

Silicon NPN Power Transistor

BD743

DESCRIPTION

- Collector-Emitter Breakdown Voltage-  
:  $V_{(BR)CEO} = 45V(\text{Min})$
- Collector Power Dissipation-  
:  $P_C = 90W @ I_C = 25^\circ C$
- 15A Continuous Collector Current
- Complement to Type BD744

APPLICATIONS

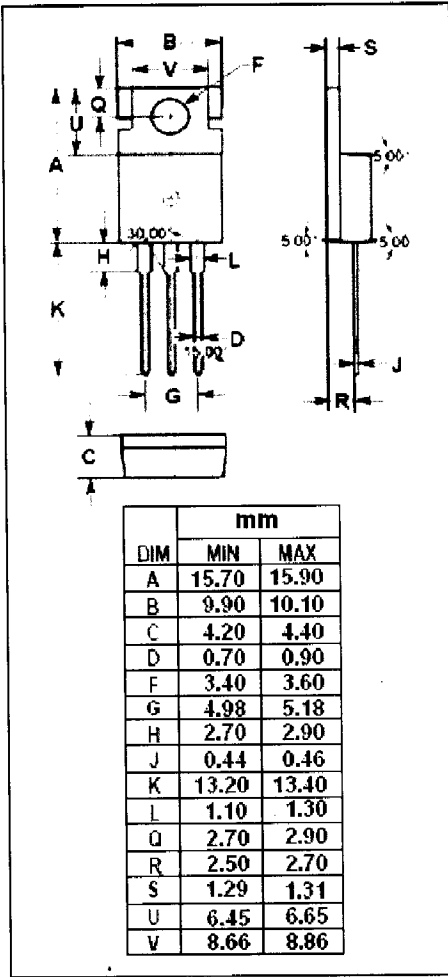
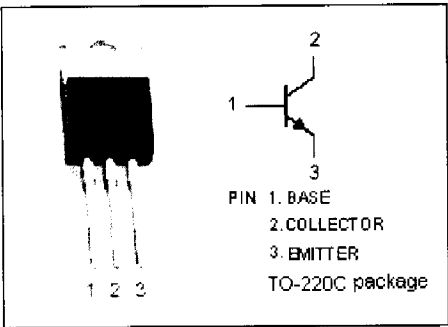
- Designed for use in general purpose power amplifier and switching applications.

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

| SYMBOL    | PARAMETER                                           | VALUE   | UNIT       |
|-----------|-----------------------------------------------------|---------|------------|
| $V_{CBO}$ | Collector-Base Voltage                              | 50      | V          |
| $V_{CEO}$ | Collector-Emitter Voltage                           | 45      | V          |
| $V_{EBO}$ | Emitter-Base Voltage                                | 5       | V          |
| $I_C$     | Collector Current-Continuous                        | 15      | A          |
| $I_{CM}$  | Collector Current-Peak                              | 20      | A          |
| $I_B$     | Base Current-Continuous                             | 5       | A          |
| $P_C$     | Collector Power Dissipation<br>@ $T_a = 25^\circ C$ | 2       | W          |
|           | Collector Power Dissipation<br>@ $T_c = 25^\circ C$ | 90      |            |
| $T_J$     | Junction Temperature                                | 150     | $^\circ C$ |
| $T_{stg}$ | Storage Temperature Range                           | -65~150 | $^\circ C$ |

THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                               | MAX  | UNIT         |
|---------------|-----------------------------------------|------|--------------|
| $R_{th\ j-c}$ | Thermal Resistance, Junction to Case    | 1.4  | $^\circ C/W$ |
| $R_{th\ j-a}$ | Thermal Resistance, Junction to Ambient | 62.5 | $^\circ C/W$ |



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## ELECTRICAL CHARACTERISTICS

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

| SYMBOL          | PARAMETER                            | CONDITIONS                                          | MIN |  | MAX | UNIT |
|-----------------|--------------------------------------|-----------------------------------------------------|-----|--|-----|------|
| $V_{(BR)CEO}$   | Collector-Emitter Breakdown Voltage  | $I_C=30\text{mA}; I_B=0$                            | 45  |  |     | V    |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage | $I_C=5\text{A}; I_B=0.5\text{A}$                    |     |  | 1.0 | V    |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation Voltage | $I_C=15\text{A}; I_B=5\text{A}$                     |     |  | 3.0 | V    |
| $V_{BE(on)-1}$  | Base-Emitter On Voltage              | $I_C=5\text{A}; V_{CE}=4\text{V}$                   |     |  | 1.0 | V    |
| $V_{BE(on)-2}$  | Base-Emitter On Voltage              | $I_C=15\text{A}; V_{CE}=4\text{V}$                  |     |  | 3.0 | V    |
| $I_{CBO}$       | Collector Cutoff Current             | $V_{CB}=50\text{V}; I_E=0$                          |     |  | 0.1 | mA   |
|                 |                                      | $V_{CB}=50\text{V}; I_E=0; T_C=125^{\circ}\text{C}$ |     |  | 5.0 |      |
| $I_{CEO}$       | Collector Cutoff Current             | $V_{CE}=30\text{V}; I_B=0$                          |     |  | 0.1 | mA   |
| $I_{EBO}$       | Emitter Cutoff Current               | $V_{EB}=5\text{V}; I_C=0$                           |     |  | 0.5 | mA   |
| $h_{FE-1}$      | DC Current Gain                      | $I_C=1\text{A}; V_{CE}=4\text{V}$                   | 40  |  |     |      |
| $h_{FE-2}$      | DC Current Gain                      | $I_C=5\text{A}; V_{CE}=4\text{V}$                   | 20  |  | 150 |      |
| $h_{FE-3}$      | DC Current Gain                      | $I_C=15\text{A}; V_{CE}=4\text{V}$                  | 5   |  |     |      |

## Switching Times

|       |              |                                              |  |     |  |    |
|-------|--------------|----------------------------------------------|--|-----|--|----|
| $t_d$ | Delay Time   | $I_C=5\text{A}; I_{B1}=-I_{B2}=0.5\text{A};$ |  | 20  |  | ns |
| $t_r$ | Rise Time    |                                              |  | 350 |  | ns |
| $t_s$ | Storage Time |                                              |  | 500 |  | ns |
| $t_f$ | Fall time    |                                              |  | 400 |  | ns |