

Absolute Maximum Ratings (Note 1)

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

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

Storage Temperature Range	-65°C to +150°C
Maximum Power Dissipation* at 25°C	
Molded Package	1714 mW
*Derate molded package 13.71 mW/°C above 25°C.	

Operating Conditions

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

Electrical Characteristics (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	$V_{CC} = 5.25V, R_P = 2.8k, \text{All Inputs} = 5V$		40	mA	
V_{I+}	Positive Input Clamp Voltage	$V_{CC} = 4.75V, I_{IN} = 1 \text{ mA}$	5.0		V	
V_{I-}	Negative Input Clamp Voltage	$V_{CC} = 5V, I_{IN} = -12 \text{ mA}, T_A = 25^\circ C$		-1.5	V	
ΔI_O	SEGMENT OUTPUTS "ON" Current Ratio	All Outputs = 50V, $I_{OUT b} = \text{Ref.}, \text{All Outputs}$	0.9	1.1		
$I_{b ON}$	Output b "ON" Current	$V_{CC} = 5V, V_{OUT b} = 50V, T_A = 25^\circ C$	$R_P = 18.1k$	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	$I_{OUT} = 250 \mu A$	80		V	
t_{pd}	Propagation Delay of Any Input to Segment Output	$V_{CC} = 5V, T_A = 25^\circ C$		10	μs	

Note 1: "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. They are not meant to imply that the devices should be operated at these limits. The table of "Electrical Characteristics" provides conditions for actual device operation.

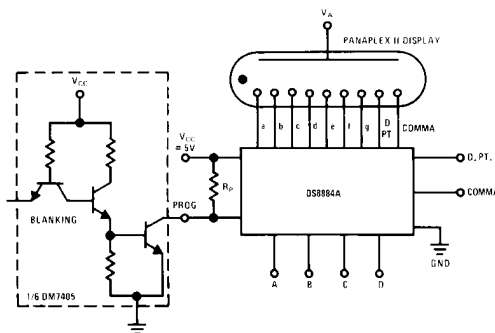
Note 2: Unless otherwise specified min/max limits apply across the 0°C to +70°C temperature range for the DS8884A. All typical values are for $T_A = 25^\circ C$ and $V_{CC} = 5V$.

Note 3: All currents into device pins shown as positive, out of device pins as negative, all voltages referenced to ground unless otherwise noted. All values shown as max or min on absolute value basis.

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

Note 5: In all applications transient segment output current must be limited to 50 mA. This may be accomplished in DC applications by connecting a 2.2k resistor from the anode-supply filter capacitor to the display anode, or by current limiting the anode driver in multiplex applications.

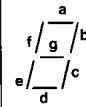
Typical Application



TL/F/5847-4

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		0
1	1	1	0	0	0	1	1	0	0	1	1	1	1	1
2	1	1	0	0	1	0	0	1	0	0	1	0		2
3	1	1	0	0	1	1	0	0	0	1	1	0		3
4	1	1	0	1	0	0	1	0	0	1	1	0		4
5	1	1	0	1	0	1	0	1	0	0	1	0		5
6	1	1	0	1	1	0	0	1	0	0	0	0		6
7	1	1	0	1	1	1	0	0	0	1	1	1	1	7
8	1	1	1	0	0	0	0	0	0	0	0	0	0	8
9	1	1	1	0	0	1	0	0	0	1	0	0		9
10	1	1	1	0	1	0	1	1	0	0	0	1	1	10
11	1	1	1	0	1	1	1	1	0	0	0	1	0	11
12	1	1	1	1	0	0	0	1	1	1	1	0	0	12
13	1	1	1	1	0	1	0	1	1	0	0	0	0	13
14	1	1	1	1	1	0	1	1	1	1	1	1	0	14
15	1	1	1	1	1	1	1	1	1	1	1	1	1	15
*D.P.T.	0	1	X	X	X	X	X	X	X	X	X	X	X	.
*Comma	0	0	X	X	X	X	X	X	X	X	X	X	X	,

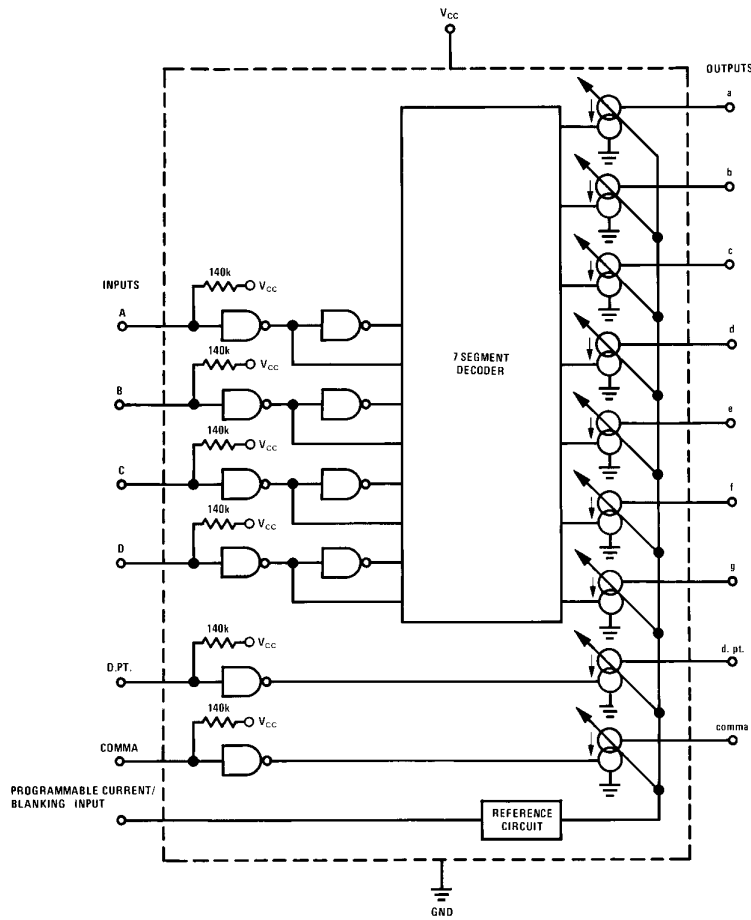


Decimal Point
 Comma

TL/F/5847-3

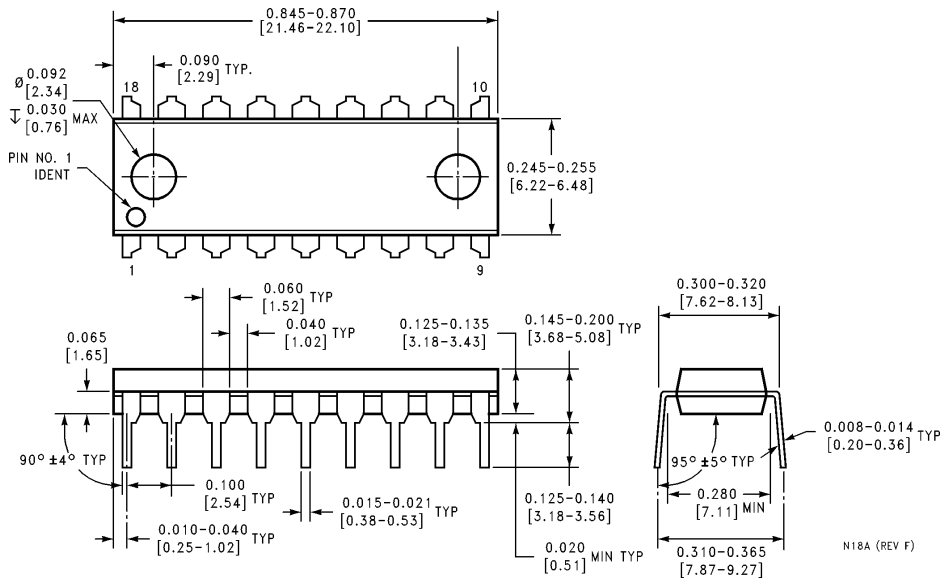
*Decimal point and comma can be displayed with or without any numeral.

Logic Diagram



TL/F/5847-1

Physical Dimensions inches (millimeters)



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

N18A (REV F)

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