

## 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  $hFE = 40(\text{Min}) @ I_C = 0.5A$

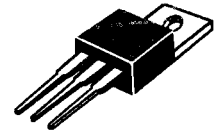
\* Current Gain-Bandwidth Product  $fT = 3.0 \text{ MHz} (\text{Min}) @ I_C = 500mA$

NPN	PNP
BD905	BD906
BD907	BD908
BD909	BD910
BD911	BD912

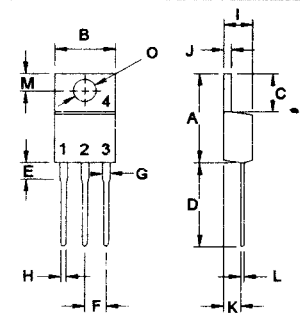
15 AMPERE  
 COMPLEMENTARY SILICON  
 POWER TRANSISTORS  
 45 -100 VOLTS  
 90 WATTS

### 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



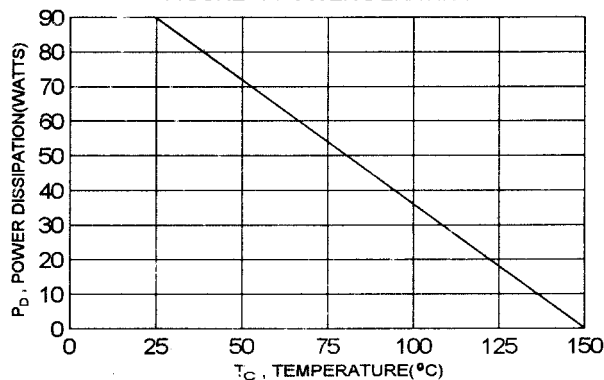
PIN 1.BASE  
 2.COLLECTOR  
 3.EMITTER  
 4.COLLECTOR(CASE)

### 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

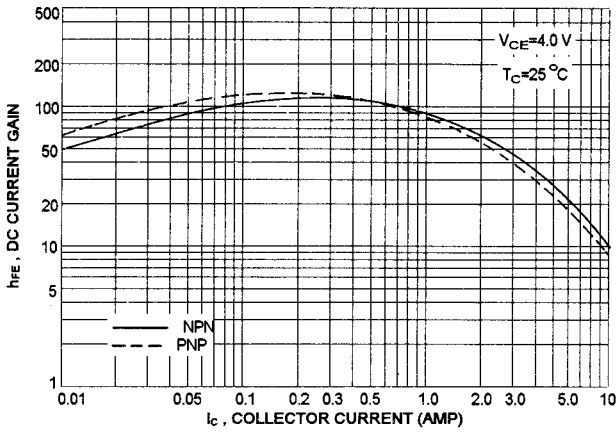
**DYNAMIC CHARACTERISTICS**

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
----------------------------------------------------------------------------------------------------------------	-------	-----	--	-----

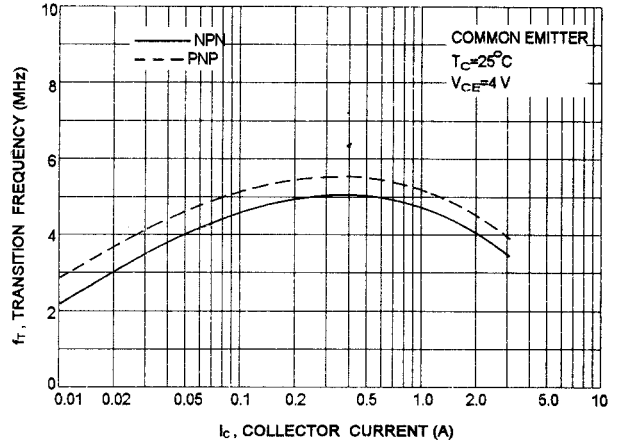
(1) Pulse Test: Pulse width = 300 us , Duty Cycle  $\leq 2.0\%$

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

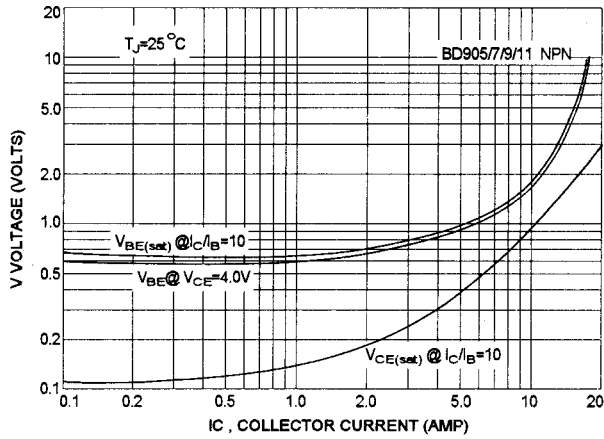
DC CURRENT GAIN



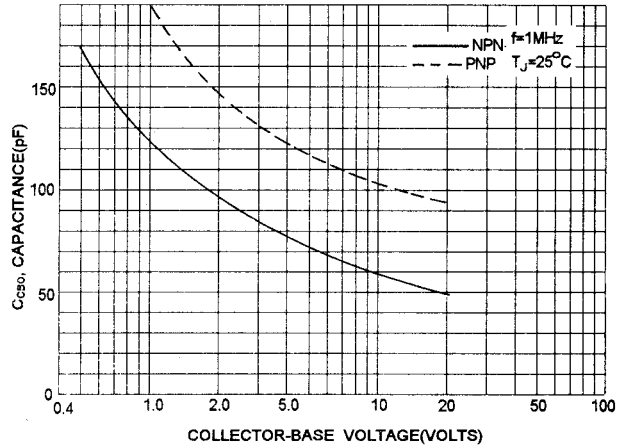
$f_T - I_C$



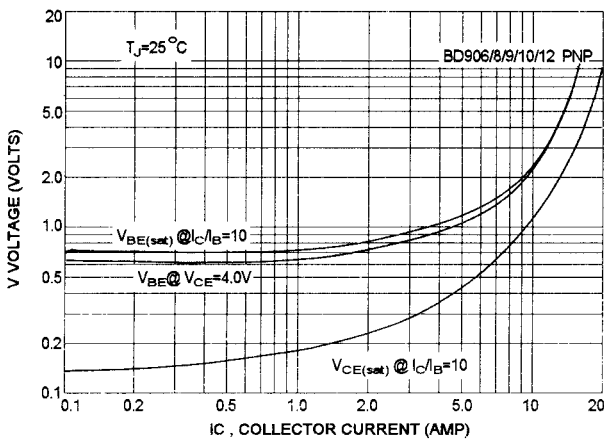
"ON" VOLTAGES



COLLECTOR-BASE CAPACITANCES



"ON" VOLTAGES



ACTIVE REGION SAFE OPERATING AREA(SOA)

