

COMPLEMENTARY SILICON PLASTIC POWER TRANSISTORS

... designed for use in general purpose power amplifier and switching applications.

FEATURES:

- * Collector-Emitter Sustaining Voltage -
 $V_{CEO(MIN)} = 45V$ (Min)- BD241,BD242
 60V(Min)- BD241A,BD242A
 80V(Min)- BD241B,BD242B
 100V(Min)- BD241C,BD242C

* DC Current Gain $hFE = 25$ (Min)@ $I_C = 1.0A$

* Current Gain-Bandwidth Product $fT = 3.0$ MHz (Min)@ $I_C = 500mA$

Boca Semiconductor Corp.
BSC

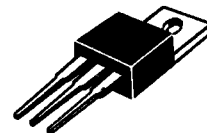
<http://www.bocasemi.com>

| NPN | PNP |
|--------|--------|
| BD241 | BD242 |
| BD241A | BD242A |
| BD241B | BD242B |
| BD241C | BD242C |

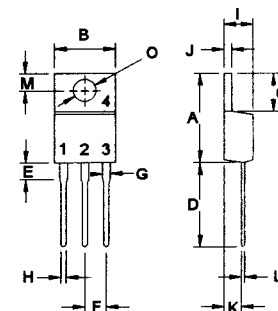
3 AMPERE
COMPLEMENTARY SILICON
POWER TRANSISTORS
45 -100 VOLTS
40 WATTS

MAXIMUM RATINGS

| Characteristic | Symbol | BD241 | BD241A | BD241B | BD241C | Unit |
|--|----------------|-------------|--------|--------|--------|--------------------|
| | | BD242 | BD242A | BD242B | BD242C | |
| Collector-Emitter Voltage | V_{CEO} | 45 | 60 | 80 | 100 | V |
| Collector-Base Voltage | V_{CBO} | 55 | 70 | 90 | 115 | V |
| Emitter-Base Voltage | V_{EBO} | 5.0 | | | | V |
| Collector Current - Continuous - Peak | I_C | 3.0 5.0 | | | | A |
| Base Current | I_B | 1.0 | | | | A |
| Total Power Dissipation@ $T_C = 25^\circ C$ Derate above $25^\circ C$ | P_D | 40 0.32 | | | | W W/ $^\circ C$ |
| Operating and Storage Junction Temperature Range | T_J, T_{STG} | -65 to +150 | | | | $^\circ C$ |



TO-220



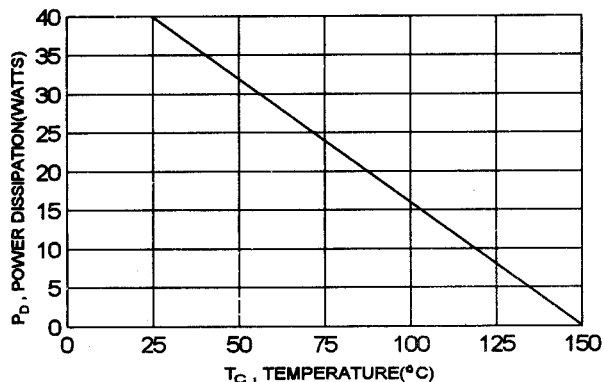
PIN 1.BASE
2.COLLECTOR
3.EMITTER
4.COLLECTOR(CASE)

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|-------------------------------------|-----------------|-------|--------------|
| Thermal Resistance Junction to Case | $R_{\theta jc}$ | 3.125 | $^\circ C/W$ |

| DIM | MILLIMETERS | |
|-----|-------------|-------|
| | MIN | MAX |
| A | 14.98 | 15.31 |
| B | 9.78 | 10.42 |
| C | 5.01 | 6.52 |
| D | 13.06 | 14.62 |
| E | 3.57 | 4.07 |
| F | 2.42 | 3.66 |
| G | 1.12 | 1.36 |
| H | 0.72 | 0.96 |
| I | 4.22 | 4.98 |
| J | 1.14 | 1.38 |
| K | 2.20 | 2.97 |
| L | 0.33 | 0.55 |
| M | 2.48 | 2.98 |
| O | 3.70 | 3.90 |

FIGURE -1 POWER DERATING



ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

OFF CHARACTERISTICS

| | | | | |
|---|--|----------------|--------------------------|----|
| Collector-Emitter Sustaining Voltage(1) ($I_C = 30\text{mA}, I_B = 0$) | BD241,BD242 BD241A,BD242A BD241B,BD242B BD241C,BD242C | $V_{CEO(sus)}$ | 45 60 80 100 | V |
| Collector Cutoff Current ($V_{CE} = 30\text{V}, I_B = 0$) ($V_{CE} = 60\text{V}, I_B = 0$) | BD241/42/41A/42A BD241B/42B/41C/42C | I_{CEO} | 0.3 0.3 | mA |
| Collector Cutoff Current ($V_{CE} = 45\text{V}, V_{EB} = 0$) ($V_{CE} = 60\text{V}, V_{EB} = 0$) ($V_{CE} = 80\text{V}, V_{EB} = 0$) ($V_{CE} = 100\text{V}, V_{EB} = 0$) | BD241/42 BD241A/42A BD241B/42B BD241C/42C | I_{CES} | 0.2 0.2 0.2 0.2 | mA |
| Emitter Cutoff Current ($V_{EB} = 5\text{V}, I_C = 0$) | | I_{EBO} | 1.0 | mA |

ON CHARACTERISTICS (1)

| | | | | |
|---|--|---------------|----------|---|
| DC Current Gain ($V_{CE} = 4.0\text{V}, I_C = 1.0\text{A}$) ($V_{CE} = 4.0\text{V}, I_C = 3.0\text{A}$) | | hFE | 25 10 | |
| Collector-Emitter Saturation Voltage ($I_C = 3.0\text{A}, I_B = 600\text{mA}$) | | $V_{CE(sat)}$ | 1.2 | V |
| Base-Emitter On Voltage ($I_C = 3.0\text{A}, V_{CE} = 4.0\text{V}$) | | $V_{BE(On)}$ | 1.8 | V |

DYNAMIC CHARACTERISTICS

| | | | | |
|--|--|-------|-----|-----|
| Current Gain-Bandwidth Product (2) ($I_C = 500\text{mA}, V_{CE} = 10\text{V}, f = 1\text{MHz}$) | | f_T | 3.0 | MHz |
| Small-Signal Current Gain ($I_C = 500\text{mA}, V_{CE} = 10\text{V}, f = 1\text{KHz}$) | | hfe | 20 | |

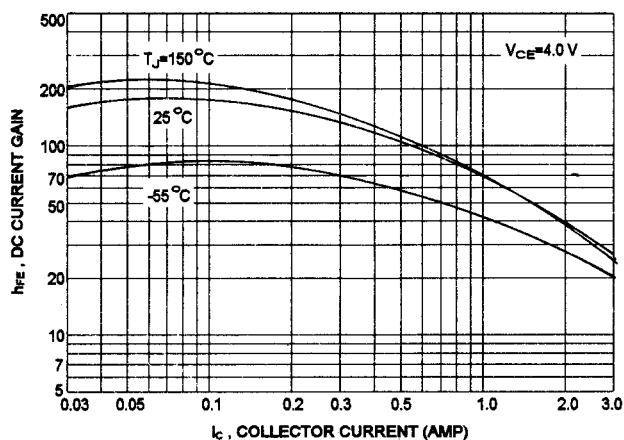
(1) Pulse Test: Pulse width = $300\mu\text{s}$, Duty Cycle $\leq 2.0\%$ (2) $f_T = |h_{fe}| \cdot f_{test}$

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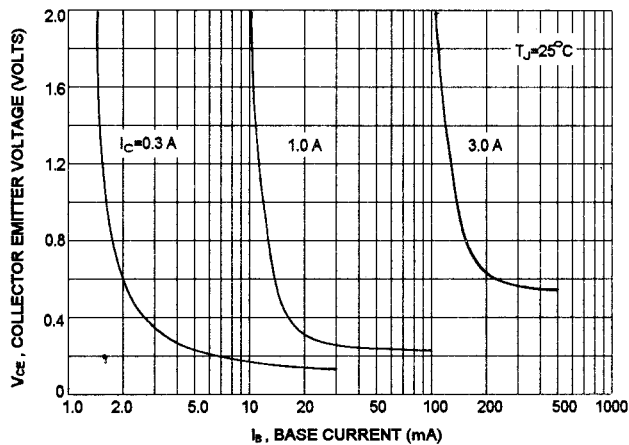
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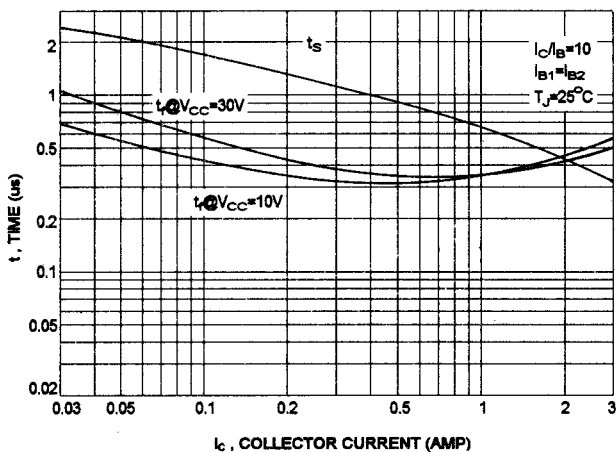
DC CURRENT GAIN



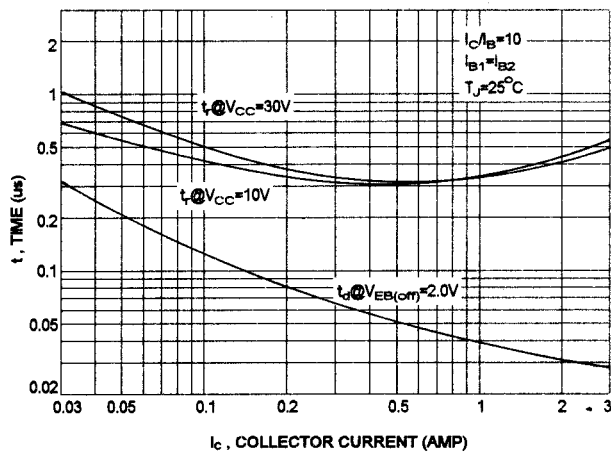
COLLECTOR SATURATION REGION



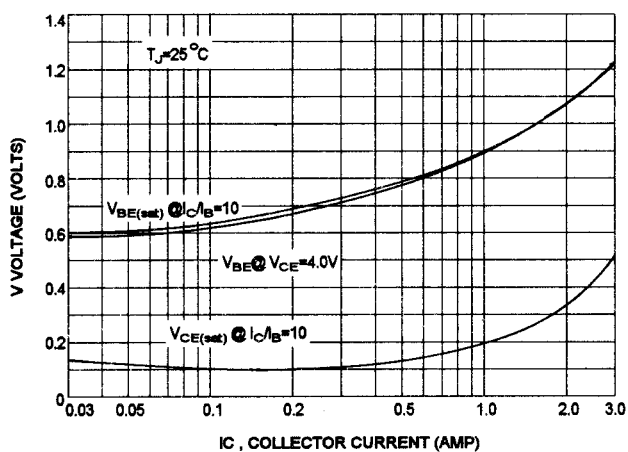
TURN-OFF TIME



TURN-ON TIME



"ON" VOLTAGES



ACTIVE REGION SAFE OPERATING AREA

