

isc Silicon NPN Power Transistors

BDT41/A/B/C

DESCRIPTION

- DC Current Gain  $-h_{FE} = 30(\text{Min})@ I_C = 0.3A$
- Collector-Emitter Sustaining Voltage-  
:  $V_{CEO(\text{SUS})} = 40V(\text{Min})$ - BDT41;  $60V(\text{Min})$ - BDT41A  
80V(Min)- BDT41B;  $100V(\text{Min})$ - BDT41C
- Complement to Type BDT42/42A/42B/42C

APPLICATIONS

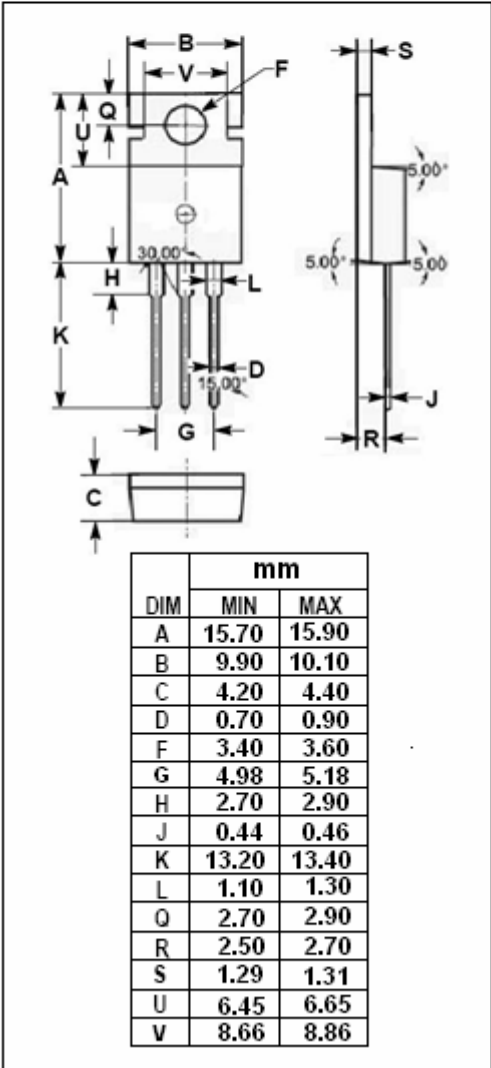
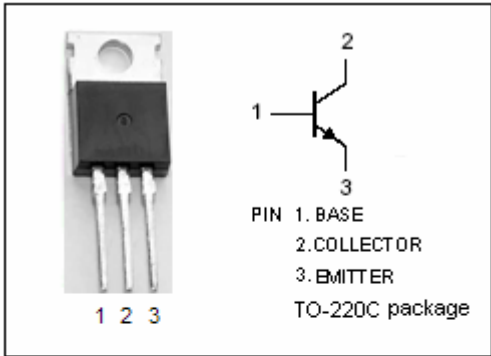
- Designed for use in general purpose amplifier and switching applications

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

| SYMBOL    | PARAMETER                                               | VALUE   | UNIT               |
|-----------|---------------------------------------------------------|---------|--------------------|
| $V_{CBO}$ | Collector-Base Voltage                                  | BDT41   | 80                 |
|           |                                                         | BDT41A  | 100                |
|           |                                                         | BDT41B  | 120                |
|           |                                                         | BDT41C  | 140                |
| $V_{CEO}$ | Collector-Emitter Voltage                               | BDT41   | 40                 |
|           |                                                         | BDT41A  | 60                 |
|           |                                                         | BDT41B  | 80                 |
|           |                                                         | BDT41C  | 100                |
| $V_{EBO}$ | Emitter-Base Voltage                                    | 5       | V                  |
| $I_C$     | Collector Current-Continuous                            | 6       | A                  |
| $I_{CM}$  | Collector Current-Peak                                  | 10      | A                  |
| $I_B$     | Base Current                                            | 3       | A                  |
| $P_C$     | Collector Power Dissipation<br>$T_C=25^{\circ}\text{C}$ | 65      | 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    | 1.92 | $^{\circ}\text{C/W}$ |
| $R_{th\ j-a}$ | Thermal Resistance, Junction to Ambient | 70   | $^{\circ}\text{C/W}$ |



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## BDT41/A/B/C

## 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 | BDT41    | $I_C=30\text{mA}; I_B=0$             | 40  |      |     | V    |
|                |                                      | BDT41A   |                                      | 60  |      |     |      |
|                |                                      | BDT 41B  |                                      | 80  |      |     |      |
|                |                                      | BDT 41C  |                                      | 100 |      |     |      |
| $V_{CE(sat)}$  | Collector-Emitter Saturation Voltage |          | $I_C=6\text{A}; I_B=0.6\text{A}$     |     |      | 1.5 | V    |
| $V_{BE(on)}$   | Base-Emitter On Voltage              |          | $I_C=6\text{A}; V_{CE}=4\text{V}$    |     |      | 2.0 | V    |
| $I_{CES}$      | Collector Cutoff Current             |          | $V_{CE}=V_{CEOmax}; V_{BE}=0$        |     |      | 0.4 | mA   |
| $I_{CEO}$      | Collector Cutoff Current             | BDT41/A  | $V_{CE}=30\text{V}; I_B=0$           |     |      | 0.2 | mA   |
|                |                                      | BDT41B/C | $V_{CE}=60\text{V}; I_B=0$           |     |      |     |      |
| $I_{EBO}$      | Emitter Cutoff Current               |          | $V_{EB}=5\text{V}; I_C=0$            |     |      | 0.5 | mA   |
| $h_{FE-1}$     | DC Current Gain                      |          | $I_C=0.3\text{A}; V_{CE}=4\text{V}$  | 30  |      |     |      |
| $h_{FE-2}$     | DC Current Gain                      |          | $I_C=3\text{A}; V_{CE}=4\text{V}$    | 15  |      | 75  |      |
| $f_T$          | Current-Gain—Bandwidth Product       |          | $I_C=0.5\text{A}; V_{CE}=10\text{V}$ | 3   |      |     | MHz  |

## Switching Times

|           |               |                                             |  |     |  |               |
|-----------|---------------|---------------------------------------------|--|-----|--|---------------|
| $t_{on}$  | Turn-On Time  | $I_C=6\text{A}; I_{B1}=-I_{B2}=0.6\text{A}$ |  | 0.6 |  | $\mu\text{S}$ |
| $t_{off}$ | Turn-Off Time |                                             |  | 1.0 |  | $\mu\text{S}$ |