



### Features

- Collector Current:  $I_C = -0.6A$
- Power Dissipation of 300mw

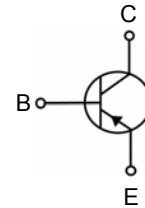
1. BASE
2. EMTTER
3. COLLECTOR



### Package Marking and Ordering Information

| Product ID | Pack    | Marking | Qty(PCS) |
|------------|---------|---------|----------|
| HMMBT5401T | SOT-523 | 2L      | 3000     |

### SOT-523



### Maxmim Ratings (Ta=25 unless otherwise noted)

| Parameter                                   | Symbol          | Limit    | Unit          |
|---|-----------------|----------|---------------|
| Collector-Base Voltage                      | $V_{CBO}$       | -160     | V             |
| Collector-Emitter Voltage                   | $V_{CEO}$       | -150     | V             |
| Emitter-Base Voltage                        | $V_{EBO}$       | -5       | V             |
| Collector Current                           | $I_C$           | -600     | mA            |
| Collector Power Dissipation                 | $P_C$           | 300      | mW            |
| Thermal Resistance From Junction To Ambient | $R_{\theta JA}$ | 416      | $^{\circ}C/W$ |
| Junction Temperature                        | $T_j$           | 150      | $^{\circ}C$   |
| Storage Temperature                         | $T_{stg}$       | -55~+150 | $^{\circ}C$   |

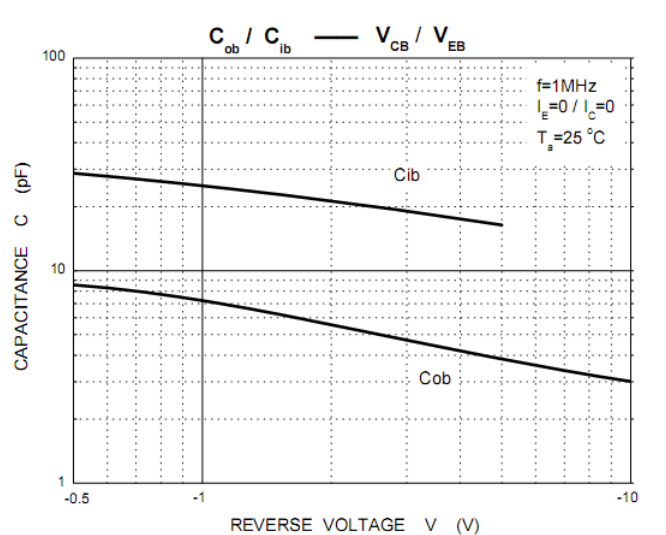
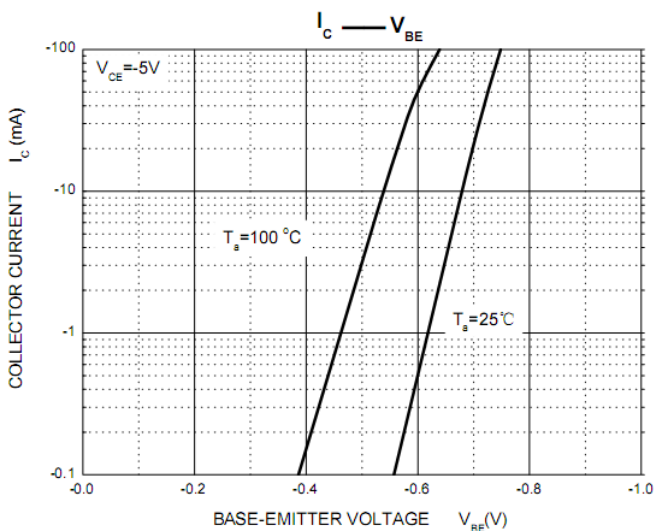
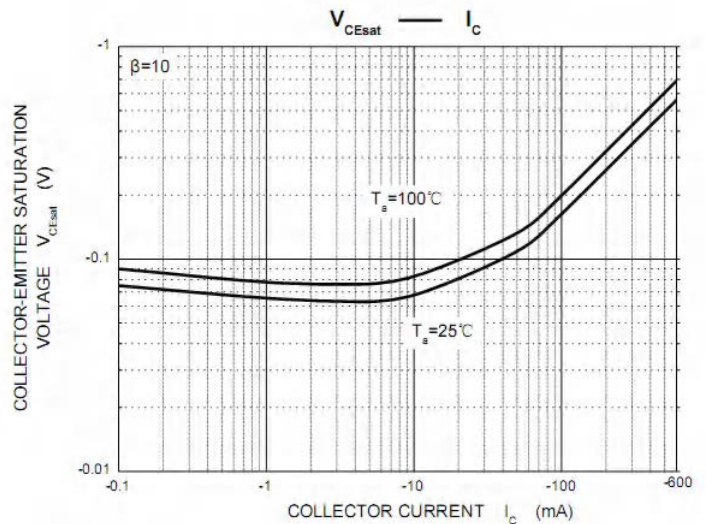
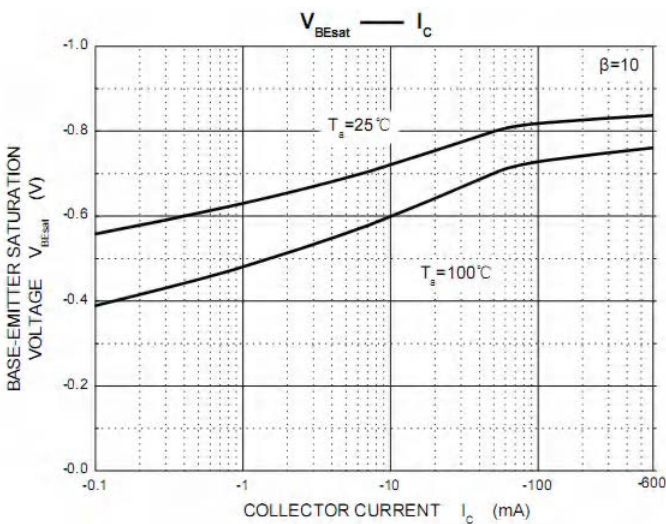
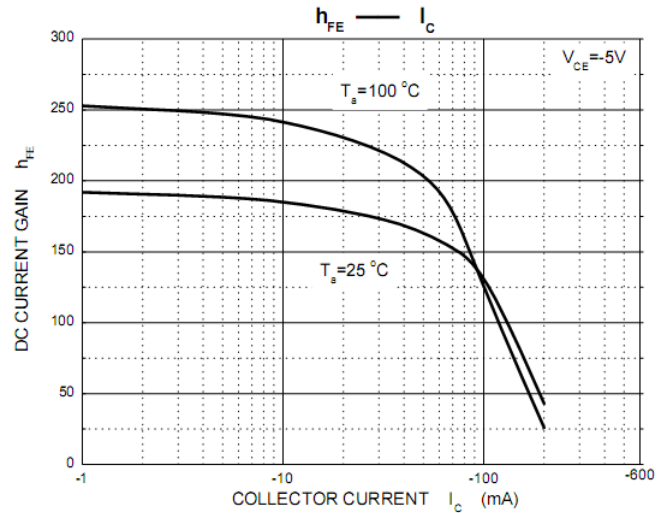
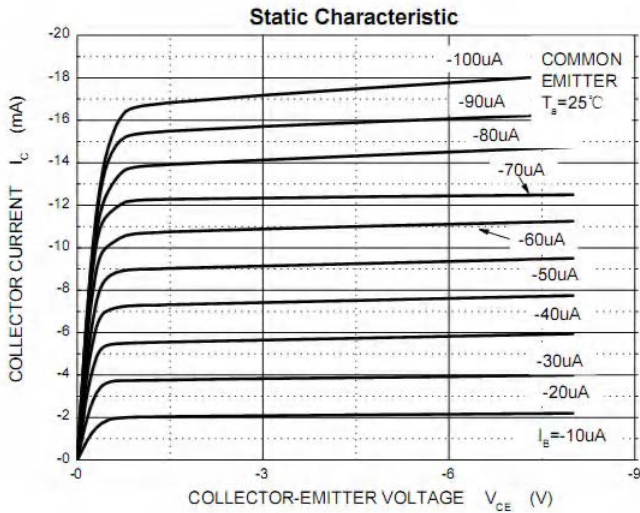
### Electrcal Charcteristics (Ta=25 unless otherwise specified)

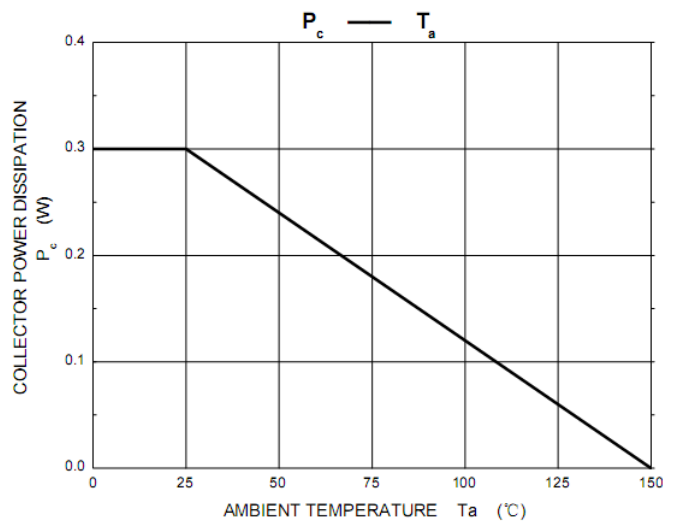
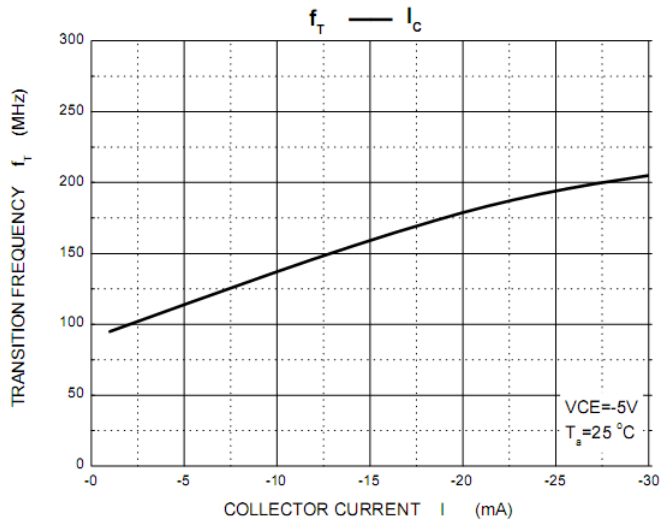
| Parameter                            | Symbol           | Test conditions                        | Min  | Typ | Max  | Unit    |
|--------------------------------------|------------------|--|------|-----|------|---------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$    | $I_C = -100\mu A, I_E = 0$             | -160 |     |      | V       |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}^*$  | $I_C = -1mA, I_B = 0$                  | -150 |     |      | V       |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$    | $I_E = -10\mu A, I_C = 0$              | -5   |     |      | V       |
| Collector cut-off current            | $I_{CBO}$        | $V_{CB} = -120V, I_E = 0$              |      |     | -0.1 | $\mu A$ |
| Emitter cut-off current              | $I_{EBO}$        | $V_{EB} = -4V, I_C = 0$                |      |     | -0.1 | $\mu A$ |
| DC current gain                      | $h_{FE(1)}^*$    | $V_{CE} = -5V, I_C = -1mA$             | 80   |     |      |         |
|                                      | $h_{FE(2)}^*$    | $V_{CE} = -5V, I_C = -10mA$            | 100  |     | 300  |         |
|                                      | $h_{FE(3)}^*$    | $V_{CE} = -5V, I_C = -50mA$            | 50   |     |      |         |
| Collector-emitter saturation voltage | $V_{CE(sat)1}^*$ | $I_C = -10mA, I_B = -1mA$              |      |     | -0.2 | V       |
|                                      | $V_{CE(sat)2}^*$ | $I_C = -50mA, I_B = -5mA$              |      |     | -0.5 | V       |
| Base-emitter saturation voltage      | $V_{BE(sat)1}^*$ | $I_C = -10mA, I_B = -1mA$              |      |     | -1   | V       |
|                                      | $V_{BE(sat)2}^*$ | $I_C = -50mA, I_B = -5mA$              |      |     | -1   | V       |
| Transition frequency                 | $f_T$            | $V_{CE} = -5V, I_C = -10mA, f = 30MHz$ | 100  |     |      | MHz     |

\*Pulse test: pulse width  $\leq 300\mu s$ , duty cycles  $\leq 2.0\%$ .



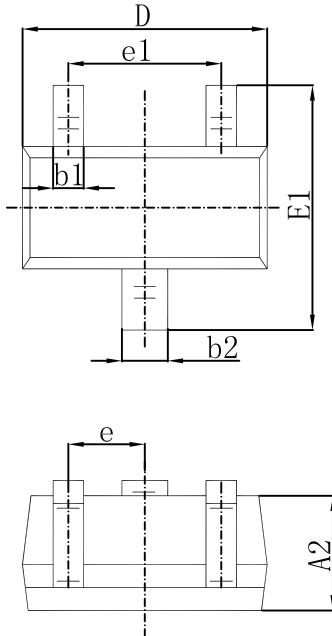
### Typical Characteristics





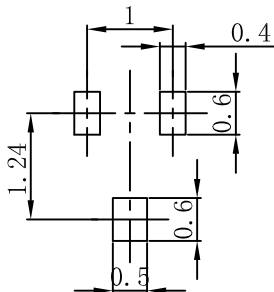


### SOT-523 Package Information



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.700                     | 0.900 | 0.028                | 0.035 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.700                     | 0.800 | 0.028                | 0.031 |
| b1     | 0.150                     | 0.250 | 0.006                | 0.010 |
| b2     | 0.250                     | 0.350 | 0.010                | 0.014 |
| c      | 0.100                     | 0.200 | 0.004                | 0.008 |
| D      | 1.500                     | 1.700 | 0.059                | 0.067 |
| E      | 0.700                     | 0.900 | 0.028                | 0.035 |
| E1     | 1.450                     | 1.750 | 0.057                | 0.069 |
| e      | 0.500 TYP.                |       | 0.020 TYP.           |       |
| e1     | 0.900                     | 1.100 | 0.035                | 0.043 |
| L      | 0.400 REF.                |       | 0.016 REF.           |       |
| L1     | 0.260                     | 0.460 | 0.010                | 0.018 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

### SOT-523 Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05$ mm.
  3. The pad layout is for reference purposes only.



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