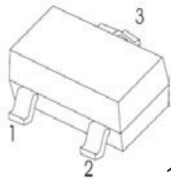


## FEATURES

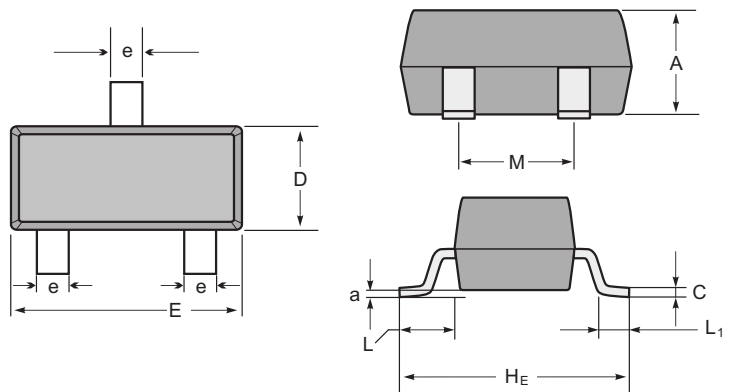
- Collector Current:  $I_C=1.5A$



1.BASE  
2.EMITTER  
3.COLLECTOR

## Marking

| Type number | Marking code |
|-------------|--------------|
| MMBT8050D   | Y1           |



SOT-23 mechanical data

| UNIT |     | A   | C    | D   | E   | H <sub>E</sub> | e   | M    | L          | L <sub>1</sub> | a    |
|------|-----|-----|------|-----|-----|----------------|-----|------|------------|----------------|------|
| mm   | max | 1.1 | 0.15 | 1.4 | 3.0 | 2.6            | 0.5 | 1.95 | 0.55 (ref) | 0.36 (ref)     | 0.0  |
|      | min | 0.9 | 0.08 | 1.2 | 2.8 | 2.2            | 0.3 | 1.7  |            |                | 0.15 |
| mil  | max | 43  | 6    | 55  | 118 | 102            | 20  | 77   | 22 (ref)   | 14 (ref)       | 0.0  |
|      | min | 35  | 3    | 47  | 110 | 87             | 12  | 67   |            |                | 6    |

## MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

| Parameter                                        | Symbol         | Value    | Unit |
|--------------------------------------------------|----------------|----------|------|
| Collector–Base Voltage                           | $V_{CBO}$      | 40       | V    |
| Collector–Emitter Voltage                        | $V_{CEO}$      | 25       | V    |
| Emitter–Base Voltage                             | $V_{EBO}$      | 5        | V    |
| Collector Current — Continuous                   | $I_C$          | 1.5      | A    |
| Collector Power Dissipation                      | $P_C$          | 300      | mW   |
| Thermal Resistance From Junction To Ambient      | $R_{thJA}$     | 417      | °C/W |
| Operation Junction and Storage Temperature Range | $T_J, T_{stg}$ | -55~+150 | °C   |

## MMBT8050D

### CLASSIFICATION OF $h_{FE1}$

|       |         |         |         |
|-------|---------|---------|---------|
| Rank  | L       | H       | J       |
| Range | 120-200 | 200-350 | 300-400 |

### ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted.)

| Parameter                            | Symbol        | Test conditions                       | Min | Typ | Max | Unit    |
|--------------------------------------|---------------|---------------------------------------|-----|-----|-----|---------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C = 100\mu A, I_E = 0$             | 40  |     |     | V       |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C = 0.1\text{ mA}, I_B = 0$        | 25  |     |     | V       |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E = 100\mu A, I_C = 0$             | 5   |     |     | V       |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB} = 40V, I_E = 0$               |     |     | 0.1 | $\mu A$ |
| Collector cut-off current            | $I_{CEO}$     | $V_{CE} = 20V, I_E = 0$               |     |     | 0.1 | $\mu A$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB} = 5V, I_C = 0$                |     |     | 0.1 | $\mu A$ |
| DC current gain                      | $h_{FE1}$     | $V_{CE} = 1V, I_C = 100mA$            | 120 |     | 400 |         |
|                                      | $h_{FE2}$     | $V_{CE} = 1V, I_C = 800mA$            | 40  |     |     |         |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 800mA, I_B = 80mA$             |     |     | 0.5 | V       |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C = 800mA, I_B = 80mA$             |     |     | 1.2 | V       |
| Transition frequency                 | $f_T$         | $V_{CE} = 10V, I_C = 50mA, f = 30MHz$ | 100 |     |     | MHz     |

## RATING AND CHARACTERISTIC CURVES (MMBT8050D)

