

ISC Silicon NPN Power Transistor

2SD961

DESCRIPTION

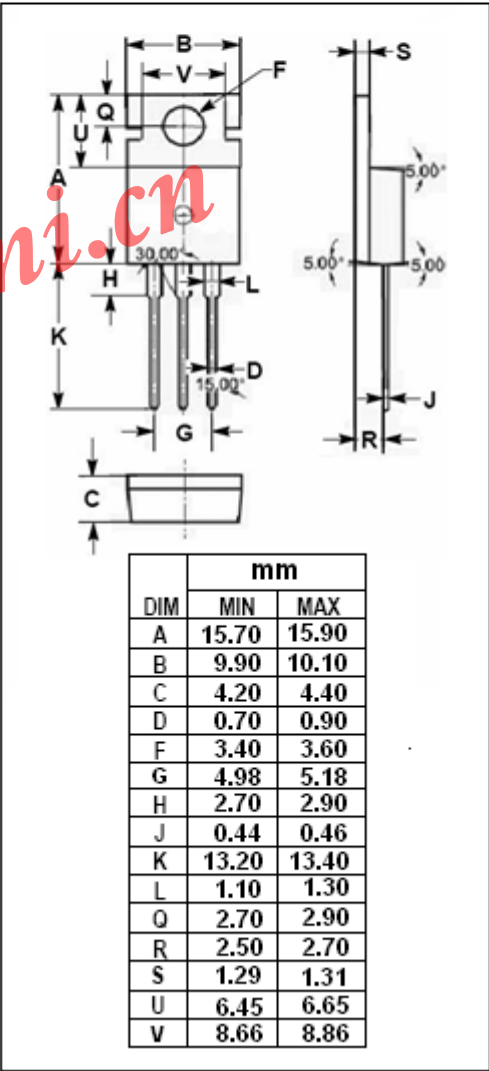
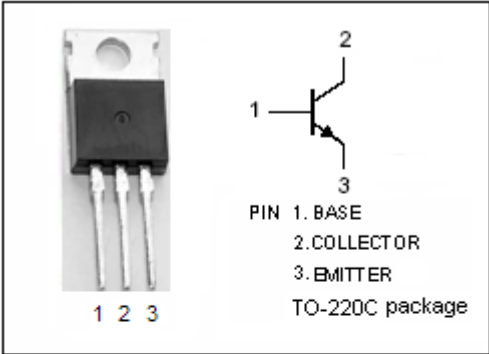
- Collector-Emitter Breakdown Voltage-  
:  $V_{(BR)CEO} = 80V(\text{Min})$
- Good Linearity of  $h_{FE}$
- Low Collector Saturation Voltage  
:  $V_{CE(sat)} = 0.5V(\text{Max})@I_C = 4A$
- Complement to Type 2SB869

APPLICATIONS

- Designed for power switching applications.

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

| SYMBOL    | PARAMETER                                          | VALUE   | UNIT        |
|-----------|----------------------------------------------------|---------|-------------|
| $V_{CBO}$ | Collector-Base Voltage                             | 130     | V           |
| $V_{CEO}$ | Collector-Emitter Voltage                          | 80      | V           |
| $V_{EBO}$ | Emitter-Base Voltage                               | 7       | V           |
| $I_C$     | Collector Current-Continuous                       | 5       | A           |
| $I_{CM}$  | Collector Current-Peak                             | 10      | A           |
| $P_C$     | Collector Power Dissipation<br>@ $T_C=25^{\circ}C$ | 40      | W           |
| $T_J$     | Junction Temperature                               | 150     | $^{\circ}C$ |
| $T_{stg}$ | Storage Temperature Range                          | -55~150 | $^{\circ}C$ |



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## ELECTRICAL CHARACTERISTICS

 $T_C=25^{\circ}\text{C}$  unless otherwise specified

| SYMBOL        | PARAMETER                            | CONDITIONS                           | MIN | TYP. | MAX | UNIT          |
|---------------|--------------------------------------|--------------------------------------|-----|------|-----|---------------|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage  | $I_C=10\text{mA}; I_B=0$             | 80  |      |     | V             |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C=4\text{A}; I_B=0.2\text{A}$     |     |      | 0.5 | V             |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage      | $I_C=4\text{A}; I_B=0.2\text{A}$     |     |      | 1.5 | V             |
| $I_{CBO}$     | Collector Cutoff Current             | $V_{CB}=100\text{V}; I_E=0$          |     |      | 10  | $\mu\text{A}$ |
| $I_{EBO}$     | Emitter Cutoff Current               | $V_{EB}=5\text{V}; I_C=0$            |     |      | 50  | $\mu\text{A}$ |
| $h_{FE-1}$    | DC Current Gain                      | $I_C=0.1\text{A}; V_{CE}=2\text{V}$  | 45  |      |     |               |
| $h_{FE-2}$    | DC Current Gain                      | $I_C=0.5\text{A}; V_{CE}=2\text{V}$  | 60  |      | 260 |               |
| $f_T$         | Current-Gain—Bandwidth Product       | $I_C=0.5\text{A}; V_{CE}=10\text{V}$ |     | 30   |     | MHz           |

## Switching Times

|          |              |                                             |  |      |  |               |
|----------|--------------|---------------------------------------------|--|------|--|---------------|
| $t_{on}$ | Turn-On Time | $I_C=2\text{A}; I_{B1}=-I_{B2}=0.2\text{A}$ |  | 0.5  |  | $\mu\text{s}$ |
| $t_s$    | Storage Time |                                             |  | 1.5  |  | $\mu\text{s}$ |
| $t_f$    | Fall Time    |                                             |  | 0.15 |  | $\mu\text{s}$ |

◆  $h_{FE-2}$  Classifications

| R      | Q      | P       |
|--------|--------|---------|
| 60-120 | 90-180 | 130-260 |