

**DESCRIPTION**

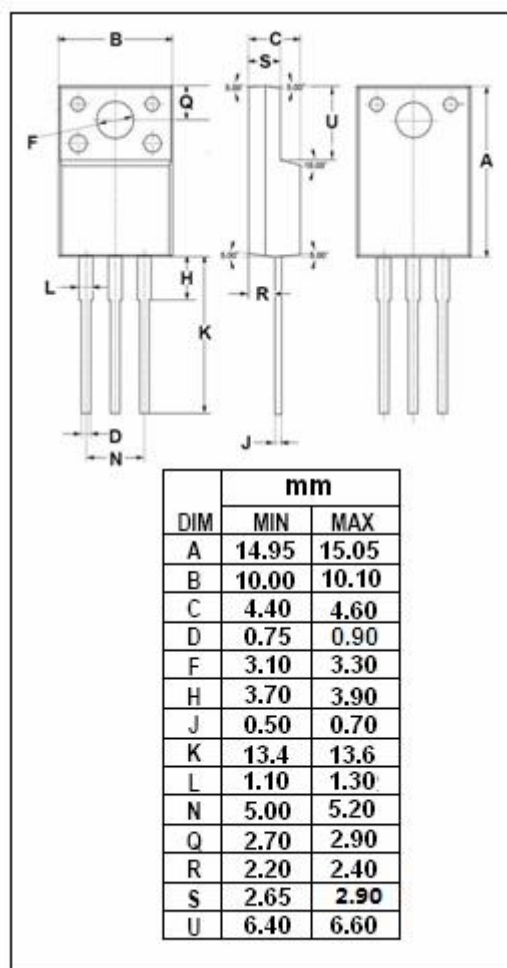
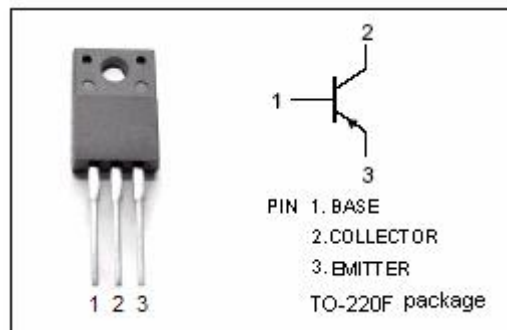
- Collector-Emitter Sustaining Voltage-  
:  $V_{CE0} = -60V(\text{Min})$
- High DC Current Gain-  
:  $h_{FE} = 100(\text{Min})@ (V_{CE} = -2V, I_C = -1A)$
- Low Saturation Voltage-  
:  $V_{CE(\text{sat})} = -0.3V(\text{Max})@ (I_C = -3A, I_B = -0.15A)$

**APPLICATIONS**

- This type of power transistor is developed for high-speed switching and features a high  $h_{FE}$  at low  $V_{CE(\text{sat})}$ , which is ideal for use as a driver in DC/DC converters and actuators.

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

| SYMBOL    | PARAMETER                                          | VALUE   | UNIT             |
|-----------|----------------------------------------------------|---------|------------------|
| $V_{CBO}$ | Collector-Base Voltage                             | -100    | V                |
| $V_{CEO}$ | Collector-Emitter Voltage                          | -60     | V                |
| $V_{EBO}$ | Emitter-Base Voltage                               | -7.0    | V                |
| $I_C$     | Collector Current-Continuous                       | -7.0    | A                |
| $I_{CM}$  | Collector Current-Pulse                            | -12     | A                |
| $I_B$     | Base Current-Continuous                            | -2.5    | A                |
| $P_T$     | Total Power Dissipation @ $T_C = 25^\circ\text{C}$ | 25      | W                |
|           | Total Power Dissipation @ $T_a = 25^\circ\text{C}$ | 2.0     |                  |
| $T_J$     | Junction Temperature                               | 150     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature                                | -55~150 | $^\circ\text{C}$ |



## ELECTRICAL CHARACTERISTICS

T<sub>j</sub>=25°C unless otherwise specified

| SYMBOL                 | PARAMETER                            | CONDITIONS                                    | MIN  | TYP. | MAX  | UNIT |
|------------------------|--------------------------------------|-----------------------------------------------|------|------|------|------|
| V <sub>CEO</sub>       | Collector-Emitter Voltage            | I <sub>C</sub> = -10mA; I <sub>B</sub> = 0    | -60  |      |      | V    |
| V <sub>CBO</sub>       | Collector-Emitter Voltage            | I <sub>E</sub> = -1mA; I <sub>C</sub> = 0     | -100 |      |      | V    |
| V <sub>CE(sat)-1</sub> | Collector-Emitter Saturation Voltage | I <sub>C</sub> = -3A; I <sub>B</sub> = -0.15A |      |      | -0.3 | V    |
| V <sub>CE(sat)-2</sub> | Collector-Emitter Saturation Voltage | I <sub>C</sub> = -4A; I <sub>B</sub> = -0.2A  |      |      | -0.5 | V    |
| V <sub>BE(sat)-1</sub> | Base-Emitter Saturation Voltage      | I <sub>C</sub> = -3A; I <sub>B</sub> = -0.15A |      |      | -1.2 | V    |
| V <sub>BE(sat)-2</sub> | Base-Emitter Saturation Voltage      | I <sub>C</sub> = -4A; I <sub>B</sub> = -0.2A  |      |      | -1.5 | V    |
| I <sub>CBO</sub>       | Collector Cutoff Current             | V <sub>CB</sub> = -80V; I <sub>E</sub> =0     |      |      | -10  | μ A  |
| I <sub>CEO</sub>       | Collector Cutoff Current             | V <sub>CE</sub> = -50V; I <sub>B</sub> =0     |      |      | -1.0 | mA   |
| I <sub>EBO</sub>       | Emitter Cutoff Current               | V <sub>EB</sub> = -5V; I <sub>C</sub> =0      |      |      | -10  | μ A  |
| h <sub>FE-1</sub>      | DC Current Gain                      | I <sub>C</sub> = -0.5A; V <sub>CE</sub> = -2V | 100  |      |      |      |
| h <sub>FE-2</sub>      | DC Current Gain                      | I <sub>C</sub> = -1.0A; V <sub>CE</sub> = -2V | 100  |      | 400  |      |
| h <sub>FE-3</sub>      | DC Current Gain                      | I <sub>C</sub> = -3.0A; V <sub>CE</sub> = -2V | 60   |      |      |      |

## Switching times

|                  |              |                                                                                                                      |  |  |     |     |
|------------------|--------------|----------------------------------------------------------------------------------------------------------------------|--|--|-----|-----|
| t <sub>on</sub>  | Turn-on Time | I <sub>C</sub> = -3.0A, R <sub>L</sub> = 17 Ω,<br>I <sub>B1</sub> = -I <sub>B2</sub> = -0.15A, V <sub>CC</sub> ≈-50V |  |  | 0.3 | μ s |
| t <sub>stg</sub> | Storage Time |                                                                                                                      |  |  | 1.5 | μ s |
| t <sub>f</sub>   | Fall Time    |                                                                                                                      |  |  | 0.3 | μ s |

◆ h<sub>FE-2</sub> Classifications

| M       | L       | K       |
|---------|---------|---------|
| 100-200 | 150-300 | 200-400 |