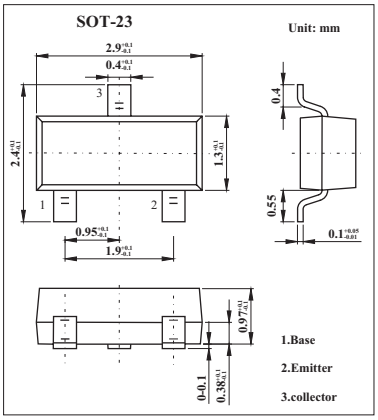
# Switching Transistors

# FMMT3903




## ■ Features

● Switching transistors

## ■ Absolute Maximum Ratings Ta = 25℃

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Collector-base voltage | $V_{CBO}$ | 60 | V |
| Collector-emitter voltage | $V_{CEO}$ | 40 | V |
| Emitter-base voltage | $V_{EBO}$ | 6 | V |
| Collector current | $I_C$ | 200 | mA |
| Power dissipation | $P_{tot}$ | 330 | mW |
| Operating and storage temperature range | $T_j$,$T_{stg}$ | -55 to +150 | ℃ |

# FMMT3903

## ■ Electrical Characteristics Ta = 25℃

| Parameter | Symbol | Testconditons | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C$=10μA | 60 | | | V |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C$=1mA | 40 | | | V |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E$=10μA | 6 | | | V |
| Collector cutoff current | $I_{CEX}$ | $V_{CE}$=30V, $V_{BE(off)}$ =3V | | | 50 | nA |
| Emitter cut-off current | $I_{BEX}$ | $V_{CE}$=30V, $V_{EB(off)}$ =3V | | | 50 | nA |
| DC current gain * | $h_{FE}$ | $I_C$=10mA, $V_{CE}$=1V | 50 | | 150 | |
| Collector-emitter saturation voltage * | $V_{CE(sat)}$ | $I_C$=10mA, $I_B$=1mA<br>$I_C$=50mA, $I_B$=5mA | | | 0.2<br>0.3 | V |
| Base-emitter saturation voltage * | $V_{BE(sat)}$ | $I_C$=10mA, $I_B$=1mA<br>$I_C$=50mA, $I_B$=5mA | | 0.65 | 0.85<br>0.95 | V |
| Current-gain-bandwidth product | $f_T$ | $I_C$=10mA, $V_{CE}$=20V f=100MHz | 250 | | | MHz |
| Output capacitance | $C_{obo}$ | $V_{CB}$=5V, $I_E$=0, f=100KHz | | | 4 | pF |
| Input capacitance | $C_{ibo}$ | $V_{BE}$=0.5V, $I_C$=0, f=100KHz | | | 8 | pF |
| Noise figure | NF | $V_{CE}$=5V $I_C$=200μA,$R_g$=2KΩ<br>f=30Hz to 15KHz at-3dB points | | | 6 | dB |
| Delay time | $t_d$ | $V_{CC}$=3V, $I_C$=10mA,$I_{B1}$=1mA<br>$V_{BE(off)}$=0.5V | | | 35 | ns |
| Rise time | $t_r$ | | | | 35 | ns |
| Storage time | $t_s$ | $V_{CC}$=3V, $I_C$=10mA<br>$I_{B1}$= $I_{B2}$=1mA | | | 175 | ns |
| Fall time | $t_f$ | | | | 50 | ns |

* Pulse test: tp ⩽ 300μs; d ⩽ 0.02.

## ■ Marking

| Marking | 1W |
|---|---|