

isc Silicon PNP Power Transistors

BDT42/A/B/C

DESCRIPTION

- DC Current Gain $-h_{FE} = 30(\text{Min}) @ I_C = -0.3\text{A}$
- Collector-Emitter Sustaining Voltage-
: $V_{CEO(\text{SUS})} = -40\text{V}(\text{Min})$ - BDT42; $-60\text{V}(\text{Min})$ - BDT42A
 $-80\text{V}(\text{Min})$ - BDT42B; $-100\text{V}(\text{Min})$ - BDT42C
- Complement to Type BDT41/A/B/C

APPLICATIONS

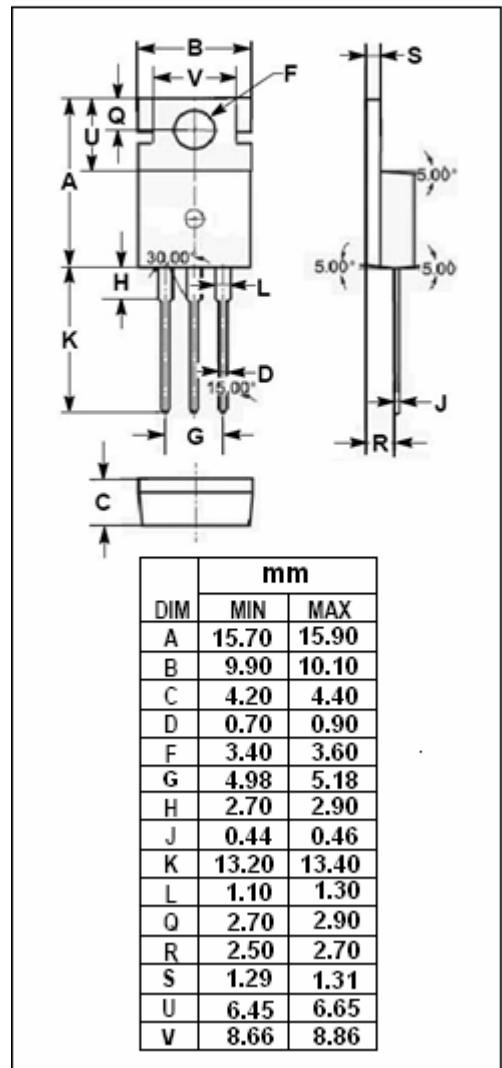
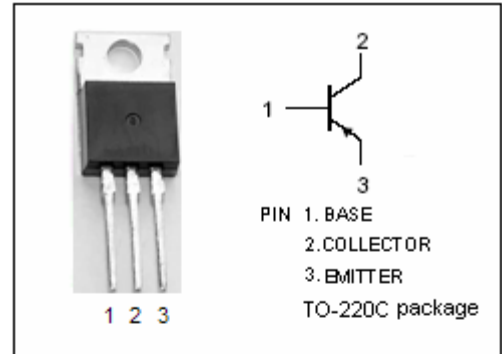
- Designed for use in general purpose amplifier and switching applications

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

| SYMBOL | PARAMETER | VALUE | UNIT | |
|-----------|---|---------|------------------|---|
| V_{CBO} | Collector-Base Voltage | BDT42 | -80 | V |
| | | BDT42A | -100 | |
| | | BDT42B | -120 | |
| | | BDT42C | -140 | |
| V_{CEO} | Collector-Emitter Voltage | BDT42 | -40 | V |
| | | BDT42A | -60 | |
| | | BDT42B | -80 | |
| | | BDT42C | -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 $T_C=25^\circ\text{C}$ | 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 | $^\circ\text{C/W}$ |



isc Silicon PNP Power Transistors

BDT42/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 | BDT42 | -40 | | | V | |
| | | BDT42A | -60 | | | | |
| | | BDT42B | -80 | | | | |
| | | BDT42C | -100 | | | | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = -6A; I_B = -0.6A$ | | | -1.5 | V | |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $I_C = -6A; V_{CE} = -4V$ | | | -2.0 | V | |
| I_{CES} | Collector Cutoff Current | $V_{CE} = V_{CEOmax}; V_{BE} = 0$ | | | -0.4 | mA | |
| I_{CEO} | Collector Cutoff Current | BDT42/A | $V_{CE} = -30V; I_B = 0$ | | | -0.2 | mA |
| | | BDT42B/C | $V_{CE} = -60V; I_B = 0$ | | | | |
| I_{EBO} | Emitter Cutoff Current | $V_{EB} = -5V; I_C = 0$ | | | -0.5 | mA | |
| h_{FE-1} | DC Current Gain | $I_C = -0.3A; V_{CE} = -4V$ | 30 | | | | |
| h_{FE-2} | DC Current Gain | $I_C = -3A; V_{CE} = -4V$ | 15 | | 75 | | |
| f_T | Current-Gain—Bandwidth Product | $I_C = -0.5A; V_{CE} = -10V$ | 3 | | | MHz | |

Switching Times

| | | | | | | |
|-----------|---------------|---------------------------------------|--|-----|--|---------------|
| t_{on} | Turn-On Time | $I_C = -6A; I_{B1} = -I_{B2} = -0.6A$ | | 0.4 | | μs |
| t_{off} | Turn-Off Time | | | 0.7 | | μs |