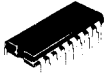


LB1294	monolithic digital IC	CIRCUIT DRAWING No.3045
FLUORESCENT DISPLAY TUBE DRIVER		 3064

Features

- 6 independent Darlington drivers
- High voltage (60V), large output source current (60mA).
- Ideally suited for use in interface between systems whose supply voltages are different from each other.
- Wide duty cycle.
- Best applicable to system of 5V supply voltage.

LB1403N SERIES	monolithic digital IC	CIRCUIT DRAWING No.3046
LEVEL METER		 3017B

Use


- AC level meters such as VU meters.
- DC level meters such as signal meters.

Features and Functions

- Capable of generating a bar-display for input voltage with 5 LEDs.
- Operates with either AC or DC input voltage using a built-in rectifier amplifier.
- Lighting levels remain stable under varying power supply voltages using a built-in reference voltage.
- LEDs are driven by a constant current; stable under varying power supply voltages.
- Power supply voltage range is wide (3.5 to 16V), for a wide range of applications.
- Five types of ICs constitute the series depending on lighting level of the LEDs and driving current.
- SEP-9 pin package and fewer externally connected components result in smaller space requirements on the circuit board.
- Low noise at LED lighted mode.

LB1403N Series Lineup

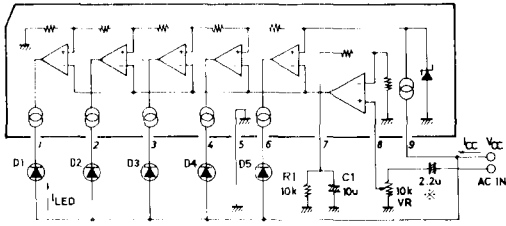
	V _{C3} lighting sensitivity	Comparator level	Constant LED current
LB1403N	85 mVrms typ	+6dB, +3dB, 0dB, -5dB, -10dB	15 mA typ
LB1413N	105 mVrms typ	1.6V _{C3} , 1.33V _{C3} , V _{C3} , 0.67V _{C3} , 0.33V _{C3}	15 mA typ
LB1423N	85 mVrms typ	+6dB, +3dB, 0dB, -5dB, -10dB	7 mA typ
LB1433N	105 mVrms typ	1.67V _{C3} , 1.33V _{C3} , V _{C3} , 0.67V _{C3} , 0.33V _{C3}	7 mA typ
LB1443N	85 mVrms typ	+6dB, +3dB, 0dB, -6dB, -12dB	15 mA typ

LB1407, 1417	monolithic digital IC	CIRCUIT DRAWING No.3047
AC/DC VOLTAGE LEVEL METER (7 RED/GREEN LEDS)		 3003A

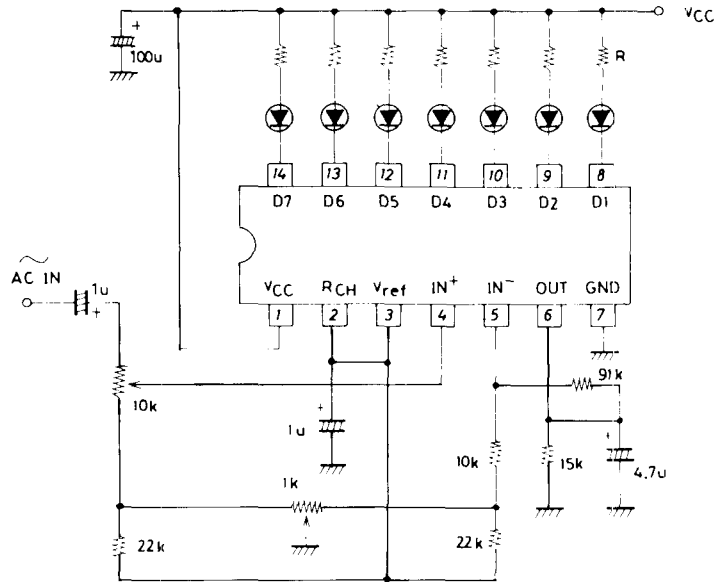
Features and Functions

- LB1407: dB scale, LB1417: Linear scale.
- Input level is indicated in the form of a bar by means of 7 red/green LEDs.
- LED current is made variable with an external resistor.
- Built-in input amplifier.
- Wide supply voltage range: 5.5V to 16V.

3046: LB1403, N, 1413, N, 1423, N, 1433, N, 1443, N APPLICATION



3047: LB1407, 1417 APPLICATION



Current flowing to LED:

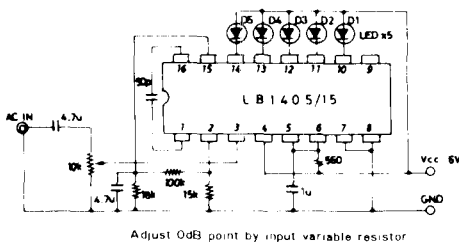
$$I_{LED} = \frac{V_{CC} - 3}{R}$$

(Example) Put $I_{LED} = 10\text{mA}$ at $V_{CC} = 12\text{V}$,

$$R = \frac{12 - 3}{10 \times 10^{-3}} = \frac{9}{10 \times 10^{-3}} = 900\Omega$$

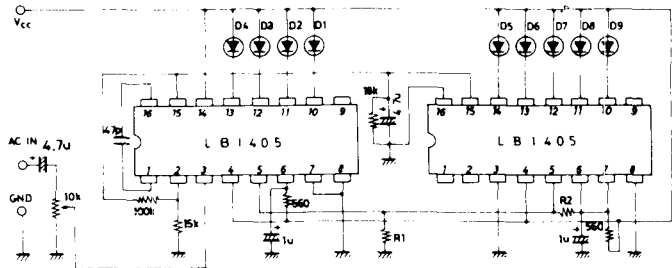
3048: LB1405, 1415 APPLICATION

(1) VU Meter



(2) Use of Series Connection

This series connection example is realized by external resistors between R01 and R02 pins.



Comparator Level: Error of resistance ratio of R1 and R2 needs less than 1%.

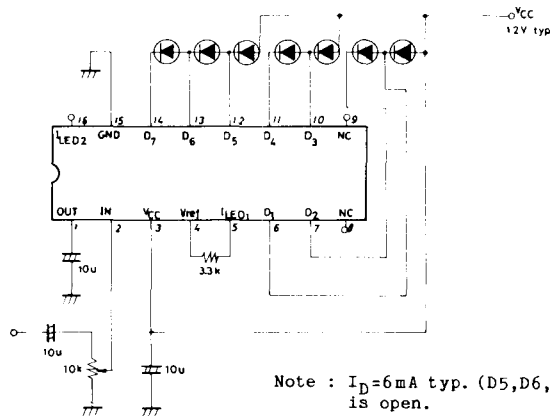
(1) When $R1 = R2 = 3.3\text{k}\Omega$

LED	D1	D2	D3	D4	D5	D6	D7	D8	D9
dB (typ)	-19	-11	-6.5	-3.7	-1.6	0	+1.5	+2.7	+3.7

(2) When $R1 = 3\text{k}\Omega, R2 = 2\text{k}\Omega$

LED	D1	D2	D3	D4	D5	D6	D7	D8	D9
dB (typ)	-18	-10	-6.5	-3	-1.2	0	+1	+2	+3

3049: LB1408 SAMPLE APPLICATION CIRCUIT



Note : $I_D = 6\text{mA}$ typ. (D5, D6, D7) when I_{LED2} (pin 16) is open.
 $I_D = 16\text{mA}$ typ. (D5, D6, D7) when I_{LED2} (pin 16) is grounded.

Continued from preceding page.

ACCESSORIES FOR AUDIO APPLIANCE'S (monolithic integrated circuit)

Type Number	Page	Case			Circuit Drawing No.	Circuit Functions & Applications	Main Specifications
		Package	Pins	Package No.			
©LC7820	242	DIP	28S	3029A	4107	2-Pole 4-Position Analog Function Switch, Tape Monitor Function, Muting Function	40V breakdown voltage, microcomputer-controlled, graphic equalizer input-output function
LC7910	241	DIP	16	3006A	4108	6-Bit 64-Step AD/DA Converter	Single 5V supply, serial/parallel data output/input
LM8523	251	DIP	42	3014A	5020	Counter for Tape Recorder	Direct drive of 4-digit LED/FLT, ref. freq. 50/60Hz, blanking pin provided

LEVEL METERS (monolithic integrated circuit)

Type Number	Page	Case			Circuit Drawing No.	Circuit Functions & Applications	Main Specifications
		Package	Pins	Package No.			
LB1403	189	SEP	9	3017B	3046	Level Meter(5 dots, green LED)	Bar display (green), applicable to AC/DC input, operating voltage range 3.5 to 16V
LB1403N	190	SEP	9	3017B	3046	Level Meter(5 dots, green LED)	Noise-reduced version of LB1403
LB1405	191	DIP	16	3006A	3048	Level Meter(5 dots, red LED)	Bar display (red), with LED direct drive output provided, operating voltage range 4.4 to 12V
LB1413	189	SEP	9	3017B	3046	Level Meter(5 dots, green LED)	Bar display (green), applicable to AC/DC input, operating voltage range 3.5 to 16V
LB1413N	190	SEP	9	3017B	3046	Level Meter(5 dots, green LED)	Noise-reduced version of LB1413
LB1415	191	DIP	16	3006A	3048	Level Meter(5 dots, red LED)	Bar display (red), with LED direct drive output provided, operating voltage range 4.4 to 12V
LB1416	193	DIP	14T	3005A	3054	Level Meter(5 dots, red/green LED)	Bar display (red/green), with 2 amps for half-wave rectification
LB1423	189	SEP	9	3017B	3046	Level Meter(5 dots, red LED)	Bar display (red), applicable to AC/DC input, operating voltage range 3.5 to 16V
LB1423N	190	SEP	9	3017B	3046	Level Meter(5 dots, red LED)	Noise-reduced version of LB1423
LB1426	193	DIP	14T	3005A	3054	Level Meter(5 dots, red/green LED)	Bar display (red/green), with 2 amps for half-wave rectification
LB1433	189	SEP	9	3017B	3046	Level Meter(5 dots, red LED)	Bar display (red), applicable to AC/DC input, operating voltage range 3.5 to 16V
LB1433N	190	SEP	9	3017B	3046	Level Meter(5 dots, red LED)	Noise-reduced version of LB1433
LB1436	193	DIP	14T	3005A	3054	Level Meter(5 dots, red/green LED)	Bar display (red/green), scale for metal tape
LB1443	189	SEP	9	3017B	3046	Level Meter(5 dots, green LED)	Bar display (green), applicable to AC/DC input, operating voltage range 3.5 to 16V
LB1443N	190	SEP	9	3017B	3046	Level Meter(5 dots, green LED)	Noise-reduced version of LB1443
LB1407	190	DIP	14	3003A	3047	AC/DC Voltage Level Meter(7 dots, red/green LED)	Bar display (red/green), dB scale, with input amp provided, VCC=5to16V, open collector