

**LB1411****Level Meter**

Overview

The LB1411 is intended for 10-LED display signal meter applications. It is especially suited for use in 3V-powered small-sized radios.

Features and Functions

- Operable from low voltage.
- Minimum number of external parts required.
- LED current is stabilized and can be also set freely by an external resistor.
- Operable even at small signal input mode because of on-chip input amplifier.
- High resolution capability because of 10-LED display.
- Less electromagnetic interference in AM band.

Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC\text{ max}}$	Pin 15	-0.3 to +10	V
Input voltage	$V_{IN\text{ max}}$	Pin 2	-0.3 to V_{CC}	V
Allowable power dissipation	$P_d\text{ max}$	$T_a=55^\circ\text{C}$	500	mW
Operating temperature	T_{opr}		-25 to +75	$^\circ\text{C}$
Storage temperature	T_{stg}		-40 to +125	$^\circ\text{C}$

Allowable Operating Ranges at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply voltage	V_{CC}	Pin 15	2.1	3	9	V
I_D determining resistance		Connected across I_{LED} &GND	3.3	6.8	20	$k\Omega$

Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC}=3\text{V}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current drain	I_{CC}	Pin 15		2.5	4	mA
Input current	I_{IN}	Pin 2, $V_{IN}=0\text{V}$	-1.0	-0.2		μA
Reference voltage	V_{ref}	Pin 16	1.14	1.24	1.34	V
D output current	$I_{D1\text{ to }10}$	Pin 4 to 13, D output ON, $6.8k\Omega$ across I_{LED} &GND	0.7	1	1.3	mA

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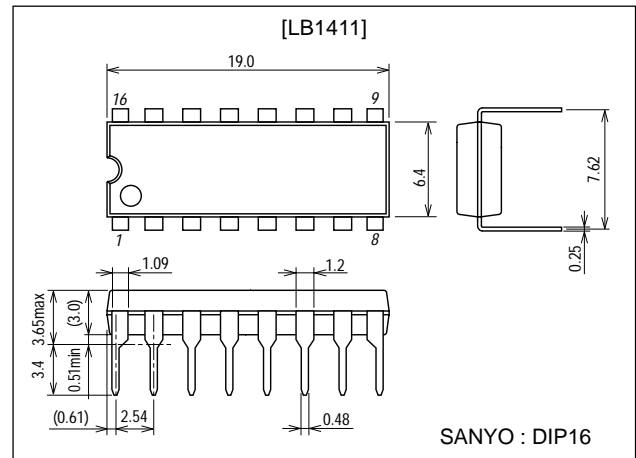
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Package Dimensions

unit:mm

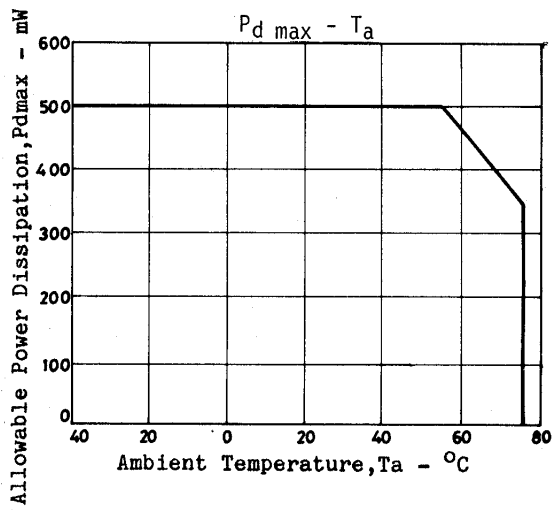
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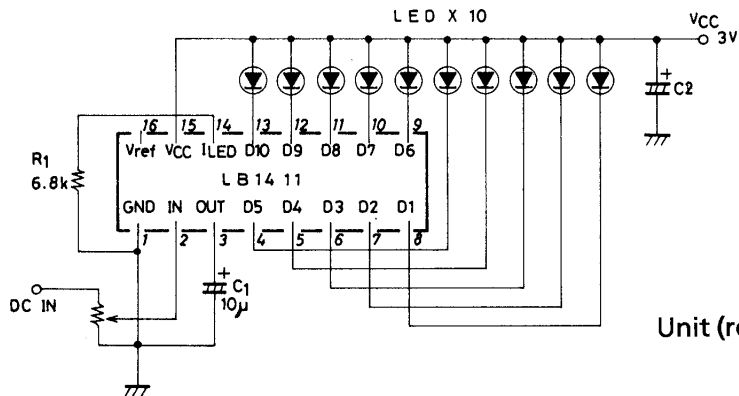
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[Comparator level]						
D ₁₀	V _{T10}	Pin 13	230	270	310	mV
D ₁	V _{T1}	Pin 8	0.06V _{T10}	0.1V _{T10}	0.14V _{T10}	mV
D ₂	V _{T2}	Pin 7	0.16V _{T10}	0.2V _{T10}	0.24V _{T10}	mV
D ₃	V _{T3}	Pin 6	0.26V _{T10}	0.3V _{T10}	0.34V _{T10}	mV
D ₄	V _{T4}	Pin 5	0.36V _{T10}	0.4V _{T10}	0.44V _{T10}	mV
D ₅	V _{T5}	Pin 4	0.46V _{T10}	0.5V _{T10}	0.54V _{T10}	mV
D ₆	V _{T6}	Pin 9	0.56V _{T10}	0.6V _{T10}	0.64V _{T10}	mV
D ₇	V _{T7}	Pin 10	0.66V _{T10}	0.7V _{T10}	0.74V _{T10}	mV
D ₈	V _{T8}	Pin 11	0.76V _{T10}	0.8V _{T10}	0.84V _{T10}	mV
D ₉	V _{T9}	Pin 12	0.86V _{T10}	0.9V _{T10}	0.94V _{T10}	mV
Output saturation voltage D ₁ to D ₁₀	V _{sat}	Pin 4 to 13, 6.8kΩ across I _{LED} &GND			0.4	V
Output leak current	I _{OFF}	Pin 4 to 13			10	μA



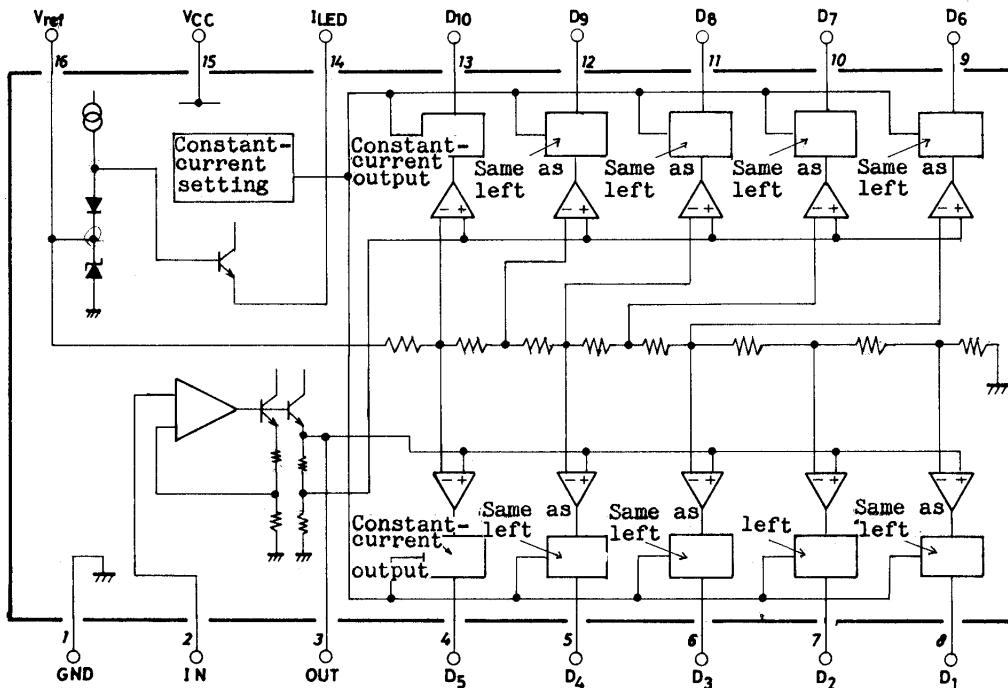
Application Circuit



Unit (resistance: Ω, capacitance: F)

Constant current of D output is determined by R1.
1mA typ. at 6.8kΩ

Equivalent Circuit Block Diagram



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