MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

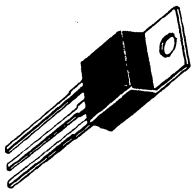
BD896, BD896A
BD898, BD898A
BD900, BD900A
BD902

PLASTIC MEDIUM-POWER PNP TRANSISTORS

. . . for use as output devices in complementary general-purpose amplifier applications.

- High DC Current Gain –
  h_{FE} = 750 (Min) @ I_C = 3.0 and 4.0 Adc
- Monolithic Construction
- **BD896A, 898, 898A, 900, 900A, 902 are complementary with BD895A, 897, 897A, 899, 899A, 901**
- **Electrical equivalents to BD696A, 698, 698A, 700, 700A, 702**

DARLINGTON
8 AMPERE
SILICON
POWER TRANSISTORS
45-60-80-100 VOLTS
70 WATTS



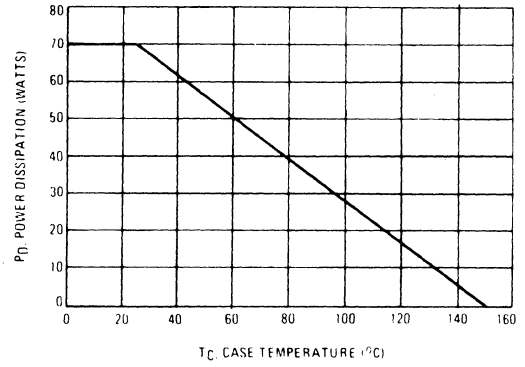
MAXIMUM RATINGS

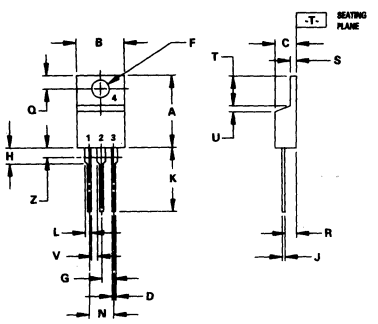
Rating	Symbol	BD696 BD696A	BD898 BD898A	BD900 BD900A	BD902	Unit
Collector-Emitter Voltage	V_{CEO}	45	60	80	100	Vdc
Collector-Base Voltage	V_{CB}	45	60	80	100	Vdc
Emitter-Base Voltage	V_{EB}	5.0				Vdc
Collector Current	I_C	8.0				Adc
Base Current	I_B	0.1				Adc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	70 0.56				Watts W/°C
Operating and Storage Junction Temperating Range	T_J, T_{stg}	-55 to +150				°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	1.79	°C/W

FIGURE 1 – POWER TEMPERATURE DERATING CURVE





NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIM Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	14.48	15.75	0.570	0.620
B	9.66	10.28	0.380	0.405
C	4.07	4.82	0.160	0.190
D	0.64	0.88	0.025	0.035
F	3.61	3.73	0.142	0.147
G	2.42	2.66	0.095	0.105
H	2.80	3.93	0.110	0.155
J	0.46	0.71	0.018	0.028
K	12.70	14.27	0.500	0.562
L	1.15	1.39	0.045	0.055
N	4.83	5.33	0.190	0.210
Q	2.54	3.04	0.100	0.120
R	2.04	2.79	0.080	0.110
S	1.15	1.39	0.045	0.055
T	5.97	6.47	0.235	0.255
U	0.00	1.27	0.000	0.050
V	1.15	—	0.045	—
Z	—	2.04	—	0.080

STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

CASE 221A-04
TO-220AB

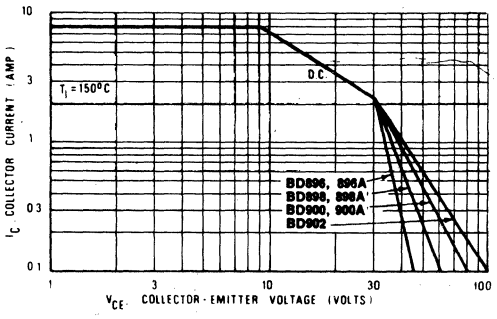
3

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage[1] (I_C = 100 mAdc, I_B = 0)	BD896, 896A BD898, 898A BD900, 900A BD902	BV_{CEO}	45 60 80 100	– – – –	Vdc
Collector Cutoff Current (V_{CE} = Half Rated V_{CEO}, I_B = 0)		I_{CEO}	–	500	μAdc
Collector Cutoff Current (V_{CB} = Rated BV_{CEO}, I_E = 0) (V_{CB} = Rated BV_{CEO}, I_E = 0, T_C = 100°C)		I_{CBO}	– –	0.2 2.0	mAdc
Emitter Cutoff Current (V_{BE} = 5.0 Vdc, I_C = 0)		I_{EBO}	–	2.0	mAdc
ON CHARACTERISTICS					
DC Current Gain[1] (I_C = 3.0 Adc, V_{CE} = 3.0 Vdc) (I_C = 4.0 Adc, V_{CE} = 3.0 Vdc)	BD896, 898, 900, 902 BD896A, 898A, 900A	h_{FE}	750 750	– –	–
Collector-Emitter Saturation Voltage (I_C = 3.0 Adc, I_B = 12 mAdc) (I_C = 4.0 Adc, I_B = 16 mAdc)	BD896, 898, 900, 902 BD896A, 898A, 900A	$V_{CE(sat)}$	– –	2.5 2.8	Vdc
Base-Emitter On Voltage[1] (I_C = 3.0 Adc, V_{CE} = 3.0 Vdc) (I_C = 4.0 Adc, V_{CE} = 3.0 Vdc)	BD896, 898, 900, 902 BD896A, 898A, 900A	$V_{BE(on)}$	– –	2.5 2.5	Vdc
DYNAMIC CHARACTERISTICS					
Small-Signal Current Gain (I_C = 3.0 Adc, V_{CE} = 3.0 Vdc, f = 1.0 MHz)		h_{fe}	1.0	–	–

[1]Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

FIGURE 2 – DC SAFE OPERATING AREA



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

At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by secondary breakdown. (See AN-415)

FIGURE 3 – DARLINGTON CIRCUIT SCHEMATIC