

isc Silicon NPN Power Transistor

BD933/935/937/939/941

DESCRIPTION

- DC Current Gain-
: $h_{FE} = 40(\text{Min}) @ I_C = 150\text{mA}$
- Complement to Type BD934/936/938/940/942

APPLICATIONS

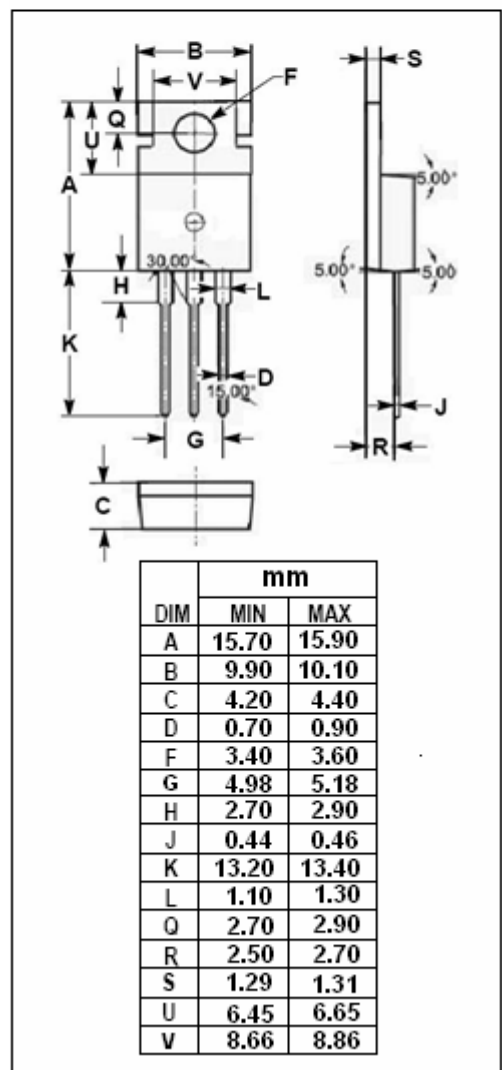
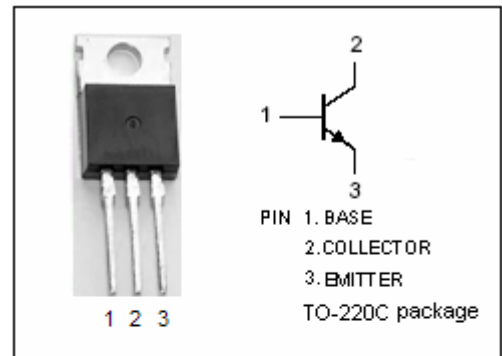
- Designed for use in output stages of audio and television amplifier circuits where high peak powers can occur.

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

| SYMBOL | PARAMETER | VALUE | UNIT | |
|-----------|---|---------|------------------|---|
| V_{CBO} | Collector-Base Voltage | BD933 | 45 | V |
| | | BD935 | 60 | |
| | | BD937 | 100 | |
| | | BD939 | 120 | |
| | | BD941 | 140 | |
| V_{CEO} | Collector-Emitter Voltage | BD933 | 45 | V |
| | | BD935 | 60 | |
| | | BD937 | 80 | |
| | | BD939 | 100 | |
| | | BD941 | 120 | |
| V_{EBO} | Emitter-Base Voltage | 5 | V | |
| I_C | Collector Current-Continuous | 3 | A | |
| I_{CM} | Collector Current-Peak | 7 | A | |
| I_B | Base Current-Continuous | 0.5 | A | |
| P_C | Collector Power Dissipation @ $T_C = 25^\circ\text{C}$ | 30 | W | |
| 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 | 4.17 | $^\circ\text{C/W}$ |
| $R_{th\ j-a}$ | 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 | TYP. | MAX | UNIT |
|----------------|--------------------------------------|---|-----|------|-----------|------|
| $V_{CEO(SUS)}$ | Collector-Emitter Sustaining Voltage | $I_C=100\text{mA}; I_B=0$ | 45 | | | V |
| | | | 60 | | | |
| | | | 80 | | | |
| | | | 100 | | | |
| | | | 120 | | | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C=1\text{A}; I_B=0.1\text{A}$ | | | 0.6 | V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $I_C=1\text{A}; V_{CE}=2\text{V}$ | | | 1.3 | V |
| I_{CBO} | Collector Cutoff Current | $V_{CB}=V_{CB0max}; I_E=0$ $V_{CB}=V_{CB0max}; I_E=0, T_J=150^\circ\text{C}$ | | | 0.05 1 | mA |
| I_{CEO} | Collector Cutoff Current | $V_{CE}=V_{CEOmax}; I_B=0$ | | | 0.1 | mA |
| I_{EBO} | Emitter Cutoff Current | $V_{EB}=5\text{V}; I_C=0$ | | | 0.2 | mA |
| h_{FE-1} | DC Current Gain | $I_C=150\text{mA}; V_{CE}=2\text{V}$ | 40 | | 250 | |
| h_{FE-2} | DC Current Gain | $I_C=1\text{A}; V_{CE}=2\text{V}$ | 25 | | | |
| f_T | Current-Gain—Bandwidth Product | $I_C=250\text{mA}; V_{CE}=10\text{V}$ | 3 | | | MHz |

Switching Times

| | | | | | | |
|-----------|---------------|---|--|-----|-----|---------------|
| t_{on} | Turn-On Time | $I_C=1.0\text{A}; I_{B1}=-I_{B2}=0.1\text{A}$ | | 0.4 | 1.0 | μs |
| t_{off} | Turn-Off Time | | | 1.5 | 3.0 | μs |