

isc Silicon NPN Power Transistor

2N5491

DESCRIPTION

- Collector-Emitter Sustaining Voltage-
: $V_{CEO(SUS)} = 40V(\text{Min})$
- Low Saturation Voltage-
: $V_{CE(sat)} = 1V(\text{Max}) @ I_C = 2.0A$

APPLICATIONS

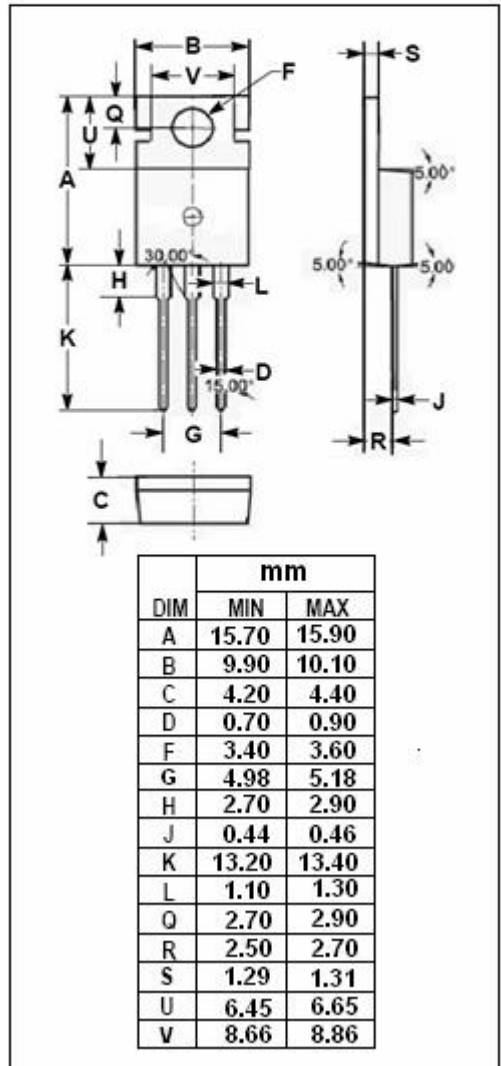
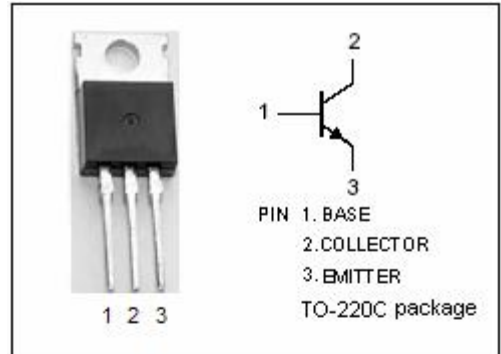
- Designed for a wide variety of medium-power switching and amplifier applications , such as series and shunt regulators and driver and output stages of high-fidelity amplifiers.

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

| SYMBOL | PARAMETER | VALUE | UNIT |
|-----------|---|---------|------------------|
| V_{CBO} | Collector-Base Voltage | 60 | V |
| V_{CEV} | Collector-Emitter Voltage $V_{BE} = -1.5V$ | 60 | V |
| V_{CER} | Collector-Emitter Voltage $R_{BE} = 100 \Omega$ | 50 | V |
| V_{CEO} | Collector-Emitter Voltage | 40 | V |
| V_{EBO} | Emitter-Base Voltage | 5 | V |
| I_C | Collector Current-Continuous | 7 | A |
| I_B | Base Current | 3 | A |
| P_C | Collector Power Dissipation @ $T_a=25^\circ\text{C}$ | 1.8 | W |
| | Collector Power Dissipation @ $T_c=25^\circ\text{C}$ | 50 | |
| T_J | Junction Temperature | 150 | $^\circ\text{C}$ |
| T_{stg} | Storage Temperature Range | -65~150 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | MAX | UNIT |
|--------------|---|-----|--------------------|
| $R_{th j-c}$ | Thermal Resistance, Junction to Case | 2.5 | $^\circ\text{C/W}$ |
| $R_{th j-a}$ | Thermal Resistance, Junction to Ambient | 70 | $^\circ\text{C/W}$ |



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ELECTRICAL CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN | MAX | UNIT |
|----------------|--------------------------------------|---|-----|------------|------|
| $V_{CE0(SUS)}$ | Collector-Emitter Sustaining Voltage | $I_C=100\text{mA}; I_B=0$ | 40 | | V |
| $V_{CEr(SUS)}$ | Collector-Emitter Sustaining Voltage | $I_C=100\text{mA}; R_{BE}=100\Omega$ | 50 | | V |
| $V_{CEv(SUS)}$ | Collector-Emitter Sustaining Voltage | $I_C=100\text{mA}; V_{BE}=-1.5\text{V}$ | 60 | | V |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C=2\text{A}; I_B=0.2\text{A}$ | | 1.0 | V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $I_C=2\text{A}; V_{CE}=4\text{V}$ | | 1.1 | V |
| I_{CEV} | Collector Cutoff Current | $V_{CE}=55\text{V}; V_{BE}=-1.5\text{V}$ $V_{CE}=55\text{V}; V_{BE}=-1.5\text{V}; T_C=125^\circ\text{C}$ | | 1.0 5.0 | mA |
| I_{CEr} | Collector Cutoff Current | $V_{CE}=40\text{V}; R_{BE}=100\Omega$ $V_{CE}=40\text{V}; R_{BE}=100\Omega; T_C=125^\circ\text{C}$ | | 2.0 3.5 | mA |
| I_{EBO} | Emitter Cutoff Current | $V_{EB}=5\text{V}; I_C=0$ | | 1.0 | mA |
| h_{FE} | DC Current Gain | $I_C=2\text{A}; V_{CE}=4\text{V}$ | 20 | 100 | |
| f_T | Current-Gain—Bandwidth Product | $I_C=0.5\text{A}; V_{CE}=4\text{V}$ | 0.8 | | MHz |

Switching Times

| | | | | | |
|-----------|---------------|---|--|----|---------------|
| t_{on} | Turn-On Time | $I_C=2\text{A}; I_{B1}=-I_{B2}=0.2\text{A}$ | | 5 | μs |
| t_{off} | Turn-Off Time | | | 15 | μs |