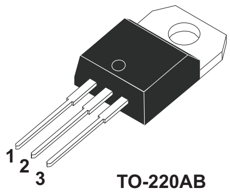
Complementary Silicon Power Transistors
(15A / 100V / 90W)

FEATURES

- Designed for general-purpose switching and amplifier applications.
- DC current gain specified to 10A
- High current gain-Band width product: f_T = 3 MHz (Min.) @ I_C = 0.5 Adc
- Excellent safe operating area

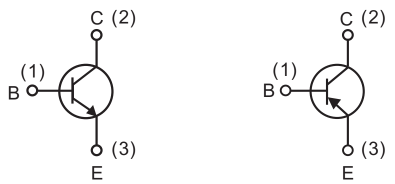


TO-220AB

DESCRIPTION

The BD911 is a silicon epitaxial-base planar NPN transistor in TO-220AB package.
It is intended for use in general-purpose amplifier and switding applications.
The complementary PNP type is BD912.

INTERNAL SCHEMATIC DIAGRAM



BD911(NPN) BD912(PNP)

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise specified)				
SYMBOL	**PARAMETER**		**VALUE**	**UNIT**
V_{CBO}	Collector to base voltage (I_E = 0)		100	V
V_{CEO}	Collector to emitter voltage (I_B = 0)		100	
V_{EBO}	Emitter to base voltage (I_C = 0)		5.0	
I_C	Collector current		15	A
I_B	Base current		5	
P_C	Total power dissipation	T_C= 25°C	90	W
	Derate above 25°C		0.72	W/°C
T_j	Junction temperature		150	°C
T_{stg}	Storage temperature		-55 to 150	

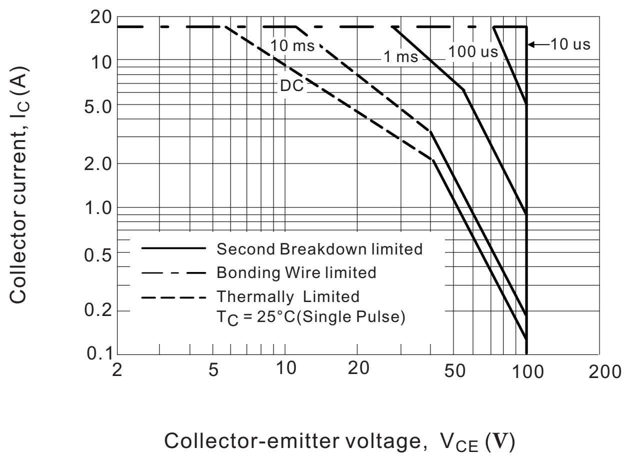
*For PNP types voltage and current values are negative.

THERMAL CHARACTERISTICS (T_C = 25°C unless otherwise specified)			
SYMBOL	**PARAMETER**	**VALUE**	**UNIT**
$R_{th(j-c)}$	Maximum thermal resistance, junction to case	1.40	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise specified)					
SYMBOL	**PARAMETER**	**CONDITIONS**	**MIN**	**MAX**	**UNIT**
◎ **OFF CHARACTERISTICS**					
I_{CEO}	Collector cutoff current	V_{CE} = 50V, I_B = 0		1.0	
I_{CBO}	Collector cutoff current	V_{CB} = 100V, I_E = 0		0.5	mA
		V_{CB} = 100V, I_E = 0, T_C = 150°C		5.0	
I_{EBO}	Emitter cutoff current	V_{EB} = 5V, I_C = 0		1.0	
$V_{CEO(SUS)}$*	Collector to emitter sustaining voltage	I_C = 100mA, I_B = 0	100		
$V_{(BR)CBO}$	Collector to base breakdown voltage	I_E = 0, I_C = 100mA	100		V
$V_{(BR)EBO}$	Emitter to base breakdown voltage	I_C = 0, I_E = 100mA	5		
◎ **ON CHARACTERISTICS**					
h_{FE}	Forward current transfer ratio (DC current gain)	I_C = 0.5A, V_{CE} = 4V	40	250	
		I_C = 5A, V_{CE} = 4V	15	150	
		I_C = 10A, V_{CE} = 4V	5		
$V_{CE(sat)}$*	Collector to emitter saturation voltage	I_C = 5A, I_B = 500mA		1.0	
		I_C = 10A, I_B = 2.5A		3.0	
$V_{BE(sat)}$*	Base to emitter saturation voltage	I_C = 10A, I_B = 2.5A		2.5	V
V_{BE}*	Base to emitter voltage	I_C = 5A, V_{CE} = 4V		1.5	
◎ **DYNAMIC CHARACTERISTICS**					
f_T	Transition frequency (Current gain- Bandwidth product)	I_C = 0.5A, V_{CE} = 4V, f = 1MHz	3.0		MHz

*Pulsed : Pulse duration = 300 μs, duty cycle ≤ 20%.
*For PNP types voltage and current values are negative.

Fig.1 Active region safe operating area



There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown. Safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation; i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

The data of figure 1 is based on $T_{J(pk)}$ =150°C. T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(pk)}$ ≤ 150°C. At high case temperatures, thermal limitations wil l reduce the power that can be handled to values less than the limitations imposed by second breakdown.

Fig.2 DC current gain

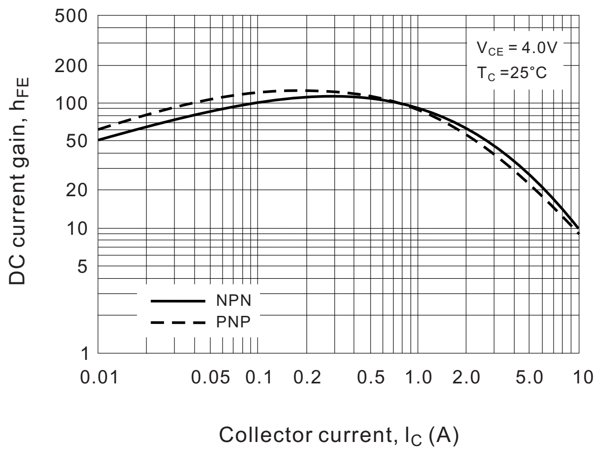


Fig.3 Power derating

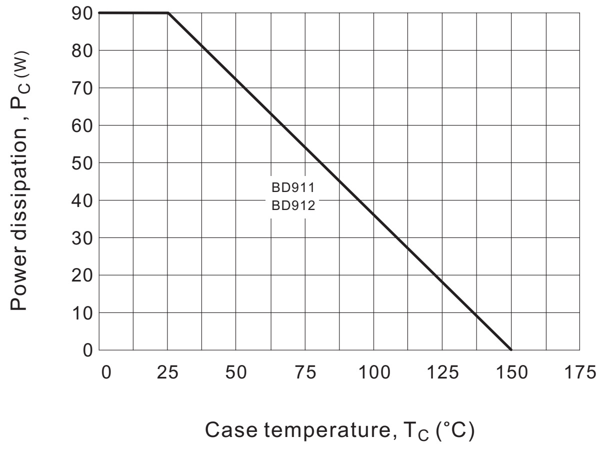


Fig.4 "On" Voltages

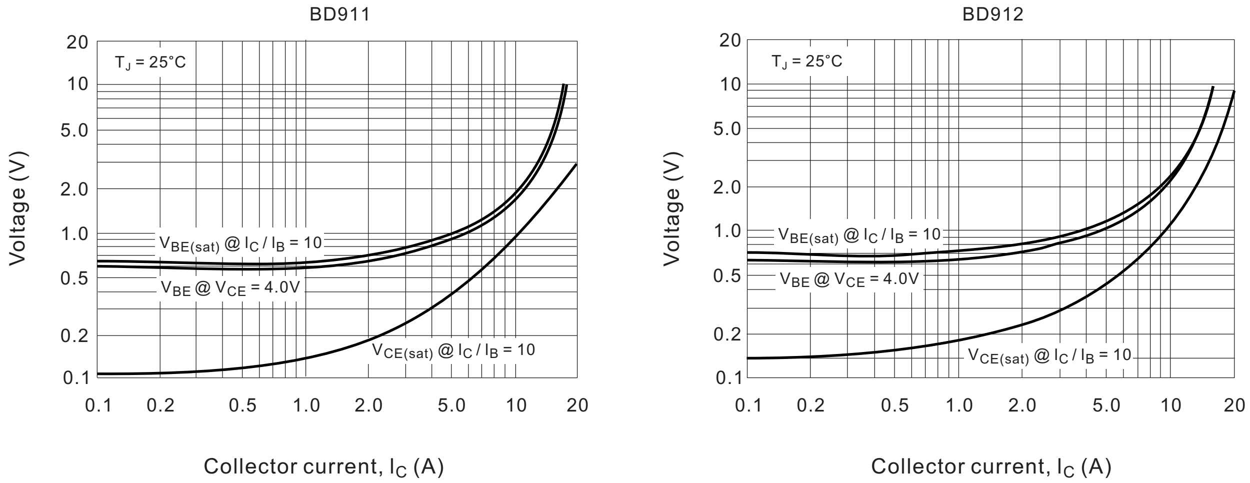


Fig.5 f_T - I_C

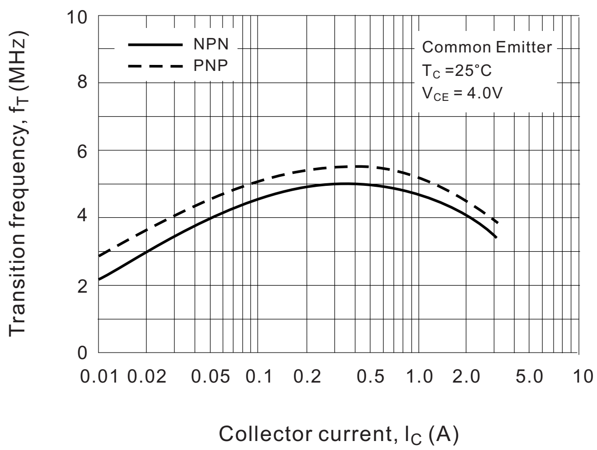
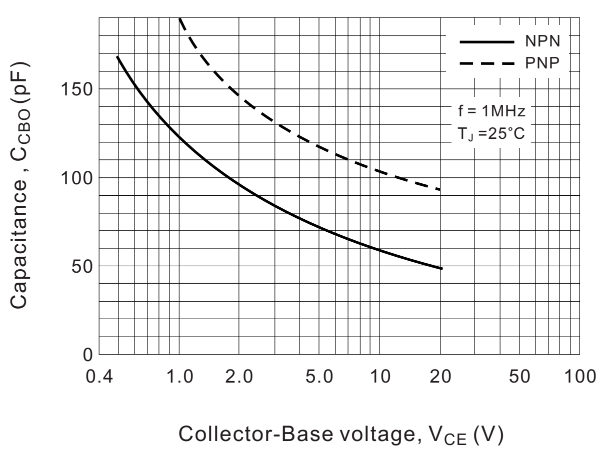
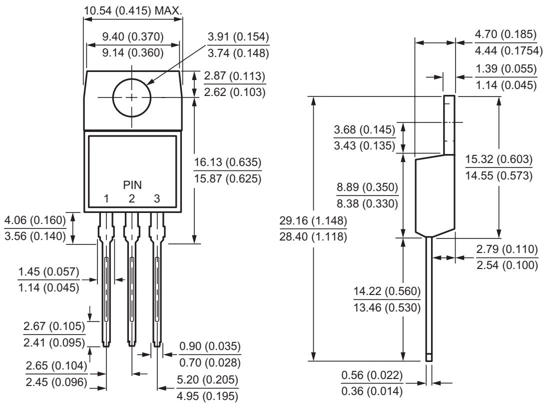


Fig.6 Collector-Base capacitances



TO-220AB


10.54 (0.415) MAX.
9.40 (0.370)
9.14 (0.360)
3.91 (0.154)
3.74 (0.148)
2.87 (0.113)
2.62 (0.103)
16.13 (0.635)
15.87 (0.625)
PIN
1 2 3
4.06 (0.160)
3.56 (0.140)
1.45 (0.057)
1.14 (0.045)
2.67 (0.105)
2.41 (0.095)
2.65 (0.104)
2.45 (0.096)
0.90 (0.035)
0.70 (0.028)
5.20 (0.205)
4.95 (0.195)
4.70 (0.185)
4.44 (0.1754)
1.39 (0.055)
1.14 (0.045)
3.68 (0.145)
3.43 (0.135)
15.32 (0.603)
14.55 (0.573)
8.89 (0.350)
8.38 (0.330)
29.16 (1.148)
28.40 (1.118)
2.79 (0.110)
2.54 (0.100)
14.22 (0.560)
13.46 (0.530)
0.56 (0.022)
0.36 (0.014)