

DS8884A High Voltage Cathode Decoder/Driver

General Description

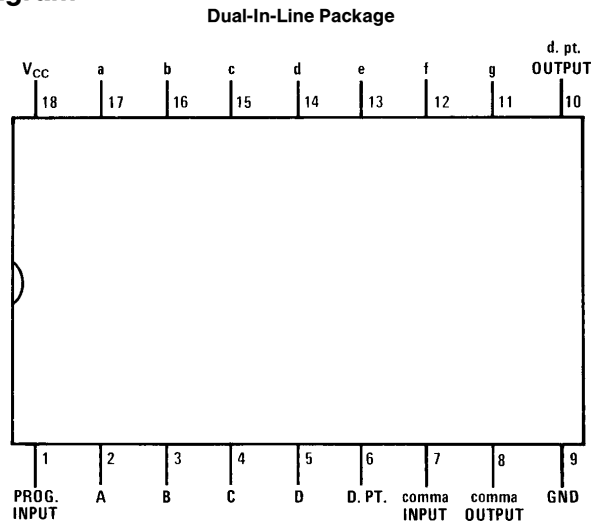
The DS8884A is designed to decode four lines of BCD input and drive seven-segment digits of gas-filled readout displays.

All outputs consist of switchable and programmable current sinks which provide constant current to the tube cathodes, even with high tube anode supply tolerance. Output currents may be varied over the 0.2 mA to 1.2 mA range for multiplex operation. The output current is adjusted by connecting an external program resistor (R_p) from V_{CC} to the program input in accordance with the programming curve. Unused outputs must be tied to V_{CC} .

Features

- Usable with AC or DC input coupling
- Current sink outputs
- High output breakdown voltage
- Low input load current
- Intended for multiplex operation
- Input pullups increase noise immunity
- Comma/d.pt. drive

Connection Diagram



TL/F/5847-2

Order Number DS8884AN
See NS Package Number N18A

(Note 1)

V _{CC}	7V
Input Voltage (Note 4)	V _{CC}
Segment Output Voltage	80V
Power Dissipation	600 mW
Transient Segment Output Current (Note 5)	50 mA

*Derate molded package 13.71 mW/°C above 25°C.

	Min	Max	Units
Supply Voltage (V_{CC})	4.75	5.25	V
Temperature (T_A)	0	+70	°C

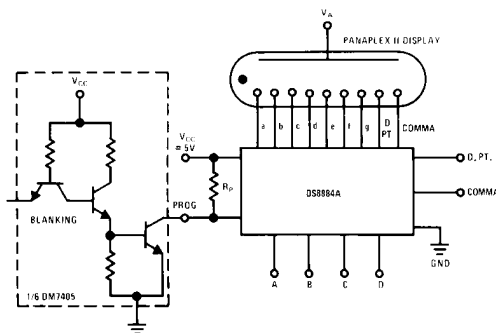
(Notes 2 and 3)

Symbol	Parameter	Conditions		Min	Max	Units
V _{IH}	Logical “1” Input Voltage	V _{CC} = 4.75V		2.0		V
V _{IL}	Logical “0” Input Voltage	V _{CC} = 4.75V			1.0	V
I _{IH}	Logical “1” Input Current	V _{CC} = 5.25V, V _{IN} = 2.4V			15	μA
I _{IL}	Logical “0” Input Current	V _{CC} = 5.25V, V _{IN} = 0.4V			− 250	μA
I _{CC}	Power Supply Current	V _{CC} = 5.25V, R _P = 2.8k, All Inputs = 5V			40	mA
V _{I+}	Positive Input Clamp Voltage	V _{CC} = 4.75V, I _{IN} = 1 mA		5.0		V
V _{I−}	Negative Input Clamp Voltage	V _{CC} = 5V, I _{IN} = − 12 mA, T _A = 25°C			− 1.5	V
ΔI _O	SEGMENT OUTPUTS “ON” Current Ratio	All Outputs = 50V, I _{OUT} b = Ref., All Outputs		0.9	1.1	
I _b ON	Output b “ON” Current	V _{CC} = 5V, V _{OUT} b = 50V, T _A = 25°C	R _P = 18.1k	0.15	0.25	mA
			R _P = 7.03k	0.45	0.55	mA
			R _P = 3.40k	0.90	1.10	mA
			R _P = 2.80k	1.08	1.32	mA
I _{CEX}	Output Leakage Current	V _{OUT} = 75V			5	μA
V _{BR}	Output Breakdown Voltage	I _{OUT} = 250 μA		80		V
t _{pd}	Propagation Delay of Any Input to Segment Output	V _{CC} = 5V, T _A = 25°C			10	μs

Note 2: Unless otherwise specified min/max limits apply across the 0°C to +70°C temperature range for the DS88B4A. All typical values are for $T_A = 25^\circ\text{C}$ and $V_{CC} = 5\text{V}$.

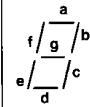
Note 4: This limit can be higher for a current limiting voltage source.

Typical Application



Truth Table

FUNCTION	D.P.T.	COMMA	D	C	B	A	a	b	c	d	e	f	g	DISPLAY
0	1	1	0	0	0	0	0	0	0	0	0	1	1	0
1	1	1	0	0	0	1	1	0	0	1	1	1	1	1
2	1	1	0	0	1	0	0	0	1	0	0	1	0	0
3	1	1	0	0	1	1	0	0	0	0	1	1	0	0
4	1	1	0	1	0	0	1	0	0	1	1	0	0	0
5	1	1	0	1	0	1	0	1	0	0	1	0	0	0
6	1	1	0	1	1	0	0	1	0	0	0	0	0	0
7	1	1	0	1	1	1	0	0	0	1	1	1	1	1
8	1	1	1	0	0	0	0	0	0	0	0	0	0	0
9	1	1	1	0	0	1	0	0	0	0	1	0	0	0
10	1	1	1	0	1	0	1	1	0	0	0	1	1	1
11	1	1	1	0	1	1	1	1	0	0	0	1	0	0
12	1	1	1	1	0	0	0	0	1	1	1	0	0	0
13	1	1	1	1	0	1	0	1	1	0	0	0	0	0
14	1	1	1	1	1	0	1	1	1	1	1	1	0	0
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1
*D.P.T.	0	1	X	X	X	X	X	X	X	X	X	X	X	a
*Comma	0	0	X	X	X	X	X	X	X	X	X	X	X	b

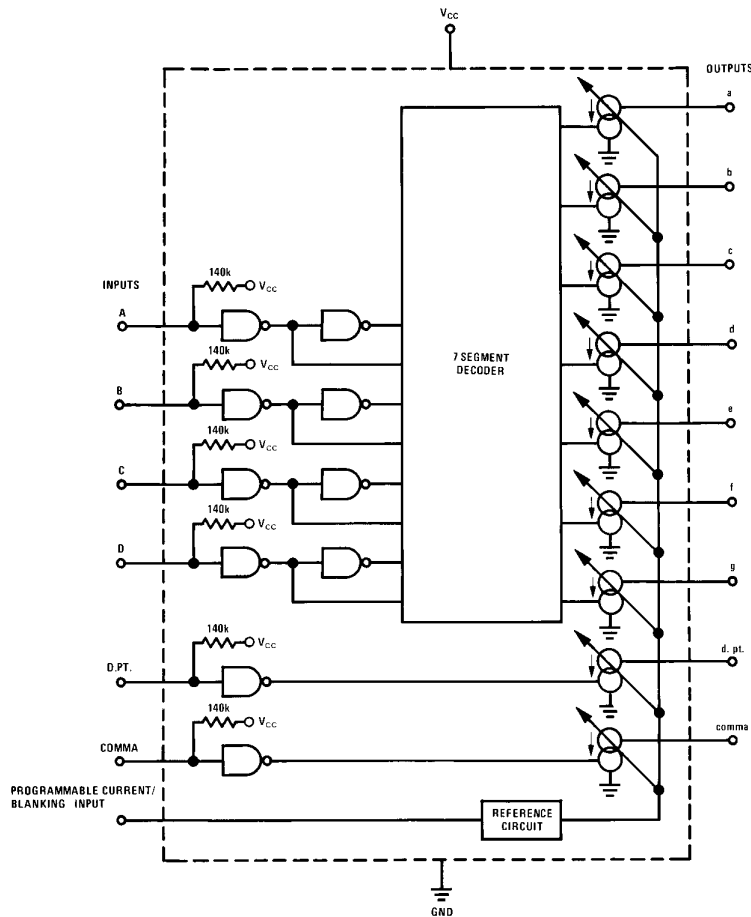


Decimal Point
 Comma

TL/F/5847-3

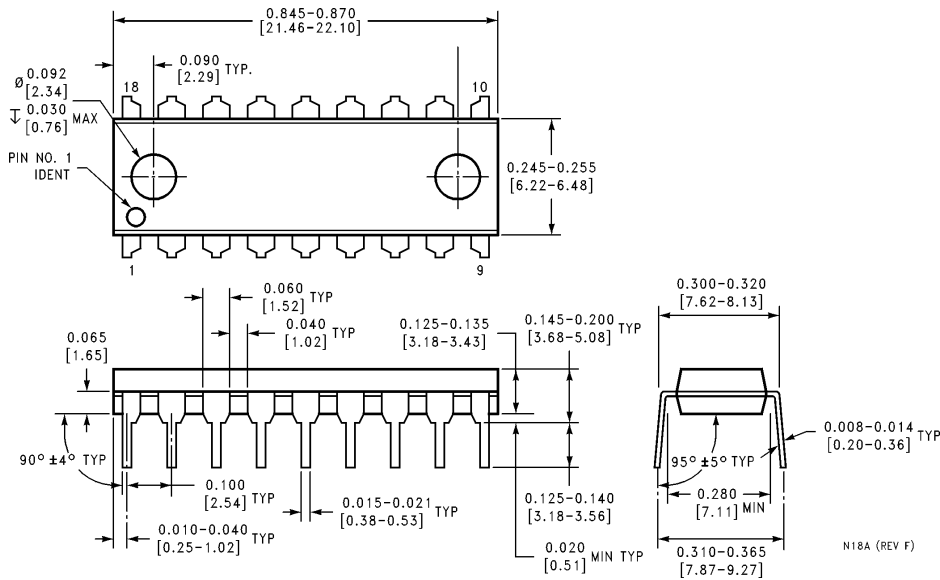
*Decimal point and comma can be displayed with or without any numeral.

Logic Diagram



TL/F/5847-1

Physical Dimensions inches (millimeters)



Molded Dual-In-Line Package (N)
Order Number DS8884AN
NS Package Number N18A

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