BD 695 A
BD 697 • BD 697 A
BD 699 • BD 699 A
BD 701

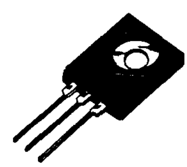
PLASTIC MEDIUM-POWER NPN TRANSISTORS

. . . 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
- BD 695A, 697, 697A, 699, 699A, 701 are complementary with BD 696A, 698, 698A, 700, 700A, 702

8.0 AMPERE
DARLINGTON POWER TRANSISTORS NPN SILICON

45, 60, 80, 100 VOLTS
70 WATTS



HARDWARE AVAILABLE:
1. MICA WASHER – 14B 52600 FO13
2. NYLON ISOLATION WASHER

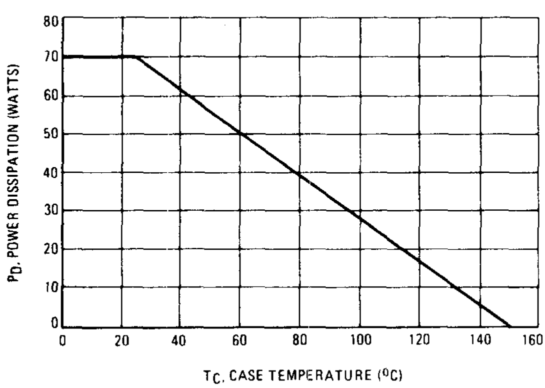
MAXIMUM RATINGS

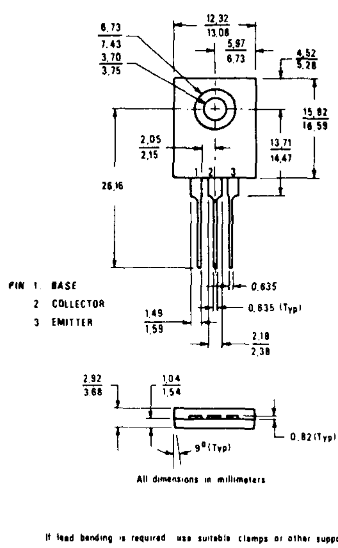
Rating	Symbol	BD 695A	BD 697 BD 697A	BD 699 BD 699A	BD 701	Unit
Collector-Emitter Voltage	V_{CEO}	45	60	80	100	Vdc
Collector-Base Voltage	V_{CB}	45	60	80	100	Vdc
Emitter-Base Voltage	V_{EB}	5.0				Vdc
Collector Current	I_C	8.0				Adc
Base Current	I_B	0.1				Adc
Total Device Dissipation @ T_C = 25°C Derate 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





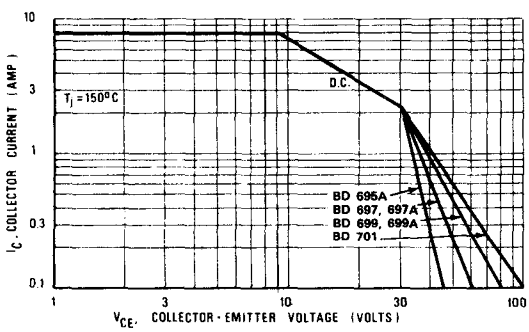
Case 199-04

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)	BD 695A BD 697, 697A BD 699, 699A BD 701	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)	 BD 697, 699, 701 BD 695A, 697A, 699A	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)	 BD 697, 699, 701 BD 695A, 697A, 699A	$V_{CE(sat)}$	 – –	 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)	 BD 697, 699, 701 BD 695A, 697A, 699A	$V_{BE(on)}$	 – –	 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