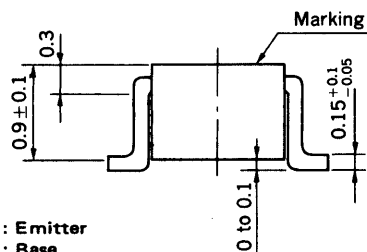
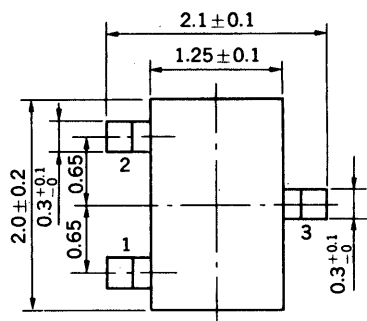


MEDIUM SPEED SWITCHING  
RESISTOR BUILT-IN TYPE PNP TRANSISTOR

PACKAGE DIMENSIONS  
in millimeters

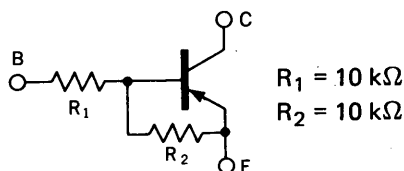


1 : Emitter  
2 : Base  
3 : Collector

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 °C Ambient Temperature	$P_T$	150	mW
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Maximum Temperatures

Junction Temperature	$T_j$	150	°C
Storage Temperature Range	$T_{stg}$	-55 to +150	°C

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

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	$h_{FE1}^*$	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	k $\Omega$	
Resistor Ratio	$R_1/R_2$	0.9	1.0	1.1		
Turn-on Time	$t_{on}$		0.1	0.5	$\mu\text{s}$	$V_{CC} = -5\text{ V}, V_{in} = -5\text{ V}$
Storage Time	$t_{stg}$		0.95	3.0	$\mu\text{s}$	$R_L = 1\text{ k}\Omega$
Turn-off Time	$t_{off}$		1.1	5.0	$\mu\text{s}$	$PW = 2\text{ }\mu\text{s}, \text{Duty Cycle} \leq 2\%$

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

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

