

SANYO

No. 3246

LA5315MVariable Divided Voltage Generator
for LCD Use**Overview**

The LA5315M is a variable divided voltage regulator IC for multiple drive of LCD matrix.

Features

- Power supply for variable bias LCD drive (1/5 to 1/13 bias available by internal resistances)
- 5 voltage outputs
- Low current dissipation (1.5mA max)
- Miniflat package

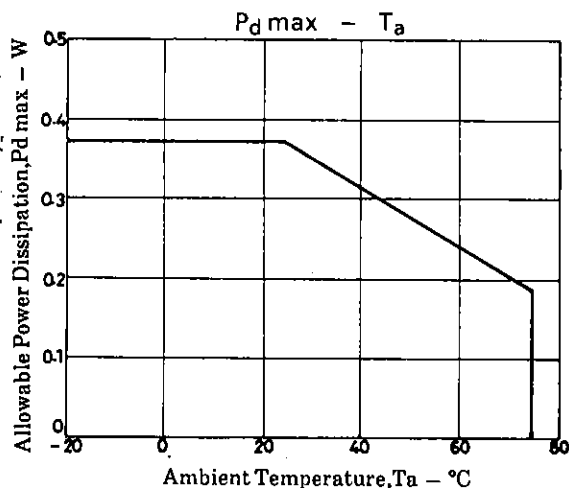
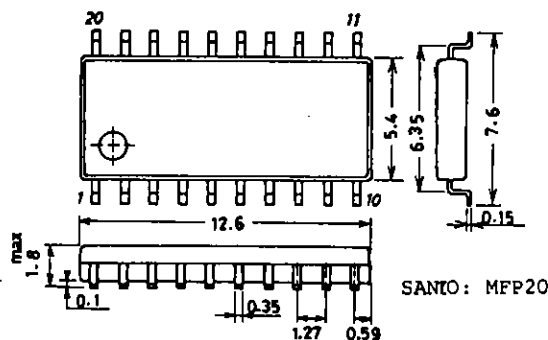
Maximum Ratings at $T_a = 25^\circ\text{C}$

				unit
Maximum Supply Voltage	V_{CC} max	$GND-V_{CC}$	-35 to 0	V
Maximum Output Current	I_{OUT} max	V_1, V_2, V_3, V_4, V_5	15	mA
Allowable Power Dissipation	P_d max		370	mW
Operating Temperature	T_{opr}		-20 to +75	$^\circ\text{C}$
Storage Temperature	T_{stg}		-30 to +125	$^\circ\text{C}$

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

				unit
Recommended Supply Voltage	V_{CC}	$GND-V_{CC}$: (When $V_1 > -1\text{V}$, I_{IN} is needed.) Note 1	-30 to -10	V
Recommended Input Voltage	V_{REF}	$GND-V_{REF}$: $V_{REF} \geq V_{CC}$ Note 1	-30 to -6	V
Recommended Input Current	I_{IN}	V_{IN} : $V_1 > -1\text{V}$, current source of I_{IN} : 1V or greater relative to GND	0.2 to 3	mA
Recommended Output Current	I_{OUT1}	V_1	-0.1 to +5	mA
	$I_{OUT2,3}$	V_2, V_3	-5 to +5	mA
	$I_{OUT4,5}$	V_4, V_5	-10 to +0.1	mA

Note 1: Set V_{CC} , V_{REF} so that $|V_2|$, $|V_{CC}-V_5|$ become 1V or greater.

**Package Dimensions 3036B**
(unit: mm)

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LA5315M

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = -16\text{V}$

				min	typ	max	unit
Current Dissipation	I_{CC}	$V_{IN}, \text{GND}-V_{CC}, V_{REF}: V_{CC} =$ $V_{REF} = -16\text{V}, V_{IN} = \text{GND}, R_X = 5\text{R}$				1.5	mA
Output Voltage Ratio	1	Ra1	V_2/V_1	1.96	2.00	2.04	
	2	Ra2	$(V_5-V_3)/(V_5-V_4)$	1.96	2.00	2.04	
	3	Rb1	V_5/V_1	8.73	9.00	9.27	
	4	Rb2	V_5/V_2	4.37	4.50	4.63	
	5	Rb3	$V_5/(V_5-V_3)$	4.37	4.50	4.63	
	6	Rb4	$V_5/(V_5-V_4)$	8.73	9.00	9.27	
Internal Resistance Ratio	1	4R	$V_{IN3}-R_{X1}$			4	
	2	5R	$V_{IN3}-R_{X2}$			5	
	3	6R	$V_{IN3}-R_{X3}$			6	
	4	7R	$V_{IN3}-R_{X4}$			7	
	5	8R	$V_{IN3}-R_{X5}$			8	
	6	9R	$V_{IN3}-R_{X6}$			9	
Resistance		R	$R_{X1}-R_{X2}$: R value when 0.5V is applied across pins ⑤ and ⑥.			20	kΩ
Load Regulation	1	ΔV_1	$V_1: +100\mu\text{A} < I_{OUT1} < +5\text{mA}$			20	mV
	2	ΔV_2	$V_2: +100\mu\text{A} < I_{OUT2} < +5\text{mA}$			20	mV
	3	ΔV_3	$V_3: +100\mu\text{A} < I_{OUT3} < +5\text{mA}$			20	mV
	4	$-\Delta V_2$	$V_2: -5\text{mA} < I_{OUT2} < -100\mu\text{A}$			20	mV
	5	$-\Delta V_3$	$V_3: -5\text{mA} < I_{OUT3} < -100\mu\text{A}$			20	mV
	6	$-\Delta V_4$	$V_4: -10\text{mA} < I_{OUT4} < -100\mu\text{A}$			20	mV
	7	$-\Delta V_5$	$V_5: -10\text{mA} < I_{OUT5} < -100\mu\text{A}$			20	mV

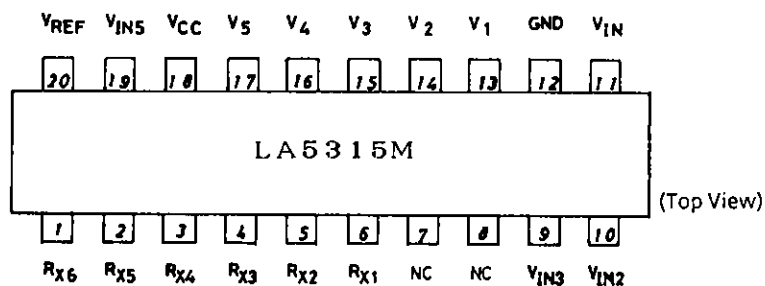
Pin Description

Pin No.	Pin Name	Description	Remarks
1	R_{X6}	R_X pin	Pin ⑩ shorted $R_X = 9\text{R}$
2	R_{X5}	R_X pin	Pin ⑩ shorted $R_X = 8\text{R}$
3	R_{X4}	R_X pin	Pin ⑩ shorted $R_X = 7\text{R}$
4	R_{X3}	R_X pin	Pin ⑩ shorted $R_X = 6\text{R}$
5	R_{X2}	R_X pin	Pin ⑩ shorted $R_X = 5\text{R}$
6	R_{X1}	R_X pin	Pin ⑩ shorted $R_X = 4\text{R}$
7		NC	
8		NC	
9	V_{IN3}	V_3 input	
10	V_{IN2}	V_2 input	
11	V_{IN}	V_1 supply (+ supply)	When $V_1 > -1.0\text{V}$, V_{IN} is applied. When $V_1 < -1.0\text{V}$, this pin is shorted to GND.
12	GND	GND	
13	V_1	V_1 output	
14	V_2	V_2 output	
15	V_3	V_3 output	
16	V_4	V_4 output	
17	V_5	V_5 output	
18	V_{CC}	V_{CC} supply (− supply)	
19	V_{IN5}	V_5 input	
20	V_{REF}	V_{REF} supply (− supply)	

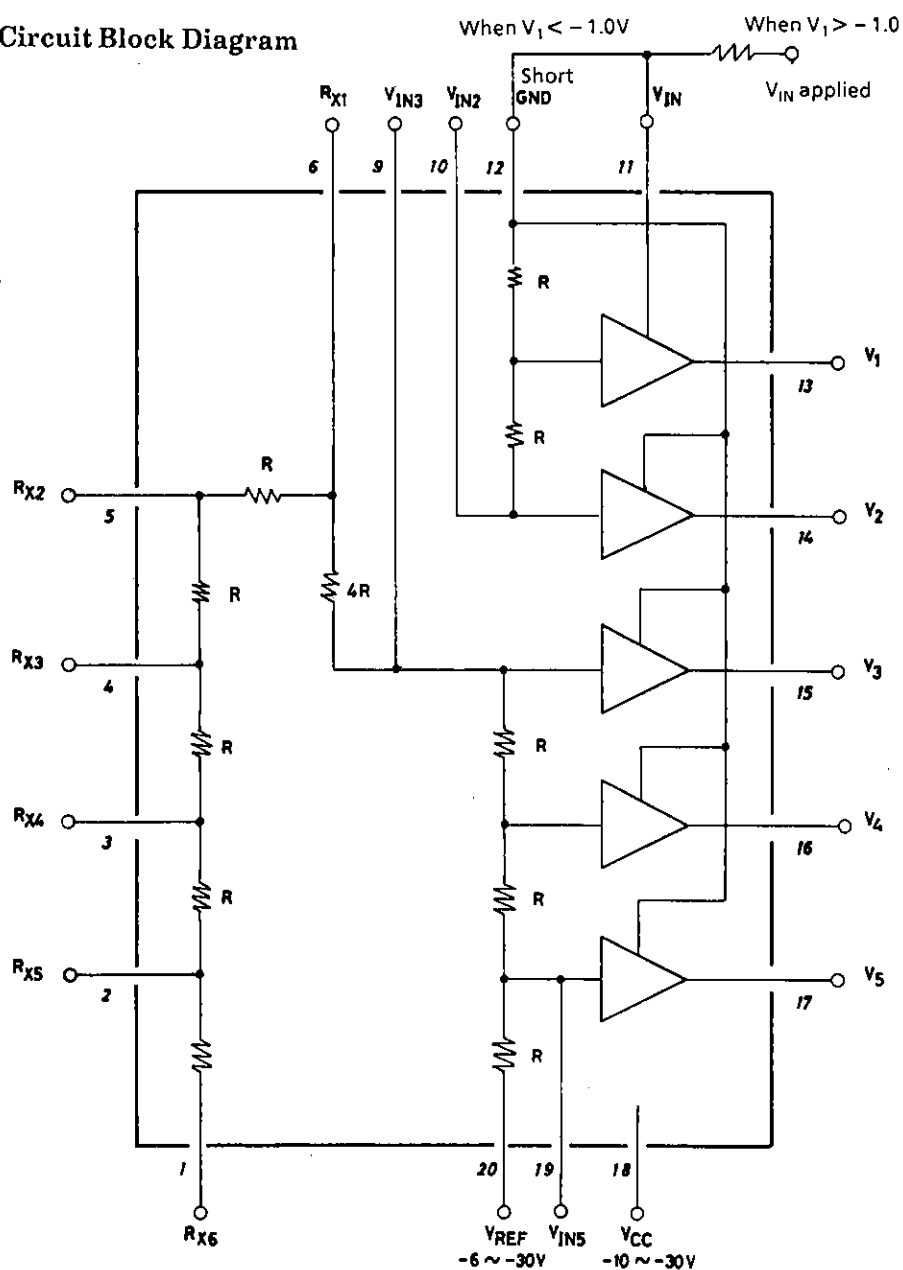
Note) Do not use the NC pin.

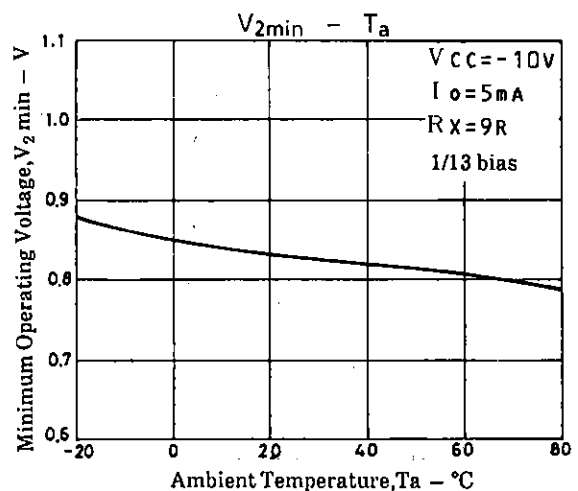
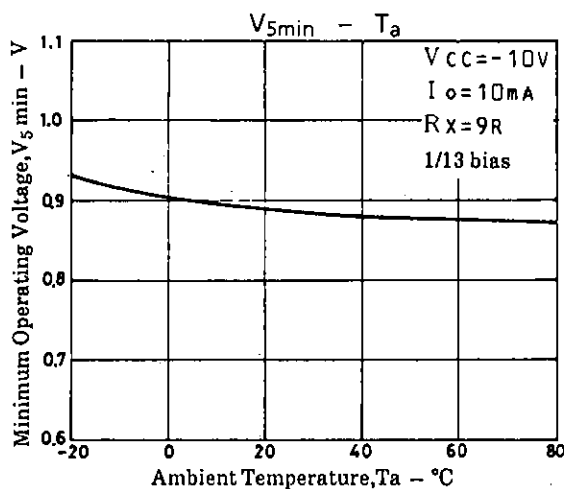
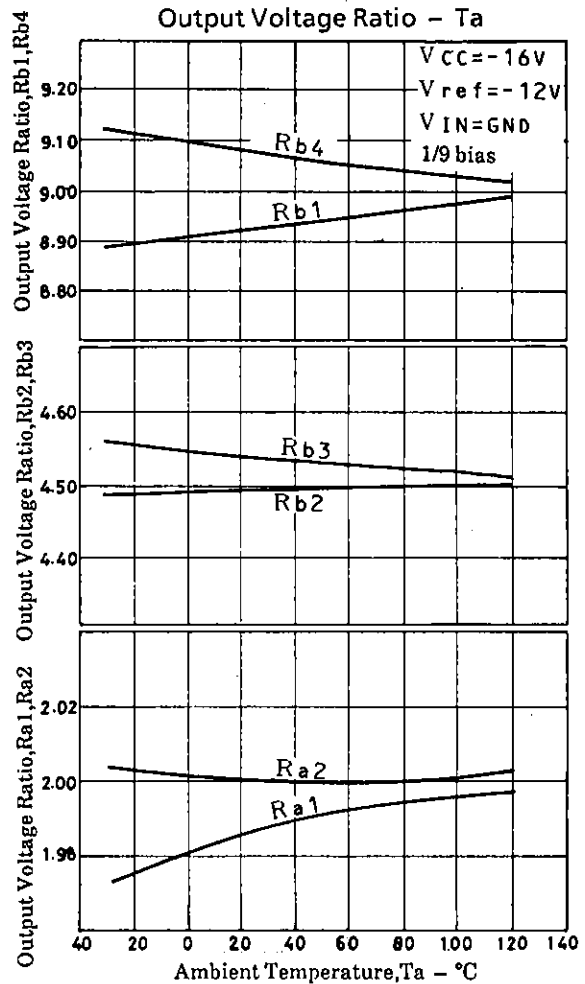
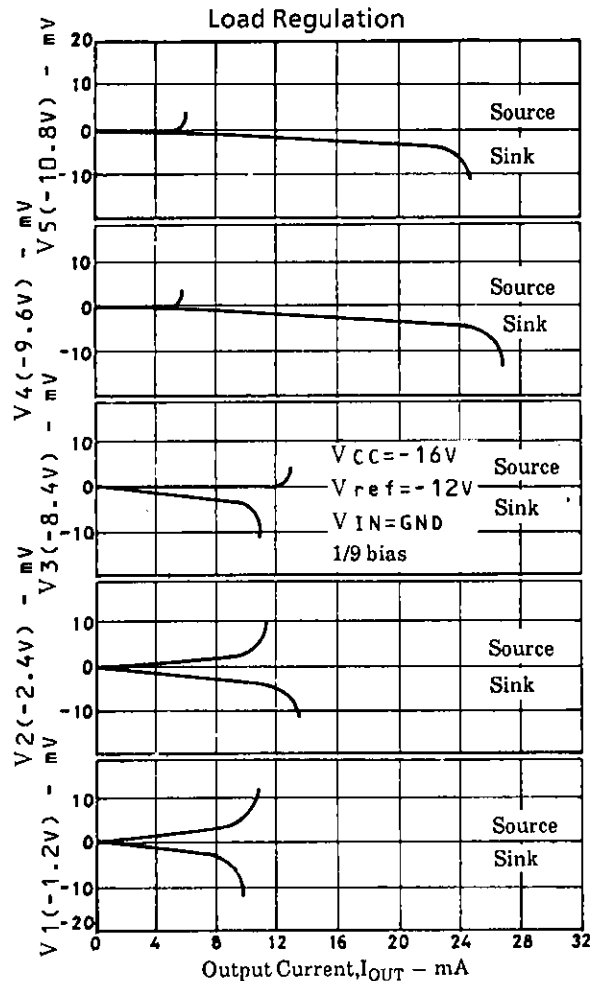
LA5315M

Pin Assignment



Equivalent Circuit Block Diagram





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