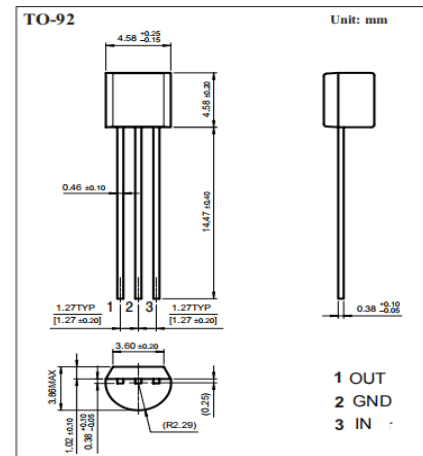


## NPN Transistors

### MMBTH10

#### ■ Features

- Collector Current Capability  $I_C=0.05A$
- Collector Emitter Voltage  $V_{CEO}=25V$



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

| Parameter                              | Symbol          | Rating      | Unit         |
|----------------------------------------|-----------------|-------------|--------------|
| Collector - Base Voltage               | $V_{CBO}$       | 30          | V            |
| Collector - Emitter Voltage            | $V_{CEO}$       | 25          |              |
| Emitter - Base Voltage                 | $V_{EBO}$       | 3           |              |
| Collector Current - Continuous         | $I_C$           | 0.05        | A            |
| Collector Power Dissipation            | $P_C$           | 225         | mW           |
| Thermal Resistance Junction to Ambient | $R_{\theta JA}$ | 556         | $^\circ C/W$ |
| Junction Temperature                   | $T_J$           | 150         | $^\circ C$   |
| Storage Temperature Range              | $T_{stg}$       | -55 to +150 |              |

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

| Parameter                            | Symbol        | Test Conditions                          | Min | Typ | Max  | Unit |
|--------------------------------------|---------------|------------------------------------------|-----|-----|------|------|
| Collector- base breakdown voltage    | $V_{CBO}$     | $I_C = 100 \mu A, I_E = 0$               | 30  |     |      | V    |
| Collector- emitter breakdown voltage | $V_{CEO}$     | $I_C = 1 mA, I_B = 0$                    | 25  |     |      |      |
| Emitter - base breakdown voltage     | $V_{EBO}$     | $I_E = 10 \mu A, I_C = 0$                | 3   |     |      |      |
| Collector-base cut-off current       | $I_{CBO}$     | $V_{CB} = 25 V, I_E = 0$                 |     |     | 100  | nA   |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB} = 2 V, I_C = 0$                  |     |     | 100  |      |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 4 mA, I_B = 0.4 mA$               |     |     | 0.5  | V    |
| Base - emitter saturation voltage    | $V_{BE(sat)}$ | $I_C = 4 mA, I_B = 0.4 mA$               |     |     | 1.2  |      |
| Base - emitter saturation voltage    | $V_{BE}$      | $V_{CE} = 10 V, I_C = 4 mA$              |     |     | 0.95 |      |
| DC current gain                      | $h_{FE}$      | $V_{CE} = 10 V, I_C = 4 mA$              | 60  |     |      |      |
| Collector output capacitance         | $C_{ob}$      | $V_{CB} = 10 V, I_E = 0, f = 1 MHz$      |     |     | 0.7  | pF   |
| Transition frequency                 | $f_T$         | $V_{CE} = 10 V, I_C = 4 mA, f = 100 MHz$ | 650 |     |      | MHz  |

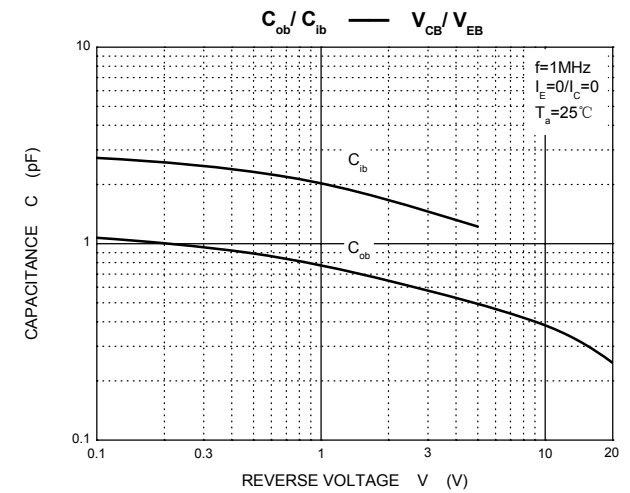
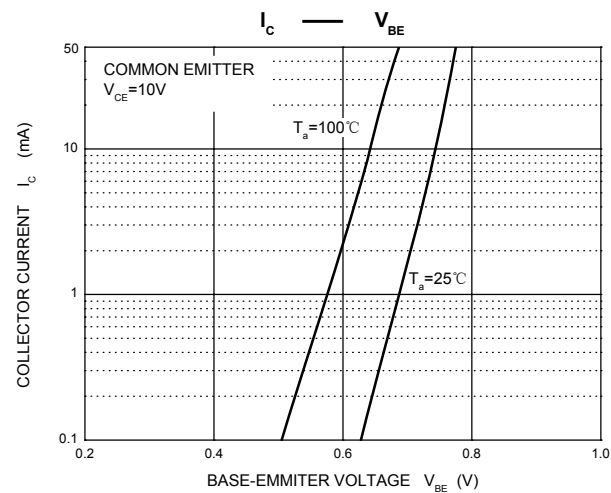
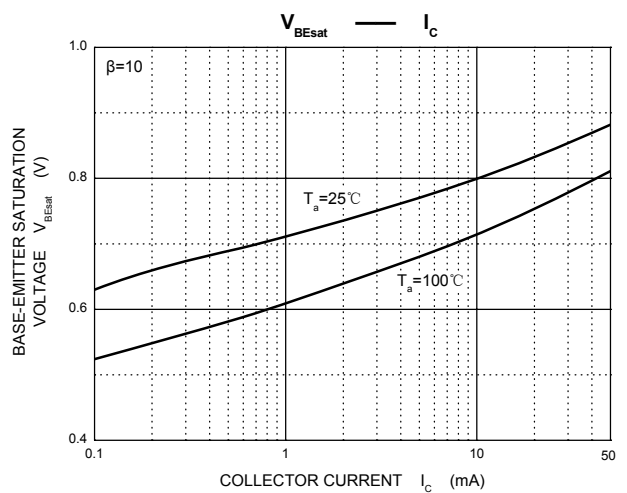
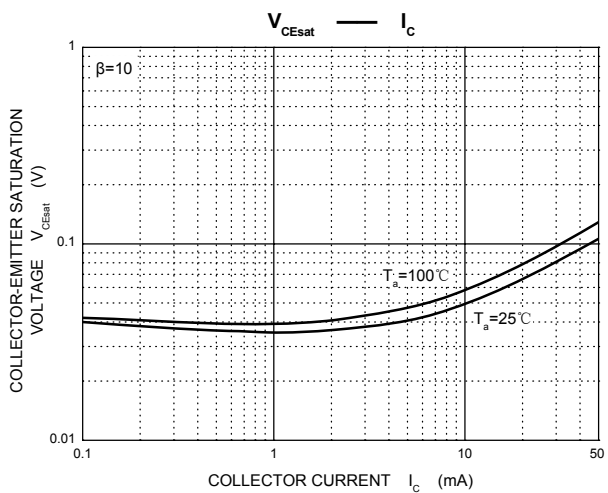
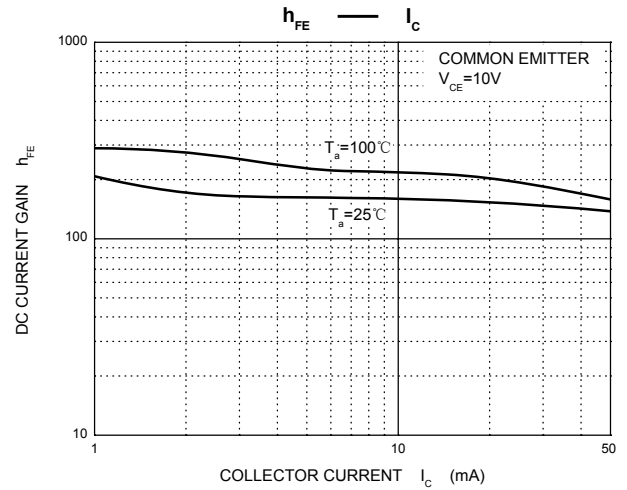
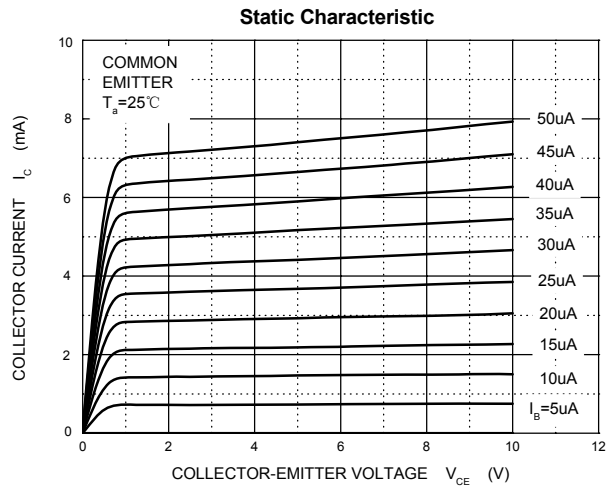
#### ■ Classification of $h_{FE}$

|         |     |
|---------|-----|
| Marking | 3EM |
|---------|-----|

## NPN Transistors

## MMBTH10

## ■ Typical Characteristics



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## MMBTH10

## ■ Typical Characteristics

