

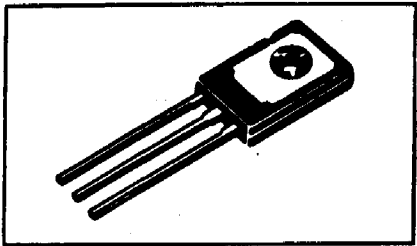
<b>NPN</b> <b>BD777*</b> <b>BD779*</b>	<b>PNP</b> <b>BD776*</b> <b>BD778*</b> <b>BD780*</b>
--	---

**PLASTIC DARLINGTON COMPLEMENTARY SILICON POWER TRANSISTORS**

... designed for general purpose amplifier and high-speed switching applications.

- High DC Current Gain  
 $h_{FE} = 1400$  (Typ) @  $I_C = 2.0$  Adc
- Collector-Emitter Sustaining Voltage -- @ 10 mAdc  
 $V_{CEO}$  (sus) = 45 Vdc (Min) — BD776, 778  
60 Vdc (Min) — BD777, 779  
80 Vdc (Min) — BD778, 780
- Reverse Voltage Protection Diode
- Monolithic Construction with Built-in Base-Emitter output Resistor

**DARLINGTON 4-AMPERE COMPLEMENTARY SILICON POWER TRANSISTORS**  
45, 60, 80 VOLTS  
15 WATTS

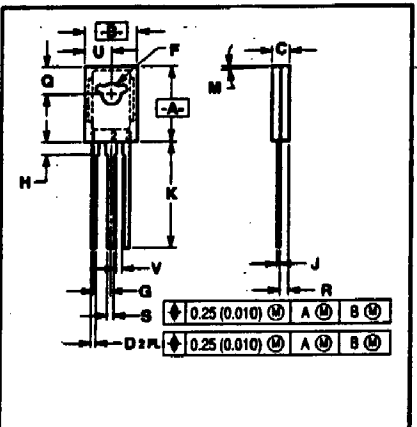
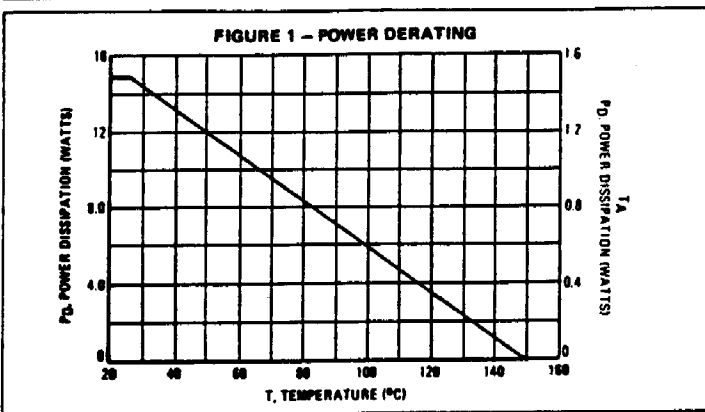


**MAXIMUM RATINGS**

Rating	Symbol	BD776	BD777 BD778	BD779 BD780	Unit
Collector-Emitter Voltage	$V_{CEO}$	45	60	80	Vdc
Collector-Base Voltage	$V_{CB}$	45	60	80	Vdc
Emitter-Base Voltage	$V_{EB}$	5.0			Vdc
Collector Current -- Continuous Peak	$I_C$	4.0			Adc
Base Current	$I_B$	100			mAdc
Total Device Dissipation $T_C = 25^\circ\text{C}$ - Derate above $25^\circ\text{C}$	$P_D$	15			Watts W/C
Operating and Storage junction Temperature Range	$T_J, T_{stg}$ $T_J, T_{stg}$	- 65 to + 150			$^\circ\text{C}$

**THERMAL CHARACTERISTICS**

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	8.34	$^\circ\text{C/W}$
Thermal Resistance, junction to Ambient	$R_{\theta JA}$	83.3	$^\circ\text{C/W}$



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. 077-01 TYPE IS OBSOLETE. NEW STANDARD 077-07.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	10.99	11.94	0.433	0.470
B	7.26	7.74	0.286	0.305
C	2.42	2.90	0.095	0.114
D	0.51	0.60	0.020	0.024
F	2.83	3.30	0.111	0.130
G	2-30 BSC		0.084 BSC	
H	1.27	2.41	0.050	0.095
J	0.30	0.63	0.012	0.025
K	14.81	16.63	0.575	0.655
M	3° TYP		3° TYP	
O	3.76	4.01	0.148	0.158
R	1.15	1.58	0.045	0.062
S	0.64	0.90	0.025	0.035
U	3.80	3.93	0.149	0.155
V	1.02	—	0.040	—

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

TO-225AA TYPE

◇ Annular Semiconductors Patented by Motorola Inc.  
△ Trademark of Motorola Inc.



# BD777, BD779 NPN BD776, BD778, BD780 PNP

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

CHARACTERISTIC	SYMBOL	MIN.	MAX.	UNIT
<b>OFF CHARACTERISTICS</b>				
Collector-Emitter Collector-Emitter Sustaining Voltage (1) ( $I_C = 10\text{ mAdc}$ , $I_B = 0$ ) BD776 BD777, BD778 BD779, BD780	$V_{CE0}$ (sus)	45 60 80		Vdc
Collector Cutoff Current ( $V_{CE} = 20\text{ Vdc}$ , $I_B = 0$ ) ( $V_{CE} = 30\text{ Vdc}$ , $I_B = 0$ ) ( $V_{CE} = 40\text{ Vdc}$ , $I_B = 0$ ) BD776 BD777, BD778 BD779, BD780	$I_{CEO}$		100 100 100	$\mu\text{Adc}$
Collector Cutoff Current ( $V_{CB} = \text{Rated}$ , $V_{CE0}$ (sus), $I_E = 0$ ) ( $V_{CB} = \text{Rated}$ , $V_{CE0}$ (sus), $I_E = 0$ , $T_C = 100^\circ\text{C}$ )	$I_{CBO}$		1.0 100	$\mu\text{Adc}$
Emitter Cutoff Current ( $V_{BE} = 5.0\text{ Vdc}$ , $I_C = 0$ )	$I_{EBO}$		1.0	$\mu\text{Adc}$
<b>ON CHARACTERISTICS</b>				
DC Current Gain ( $I_C = 2.0\text{ Adc}$ , $V_{CE} = 3.0\text{ Vdc}$ )	$h_{FE}$	750		
Collector-Emitter Saturation Voltage ( $I_C = 1.5\text{ Adc}$ , $I_B = 6\text{ mAdc}$ )	$V_{CE}(\text{Sat})$		1.5	Vdc
Base-Emitter Saturation Voltage ( $I_C = 1.5\text{ Adc}$ , $I_B = 6\text{ mAdc}$ )	$V_{BE}(\text{Sat})$		2.5	Vdc
Base-Emitter On Voltage ( $I_C = 1.5\text{ Adc}$ , $V_{CE} = 3\text{ Vdc}$ )	$V_{BE}(\text{On})$		2.3	Vdc
Output Diode Voltage Drop ( $I_{EC} = 2.0\text{ Adc}$ )	$V_{EC}$		2.0	Vdc
<b>DYNAMIC CHARACTERISTICS</b>				
Current Gain Bandwidth Product ( $I_C = 1.0\text{ Adc}$ , $V_{CE} = 2.0\text{ Vdc}$ )	$f_T$	20		MHz
Turn-On Time ( $I_C = 250\text{ mA}$ , $V_{CE} = 2\text{ V}$ ) BD775-777-779 BD776-778-780	SYMBOL		TYP.	UNIT
	$t_{on}$		250 250 150	ns
Turn Off Time ( $I_C = 250\text{ mA}$ , $V_{CE} = 2\text{ V}$ ) BD775-777-779 BD776-778-780	$t_{off}$		800 400	ns

FIGURE 2 - ACTIVE REGION SAFE OPERATING AREA

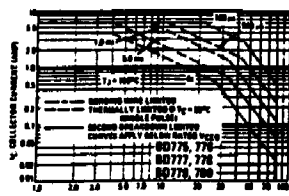


FIGURE 3 - TYPICAL DC CURRENT GAIN

