MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

BD895, BD895A
BD897, BD897A
BD899, BD899A
BD901

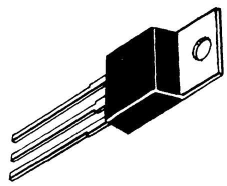
PLASTIC POWER SILICON NPN DARLINGTONS

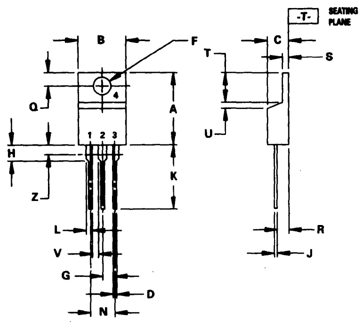
. . . for use as output devices in complementary general-purpose amplifier applications.

- High DC Current Gain — h_{FE} = 750 (Min) @ I_C = 3.0 and 4.0 Adc
- Monolithic Construction
- BD895, 895A, 897, 897A, 899, 899A, 901 are complementary with BD896, 896A, 898, 898A, 900, 900A, 902.
- Electrical equivalents to BD695A, 697, 697A, 699, 699A, 701.

DARLINGTON
8 AMPERE
NPN SILICON
POWER TRANSISTORS

45-60-80-100 VOLTS
70 WATTS





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

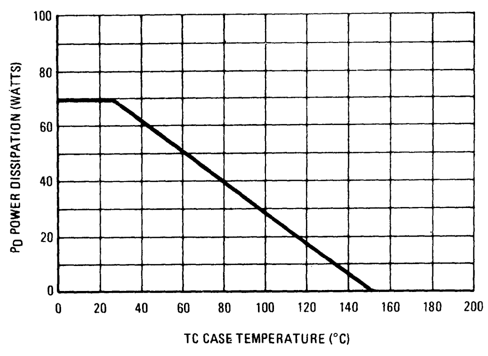
MAXIMUM RATINGS

Rating	Symbol	BD895 BD895A	BD897 BD897A	BD899 BD899A	BD901	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	P_D	70				Watts
Derate above 25 °C		0.56				W/°C
Operating and Storage Junction Temperature 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



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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)	BD895, 895A BD897, 897A BD899, 899A BD901	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)	BD895, 897, 899, 901 BD895A, 897A, 899A	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)	BD895, 897, 899, 901 BD895A, 897A, 899A	$V_{CE(sat)}$	– –	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)	BD895, 897, 899, 901 BD895A, 897A, 899A	$V_{BE(on)}$	– –	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%.

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).

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FIGURE 2 – DC SAFE OPERATING AREA

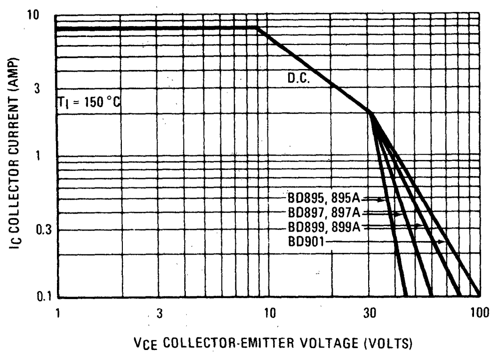

FIGURE 3 – DARLINGTON CIRCUIT SCHEMATIC