



DS8863/DS8963 MOS-to-LED 8-Digit Driver

General Description

The DS8863 and DS8963 are designed to be used in conjunction with MOS integrated circuits and common-cathode LED's in serially addressed multi-digit displays.

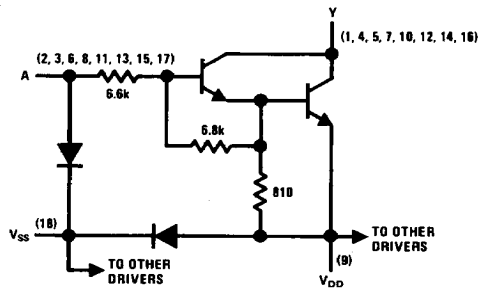
The DS8863 is an 8-digit driver. Each driver is capable of sinking up to 500 mA.

The DS8963 is identical to the DS8863 except it is intended for operation at up to 18V.

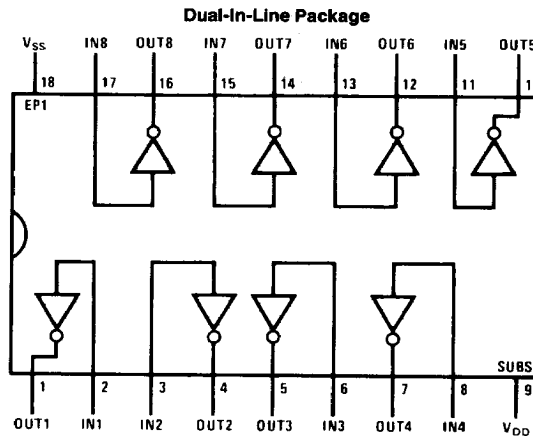
Features

- 500 mA sink capability per driver, DS8863, DS8963
- MOS compatibility (low input current)
- Low standby power
- High gain Darlington circuits

Schematic and Connection Diagrams



TL/F/5839-1



Top View

Order Number DS8863N or DS8963N
See NS Package Number N18A

TL/F/5839-2

Absolute Maximum Ratings

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

	DS8863	DS8963		DS8863	DS8963
Input Voltage Range (Note 1)	-5V to V_{SS}	-5V to V_{SS}	Collector (Output) Current		
Collector (Output) Voltage (Note 2)	10V	18V	Each Collector (Output)	500 mA	500 mA
Collector (Output)-to-Input Voltage	10V	18V	All Collectors (Output)	600 mA	600 mA
Emitter-to-Ground Voltage ($V_I \geq 5V$)			Continuous Total Dissipation	800 mW	800 mW
Emitter-to-Input Voltage			Operating Temperature Range	0°C to +70°C	0°C to +70°C
Voltage at V_{SS} Terminal With Respect to Any Other Device Terminal	10V	18V	Storage Temperature Range	-65°C to +150°C	
			Maximum Power Dissipation at 25°C		
			Molded Package	1563 mW†	1563 mW†
			Lead Temperature (Soldering, 4 sec.)	260°C	260°C

†Derate molded package 12.5 mW/°C above 25°C.

Electrical Characteristics $V_{SS} = 10V$, $T_A = 0^\circ\text{C}$ to $+70^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{OL}	Low Level Output Voltage	$V_{IN} = 7V$, $I_{OUT} = 500\text{ mA}$, $T_A = 25^\circ\text{C}$			1.5	V
					1.6	V
I_{OH}	High Level Output Current	$V_{OH} = 10V^*$, $I_{IN} = 40\text{ }\mu\text{A}$			250	μA
		$V_{IN} = 0.5V$			250	μA
I_I	Input Current at Maximum Input Voltage	$V_{IN} = 10V$, $I_{OL} = 20\text{ mA}$			2	mA
I_{SS}	Current into V_{SS} Terminal				1	mA

*18V for the DS8963

Switching Characteristics $V_{SS} = 7.5V$, $T_A = 25^\circ\text{C}$

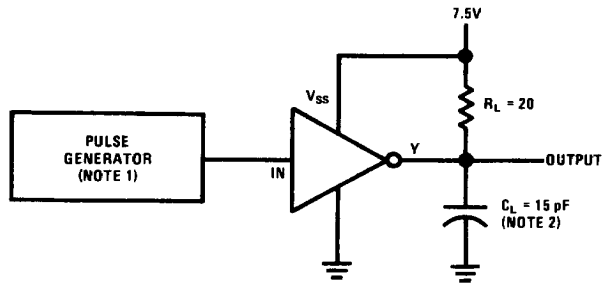
Symbol	Parameter	Conditions	Min	Typ	Max	Units
t_{PLH}	Propagation Delay Time, Low-to-High Level Output	$V_{IH} = 8V$, $R_L = 20\Omega$, $C_L = 15\text{ pF}$		300		ns
t_{PHL}	Propagation Delay Time, High-to-Low Level Output			30		ns

Note 1: The input is the only device terminal which may be negative with respect to ground.

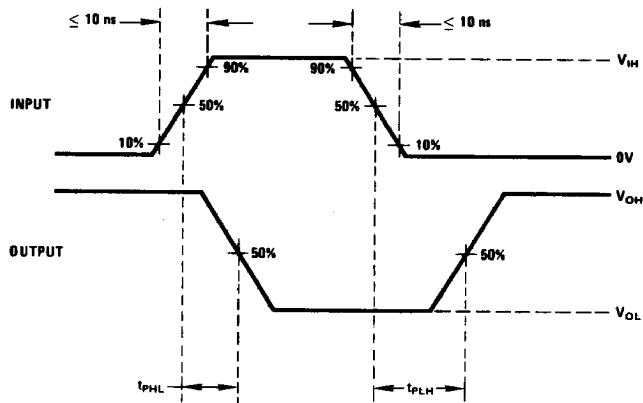
Note 2: Voltage values are with respect to network ground terminal unless otherwise noted.

AC Test Circuits and Waveforms

DS8863



TL/F/5839-3



TL/F/5839-4

Note 1: The pulse generator has the following characteristics: $Z_{OUT} = 50\Omega$, $PRR = 100\text{ KHz}$, $t_W = 1\mu s$.

Note 2: C_L includes probe and jig capacitance.