

TOSHIBA TRANSISTOR SILICON PNP EPITAXIAL TYPE (PCT PROCESS)

# 2SA1955

GENERAL PURPOSE AMPLIFIER APPLICATIONS

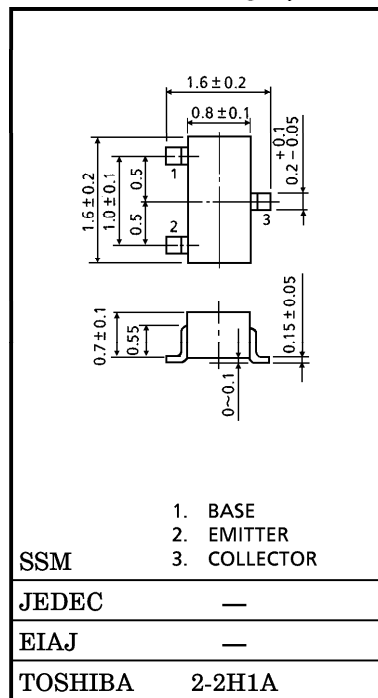
SWITCHING AND MUTING SWITCH APPLICATION

Unit in mm

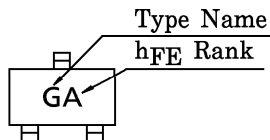
- Low Saturation Voltage :  $V_{CE(sat)}(1) = -15mV$  (Typ.)  
@  $I_C = -10mA / I_B = -0.5mA$
- Large Collector Current :  $I_C = -400mA$  (Max.)

MAXIMUM RATINGS ( $T_a = 25^\circ C$ )

| CHARACTERISTIC              | SYMBOL    | RATING  | UNIT       |
|-----------------------------|-----------|---------|------------|
| Collector-Base Voltage      | $V_{CBO}$ | -15     | V          |
| Collector-Emitter Voltage   | $V_{CEO}$ | -12     | V          |
| Emitter-Base Voltage        | $V_{EBO}$ | -5      | V          |
| Collector Current           | $I_C$     | -400    | mA         |
| Base Current                | $I_B$     | -50     | mA         |
| Collector Power Dissipation | $P_C$     | 100     | mW         |
| Junction Temperature        | $T_j$     | 125     | $^\circ C$ |
| Storage Temperature Range   | $T_{stg}$ | -55~125 | $^\circ C$ |



MARKING



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC                       |              | SYMBOL           | TEST CONDITION                             | MIN.                     | TYP.  | MAX. | UNIT     |
|--------------------------------------|--------------|------------------|--|--------------------------|-------|------|----------|
| Collector Cut-off Current            |              | $I_{CBO}$        | $V_{CB} = -15V, I_E = 0$                   | —                        | —     | -0.1 | $\mu A$  |
| Emitter Cut-off Current              |              | $I_{EBO}$        | $V_{EB} = -5V, I_C = 0$                    | —                        | —     | -0.1 | $\mu A$  |
| DC Current Gain                      |              | $h_{FE}$ (Note)  | $V_{CE} = -2V, I_C = -10mA$                | 300                      | —     | 1000 |          |
| Collector-Emitter Saturation Voltage |              | $V_{CE(sat)}(1)$ | $I_C = -10mA, I_B = -0.5mA$                | —                        | -15   | -30  | mV       |
|                                      |              | $V_{CE(sat)}(2)$ | $I_C = -200mA, I_B = -10mA$                | —                        | -110  | -250 |          |
| Base-Emitter Saturation Voltage      |              | $V_{BE(sat)}$    | $I_C = -200mA, I_B = -10mA$                | —                        | -0.87 | -1.2 | V        |
| Transition Frequency                 |              | $f_T$            | $V_{CE} = -2V, I_C = -10mA$                | 80                       | 130   | —    | MHz      |
| Collector Output Capacitance         |              | $C_{ob}$         | $V_{CB} = -10V, I_E = 0, f = 1MHz$         | —                        | 4.2   | —    | pF       |
| Collector-Emitter On Resistance      |              | $R_{on}$         | $I_B = -1mA, V_{in} = -1V_{rms}, f = 1kHz$ | —                        | 0.9   | —    | $\Omega$ |
| Switching Time                       | Turn-on Time | $t_{on}$         |  | —                        | 40    | —    | ns       |
|                                      | Storage Time | $t_{stg}$        |  | —                        | 280   | —    |          |
|                                      | Fall Time    | $t_f$            |  | $I_{B1} = -I_{B2} = 5mA$ | —     | 45   |          |

(Note)  $h_{FE}$  Classification    A : 300~600, B : 500~1000

