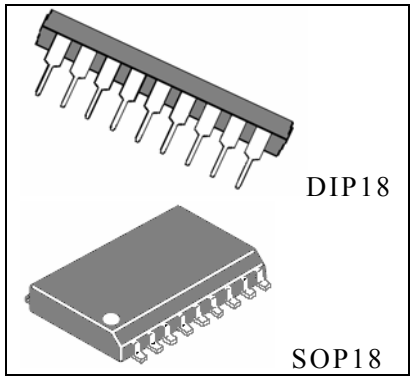
Octal High Voltage,High Current Darlington Transistor Arrays ULN2803APG/AFWG

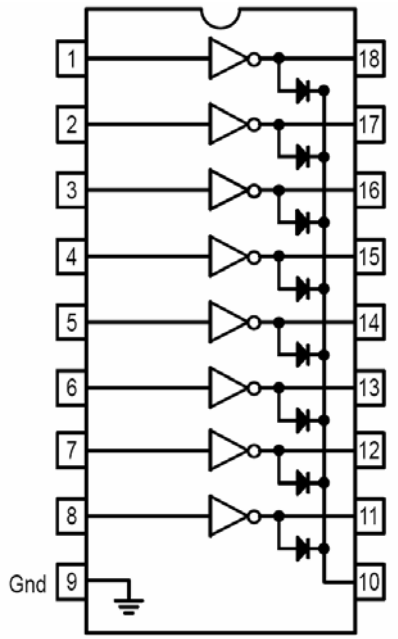
DESCRIPTIONS:

The eight NPN Darlington connected transistors in this family of arrays are ideally suited for interfacing between low logic level digital circuitry (such as TTL, CMOS or PMOS/NMOS) and the higher current/voltage requirements of lamps, relays, printer hammers or other similar loads for a broad range of computer, industrial, and consumer applications. All devices feature open–collector outputs and free wheeling clamp diodes for transient suppression



The ULN2803 is designed to be compatible with standard TTL families while the ULN2804 is optimized for 6 to 15 volt high level CMOS or PMOS.

PIN CONNECTION



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C and rating apply to any one device in the package, unless otherwise noted.)

Characteristic	Symbol	Value	Unit
Output voltage	V_O	50	V
Input voltage	V_I	30	V
Collector current- continuous	I_C	500	mA
Base current- continuous	I_B	25	mA
Operating temperature	Topr	0～70	°C
Storage temperature	Tstg	-55～+150	°C
Junction temperature	T_J	125	°C

* $R_{\theta JA}$=55°C/W

Do not exceed maximum current limit per driver.

ELECTRICAL CHARACTERISTICS

(unless otherwise specified: T_A=25°C)

Characteristics	Symbol	Test conditions	Min	Typ	Max	Unit
Output leakage current (Fig.1)	I_{CEX}	Vo=50V, T_A=70°C			100	μA
		Vo=50V, T_A=25°C			50	
Collector-Emitter saturation voltage (Fig.2)	$V_{CE(sat)}$	Ic=350mA,I_B=500μA		1.1	1.6	V
		Ic=200mA,I_B=350μA		0.95	1.3	
		Ic=100mA,I_B=250μA		0.85	1.1	
Input current - on condition (Fig.4)	$I_{I(on)}$	V_I=3.85V		1.1	1.35	mA
Input voltage - on condition (Fig.5)	$V_{I(on)}$	V_{CE}=2.0V,I_C=200mA		1.70	2.4	V
		V_{CE}=2.0V,I_C=250mA		1.75	2.7	
		V_{CE}=2.0V,I_C=300mA		1.80	3.0	
Input current - off condition (Fig.3)	$I_{I(off)}$	I_C=500μA, T_A=70°C	50	100		μA
Input capacitance	C_I			15	25	pF
Turn-on delay time (50% E_I to 50% E_O)	ton			0.25	1.0	μs
Turn-off delay time (50% E_I to 50% E_O)	toff			0.25	1.0	μs
Clamp diode leakage current (V_R=50V) (Fig.6)	I_R	T_A=25°C			50	μA
		T_A=70°C			100	
Clamp diode forward Voltage (Fig.7)	V_F	I_F=350mA		1.5	2.0	V

TEST CIRCUIT

Figure 1.

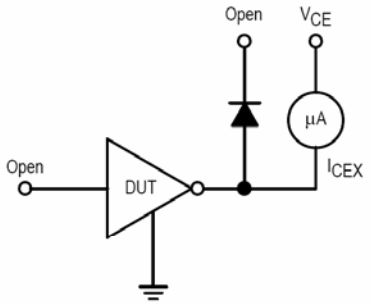


Figure 2.

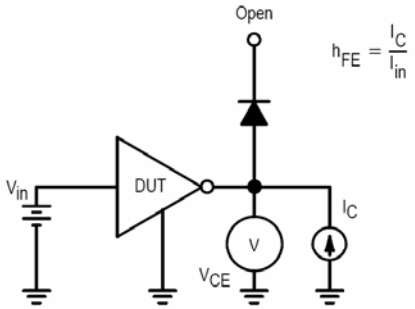


Figure 3.

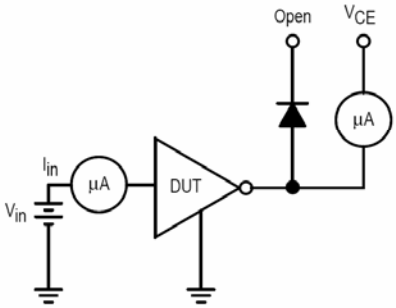


Figure 4.

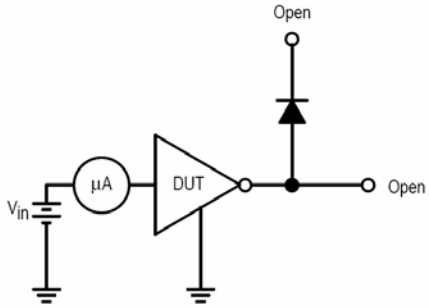


Figure 5.

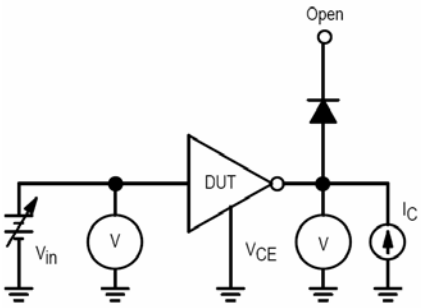


Figure 6.

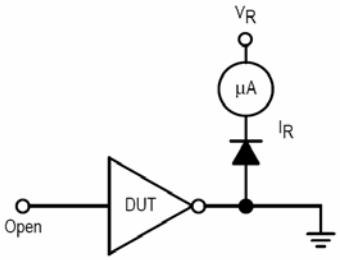
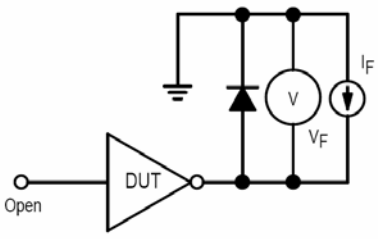
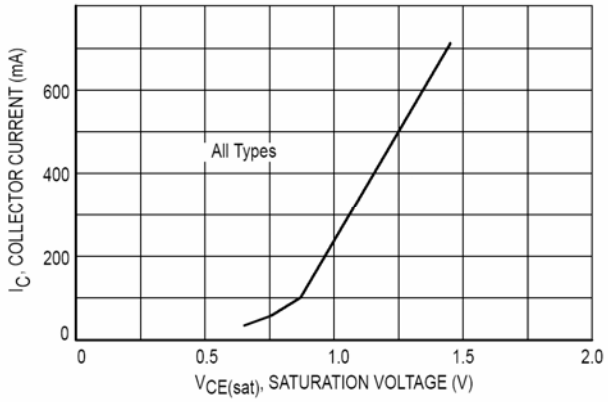


Figure 7.

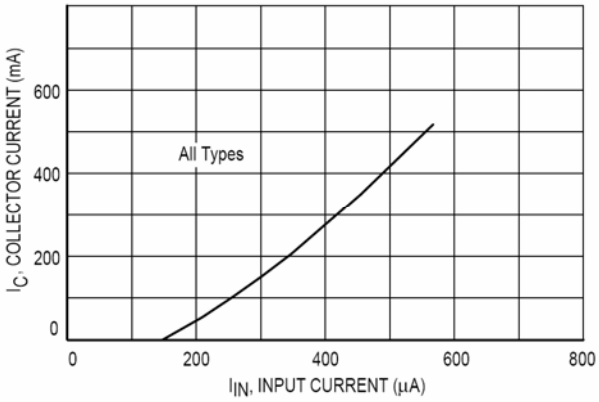


TYPICAL CURVE

Output Current versus Saturation Voltage

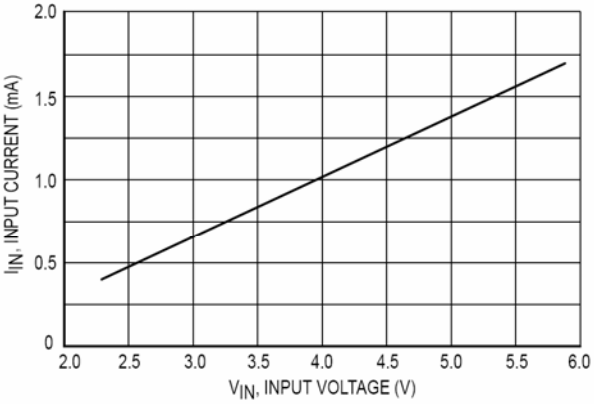


Output Current versus Input Current



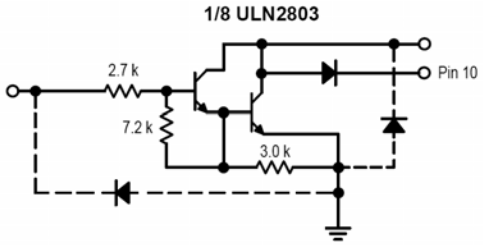
Input Characteristics

ULN2803 Input Current versus Input Voltage



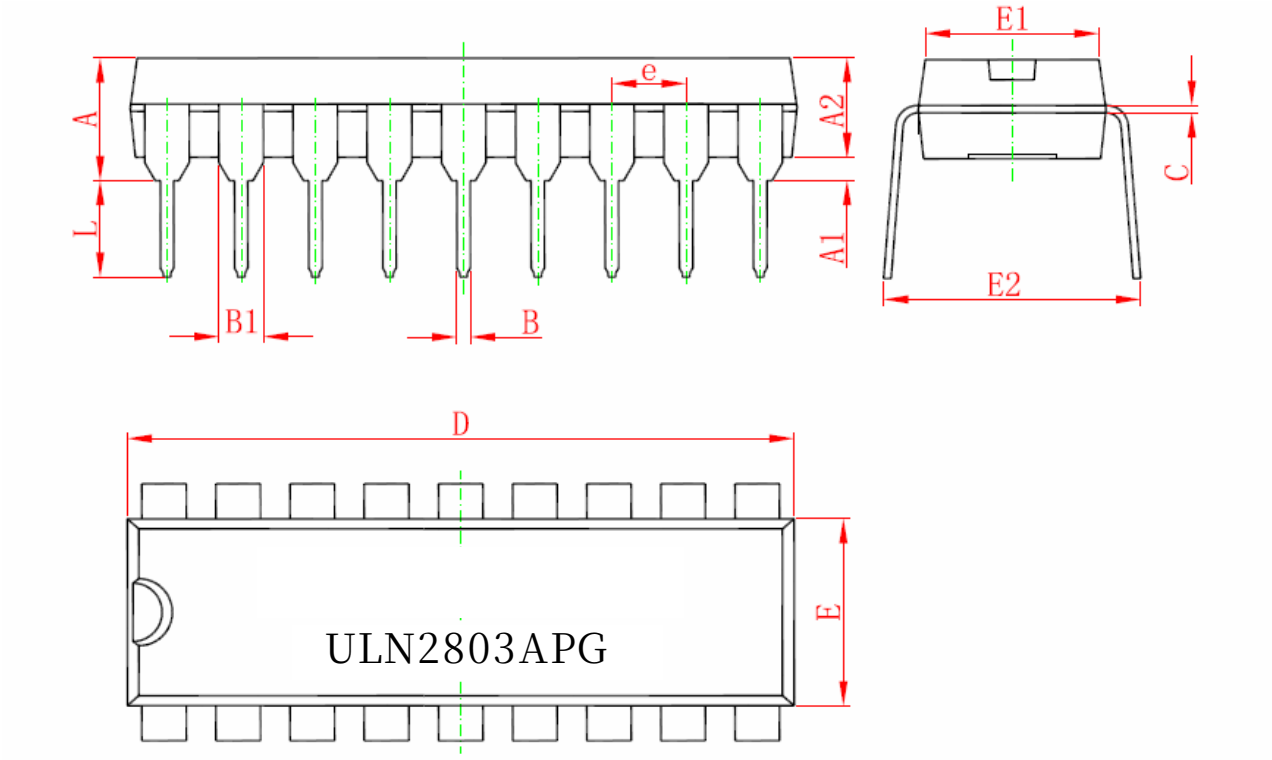
Representative Schematic Diagrams

1/8 ULN2803



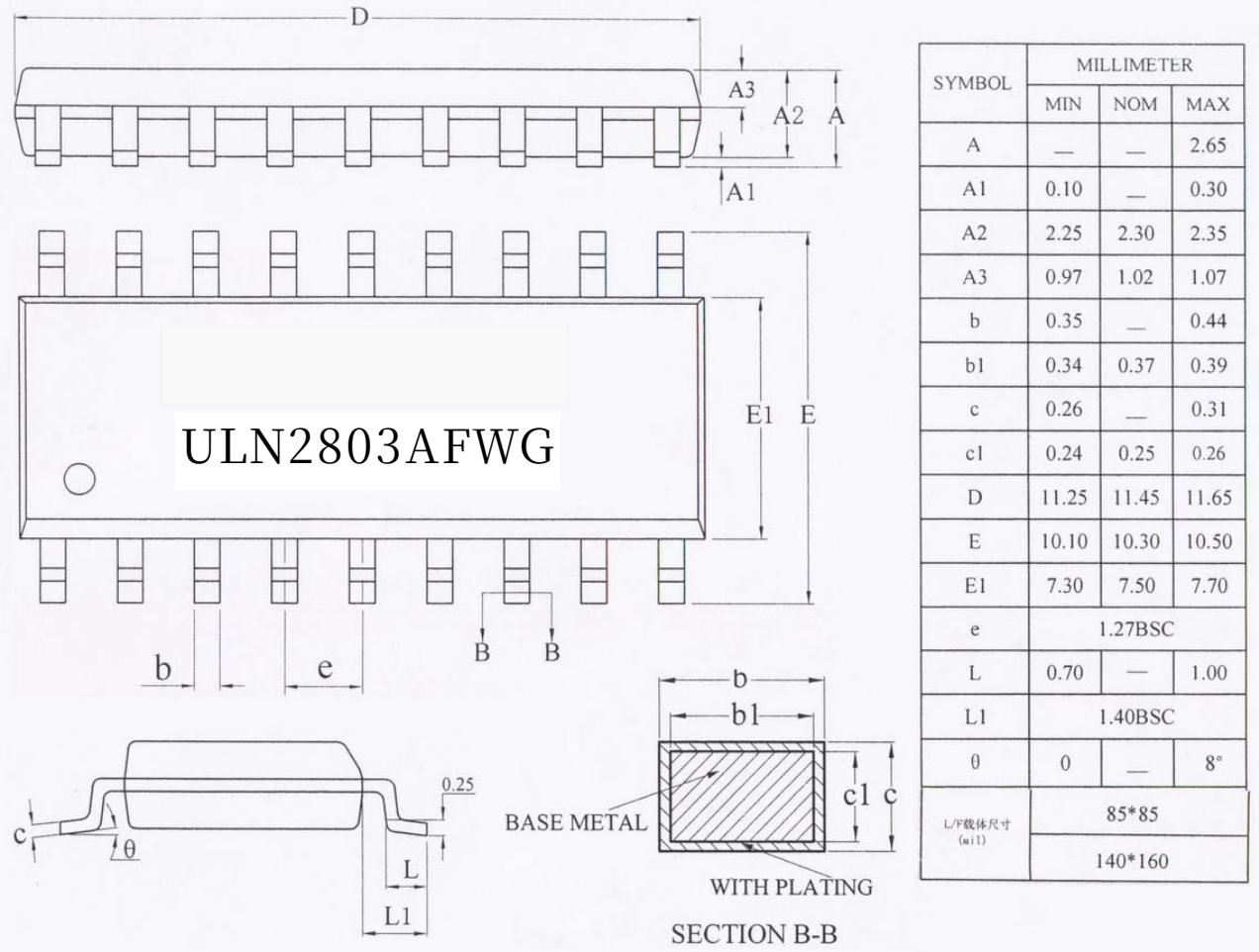
OUTLINE DRAWING

DIP18 Unit: mm



Symbol	Dimensions In Millimeters	
	Min	Max
A	3.710	4.310
A1	0.510	
A2	3.200	3.600
B	0.380	0.570
B1	1.524 (BSC)	
C	0.204	0.360
D	22.640	23.040
E	6.200	6.600
E1	7.320	7.920
e	2.540 (BSC)	
L	3.000	3.600
E2	8.400	9.000

SOP18 Unit:mm



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	2.65
A1	0.10	—	0.30
A2	2.25	2.30	2.35
A3	0.97	1.02	1.07
b	0.35	—	0.44
b1	0.34	0.37	0.39
c	0.26	—	0.31
c1	0.24	0.25	0.26
D	11.25	11.45	11.65
E	10.10	10.30	10.50
E1	7.30	7.50	7.70
e	1.27BSC		
L	0.70	—	1.00
L1	1.40BSC		
θ	0	—	8°
L/F载体尺寸 (mil)	85*85		
	140*160		