MIC2803/2804

High-Voltage High-Current Darlington Array

Not Recommended for New Designs

General

The MIC2803 and MIC2804 are high-voltage, high-current Darlington arrays ideal for switching high-power loads from logic-level TTL, CMOS, or PMOS control signals.

The MIC2803/4 Darlington transistor array can be used to manage multiple loads of up to 50V and 500mA, limited by package power dissipation.

The MIC2803 features inputs compatible with 5V TTL and CMOS logic while the MIC2804 features inputs compatible with 6V to 15V CMOS or PMOS logic outputs.

The MIC2803/4 is available in 18-pin plastic DIP and wide SOIC packages in the –40°C to +85°C temperature range.

Features

- Output voltage to 50V
- Output current to 500mA
- Open-collector outputs
- Integral clamp diodes
- TTL, CMOS, or PMOS compatible inputs

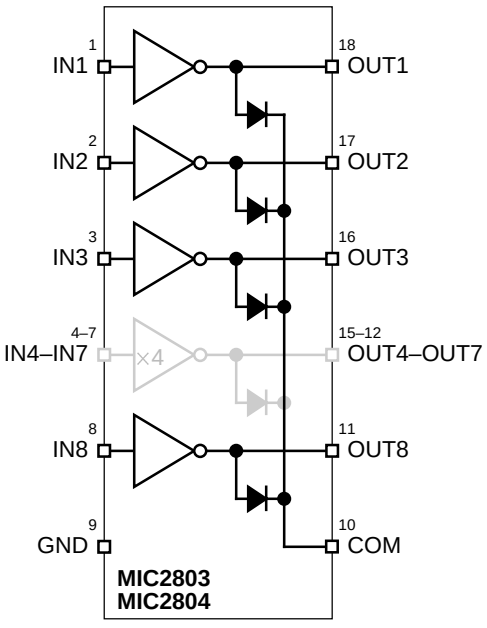
Applications

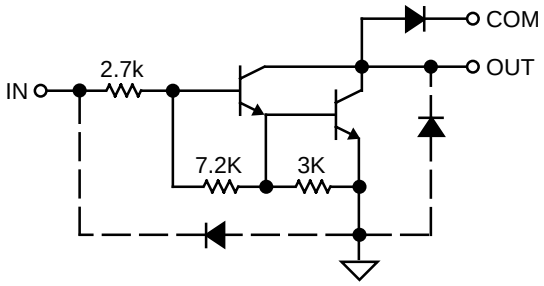
- Relay and solenoid switching
- Stepping motor
- LED and incandescent displays

Ordering Information

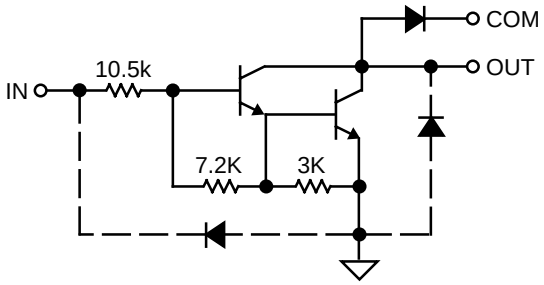
Part Number	Temperature Range	Package
MIC2803BN	–40°C to +85°C	18-pin DIP
MIC2803BWM	–40°C to +85°C	18-pin wide SOIC
MIC2804BN	–40°C to +85°C	18-pin DIP
MIC2804BWM	–40°C to +85°C	18-pin wide SOIC

Functional Diagrams



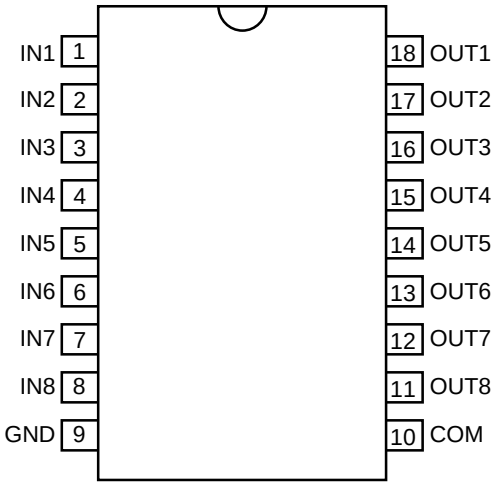


Typical MIC2803 Darlington Driver



Typical MIC2804 Darlington Driver

Pin Configuration



18-Pin DIP (N)
18-Pin Wide SOIC (WM)

Pin Description

Pin Number	Pin Name	Pin Function
1–8	IN1–IN8	Input 1 through Input 8: Base drive to Darlington transistor via current limiting resistor.
9	GND	Ground
10	COM	Clamp Diode Common
11–18	OUT8–OUT1	Output 8 through Output 1: Open collector output of Darlington transistor.

Absolute Maximum Ratings

Output Voltage (V_{CE}) 50V
Continuous Output Current (I_C) 500mA
Input Voltage (V_{IN}) 30V
Continuous Input Current (I_{IN}) 25mA
Storage Temperature (T_S) ..... –65°C to +150°C

Operating Ratings

Ambient Temperature (T_A) ..... –40°C to +85°C
Package Thermal Resistance
PDIP θ_{JA} ..... 56°C/W
SOIC θ_{JA} ..... 84°C/W

Electrical Characteristics

V_{CC} = 50V, T_A = 25°C, unless noted.

Symbol	Parameter	Condition		Min	Typ	Max	Units
I_{CEX}	Output Leakage Current		T_A = +25°C T_A = +70°C			50 100	µA µA
		MIC2804	T_A = +85°C, V_{IN} = 1.0V			500	µA
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage		I_C = 100mA, I_{IN} = 250µA I_C = 200mA, I_{IN} = 350µA I_C = 350mA, I_{IN} = 500µA		0.9 1.1 1.3	1.1 1.3 1.6	V V V
$I_{IN(on)}$	Input Current	MIC2803	V_{IN} = 3.85V		0.93	1.35	mA
		MIC2804	V_{IN} = 5.0V V_{IN} = 12V		0.35 1.0	0.5 1.45	mA mA
$I_{IN(off)}$			I_C = 500µA, T_A = +85°C	50	65		µA
$V_{IN(on)}$	Input Voltage	MIC2803	V_{CE} = 2.0V, I_C = 200mA V_{CE} = 2.0V, I_C = 250mA V_{CE} = 2.0V, I_C = 300mA			2.4 2.7 3.0	V V V
		MIC2804	V_{CE} = 2.0V, I_C = 125mA V_{CE} = 2.0V, I_C = 200mA V_{CE} = 2.0V, I_C = 275mA V_{CE} = 2.0V, I_C = 350mA			5.0 6.0 7.0 8.0	V V V V
C_{IN}	Input Capacitance				15	25	pF
t_{ON}	Turn-On Delay		0.5E_{IN} to 0.5E_{OUT}		0.15	1.0	µs
t_{OFF}	Turn-Off Delay		0.5E_{IN} to 0.5E_{OUT}		0.05	1.0	µs
I_R	Clamp Diode Leakage Current		V_R = 50V, T_A = +25°C V_R = 50V, T_A = +85°C			50 100	µA µA
V_F	Clamp Diode Forward Voltage		I_F = 350mA		1.7	2.0	V

General Note: Devices are ESD protected; however, handling precautions are recommended.