

COMPLEMENTARY SILICON PLASTIC POWER TRANSISTORS

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

FEATURES:

* Collector-Emitter Sustaining Voltage -

$V_{CEO(sus)}$ = 45V(Min)- BD905, BD906
 60V(Min)- BD907, BD908
 80V(Min)- BD909, BD910
 100V(Min)- BD911, BD912

* DC Current Gain $hFE = 40(\text{Min}) @ I_C = 0.5A$

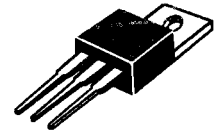
* Current Gain-Bandwidth Product $fT = 3.0 \text{ MHz} (\text{Min}) @ I_C = 500mA$

| NPN | PNP |
|-------|-------|
| BD905 | BD906 |
| BD907 | BD908 |
| BD909 | BD910 |
| BD911 | BD912 |

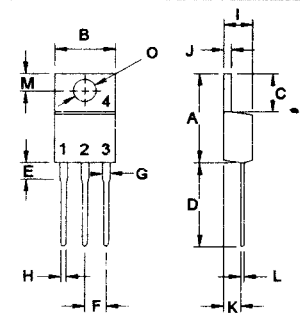
15 AMPERE
 COMPLEMENTARY SILICON
 POWER TRANSISTORS
 45 -100 VOLTS
 90 WATTS

MAXIMUM RATINGS

| Characteristic | Symbol | BD905 BD906 | BD907 BD908 | BD909 BD910 | BD911 BD912 | Unit |
|---|----------------|----------------|----------------|----------------|----------------|--------------------|
| Collector-Emitter Voltage | V_{CEO} | 45 | 60 | 80 | 100 | V |
| Collector-Base Voltage | V_{CBO} | 45 | 60 | 80 | 100 | V |
| Emitter-Base Voltage | V_{EBO} | 5.0 | | | | V |
| Collector Current - Continuous - Peak | I_C | 15 20 | | | | A |
| Base Current | I_B | 5.0 | | | | A |
| Total Power Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$ | P_D | 90 0.72 | | | | W W/ $^\circ C$ |
| Operating and Storage Junction Temperature Range | T_J, T_{STG} | -65 to +150 | | | | $^\circ C$ |



TO-220



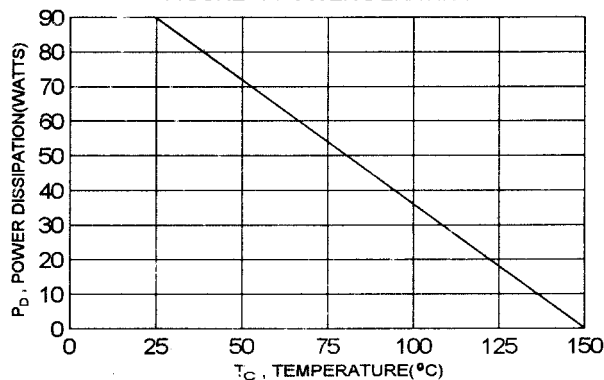
PIN 1.BASE
 2.COLLECTOR
 3.EMITTER
 4.COLLECTOR(CASE)

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|-------------------------------------|-----------------|------|--------------|
| Thermal Resistance Junction to Case | $R_{\theta jc}$ | 1.38 | $^\circ C/W$ |

| DIM | MILLIMETERS | |
|-----|-------------|-------|
| | MIN | MAX |
| A | 14.68 | 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



BD905, BD907, BD909, BD911 NPN / BD906, BD908, BD810, BD912 PNP

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

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

OFF CHARACTERISTICS

| | | | | |
|---|--|----------------|--------------------------|----|
| Collector-Emitter Sustaining Voltage(1) ($I_C = 50\text{ mA}$, $I_B = 0$) | BD905, BD906 BD907, BD908 BD909, BD910 BD911, BD912 | $V_{CEO(sus)}$ | 45 60 80 100 | V |
| Collector Cutoff Current ($V_{CE} = 30\text{ V}$, $I_B = 0$) ($V_{CE} = 30\text{ V}$, $I_B = 0$) ($V_{CE} = 40\text{ V}$, $I_B = 0$) ($V_{CE} = 50\text{ V}$, $I_B = 0$) | BD905, BD906 BD907, BD908 BD909, BD910 BD911, BD912 | I_{CEO} | 1.0 1.0 1.0 1.0 | mA |
| Collector Cutoff Current ($V_{CB} = 45\text{ V}$, $I_E = 0$) ($V_{CB} = 60\text{ V}$, $I_E = 0$) ($V_{CB} = 80\text{ V}$, $I_E = 0$) ($V_{CB} = 100\text{ V}$, $I_E = 0$) | BD905, BD906 BD907, BD908 BD909, BD910 BD911, BD912 | I_{CBO} | 0.5 0.5 0.5 0.5 | mA |
| Emitter Cutoff Current ($V_{EB} = 5.0\text{ V}$, $I_C = 0$) | | I_{EBO} | 1.0 | mA |

ON CHARACTERISTICS (1)

| | | | | |
|--|---------------|-----------------|------------|---|
| DC Current Gain ($I_C = 0.5\text{ A}$, $V_{CE} = 4.0\text{ V}$) ($I_C = 5.0\text{ A}$, $V_{CE} = 4.0\text{ V}$) ($I_C = 10\text{ A}$, $V_{CE} = 4.0\text{ V}$) | h_{FE} | 40 15 5.0 | 250 150 | |
| Collector-Emitter Saturation Voltage ($I_C = 5.0\text{ A}$, $I_B = 0.5\text{ A}$) ($I_C = 10\text{ A}$, $I_B = 2.5\text{ A}$) | $V_{CE(sat)}$ | | 1.0 3.0 | V |
| Base-Emitter Saturation Voltage ($I_C = 10\text{ A}$, $I_B = 2.5\text{ A}$) | $V_{BE(sat)}$ | | 2.5 | V |
| Base-Emitter On Voltage ($I_C = 5.0\text{ A}$, $V_{CE} = 4.0\text{ V}$) | $V_{BE(on)}$ | | 1.5 | V |

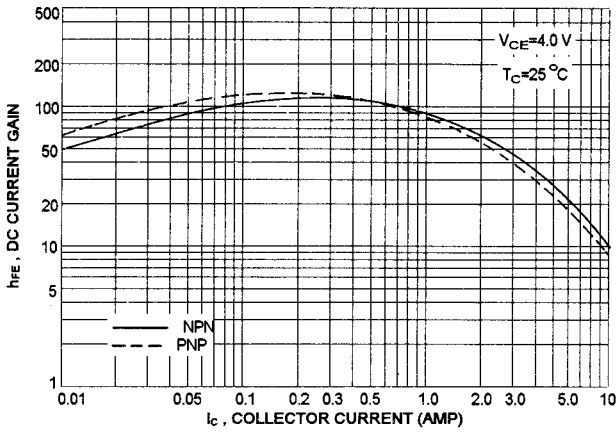
DYNAMIC CHARACTERISTICS

| | | | | |
|--|-------|-----|--|-----|
| Current Gain-Bandwidth Product (2) ($I_C = 500\text{ mA}$, $V_{CE} = 4.0\text{ V}$, $f = 1\text{ MHz}$) | f_T | 3.0 | | MHz |
|--|-------|-----|--|-----|

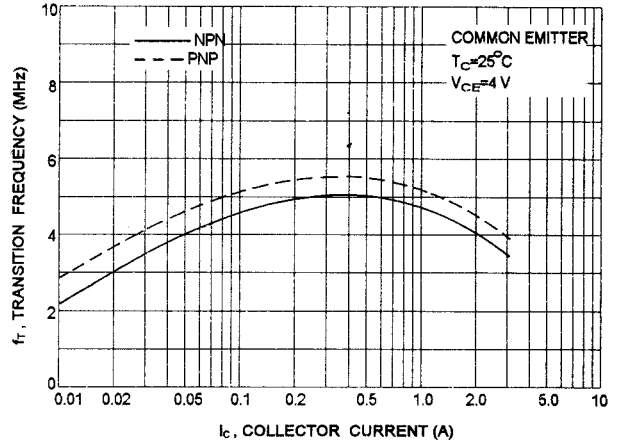
(1) Pulse Test: Pulse width = 300 us , Duty Cycle $\leq 2.0\%$

(2) $f_T = |h_{re}| \cdot f_{test}$

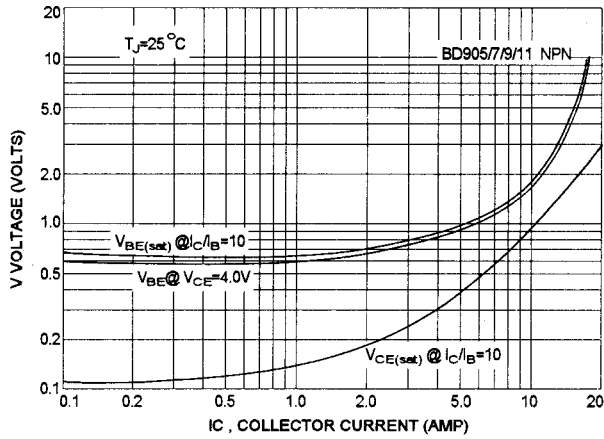
DC CURRENT GAIN



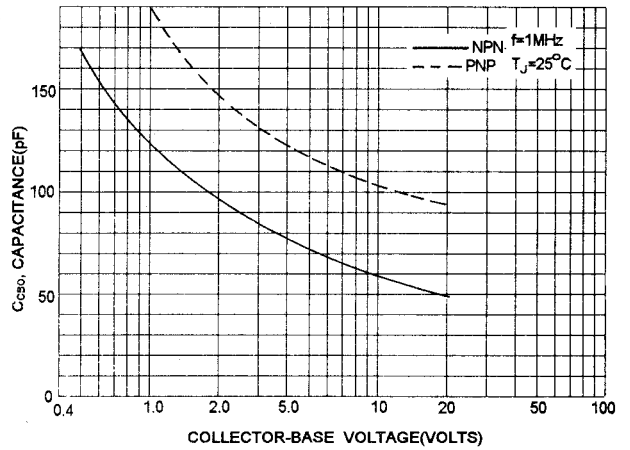
$f_T - I_C$



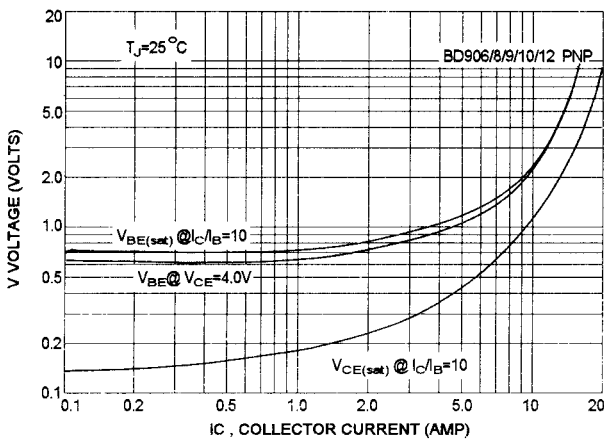
"ON" VOLTAGES



COLLECTOR-BASE CAPACITANCES



"ON" VOLTAGES



ACTIVE REGION SAFE OPERATING AREA(SOA)

