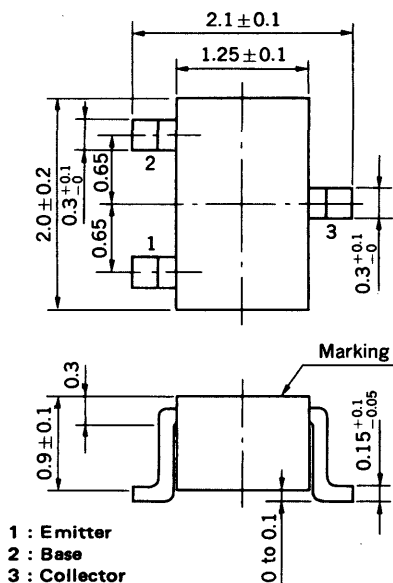


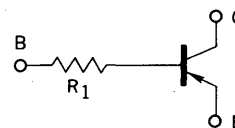
**MEDIUM SPEED SWITCHING  
RESISTOR BUILT-IN TYPE PNP TRANSISTOR**

**PACKAGE DIMENSIONS**  
in millimeters



**FEATURES**

- Resistor Built-in TYPE



$R_1 = 22 \text{ k}\Omega$

- Complementary to GA1F4Z

**ABSOLUTE MAXIMUM RATINGS**

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

|   |           |             |                  |
|---|-----------|-------------|------------------|
| Collector to Base Voltage                 | $V_{CB0}$ | -60         | V                |
| Collector to Emitter Voltage              | $V_{CEO}$ | -50         | V                |
| Emitter to Base Voltage                   | $V_{EBO}$ | -5          | V                |
| Collector Current (DC)                    | $I_C$     | -100        | mA               |
| Collector Current (Pulse)                 | $I_C$     | -200        | mA               |
| Maximum Power Dissipation                 |           |             |                  |
| Total Power Dissipation                   |           |             |                  |
| at $25^\circ\text{C}$ 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 ( $T_a = 25^\circ\text{C}$ )**

| CHARACTERISTIC               | SYMBOL          | MIN. | TYP.  | MAX. | UNIT             | TEST CONDITIONS   |
|------------------------------|-----------------|------|-------|------|------------------|---|
| Collector Cutoff Current     | $I_{CBO}$       |      |       | -100 | nA               | $V_{CB} = -50 \text{ V}, I_E = 0$   |
| DC Current Gain              | $h_{FE1}^*$     | 135  | 280   | 600  |                  | $V_{CE} = -5.0 \text{ V}, I_C = -5.0 \text{ mA}$  |
| DC Current Gain              | $h_{FE2}^*$     | 100  | 200   |      |                  | $V_{CE} = -5.0 \text{ V}, I_C = -50 \text{ mA}$   |
| Collector Saturation Voltage | $V_{CE(sat)}^*$ |      | -0.06 | -0.2 | V                | $I_C = -5.0 \text{ mA}, I_B = -0.25 \text{ mA}$   |
| High-Level Input Voltage     | $V_{IH}^*$      |      | -0.57 | -0.5 | V                | $V_{CE} = -5.0 \text{ V}, I_C = -100 \mu\text{A}$   |
| Low-Level Input Voltage      | $V_{IL}^*$      | -3.0 | -1.1  |      | V                | $V_{CE} = -0.2 \text{ V}, I_C = -5.0 \text{ mA}$  |
| Input Resistor               | $R_1$           | 15.4 | 22.0  | 28.6 | $\text{k}\Omega$ |   |
| Turn-on Time                 | $t_{on}$        |      |       | 0.2  | $\mu\text{s}$    | $V_{CC} = -5 \text{ V}, V_{in} = -5 \text{ V}$<br>$R_L = 1 \text{ k}\Omega$<br>$PW = 2 \mu\text{s}, \text{Duty Cycle} \leq 2\%$ |
| Storage Time                 | $t_{stg}$       |      |       | 5.0  | $\mu\text{s}$    |   |
| Turn-off Time                | $t_{off}$       |      |       | 6.0  | $\mu\text{s}$    |   |

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

**$h_{FE}$  Classification**

| Marking   | M64        | M65        | M66        |
|-----------|------------|------------|------------|
| $h_{FE1}$ | 135 to 270 | 200 to 400 | 300 to 600 |

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

