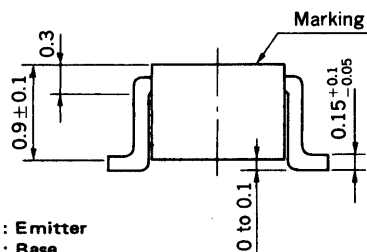
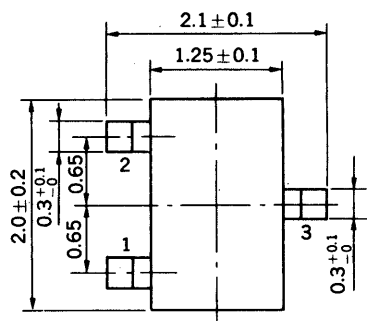


MEDIUM SPEED SWITCHING
RESISTOR BUILT-IN TYPE PNP TRANSISTOR

PACKAGE DIMENSIONS
in millimeters

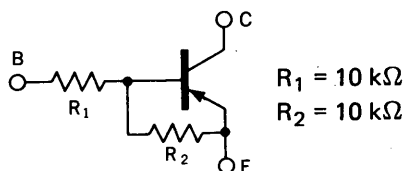


1 : Emitter
2 : Base
3 : Collector

Marking: M33

FEATURES

- Resistors Built-in TYPE



- Complementary to GA1A4M

ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Currents ($T_a = 25\text{ }^\circ\text{C}$)

| | | | |
|------------------------------|----------------|------|----|
| Collector to Base Voltage | V_{CB0} | -60 | V |
| Collector to Emitter Voltage | V_{CE0} | -50 | V |
| Emitter to Base Voltage | V_{EBO} | -10 | V |
| Collector Current (DC) | $I_{C(DC)}$ | -100 | mA |
| Collector Current (Pulse) | $I_{C(Pulse)}$ | -200 | mA |

Maximum Power Dissipation

| | | | |
|--|-------|-----|----|
| Total Power Dissipation at $25\text{ }^\circ\text{C}$ Ambient Temperature | P_T | 150 | mW |
|--|-------|-----|----|

Maximum Temperatures

| | | | |
|---------------------------|-----------|-------------|------------------|
| Junction Temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

ELECTRICAL CHARACTERISTICS ($T_a = 25\text{ }^\circ\text{C}$)

| CHARACTERISTIC | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS |
|------------------------------|-----------------|------|-------|------|------------------|---|
| Collector Cutoff Current | I_{CB0} | | | -100 | nA | $V_{CB} = -50\text{ V}, I_E = 0$ |
| DC Current Gain | h_{FE1}^* | 35 | 60 | 100 | | $V_{CB} = -5.0\text{ V}, I_C = -5.0\text{ mA}$ |
| DC Current Gain | h_{FE2}^* | 80 | 200 | | | $V_{CE} = -5.0\text{ V}, I_C = -50\text{ mA}$ |
| Collector Saturation Voltage | $V_{CE(sat)}^*$ | | -0.04 | -0.2 | V | $I_C = -50\text{ mA}, I_B = -0.25\text{ mA}$ |
| Low-Level Input Voltage | V_{IL}^* | | -1.13 | -0.8 | V | $V_{CE} = -5.0\text{ V}, I_C = -100\text{ }\mu\text{A}$ |
| High-Level Input Voltage | V_{IH}^* | -3.0 | -1.6 | | V | $V_{CE} = -0.2\text{ V}, I_C = -5.0\text{ mA}$ |
| Input Resistor | R_1 | 7 | 10 | 13 | $\text{k}\Omega$ | |
| Resistor Ratio | R_1/R_2 | 0.9 | 1.0 | 1.1 | | |
| Turn-on Time | t_{on} | | 0.1 | 0.5 | μs | $V_{CC} = -5\text{ V}, V_{in} = -5\text{ V}$ |
| Storage Time | t_{stg} | | 0.95 | 3.0 | μs | $R_L = 1\text{ k}\Omega$ |
| Turn-off Time | t_{off} | | 1.1 | 5.0 | μs | $PW = 2\text{ }\mu\text{s}, \text{Duty Cycle} \leq 2\%$ |

* Pulsed: $PW \leq 350\text{ }\mu\text{s}, \text{Duty Cycle} \leq 2\%$

TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

