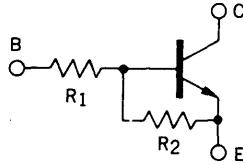


# NEC

## NPN SILICON TRANSISTOR AA1L4M

**DESCRIPTION** The AA1L4M is designed for use in medium speed switching circuit.

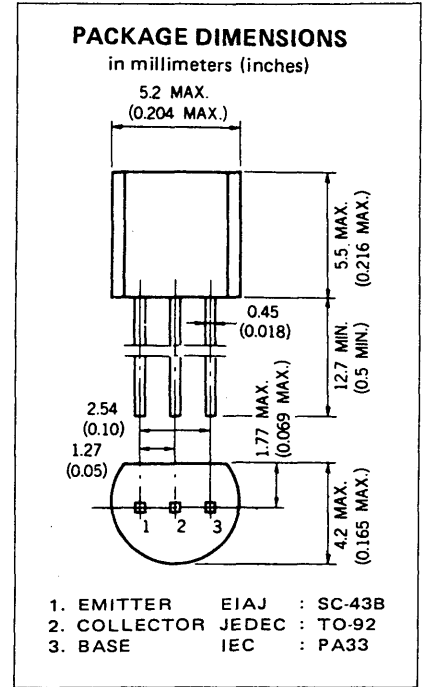
**FEATURE** • Bias resistors built-in type NPN transistor equivalent circuit.



$R_1 = 47\text{ k}\Omega$   
 $R_2 = 47\text{ k}\Omega$

### ABSOLUTE MAXIMUM RATINGS

|  |                |
|--|----------------|
| Maximum Temperatures                                   |                |
| Storage Temperature                                    | -55 to +150 °C |
| Junction Temperature                                   | 150 °C Maximum |
| Maximum Power Dissipation ( $T_a = 25\text{ °C}$ )     |                |
| Total Power Dissipation                                | 300 mW         |
| Maximum Voltages and Currents ( $T_a = 25\text{ °C}$ ) |                |
| $V_{CBO}$ Collector to Base Voltage                    | 60 V           |
| $V_{CEO}$ Collector to Emitter Voltage                 | 50 V           |
| $V_{EBO}$ Emitter to Base Voltage                      | 10 V           |
| $I_{C(DC)}$ Collector Current (DC)                     | 100 mA         |
| $I_{C(pulse)}$ Collector Current (pulse)               | 200 mA         |



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### ELECTRICAL CHARACTERISTICS ( $T_a = 25\text{ °C}$ )

| SYMBOL        | CHARACTERISTIC               | MIN. | TYP. | MAX. | UNIT             | TEST CONDITIONS  |
|---------------|------------------------------|------|------|------|------------------|--|
| $R_1$         | Input Resistance             | 32.9 | 47.0 | 61.1 | $\text{k}\Omega$ |  |
| $R_1/R_2$     | Resistors Ratio              | 0.9  | 1.0  | 1.1  | —                |  |
| $V_{IL}$      | Low Level Input Voltage      |      | 1.1  | 0.8  | V                | $V_{CE} = 5.0\text{ V}, I_C = 100\text{ }\mu\text{A}$  |
| $V_{IH}$      | Hi Level Input Voltage       | 5.0  | 1.7  |      | V                | $V_{CE} = 0.2\text{ V}, I_C = 5.0\text{ mA}$   |
| $t_{on}$      | Turn on Time                 |      | 0.27 | 0.7  | $\mu\text{s}$    | $V_{CC} = 5.0\text{ V}, R_L = 1.0\text{ k}\Omega$<br>$V_{in} = 5.0\text{ V},$<br>$PW = 2\text{ }\mu\text{s}, \text{Duty Cycle} \leq 2\%$ |
| $t_{stg}$     | Storage Time                 |      | 2.0  | 5.0  | $\mu\text{s}$    |  |
| $t_{off}$     | Turn off Time                |      | 2.48 | 6.0  | $\mu\text{s}$    |  |
| $h_{FE1}$     | DC Current Gain              | 85   | 240  | 340  | —                | $V_{CE} = 5.0\text{ V}, I_C = 5.0\text{ mA}$   |
| $h_{FE2}$     | DC Current Gain              | 95   | 640  |      | —                | $V_{CE} = 5.0\text{ V}, I_C = 50\text{ mA}$  |
| $V_{CE(sat)}$ | Collector Saturation Voltage |      | 0.04 | 0.2  | V                | $I_C = 5.0\text{ mA}, I_B = 0.25\text{ mA}$  |
| $I_{CBO}$     | Collector Cutoff Current     |      |      | 0.1  | $\mu\text{A}$    | $V_{CB} = 50\text{ V}, I_E = 0$  |

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

