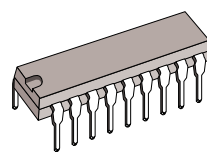


EIGHT DARLINGTON ARRAYS

- EIGHT DARLINGTONS PER PACKAGE
- **EXTENDED TEMPERATURE RANGE**
(- 40 to 105°C)
- OUTPUT CURRENT TO 500mA
- OUTPUT VOLTAGE TO 50V
- INTEGRAL SUPPRESSION DIODES
- VERSIONS FOR ALL POPULAR LOGIC FAMILIES
- OUTPUT CAN BE PARALLELED
- INPUTS PINNED OPPOSITE OUTPUTS TO SIMPLIFY BOARD LAYOUT



DIP18
(Plastic Package)

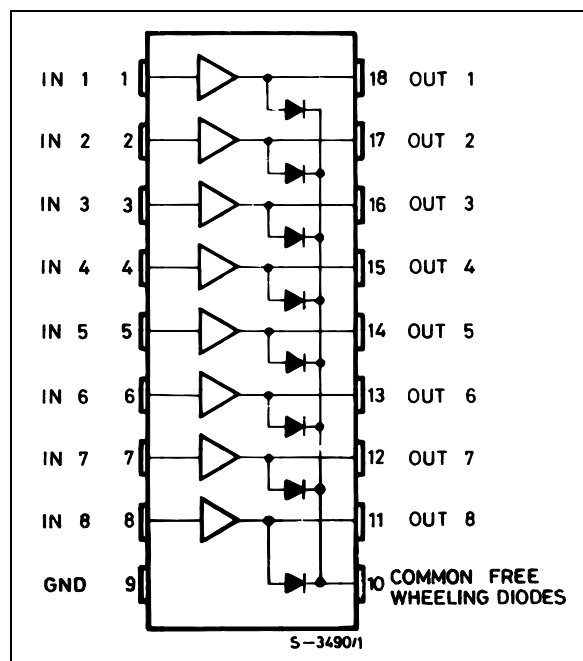
DESCRIPTION

The ULQ2801A-ULQ2805A each contain eight darlington transistors with common emitters and integral suppression diodes for inductive loads. Each darlington features a peak load current rating of 600mA (500mA continuous) and can withstand at least 50V in the off state. Outputs may be paralleled for higher current capability.

Five versions are available to simplify interfacing to standard logic families : the ULQ2801A is designed for general purpose applications with a current limit resistor ; the ULQ2802A has a 10.5kΩ input resistor and zener for 14-25V PMOS ; the ULQ2803A has a 2.7kΩ input resistor for 5V TTL and CMOS ; the ULQ2804A has a 10.5kΩ input resistor for 6-15V CMOS and the ULQ2805A is designed to sink a minimum of 350mA for standard and Schottky TTL where higher output current is required.

All types are supplied in a 18-lead plastic DIP with a copper lead frame and feature the convenient input-opposite-output pinout to simplify board layout.

PIN CONNECTION (top view)



ULQ2801A - ULQ2802A - ULQ2803A - ULQ2804A - ULQ2805A

ELECTRICAL CHARACTERISTICS (T_j = –40 to 105°C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit	Fig.
I _{CEX}	Output Leakage Current	V _{CE} = 50V T _J = 105°C, V _{CE} = 50V T _J = 105°C for ULQ2802A V _{CE} = 50V, V _i = 6V for ULQ2804A V _{CE} = 50V, V _i = 1V			50 100 500 500	μA μA μA μA	1a 1a 1b 1b
V _{CE (sat)}	Collector-emitter Saturation Voltage	I _C = 100mA, I _B = 250μA I _C = 200mA, I _B = 350μA I _C = 350mA, I _B = 500μA		0.9 1.1 1.3	1.1 1.3 1.6	V V V	2
I _{i(on)}	Input Current	for ULQ2802A V _i = 17V for ULQ2803A V _i = 3.85V for ULQ2804A V _i = 5V V _i = 12V for ULQ2805A V _i = 3V		0.82 0.93 0.35 1 1.5	1.25 1.35 0.5 1.45 2.4	mA mA mA mA mA	3
I _{i(off)}	Input Current	T _J = 105°C, I _C = 500μA	50	65		μA	4
V _{i(on)}	Input Voltage	for ULQ2802A V _{CE} = 2V, I _C = 300mA for ULQ2803A V _{CE} = 2V, I _C = 200mA V _{CE} = 2V, I _C = 250mA V _{CE} = 2V, I _C = 300mA for ULQ2804A V _{CE} = 2V, I _C = 125mA V _{CE} = 2V, I _C = 200mA V _{CE} = 2V, I _C = 275mA V _{CE} = 2V, I _C = 350mA for ULQ2805A V _{CE} = 2V, I _C = 350mA			13 2.4 2.7 3 5 6 7 8 2.4	V V V V V V V V V	5
h _{FE}	DC Forward Current Gain	for ULQ2802A V _{CE} = 2V, I _C = 350mA	1000			–	2
C _i	Input Capacitance			15	25 (*)	pF	–
t _{PLH}	Turn-on Delay Time	0.5 V _i to 0.5 V _o		0.25	1 (*)	μs	–
t _{PHL}	Turn-off Delay Time	0.5 V _i to 0.5 V _o		0.25	1 (*)	μs	–
I _R	Clamp Diode Leakage Current	V _R = 50V T _J = 105°C, V _R = 50V			50 100	μA μA	6
V _F	Clamp Diode Forward Voltage	I _F = 350mA		1.7	2	V	7

(*) Guaranteed by design

TEST CIRCUITS

Figure 1a.

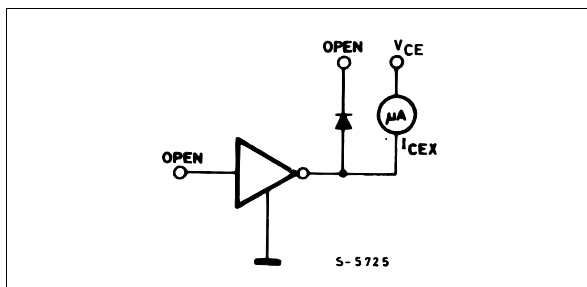


Figure 1b.

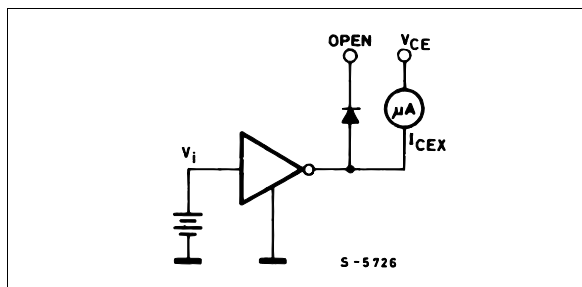


Figure 2.

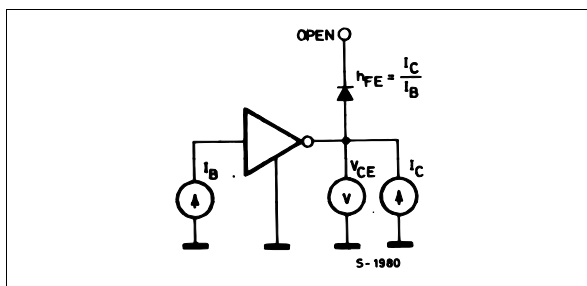


Figure 3.

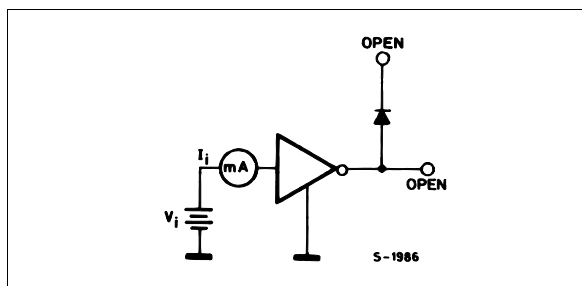


Figure 4.

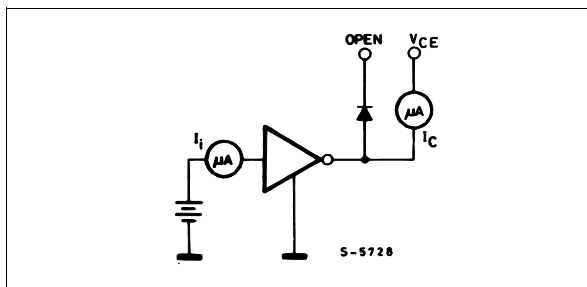


Figure 5.

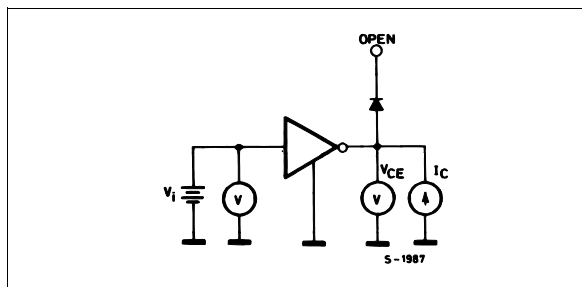


Figure 6.

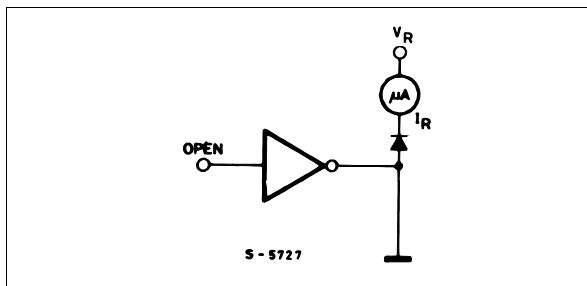


Figure 7.

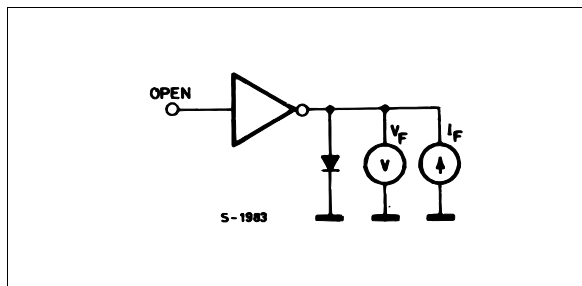


Figure 8 : Collector Current as a Function of Saturation Voltage.

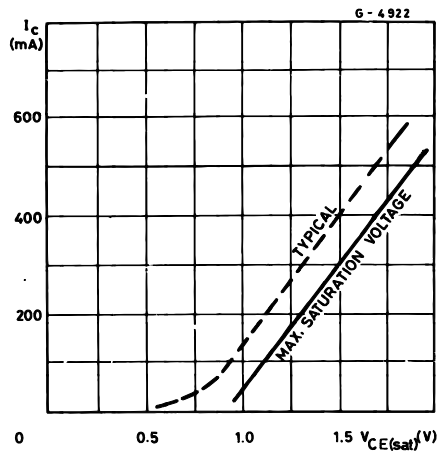


Figure 9 : Collector Current as a Function of Input Current.

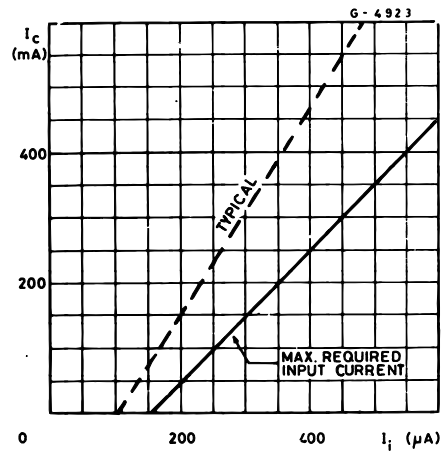


Figure 10 : Allowable Average Power Dissipation as a Function of Ambient Temperature.

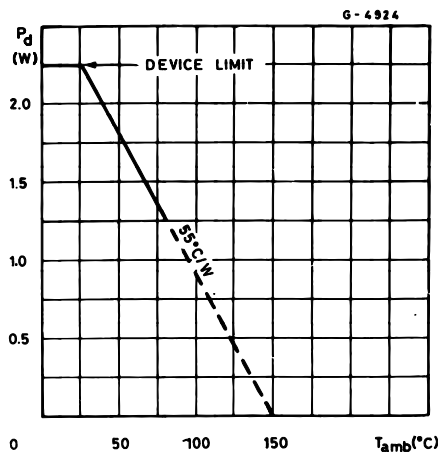


Figure 11 : Peak Collector Current as a Function of Duty Cycle.

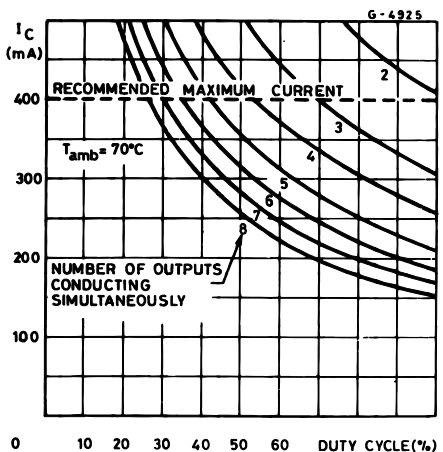


Figure 12 : Peak Collector Current as a Function of Duty.

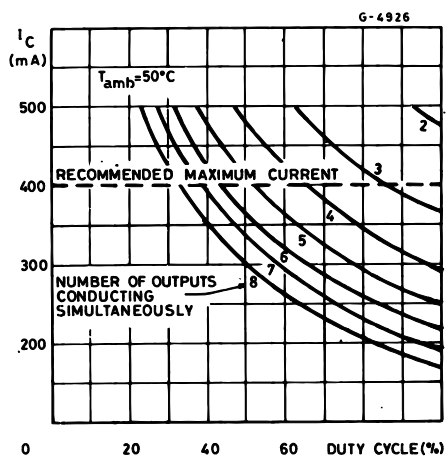


Figure 13 : Input Current as a Function of Input Voltage (for ULQ2802A).

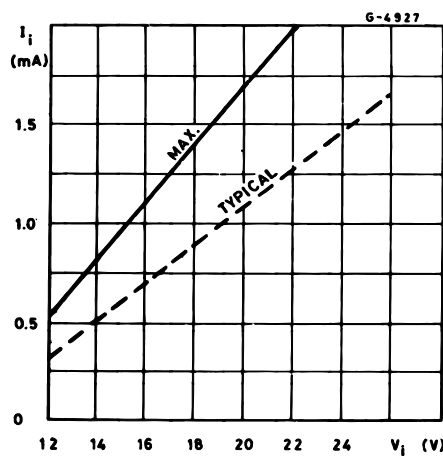


Figure 14 : Input Current as a Function of Input Voltage (for ULQ2804A)

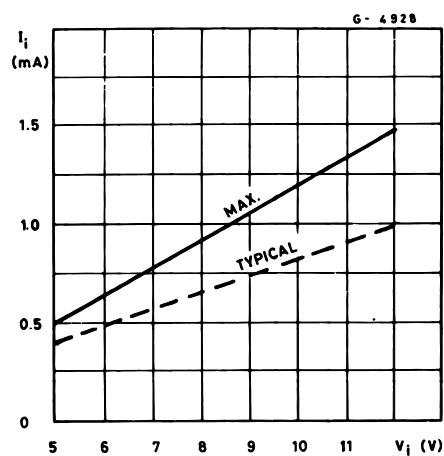


Figure 15 : Input Current as a Function of Input Voltage (for ULQ2803A)

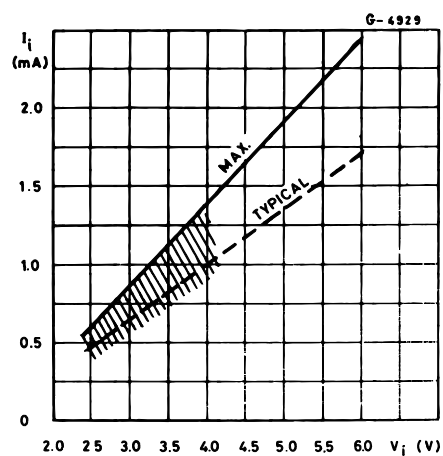
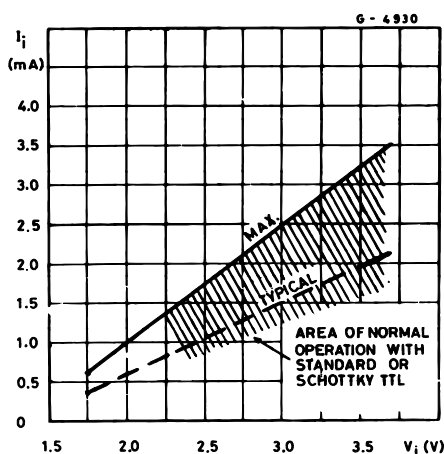
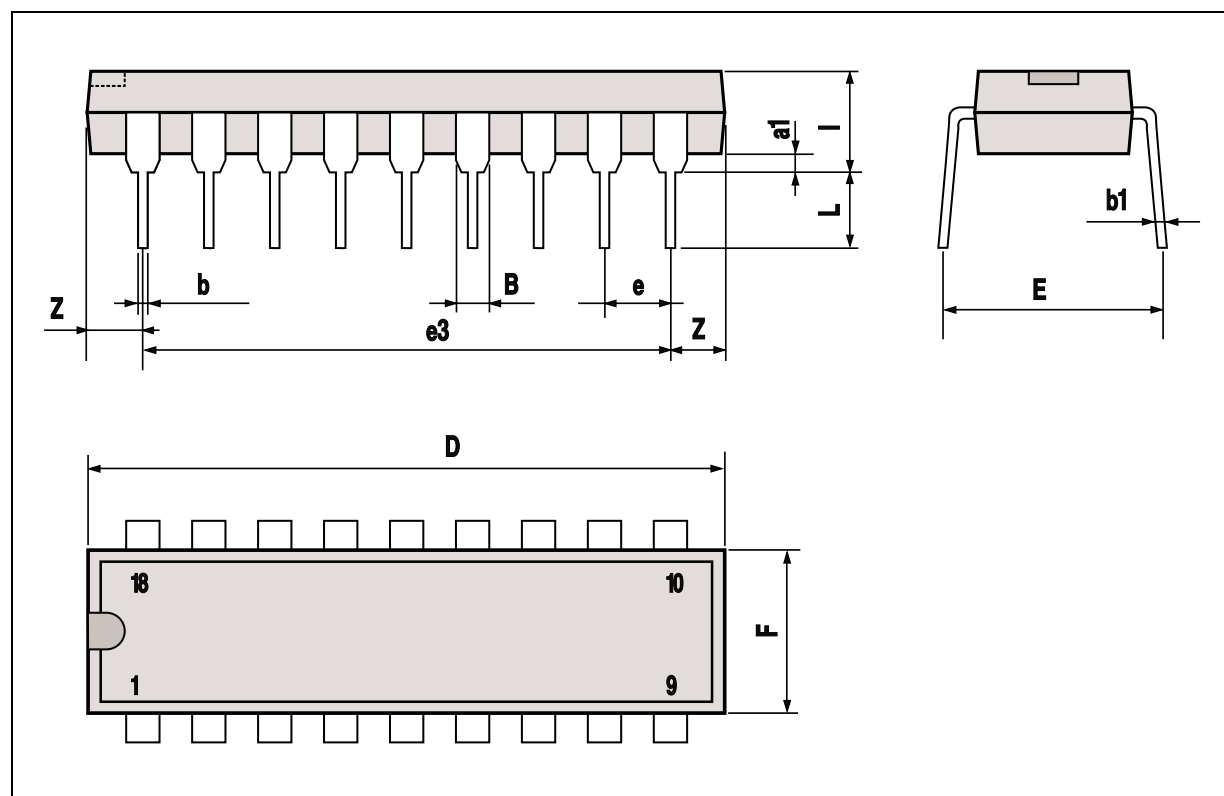


Figure 16 : Input Current as a Function of Input Voltage (for ULQ2805A)



DIP18 PACKAGE MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
a1	0.254			0.010		
B	1.39		1.65	0.055		0.065
b		0.46			0.018	
b1		0.25			0.010	
D			23.24			0.915
E		8.5			0.335	
e		2.54			0.100	
e3		20.32			0.800	
F			7.1			0.280
I			3.93			0.155
L		3.3			0.130	
Z		1.27	1.59		0.050	0.063



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