

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE

2SD633, 2SD635

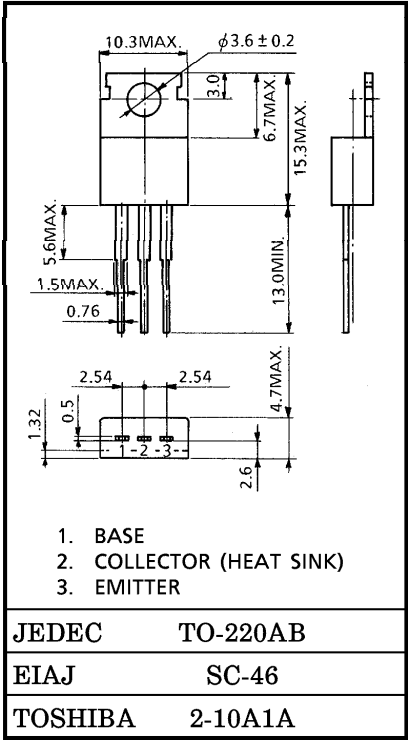
HIGH POWER SWITCHING APPLICATIONS  
HAMMER DRIVE, PULSE MOTOR DRIVE APPLICATIONS

INDUSTRIAL APPLICATIONS  
Unit in mm

- High DC Current Gain :  $h_{FE}=2000$  (Min.)
- Low Saturation Voltage :  $V_{CE(sat)}=1.5V$  (Max.)
- Complementary to 2SB673 and 2SB675.

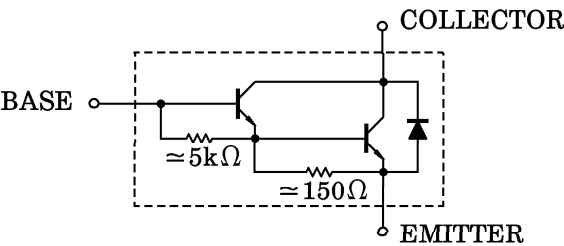
MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC   |        | SYMBOL           | RATING  | UNIT |
|--|--------|------------------|---------|------|
| Collector-Base Voltage                                 | 2SD633 | V <sub>CBO</sub> | 100     | V    |
|  | 2SD635 |                  | 60      |      |
| Collector-Emitter Voltage                              | 2SD633 | V <sub>CEO</sub> | 100     | V    |
|  | 2SD635 |                  | 60      |      |
| Emitter-Base Voltage                                   |        | V <sub>EBO</sub> | 5       | V    |
| Collector Current                                      |        | I <sub>C</sub>   | 7       | A    |
|  |        | I <sub>CP</sub>  |         |      |
| Base Current   |        | I <sub>B</sub>   | 0.7     | A    |
| Collector Power Dissipation<br>(T <sub>c</sub> = 25°C) |        | P <sub>C</sub>   | 40      | W    |
| Junction Temperature                                   |        | T <sub>j</sub>   | 150     | °C   |
| Storage Temperature Range                              |        | T <sub>stg</sub> | −55~150 | °C   |



Weight : 1.9g (Typ.)  
Mounting kit No. AC75

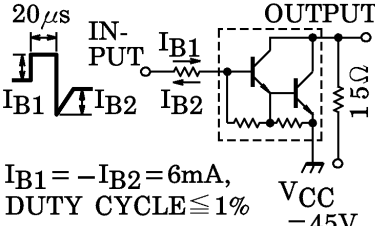
EQUIVALENT CIRCUIT



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

| CHARACTERISTIC                       |              | SYMBOL                | TEST CONDITION  | MIN.   | TYP. | MAX.  | UNIT |   |
|--------------------------------------|--------------|-----------------------|---|--|------|-------|------|---|
| Collector Cut-off Current            | 2SD633       | I <sub>CBO</sub>      | V <sub>CB</sub> =100V, I <sub>E</sub> =0  | —  | —    | 100   | μA   |   |
|                                      | 2SD635       |                       | V <sub>CB</sub> =60V, I <sub>E</sub> =0   | —  | —    | 100   |      |   |
| Emitter Cut-off Current              |              | I <sub>EBO</sub>      | V <sub>EB</sub> =5V, I <sub>C</sub> =0  | —  | —    | 3.0   | mA   |   |
| Collector-Emitter Breakdown Voltage  | 2SD633       | V (BR) CEO            | I <sub>C</sub> =50mA, I <sub>B</sub> =0   | 100  | —    | —     | V    |   |
|                                      | 2SD635       |                       |   | 60   | —    | —     |      |   |
| DC Current Gain                      |              | h <sub>FE</sub> (1)   | V <sub>CE</sub> =3V, I <sub>C</sub> =3A   | 2000   | —    | 15000 |      |   |
|                                      |              | h <sub>FE</sub> (2)   | V <sub>CE</sub> =3V, I <sub>C</sub> =7A   | 1000   | —    | —     |      |   |
| Collector-Emitter Saturation Voltage |              |                       | V <sub>CE</sub> (sat) (1)   | I <sub>C</sub> =3A, I <sub>B</sub> =6mA  | —    | 0.9   | 1.5  | V |
|                                      |              |                       | V <sub>CE</sub> (sat) (2)   | I <sub>C</sub> =7A, I <sub>B</sub> =14mA   | —    | 1.2   | 2.0  |   |
| Base-Emitter Saturation Voltage      |              | V <sub>BE</sub> (sat) | I <sub>C</sub> =3A, I <sub>B</sub> =6mA   | —  | 1.5  | 2.5   | V    |   |
| Switching Time                       | Turn-on Time | t <sub>on</sub>       |  | —  | 0.8  | —     | μs   |   |
|                                      | Storage Time | t <sub>stg</sub>      |   | —  | 3.0  | —     |      |   |
|                                      | Fall Time    | t <sub>f</sub>        |   | I <sub>B1</sub> = -I <sub>B2</sub> =6mA,<br>DUTY CYCLE ≤ 1%<br>V <sub>CC</sub> = 45V | —    | 2.5   |      | — |

