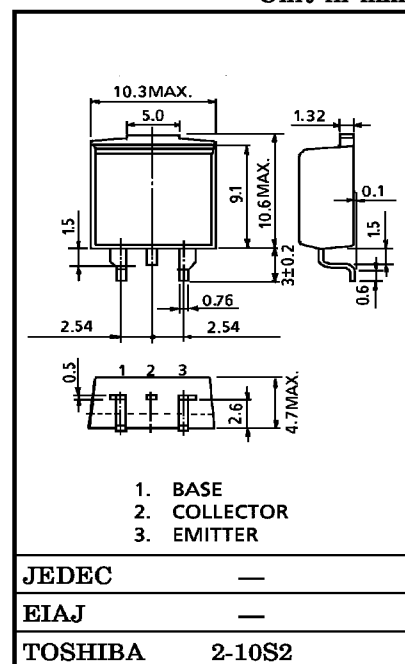


**2SB1667(SM)**

Unit in mm

- **Low Collector Saturation Voltage**  
:  $V_{CE(sat)} = -1.7 \text{ V (Max.)}$  ( $I_C = -3 \text{ A}$ ,  $I_B = -0.3 \text{ A}$ )

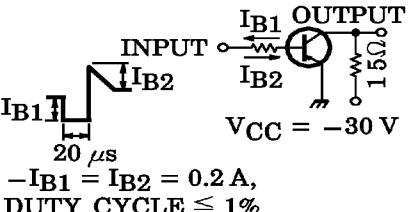
| CHARACTERISTIC              |                            | SYMBOL    | RATING  | UNIT               |
|-----------------------------|----------------------------|-----------|---------|--------------------|
| Collector-Base Voltage      |                            | $V_{CB0}$ | -60     | V                  |
| Collector-Emitter Voltage   |                            | $V_{CEO}$ | -60     | V                  |
| Emitter-Base Voltage        |                            | $V_{EB0}$ | -7      | V                  |
| Collector Current           |                            | $I_C$     | -3      | A                  |
| Base Current                |                            | $I_B$     | -0.5    | A                  |
| Collector Power Dissipation | $T_a = 25^{\circ}\text{C}$ | $P_C$     | 1.5     | W                  |
|                             | $T_c = 25^{\circ}\text{C}$ |           | 25      |                    |
| Junction Temperature        |                            | $T_j$     | 150     | $^{\circ}\text{C}$ |
| Storage Temperature Range   |                            | $T_{stg}$ | -55~150 | $^{\circ}\text{C}$ |



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

| CHARACTERISTIC                       |                       | SYMBOL         | TEST CONDITION                                                                                                                                                                                                                                                                                                             | MIN. | TYP. | MAX. | UNIT          |
|--------------------------------------|-----------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|---------------|
| Collector Cut-off Current            |                       | $I_{CBO}$      | $V_{CB} = -60\text{ V}, I_E = 0$                                                                                                                                                                                                                                                                                           | —    | —    | -100 | $\mu\text{A}$ |
| Emitter Cut-off Current              |                       | $I_{EBO}$      | $V_{EB} = -7\text{ V}, I_C = 0$                                                                                                                                                                                                                                                                                            | —    | —    | -100 | $\mu\text{A}$ |
| Collector-Emitter Breakdown Voltage  |                       | $V_{(BR) CEO}$ | $I_C = -50\text{ mA}, I_B = 0$                                                                                                                                                                                                                                                                                             | -60  | —    | —    | V             |
| DC Current Gain                      | $h_{FE(1)}$<br>(Note) |                | $V_{CE} = -5\text{ V}, I_C = -0.5\text{ A}$                                                                                                                                                                                                                                                                                | 60   | —    | 300  |               |
|                                      | $h_{FE(2)}$           |                | $V_{CE} = -5\text{ V}, I_C = -3\text{ A}$                                                                                                                                                                                                                                                                                  | 20   | —    | —    |               |
| Collector-Emitter Saturation Voltage |                       | $V_{CE(sat)}$  | $I_C = -3\text{ A}, I_B = -0.3\text{ A}$                                                                                                                                                                                                                                                                                   | —    | -0.5 | -1.7 | V             |
| Base-Emitter Voltage                 |                       | $V_{BE}$       | $V_{CE} = -5\text{ V}, I_C = -0.5\text{ A}$                                                                                                                                                                                                                                                                                | —    | -0.7 | -1.0 | V             |
| Transition Frequency                 |                       | $f_T$          | $V_{CE} = -5\text{ V}, I_C = -0.5\text{ A}$                                                                                                                                                                                                                                                                                | —    | 9    | —    | MHz           |
| Collector Output Capacitance         |                       | $C_{ob}$       | $V_{CB} = -10\text{ V}, I_E = 0,$<br>$f = 1\text{ MHz}$                                                                                                                                                                                                                                                                    | —    | 150  | —    | pF            |
| Switching Time                       | Turn-on Time          | $t_{on}$       |  <p> <math>I_{B1}</math> INPUT <math>I_{B2}</math> OUTPUT<br/> <math>V_{CC} = -30\text{ V}</math><br/> <math>20\ \mu\text{s}</math><br/> <math>-I_{B1} = I_{B2} = 0.2\text{ A},</math><br/> <math>\text{DUTY CYCLE} \leq 1\%</math> </p> | —    | 0.4  | —    | $\mu\text{s}$ |
|                                      | Storage Time          | $t_{stg}$      |                                                                                                                                                                                                                                                                                                                            | —    | 1.7  | —    |               |
|                                      | Fall Time             | $t_f$          |                                                                                                                                                                                                                                                                                                                            | —    | 0.5  | —    |               |

(Note) :  $h_{FE(1)}$  Classification    O : 60~120,    Y : 100~200

