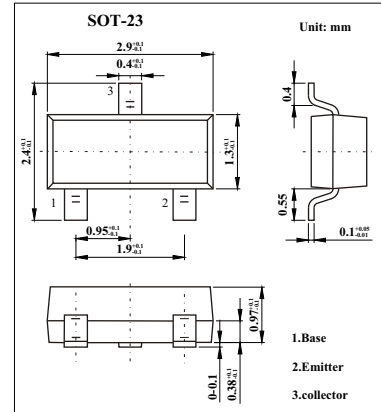


## NPN Switching Transistor KMBT2222A

### Features

High current (max. 600 mA)

Low voltage (max.40 V).



### Absolute Maximum Ratings $T_a = 25$

| Parameter                                   | Symbol          | Rating      | Unit |
|---|-----------------|-------------|------|
| Collector-base voltage                      | $V_{CBO}$       | 75          | V    |
| Collector-emitter voltage                   | $V_{CEO}$       | 40          | V    |
| Emitter-base voltage                        | $V_{EBO}$       | 6           | V    |
| Collector current                           | $I_C$           | 600         | mA   |
| Total power dissipation $T_a = 25$          | $P_{tot}$       | 300         | mW   |
| Thermal resistance from junction to ambient | $R_{\theta JA}$ | 417         | K/W  |
| Operating and Storage and Temperature Range | $T_j, T_{STG}$  | -65 to +150 |      |

**KMBT2222A**Electrical Characteristics  $T_a = 25$ 

| Parameter                            | Symbol        | Testconditions   | Min | Typ | Max | Unit    |
|--------------------------------------|---------------|--|-----|-----|-----|---------|
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C = 10 \mu A, I_E = 0$  | 75  |     |     | V       |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C = 10 mA, I_B = 0$   | 40  |     |     | V       |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_C = 10 \mu A, I_C = 0$  | 6   |     |     | V       |
| Collector cutoff current             | $I_{CBO}$     | $I_E = 0; V_{CB} = 60 V$   |     |     | 10  | nA      |
|                                      |               | $I_E = 0; V_{CB} = 60 V; T_J = 125$                                |     |     | 10  | $\mu A$ |
| Emitter cutoff current               | $I_{EBO}$     | $I_C = 0; V_{EB} = 3 V$  |     |     | 10  | nA      |
| DC current gain                      | $h_{FE}$      | $I_C = 0.1 mA; V_{CE} = 10 V$                                      | 35  |     |     |         |
|                                      |               | $I_C = 1 mA; V_{CE} = 10 V$  | 50  |     |     |         |
|                                      |               | $I_C = 10 mA; V_{CE} = 10 V$                                       | 75  |     |     |         |
|                                      |               | $I_C = 10 mA; V_{CE} = 10 V; T_a = -55$                            | 35  |     |     |         |
|                                      |               | $I_C = 150 mA; V_{CE} = 10 V$                                      | 100 |     | 300 |         |
|                                      |               | $I_C = 150 mA; V_{CE} = 1 V$                                       | 50  |     |     |         |
| collector-emitter saturation voltage | $V_{CEsat}$   | $I_C = 150 mA; I_B = 15 mA$  |     |     | 300 | mV      |
|                                      |               | $I_C = 500 mA; I_B = 50 mA$  |     |     | 1   | V       |
| base-emitter saturation voltage      | $V_{BEsat}$   | $I_C = 150 mA; I_B = 15 mA$  | 0.6 |     | 1.2 | V       |
|                                      |               | $I_C = 500 mA; I_B = 50 mA$  |     |     | 2   | V       |
| Delay time                           | $t_d$         | $I_{B1} = 15 mA, I_C = 150 mA,$<br>$V_{CC} = 30V, V_{BE} = -0.5 V$ |     |     | 15  | ns      |
| Rise time                            | $t_r$         |  |     |     | 25  | ns      |
| Storage time                         | $t_s$         | $I_{B1} = I_{B2} = 15 mA,$<br>$I_C = 150 mA, V_{CC} = 30V$         |     |     | 200 | ns      |
| Fall time                            | $t_f$         |  |     |     | 60  | ns      |
| Output Capacitance                   | $C_{obo}$     | $V_{CB} = 10V, f = 1.0MHz, I_E = 0$                                |     |     | 8   | pF      |
| Input Capacitance                    | $C_{ibo}$     | $V_{EB} = 0.5V, f = 1.0MHz, I_C = 0$                               |     |     | 25  | pF      |
| Noise Figure                         | NF            | $V_{CE} = 10 V, I_C = 100 \mu A, R_s = 1 k \Omega, f = 1 kHz$      |     |     | 4   | dB      |
| Transition frequency                 | $f_T$         | $I_C = 20 mA; V_{CE} = 20 V; f = 100 MHz$                          | 300 |     |     | MHz     |

## Marking

|         |    |
|---------|----|
| Marking | 1P |
|---------|----|

**KMBT2222A**

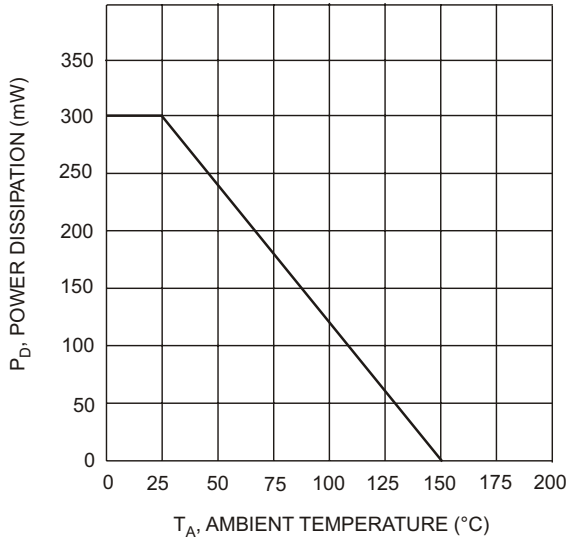


Fig. 1, Max Power Dissipation vs Ambient Temperature

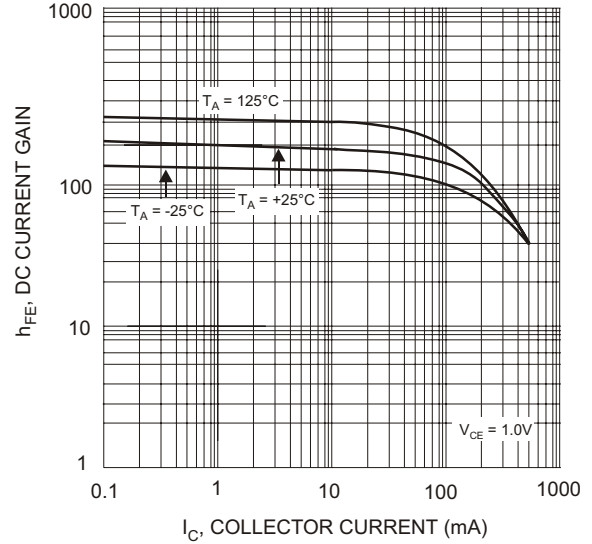


Fig. 2, Typical DC Current Gain vs Collector Current

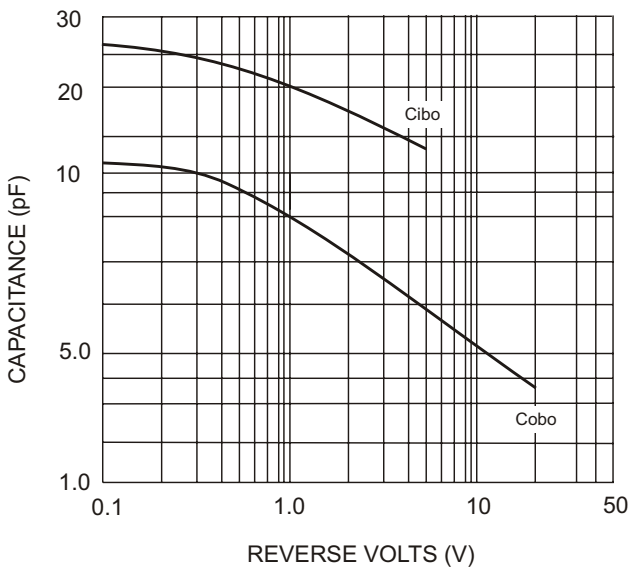


Fig. 3 Typical Capacitance

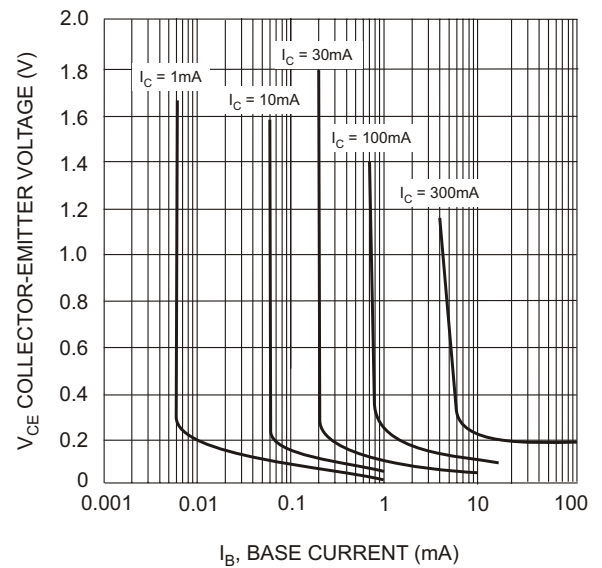


Fig. 4 Typical Collector Saturation Region