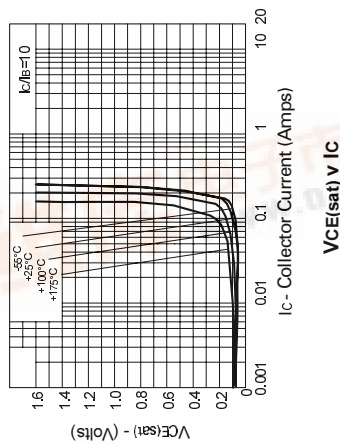
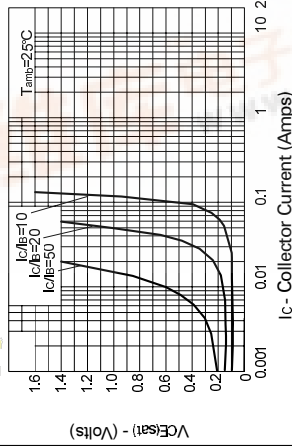




## FMMT458

### TYPICAL CHARACTERISTICS

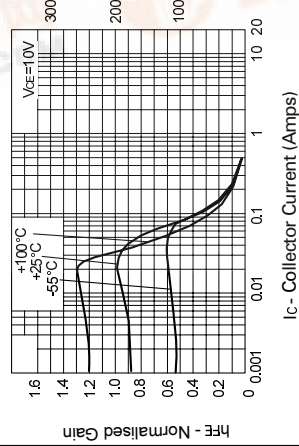


VCE(sat) v IC

IC - Collector Current (Amps)

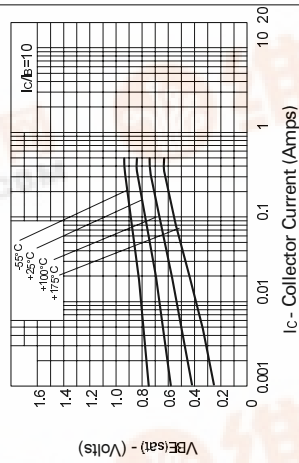
VCE(sat) v IC

IC - Collector Current (Amps)



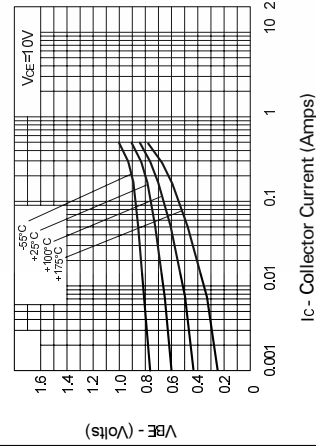
hFE v IC

IC - Collector Current (Amps)



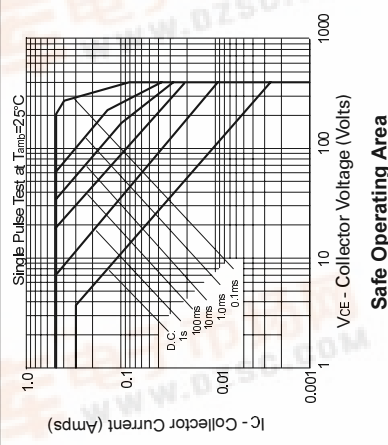
VBE(sat) v IC

IC - Collector Current (Amps)



VBE(on) v IC

IC - Collector Current (Amps)



Safe Operating Area

VCE - Collector Voltage (Volts)

## SOT23 NPN SILICON PLANAR HIGH VOLTAGE TRANSISTOR

ISSUE 3 – OCTOBER 1995

### FEATURES

- \* 400 Volt V<sub>CEO</sub>

COMPLEMENTARY TYPE – FMMT558

PARTMARKING DETAIL – 458

### ABSOLUTE MAXIMUM RATINGS.

| PARAMETER                                   | SYMBOL                            | VALUE       | UNIT |
|---------------------------------------------|-----------------------------------|-------------|------|
| Collector-Base Voltage                      | V <sub>CB0</sub>                  | 400         | V    |
| Collector-Emitter Voltage                   | V <sub>CE0</sub>                  | 400         | V    |
| Emitter-Base Voltage                        | V <sub>EB0</sub>                  | 5           | V    |
| Continuous Collector Current                | I <sub>C</sub>                    | 225         | mA   |
| Peak Pulse Current                          | I <sub>CM</sub>                   | 1           | A    |
| Base Current                                | I <sub>B</sub>                    | 200         | mA   |
| Power Dissipation at T <sub>amb</sub> =25°C | P <sub>tot</sub>                  | 500         | mW   |
| Operating and Storage Temperature Range     | T <sub>J</sub> ; T <sub>stg</sub> | -55 to +150 | °C   |

### ELECTRICAL CHARACTERISTICS (at T<sub>amb</sub> = 25°C).

| PARAMETER                             | SYMBOL                              | MIN.                        | MAX. | UNIT | CONDITIONS.                                                                                |
|---------------------------------------|-------------------------------------|-----------------------------|------|------|--------------------------------------------------------------------------------------------|
| Collector-Base Breakdown Voltage      | V <sub>(BR)CBO</sub>                | 400                         |      | V    | I <sub>C</sub> =100μA                                                                      |
| Collector-Emitter Breakdown Voltage   | V <sub>CE0(sus)</sub>               | 400                         |      | V    | I <sub>C</sub> =10mA*                                                                      |
| Emitter-Base Breakdown Voltage        | V <sub>(BR)EBO</sub>                | 5                           |      | V    | I <sub>E</sub> =100μA                                                                      |
| Collector Cut-Off Current             | I <sub>CBO</sub>                    |                             | 100  | nA   | V <sub>CB</sub> =320V                                                                      |
| Collector Cut-Off Current             | I <sub>CES</sub>                    |                             | 100  | nA   | V <sub>CE</sub> =320V                                                                      |
| Emitter Cut-Off Current               | I <sub>EBO</sub>                    |                             | 100  | nA   | V <sub>EB</sub> =4V                                                                        |
| Collector-Emitter Saturation Voltage  | V <sub>CE(sat)</sub>                | 0.2                         | 0.5  | V    | I <sub>C</sub> =20mA, I <sub>B</sub> =2mA*                                                 |
| Base-Emitter Saturation Voltage       | V <sub>BE(sat)</sub>                | 0.9                         | 0.9  | V    | I <sub>C</sub> =50mA, I <sub>B</sub> =6mA*                                                 |
| Base-Emitter Turn On Voltage          | V <sub>BE(on)</sub>                 |                             | 0.9  | V    | I <sub>C</sub> =50mA, V <sub>CE</sub> =10V*                                                |
| Static Forward Current Transfer Ratio | h <sub>FE</sub>                     | 100                         | 300  |      | I <sub>C</sub> =1mA, V <sub>CE</sub> =10V                                                  |
|                                       |                                     | 100                         | 15   |      | I <sub>C</sub> =50mA, V <sub>CE</sub> =10V*                                                |
|                                       |                                     | 15                          |      |      | I <sub>C</sub> =100mA, V <sub>CE</sub> =10V*                                               |
| Transition Frequency                  | f <sub>T</sub>                      | 50                          |      | MHz  | I <sub>C</sub> =10mA, V <sub>CE</sub> =20V, f=20MHz                                        |
| Collector-Base Breakdown Voltage      | C <sub>obo</sub>                    |                             | 5    | pF   | V <sub>CB</sub> =20V, f=1MHz                                                               |
| Switching times                       | t <sub>on</sub><br>t <sub>off</sub> | 135 Typical<br>2260 Typical |      | ns   | I <sub>C</sub> =50mA, V <sub>CC</sub> =100V<br>I <sub>B1</sub> =5mA, I <sub>B2</sub> =10mA |

\*Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤ 2%  
Spice parameter data is available upon request for this device

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SOT23 NPN SILICON PLANAR  
HIGH VOLTAGE TRANSISTOR

ISSUE 3 – OCTOBER 1995

FEATURES

\* 400 Volt  $V_{CEO}$

COMPLEMENTARY TYPE – FMMT558

PARTMARKING DETAIL – 458

ABSOLUTE MAXIMUM RATINGS.

| PARAMETER                                  | SYMBOL         | VALUE       | UNIT        |
|--------------------------------------------|----------------|-------------|-------------|
| Collector-Base Voltage                     | $V_{CBO}$      | 400         | V           |
| Collector-Emitter Voltage                  | $V_{CEO}$      | 400         | V           |
| Emitter-Base Voltage                       | $V_{EBO}$      | 5           | V           |
| Continuous Collector Current               | $I_C$          | 225         | mA          |
| Peak Pulse Current                         | $I_{CM}$       | 1           | A           |
| Base Current                               | $I_B$          | 200         | mA          |
| Power Dissipation at $T_{amb}=25^{\circ}C$ | $P_{tot}$      | 500         | mW          |
| Operating and Storage Temperature Range    | $T_j, T_{stg}$ | -55 to +150 | $^{\circ}C$ |

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

| PARAMETER                             | SYMBOL            | MIN. | MAX.                        | UNIT | CONDITIONS.                                      |
|---------------------------------------|-------------------|------|-----------------------------|------|--------------------------------------------------|
| Collector-Base Breakdown Voltage      | $V_{(BR)CBO}$     | 400  |                             | V    | $I_C=100\mu A$                                   |
| Collector-Emitter Breakdown Voltage   | $V_{CEO(sus)}$    | 400  |                             | V    | $I_C=10mA^*$                                     |
| Emitter-Base Breakdown Voltage        | $V_{(BR)EBO}$     | 5    |                             | V    | $I_E=100\mu A$                                   |
| Collector Cut-Off Current             | $I_{CBO}$         |      | 100                         | nA   | $V_{CB}=320V$                                    |
| Collector Cut-Off Current             | $I_{CES}$         |      | 100                         | nA   | $V_{CE}=320V$                                    |
| Emitter Cut-Off Current               | $I_{EBO}$         |      | 100                         | nA   | $V_{EB}=4V$                                      |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$     |      | 0.2                         | V    | $I_C=20mA, I_B=2mA^*$                            |
| Base-Emitter Saturation Voltage       | $V_{BE(sat)}$     |      | 0.5                         | V    | $I_C=50mA, I_B=6mA^*$                            |
| Base-Emitter Turn On Voltage          | $V_{BE(on)}$      |      | 0.9                         | V    | $I_C=50mA, I_B=5mA^*$                            |
| Static Forward Current Transfer Ratio | $h_{FE}$          | 100  | 300                         |      | $I_C=50mA, V_{CE}=10V^*$                         |
| Transition Frequency                  | $f_T$             | 50   |                             | MHz  | $I_C=10mA, V_{CE}=20V, f=20MHz$                  |
| Collector-Base Breakdown Voltage      | $C_{obo}$         |      | 5                           | pF   | $V_{CB}=20V, f=1MHz$                             |
| Switching times                       | $t_{on}, t_{off}$ |      | 135 Typical<br>2260 Typical | ns   | $I_C=50mA, V_{CC}=100V, I_{B1}=5mA, I_{B2}=10mA$ |

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

FMMT458

TYPICAL CHARACTERISTICS

