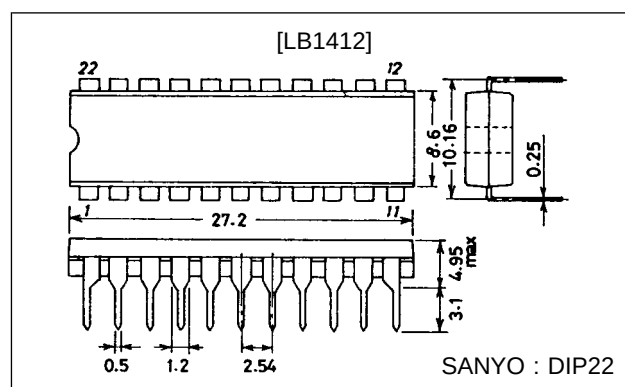


SANYO**LB1412****Level Meter Driver for 12 LEDs****Functions and Features**

- Bar-shaped display of input level by means of 12 LEDs
- High-order 5 dots with peak hold
- Built-in oscillator for peak hold reset. Requires 1 pce. each of external C, R. Uses either oscillator at the time of stereo operation. Capable of also resetting manually.
- Capable of constant-current driving low-order 7 dots (green LED). Constant-current value variable with an external resistor
- Lower current drain available by connecting green LEDs in series
- Built-in input amplifier
- Requires no other light-up level adjustment than adjustment for 0 dB. D1 error: within ± 3 dB of 20 dB
- Supply voltage range : 10 to 16 V

Package Dimensions

unit : mm

3010A-DIP22**Specifications****Absolute Maximum Ratings at Ta = 25°C**

Parameter	Symbol	Pin No.	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max	15		-0.3 to +18	V
Output current	I_{OL}	1 to 5	D8 to D12, output on	30	mA
Allowable power dissipation	P_d max		Ta = 60°C	650	mW
Operating temperature	T_{opr}			-30 to +75	°C
Storage temperature	T_{stg}			-40 to +125	°C

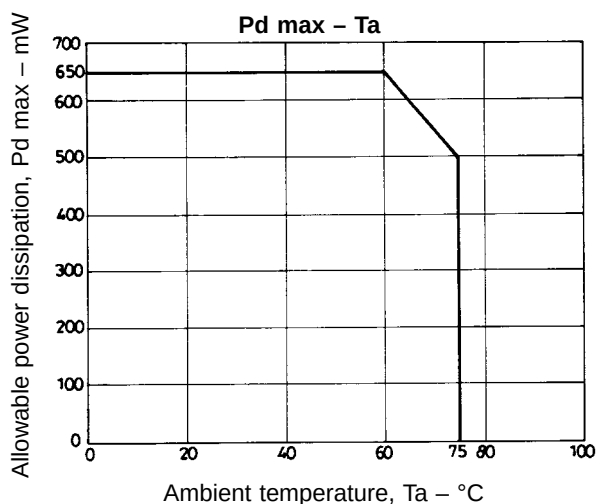
Allowable Operating Range at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V_{CC}		10 to 16	V

LB1412

Electrical Characteristics at Ta = 25°C, V_{CC} = 12 V

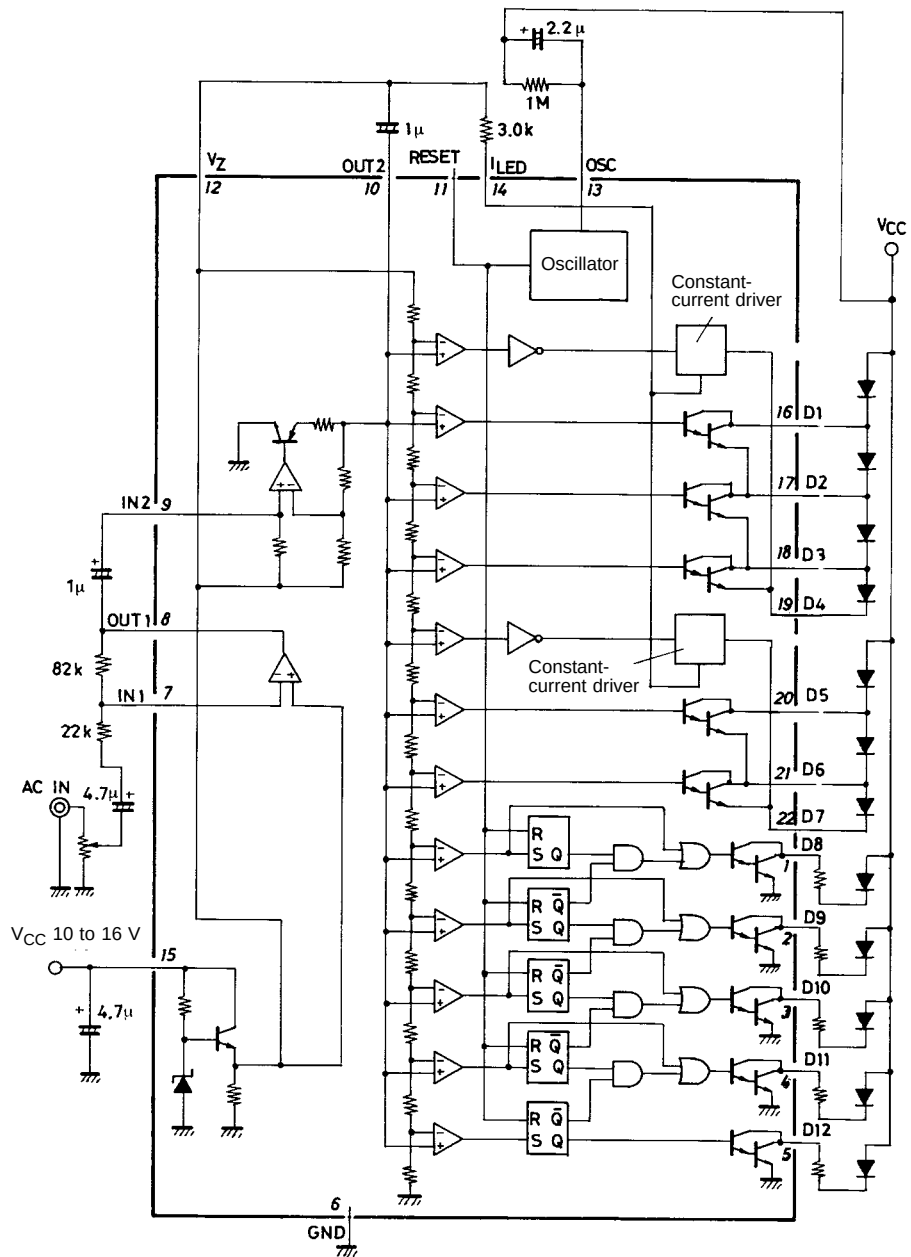
Parameter		Symbols	Pin No.	Conditions	min	typ	max	Unit
Input bias current	Amp (1)	I _{BIN1}	7		-3	-0.2	0	μA
Output saturation voltage	Amp (1)	V _{OH01}	8	Pins 8, 9 short	10.5	11.2	11.6	V
	Amp (1)	V _{OL01}	8	Pins 8, 9 short	1.0	1.5	2.0	V
Voltage gain	Amp (1)	V _{GA1}			30	100		dB
Input resistance	Amp (2)	R _{IN2}	9		8	12	16	kΩ
Load resistance	Amp (2)	R _{O2}	10		35	50	65	kΩ
Output current	Amp (2)	I _{OL02}	10		3	6	12	mA
Voltage gain	Amp (2)	V _{GA2}			1.8	2.0	2.2	times
Output current		I _{OL}	19, 22	D1, D5 : 3 kΩ across V _Z and I _{LED}	13	17	20	mA
Output saturation voltage		V _{sat}	17, 18, 19, 21, 22	D2 to D4, D6 to D7 : Output Transistor on across V _Z and I _{LED}		1.0	1.3	V
		V _{sat}	1 to 5	D8 to D12 : I _{OLD1} to D5 = 30 mA		1.5	2.0	V
Output leak current		I _{off}	19, 22	D1, D5 : output transistor off	0		30	μA
		I _{off}	1 to 15	D8 to D12 : output transistor off	0		30	μA
Comparator level	D8	V _{THD8}	1	D8 : Voltage to turn on D8 by applying DC voltage across V _Z and I _{NZ}	-0.625	-0.55	-0.465	V
	D1	G _{D1}	16	D8 light-up level : 0 dB	-23	-20	-17	dB
	D2	G _{D2}	17	D8 light-up level : 0 dB	-17	-15	-13	dB
	D3	G _{D3}	18	D8 light-up level : 0 dB	-12	-10	-8	dB
	D4	G _{D4}	19	D8 light-up level : 0 dB	-8	-7	-6	dB
	D5	G _{D5}	20	D8 light-up level : 0 dB	-6	-5	-4	dB
	D6	G _{D6}	21	D8 light-up level : 0 dB	-4	-3	-2	dB
	D7	G _{D7}	22	D8 light-up level : 0 dB	-1.5	-1	-0.5	dB
	D9	G _{D9}	2	D8 light-up level : 0 dB	0.5	1	1.5	dB
	D10	G _{D10}	3	D8 light-up level : 0 dB	2	3	4	dB
	D11	G _{D11}	4	D8 light-up level : 0 dB	4	5	6	dB
	D12	G _{D12}	5	D8 light-up level : 0 dB	7	8	9	dB
Reference voltage		V _Z	12	3 kΩ across V _Z and I _{LED}	5.6	6.3	6.8	V
R pin flow-out current		I _{OLR}	11	V _R = 0 V, OSC pin: open	-0.6	-0.3	-0.1	mA
R pin voltage		V _R	11	OSC pin: open	0.4	0.7	0.9	V
Oscillation frequency		f _{OSC}	13	1 MΩ, 2.2 μF across V _{CC} and V _Z	1.5	2	2.5	s
Current drain		I _{CC}	15	3 kΩ across V _Z and I _{LED} , all D outputs off		9	15	mA



Pin Assignment



Equivalent Circuit Block Diagram



2-5 Reset pin (Pin 11)

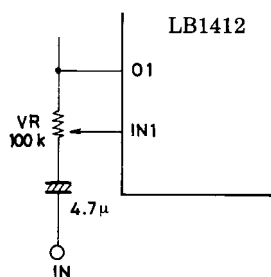
When the reset pin is open, peak hold of D8 to D12 occurs. When the reset pin is connected to GND, reset occurs. Connecting the reset pin to GND causes no peak hold.

2-6 C1, R1

The oscillation cycle of oscillator depends on the product of C1 and R1. The oscillation cycle at $C1 = 2.2 \mu\text{F}$, $R1 = 1 \text{ M}\Omega$ is approximately 2 seconds. However, if an electrolytic capacitor is used for C1, the actual capacitance differs from the marked value.

2-7 Reduction in number of parts

R3, R4, VR1 are substituted by one VR.



Unit (resistance: Ω , capacitance: F)

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