

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

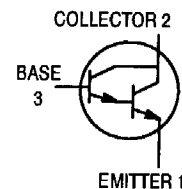
**Plastic Medium-Power  
Silicon NPN Darlington**

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

**Features**

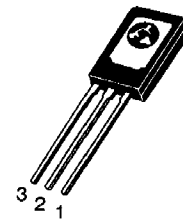
- High DC Current Gain:  
 $h_{FE} = 750$  (Min) @  $I_C$   
 $= 1.5$  and  $2.0$  Adc
- Monolithic Construction
- BD675, 675A, 677, 677A, 679, 679A, 681 are complementary with BD676, 676A, 678, 678A, 680, 680A, 682
- BD677, 677A, 679, 679A are equivalent to MJE 800, 801, 802, 803

**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 $25^\circ\text{C}$	$P_D$	40 0.32	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$



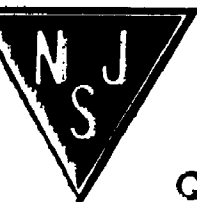
TO-225AA

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	$\theta_{JC}$	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
<b>OFF CHARACTERISTICS</b>				
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**

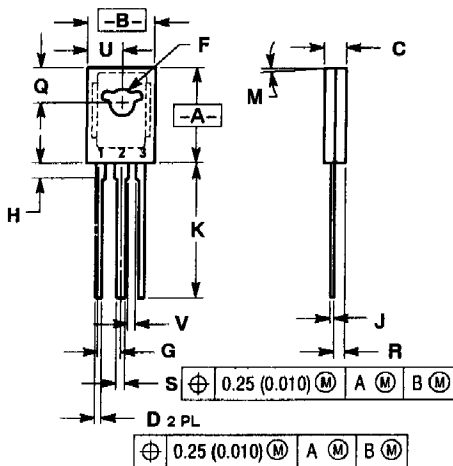
Small Signal Current Gain ( $I_C = 1.5\text{ Adc}$ , $V_{CE} = 3.0\text{ Vdc}$ , $f = 1.0\text{ MHz}$ )		$h_{fe}$	1.0	-
---	--	----------	-----	---

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