

TOSHIBA TRANSISTOR SILICON PNP EPITAXIAL TYPE (PCT PROCESS)

# 2SA1891

POWER AMPLIFIER APPLICATIONS

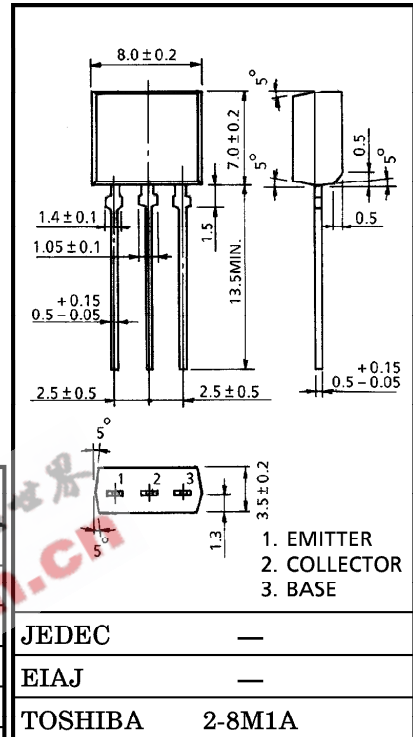
POWER SWITCHING APPLICATIONS

- Low Collector Saturation Voltage  
:  $V_{CE(sat)} = -0.5V$  (Max.) ( $I_C = -1A$ )
- High Collector Power Dissipation :  $P_C = 1.3W$  ( $T_a = 25^\circ C$ )
- High Speed Switching Time :  $t_{stg} = 300ns$  (Typ.)
- Complementary to 2SC5028

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

| CHARACTERISTIC              | SYMBOL    | RATING  | UNIT       |
|-----------------------------|-----------|---------|------------|
| Collector-Base Voltage      | $V_{CBO}$ | -60     | V          |
| Collector-Emitter Voltage   | $V_{CEO}$ | -50     | V          |
| Emitter-Base Voltage        | $V_{EBO}$ | -6      | V          |
| Collector Current           | $I_C$     | -2      | A          |
| Base Current                | $I_B$     | -0.2    | A          |
| Collector Power Dissipation | $P_C$     | 1.3     | W          |
| Junction Temperature        | $T_j$     | 150     | $^\circ C$ |
| Storage Temperature Range   | $T_{stg}$ | -55~150 | $^\circ C$ |

Unit in mm



Weight : 0.55g

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC                       | SYMBOL        | TEST CONDITION                     | MIN.   | TYP. | MAX. | UNIT    |   |     |   |         |
|--------------------------------------|---------------|------------------------------------|--|------|------|---------|---|-----|---|---------|
| Collector Cut-off Current            | $I_{CBO}$     | $V_{CB} = -60V, I_E = 0$           | —  | —    | -1.0 | $\mu A$ |   |     |   |         |
| Emitter Cut-off Current              | $I_{EBO}$     | $V_{EB} = -6V, I_C = 0$            | —  | —    | -1.0 | $\mu A$ |   |     |   |         |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C = -10mA, I_B = 0$             | -50  | —    | —    | V       |   |     |   |         |
| DC Current Gain                      | $h_{FE(1)}$   | $V_{CE} = -2V, I_C = -100mA$       | 120  | —    | 400  |         |   |     |   |         |
|                                      | $h_{FE(2)}$   | $V_{CE} = -2V, I_C = -1.5A$        | 40   | —    | —    |         |   |     |   |         |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = -1A, I_B = -0.05A$          | —  | —    | -0.5 | V       |   |     |   |         |
| Base-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C = -1A, I_B = -0.05A$          | —  | —    | -1.2 | V       |   |     |   |         |
| Transition Frequency                 | $f_T$         | $V_{CE} = -2V, I_C = -100mA$       | —  | 100  | —    | MHz     |   |     |   |         |
| Collector Output Capacitance         | $C_{ob}$      | $V_{CB} = -10V, I_E = 0, f = 1MHz$ | —  | 23   | —    | pF      |   |     |   |         |
| Switching Time                       | Turn-on Time  | $t_{on}$                           | <p> <math>20\mu s</math> INPUT <math>I_{B2}</math> OUTPUT<br/> <math>I_{B1}</math> <math>I_{B2}</math> <math>I_{B1}</math> 300Ω 30V<br/> <math>-I_{B1} = I_{B2} = 0.05A</math> <math>V_{CC} = -30V</math><br/>                     DUTY CYCLE <math>\leq 1\%</math> </p> |      |      |         | — | 0.1 | — | $\mu s$ |
|                                      | Storage Time  | $t_{stg}$                          |  |      |      |         | — | 0.3 | — |         |
|                                      | Fall Time     | $t_f$                              |  |      |      |         | — | 0.1 | — |         |