

**BD675, BD675A, BD677,
BD677A, BD679, BD679A,
BD681**

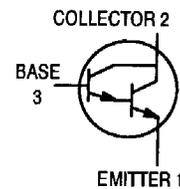
**Plastic Medium-Power
Silicon NPN Darlington**

This series of plastic, medium-power silicon NPN Darlington transistors can be used as output devices in complementary general-purpose amplifier applications.

Features

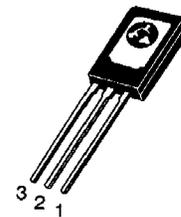
- High DC Current Gain:
 $h_{FE} = 750$ (Min) @ I_C
 $= 1.5$ and 2.0 Adc
- Monolithic Construction
- BD675, 675A, 677, 677A, 679, 679A, 681 are complementary with BD676, 676A, 678, 678A, 680, 680A, 682
- BD677, 677A, 679, 679A are equivalent to MJE 800, 801, 802, 803

**4.0 AMPERES
POWER TRANSISTORS
NPN SILICON
60, 80, 100 VOLTS, 40 WATTS**



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage BD675, A BD677, A BD679, A BD681	V_{CEO}	45 60 80 100	Vdc
Collector-Base Voltage BD675, A BD677, A BD679, A BD681	V_{CBO}	45 60 80 100	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector Current	I_C	4.0	A dc
Base Current	I_B	1.0	A dc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	40 0.32	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$



TO-225AA

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	θ_{JC}	3.13	$^\circ\text{C/W}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

NJ Semi-Conductors reserves the right to change test conditions, parameters limits and package dimensions without notice information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.



ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage, (Note 1) ($I_C = 50\text{ mAdc}$, $I_B = 0$)	BD675, 675A BD677, 677A BD679, 679A BD681	BV_{CEO}	45 60 80 100	- - - -
Collector Cutoff Current ($V_{CE} = \text{Half Rated } BV_{CEO}$, $I_B = 0$)		I_{CEO}	-	500
Collector Cutoff Current ($V_{CB} = \text{Rated } BV_{CEO}$, $I_E = 0$) ($V_{CB} = \text{Rated } BV_{CEO}$, $I_E = 0$, $T_C = 100^\circ\text{C}$)		I_{CBO}	- -	0.2 2.0
Emitter Cutoff Current ($V_{BE} = 5.0\text{ Vdc}$, $I_C = 0$)		I_{EBO}	-	2.0

ON CHARACTERISTICS

DC Current Gain, (Note 1) ($I_C = 1.5\text{ Adc}$, $V_{CE} = 3.0\text{ Vdc}$) ($I_C = 2.0\text{ Adc}$, $V_{CE} = 3.0\text{ Vdc}$)	BD675, 677, 679, 681 BD675A, 677A, 679A	h_{FE}	750 750	- -
Collector-Emitter Saturation Voltage, (Note 1) ($I_C = 1.5\text{ Adc}$, $I_B = 30\text{ mAdc}$) ($I_C = 2.0\text{ Adc}$, $I_B = 40\text{ mAdc}$)	BD677, 679, 681 BD675A, 677A, 679A	$V_{CE(sat)}$	- -	2.5 2.8
Base-Emitter On Voltage, (Note 1) ($I_C = 1.5\text{ Adc}$, $V_{CE} = 3.0\text{ Vdc}$) ($I_C = 2.0\text{ Adc}$, $V_{CE} = 3.0\text{ Vdc}$)	BD677, 679, 681 BD675A, 677A, 679A	$V_{BE(on)}$	- -	2.5 2.5

DYNAMIC CHARACTERISTICS

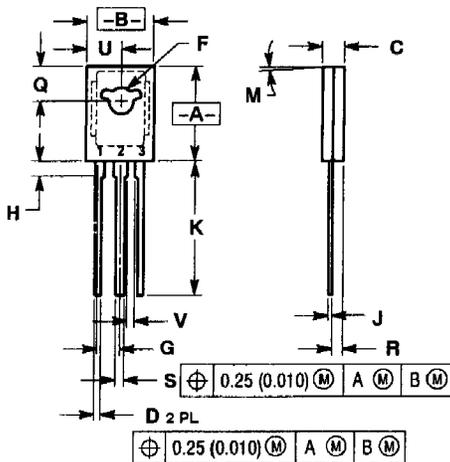
Small Signal Current Gain ($I_C = 1.5\text{ Adc}$, $V_{CE} = 3.0\text{ Vdc}$, $f = 1.0\text{ MHz}$)		h_{fe}	1.0	-
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1. Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

BD675, BD675A, BD677, BD677A, BD679, BD679A, BD681

PACKAGE DIMENSIONS

TO-225AA



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 077-01 THRU -08 OBSOLETE, NEW STANDARD 077-09.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.425	0.435	10.80	11.04
B	0.295	0.305	7.50	7.74
C	0.095	0.105	2.42	2.66
D	0.020	0.026	0.51	0.66
F	0.115	0.130	2.93	3.30
G	0.094 BSC		2.39 BSC	
H	0.050	0.095	1.27	2.41
J	0.015	0.025	0.39	0.63
K	0.575	0.665	14.61	16.83
M	5° TYP		5° TYP	
Q	0.148	0.158	3.76	4.01
R	0.045	0.065	1.15	1.65
S	0.025	0.035	0.64	0.88
U	0.145	0.155	3.68	3.93
V	0.040	---	1.02	---

STYLE 1:

1. EMITTER
2. COLLECTOR
3. BASE