

No.1376C

LB1411

Level Meter

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

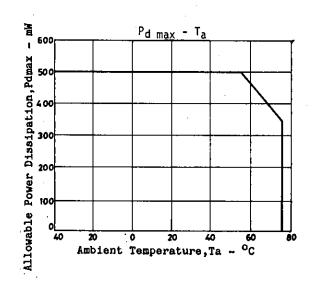
- . Operable from low voltage.
- . Minimum number of external parts required.
- . LED current is stabilized and can be also set freely by an external resistor.
- . Operable even at small signal input mode because of on-chip input amplifier.
- . High resolution capability because of 10-LED display.
-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

Absolute Maximum Ratings at Ta-	=25 <sup>0</sup> C	(Pin No.)			uni	.t
Maximum Supply Voltage	$v_{cc}^{max}$	15	-0.3	to 10	) V	7
Input Voltage	V <sub>TN</sub> max		-0.3 t	o Vcc	. v	7
Allowable Power Dissipation	Pdmax	Ta≃55 <sup>O</sup> C	-0.3 t	500	mW	ī
Operating Temperature	Topr		-25 t		_	;
Storage Temperature	Tstg		-40 to			;
Allowable Operating Conditions	min	typ	max	unit		
Supply Voltage	$v_{cc}$	15	2.1	3	9	V
${f I}_{f D}$ Determining Resistance	00	Connected across I <sub>LED</sub> & GND	3.3	6.8	20	kohm

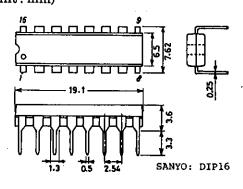
## Electrical Characteristics at Ta=25°C, V<sub>CC</sub>=3V

	(1	.)	min	typ	max	unit	
Current Dissipation	$\mathbf{I}_{\mathbf{CC}}$	15			2.5	4	mA
Input Current	I <sub>IN</sub> Vref	2	V <sub>IN</sub> =OV	-1.0	-0.2		μA
Reference Voltage				1.14	1.24	1.34	v
D Output Current	I <sub>D1to10</sub>	4to13	D output ON,6.8kohms	0.7	1	1.3	mΑ
	2,0010		across I <sub>LED</sub> & GND				

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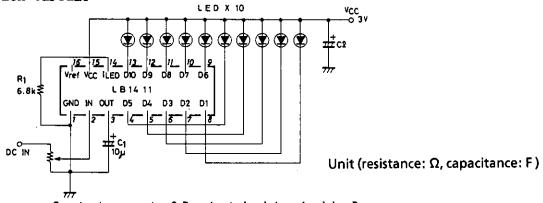


# Package Dimensions 3064 (unit: mm)



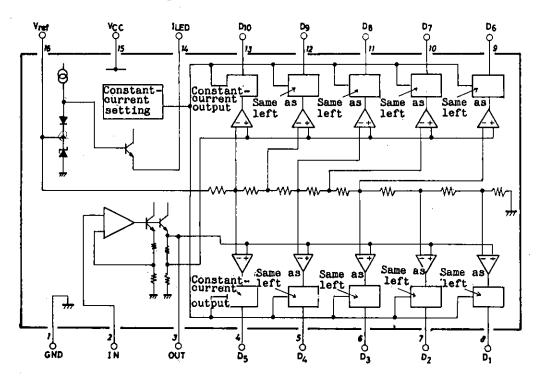
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•		(	Pin No	.)		min	typ	max	unit
Comparat	tor D <sub>10</sub>	V <sub>T10</sub>	13			230		310	mV
Level	D <sub>1</sub>	V <sub>T 1</sub>	8			0.06VT10	0.1V <sub>T10</sub>	0.14V <sub>T10</sub>	mV
	D <sub>2</sub>	$v_{T2}^{1}$	7			0.16V <sub>T10</sub>	0.2V <sub>T10</sub>	0.24VT10	mV
	ρŽ	V <sub>T3</sub>	6			0.26V <sub>T10</sub>	$0.3V_{T10}$	0.34VT10	mV
	D3 D4	V <sub>T4</sub>	5			0.36V <sub>T10</sub>	0.4VT10	0.44VT10	mV
	$D_5^{-}$	$v_{T5}^{17}$	4			0.46V <sub>T10</sub>	0.5V <sub>T10</sub>	0.54V <sub>T10</sub>	mV
	D <sub>5</sub> D <sub>6</sub>	V <sub>T6</sub>	. 9			0.56V <sub>T10</sub>	0.6VT10	0.64VT10	mV
	$D_{7}$	V <sub>T7</sub>	10			$0.66V_{T10}^{110}$	$0.7V_{T10}$	0.74V <sub>T10</sub>	mV
	Dέ	V <sub>T8</sub>	11			0.76V <sub>T10</sub>	0.8VT10	0.84V <sub>T10</sub>	шV
$D_{\mathbf{o}}^{\mathbf{o}}$	$\mathbf{D}_{\mathbf{o}}^{\mathbf{o}}$	VTO	12			0.86V <sub>T10</sub>	0.9VT10	$0.94V_{T10}^{110}$	mV
Output	D <sub>1</sub> toD <sub>10</sub>	Vŝát	4to13	6.8kohms	across	I ED	110	0.4	V
Saturati	ion			& GND		.000			
Voltage	-								
Output I Current	Leak	IOFF	4to13					10	μA

### **Application Circuit**



Constant current of D output is determined by  $R_1$ . 1mA typ. at 6.8kohms

### Equivalent Circuit Block Diagram



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