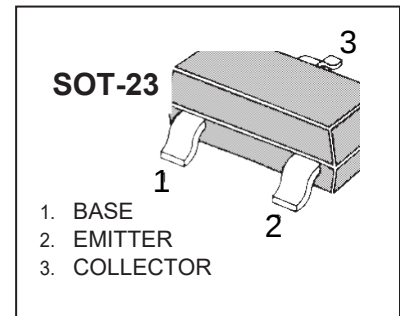


## SOT-23 Plastic-Encapsulate Transistors

### FMMT624 NPN Transistors

#### Features

- Collector Current Capability  $I_C=1A$
- Collector Emitter Voltage  $V_{CEO}=125V$
- Complementary to FMMT723
- Marking:624



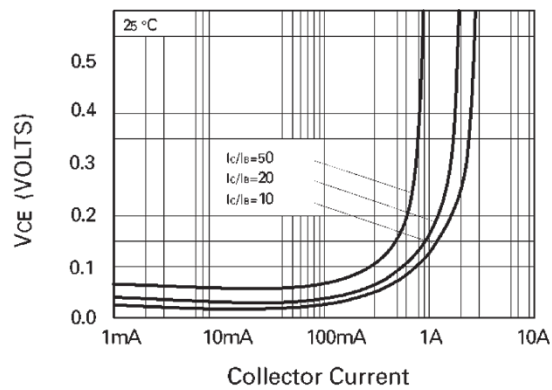
#### Absolute Maximum Ratings $T_a = 25^\circ$

| Parameter                      | Symbol    | Rating     | Unit     |
|--------------------------------|-----------|------------|----------|
| Collector - Base Voltage       | $V_{CB0}$ | 125        | V        |
| Collector - Emitter Voltage    | $V_{CE0}$ | 125        |          |
| Emitter - Base Voltage         | $V_{EB0}$ | 5          |          |
| Collector Current - Continuous | $I_C$     | 1          | A        |
| Collector Current - Pulse      | $I_{CP}$  | 3          |          |
| Base Current                   | $I_B$     | 0.5        |          |
| Collector Power Dissipation    | $P_C$     | 625        | mW       |
| Junction Temperature           | $T_J$     | 150        | $^\circ$ |
| Storage Temperature Range      | $T_{stg}$ | -55 to 150 |          |

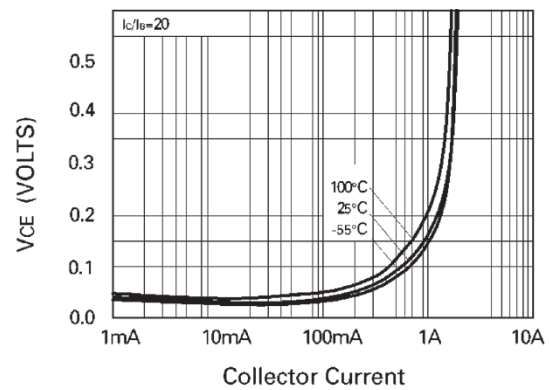
#### Electrical Characteristics $T_a = 25^\circ$

| Parameter                            | Symbol        | Test Conditions                           | Min | Typ  | Max | Unit |
|--------------------------------------|---------------|-------------------------------------------|-----|------|-----|------|
| Collector- base breakdown voltage    | $V_{CB0}$     | $I_C = 100 \mu A, I_E = 0$                | 125 |      |     | V    |
| Collector- emitter breakdown voltage | $V_{CE0}$     | $I_C = 10 mA, I_B = 0$                    | 125 |      |     |      |
| Emitter - base breakdown voltage     | $V_{EB0}$     | $I_E = 100 \mu A, I_C = 0$                | 5   |      |     |      |
| Collector-base cut-off current       | $I_{CBO}$     | $V_{CB} = 100 V, I_E = 0$                 |     |      | 100 | nA   |
| Collector- emitter cut-off current   | $I_{CES}$     | $V_{CE} = 100 V, I_E = 0$                 |     |      | 100 |      |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB} = 4 V, I_C = 0$                   |     |      | 100 |      |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 100 mA, I_B = 10 mA$               |     |      | 50  | mV   |
|                                      |               | $I_C = 500 mA, I_B = 50 mA$               |     |      | 150 |      |
|                                      |               | $I_C = 500 mA, I_B = 10 mA$               |     |      | 220 |      |
|                                      |               | $I_C = 1 A, I_B = 50 mA$                  |     |      | 250 |      |
| Base - emitter saturation voltage    | $V_{BE(sat)}$ | $I_C = 1 A, I_B = 50 mA$                  |     |      | 1   | V    |
| Base-emitter turn-on voltage         | $V_{BE(on)}$  | $V_{CE} = 10 V, I_C = 1 A$                |     |      | 1   |      |
| DC current gain                      | $h_{FE}$      | $V_{CE} = 10 V, I_C = 10 mA$              | 200 |      |     |      |
|                                      |               | $V_{CE} = 10 V, I_C = 200 mA$             | 300 |      |     |      |
|                                      |               | $V_{CE} = 10 V, I_C = 1 A$                | 100 |      |     |      |
|                                      |               | $V_{CE} = 10 V, I_C = 3 A$                |     | 18   |     |      |
| Turn-on time                         | $t_{on}$      | $V_{CC} = 50 V, I_C = 0.5 A$              |     | 60   |     | ns   |
| Turn-off time                        | $t_{off}$     | $I_{B1} = -I_{B2} = 50 mA$                |     | 1300 |     |      |
| Collector output capacitance         | $C_{ob}$      | $V_{CB} = 10 V, f = 1 MHz$                |     |      | 15  | pF   |
| Transition frequency                 | $f_T$         | $V_{CE} = 10 V, I_C = 50 mA, f = 100 MHz$ | 100 |      |     | MHz  |

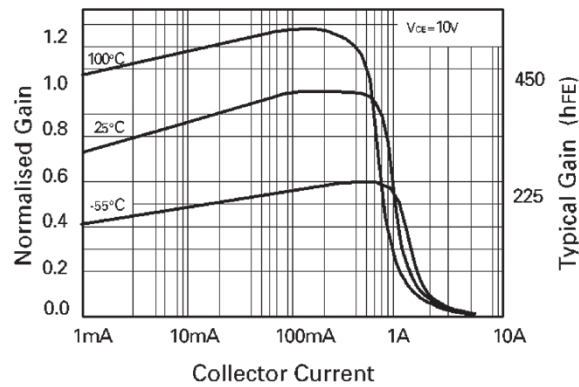
## Typical Characteristics



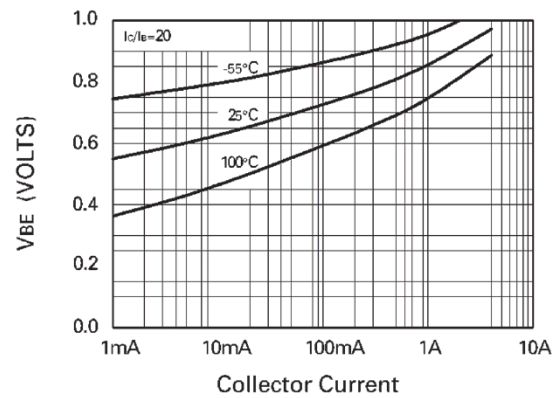
**$V_{CE(SAT)}$  vs  $I_C$**



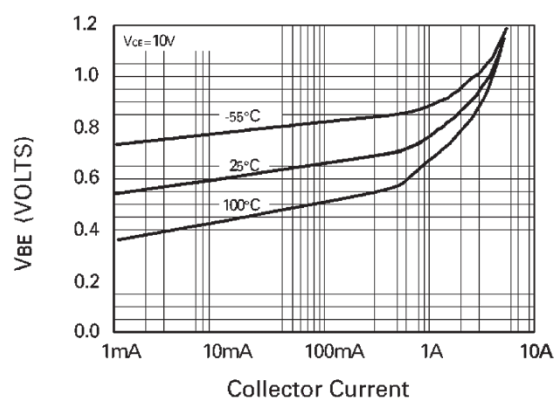
**$V_{CE(SAT)}$  vs  $I_C$**



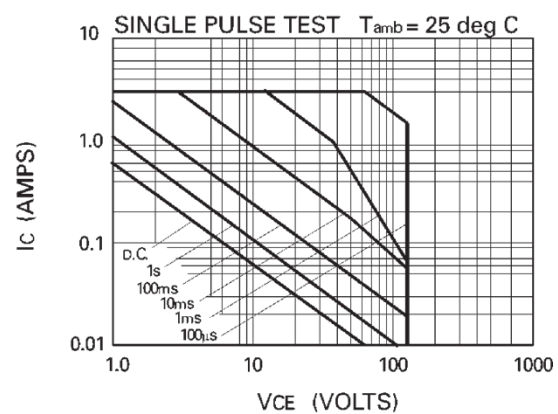
**$h_{FE}$  vs  $I_C$**



**$V_{BE(SAT)}$  vs  $I_C$**

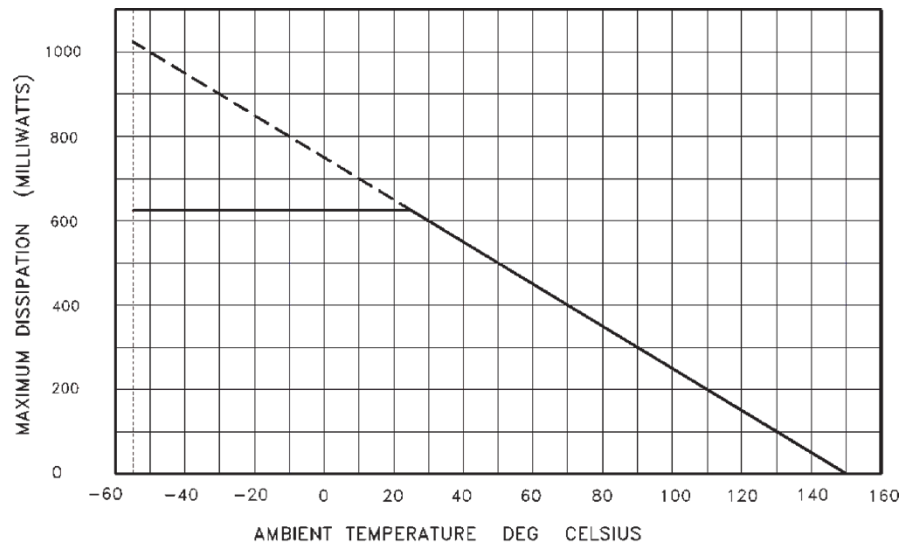


**$V_{BE(ON)}$  vs  $I_C$**

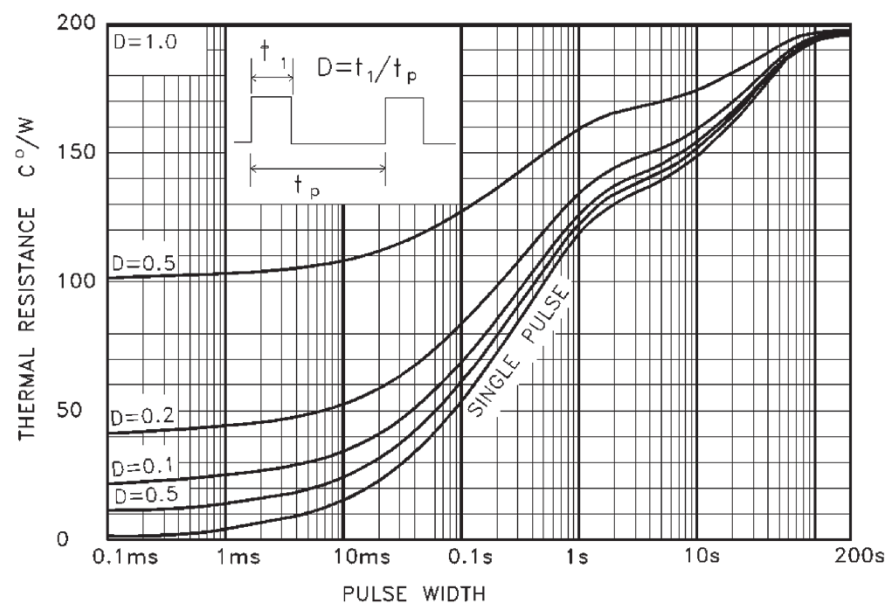


**Safe Operating Area**

## Typical Characteristics



DERATING CURVE

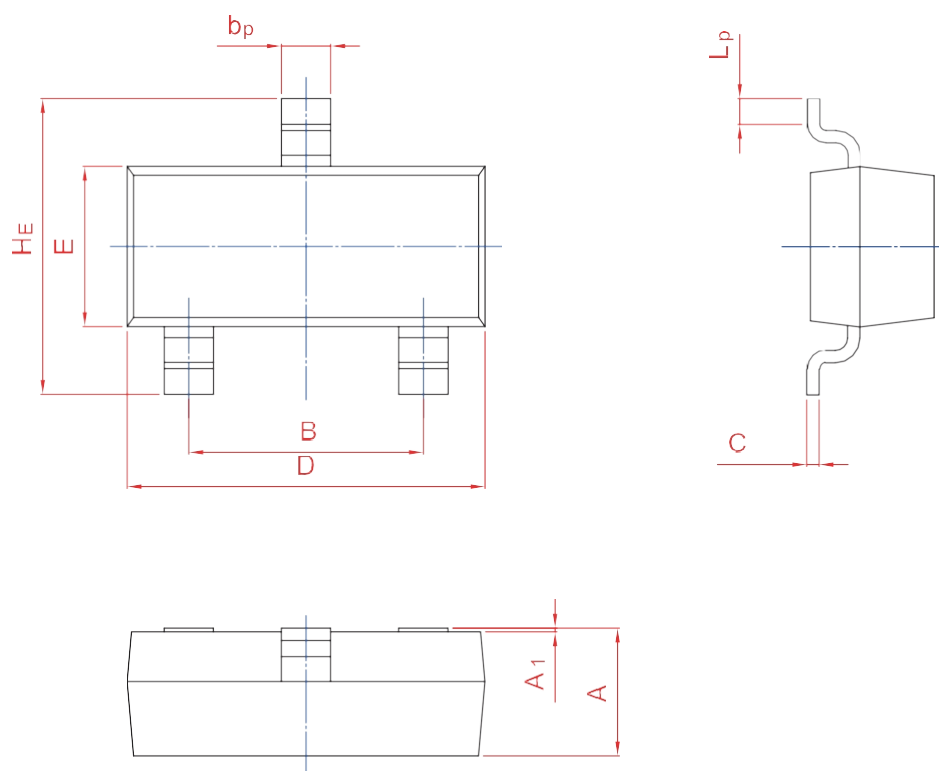
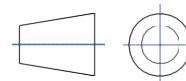


MAXIMUM TRANSIENT THERMAL RESISTANCE

# PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



| UNIT | A            | B            | b <sub>p</sub> | C            | D            | E            | H <sub>E</sub> | A <sub>1</sub> | L <sub>p</sub> |
|------|--------------|--------------|----------------|--------------|--------------|--------------|----------------|----------------|----------------|
| mm   | 1.40<br>0.95 | 2.04<br>1.78 | 0.50<br>0.35   | 0.19<br>0.08 | 3.10<br>2.70 | 1.65<br>1.20 | 3.00<br>2.20   | 0.100<br>0.013 | 0.50<br>0.20   |