


Monolithic Linear IC

	No. 3246	<h1 style="text-align: center;">LA5315M</h1> <h2 style="text-align: center;">Variable Divided Voltage Generator for LCD Use</h2>

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

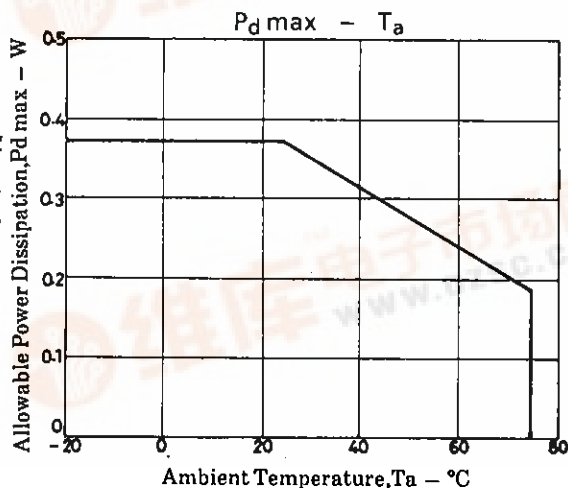
Maximum Ratings at Ta = 25°C

Parameter	Symbol	Value	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 °C
Storage Temperature	T _{stg}		-30 to +125 °C

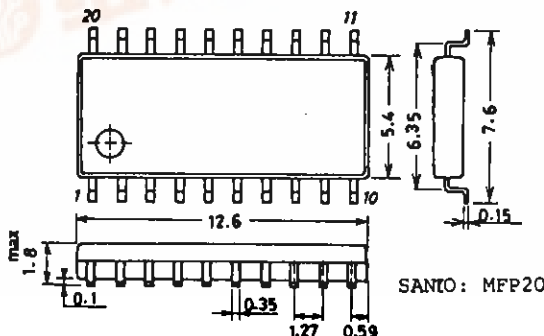
Operating Conditions at Ta = 25°C

Parameter	Symbol	Value	Unit
Recommended Supply Voltage	V _{CC}	GND-V _{CC} : (When V ₁ > -1V, I _{IN} is needed.) Note 1	-30 to -10 V
Recommended Input Voltage	V _{REF}	GND-V _{REF} : V _{REF} ≥ V _{CC} Note 1	-30 to -6 V
Recommended Input Current	I _{IN}	V _{IN} : V ₁ > -1V, 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 |V₂|, |V_{CC}-V₅| become 1V or greater.



Package Dimensions 3036B
(unit: mm)



SANTO: MFP20



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Operating Characteristics at Ta = 25°C, V _{CC} = -16V				min	typ	max	unit
Current Dissipation	I _{CC}	V _{IN} , GND-V _{CC} , V _{REF} : V _{CC} = V _{REF} = -16V, V _{IN} = GND, R _X = 5R				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)	V _{ref} = -12V V _{CC} = -16V, 1/9 bias (R _X = 5R)	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}	Resistance ratio referenced to R across pins ⑤ and ⑥			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		
Load Regulation	1	ΔV ₁	V ₁ : +100μA < I _{OUT1} < +5mA			20	mV
	2	ΔV ₂	V ₂ : +100μA < I _{OUT2} < +5mA			20	mV
	3	ΔV ₃	V ₃ : +100μA < I _{OUT3} < +5mA			20	mV
	4	-ΔV ₂	V ₂ : -5mA < I _{OUT2} < -100μA			20	mV
	5	-ΔV ₃	V ₃ : -5mA < I _{OUT3} < -100μA			20	mV
	6	-ΔV ₄	V ₄ : -10mA < I _{OUT4} < -100μA			20	mV
	7	-ΔV ₅	V ₅ : -10mA < I _{OUT5} < -100μA			20	mV

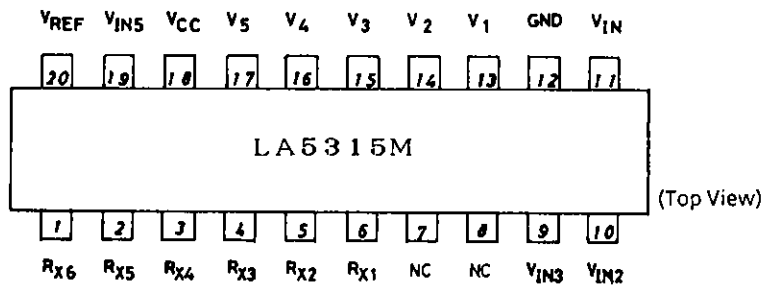
Pin Description

Pin No.	Pin Name	Description	Remarks
1	R _{X6}	R _X pin	Pin ⑥ shorted R _X = 9R
2	R _{X5}	R _X pin	Pin ⑥ shorted R _X = 8R
3	R _{X4}	R _X pin	Pin ⑥ shorted R _X = 7R
4	R _{X3}	R _X pin	Pin ⑥ shorted R _X = 6R
5	R _{X2}	R _X pin	Pin ⑥ shorted R _X = 5R
6	R _{X1}	R _X pin	Pin ⑥ shorted R _X = 4R
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 > -1.0V, V _{IN} is applied. When V ₁ < -1.0V, 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)	

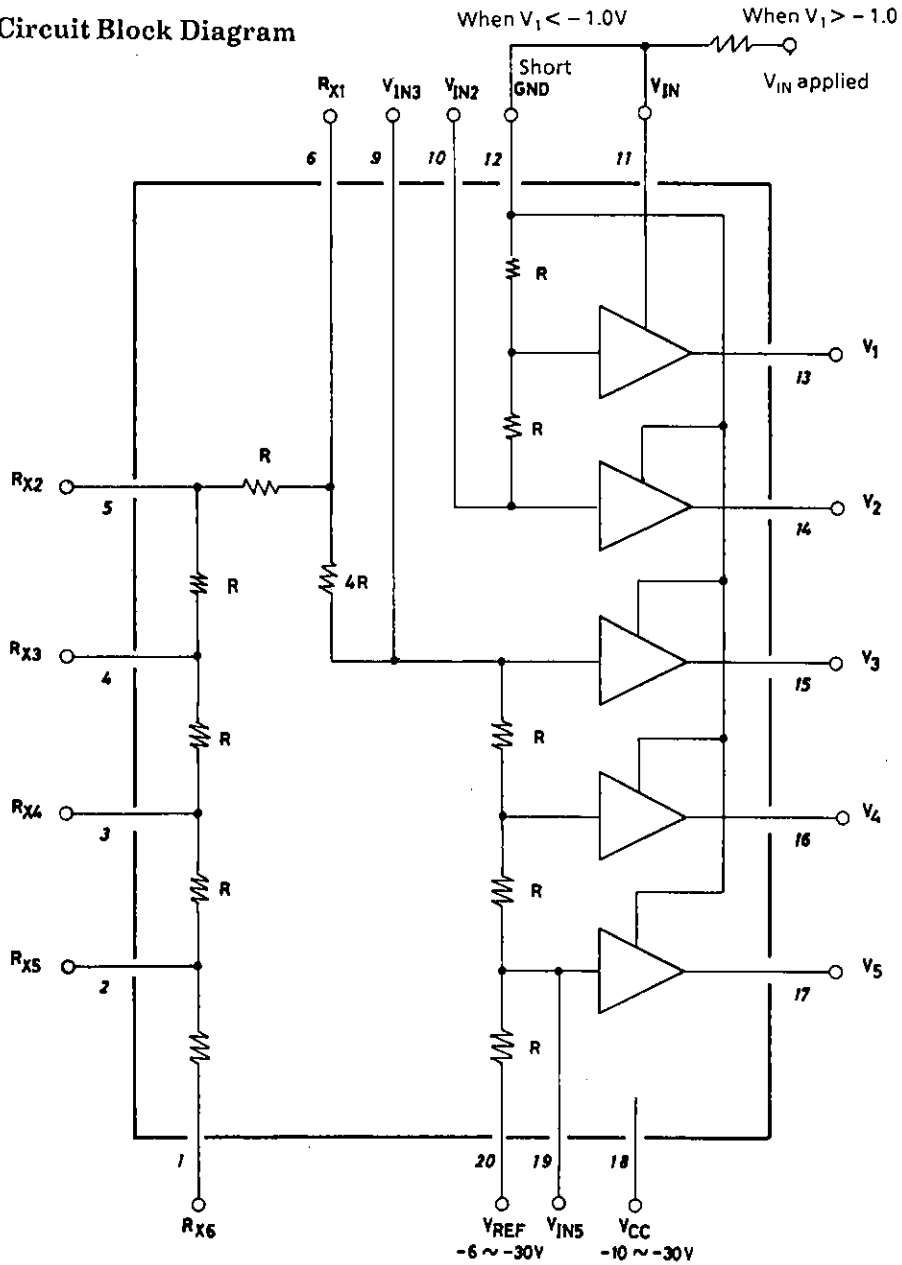
(Note) Do not use the NC pin.

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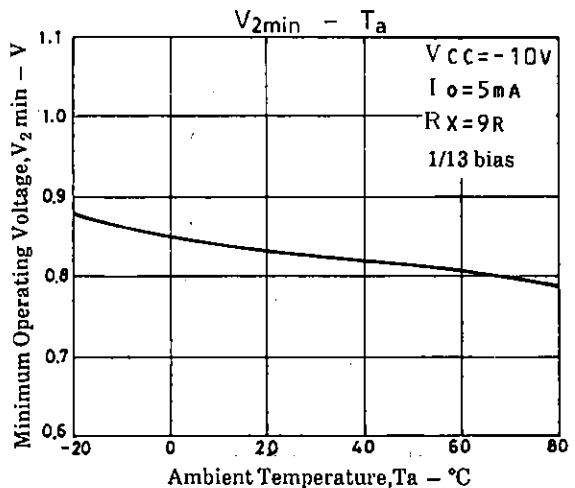
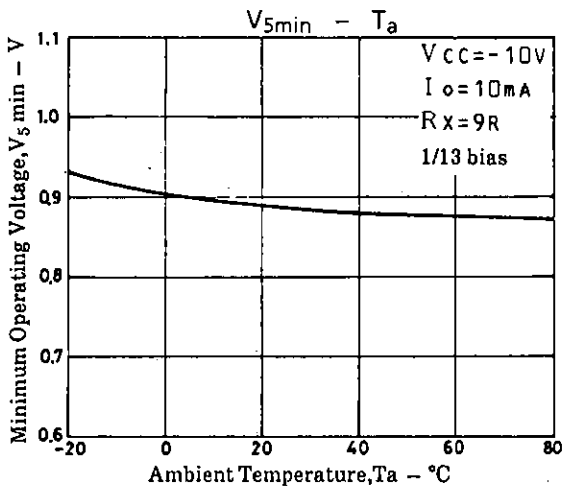
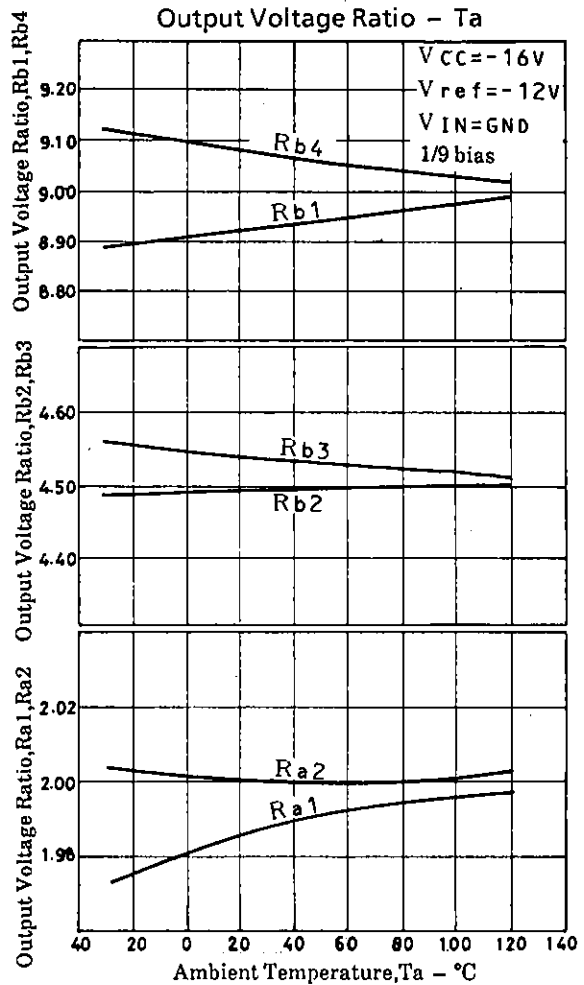
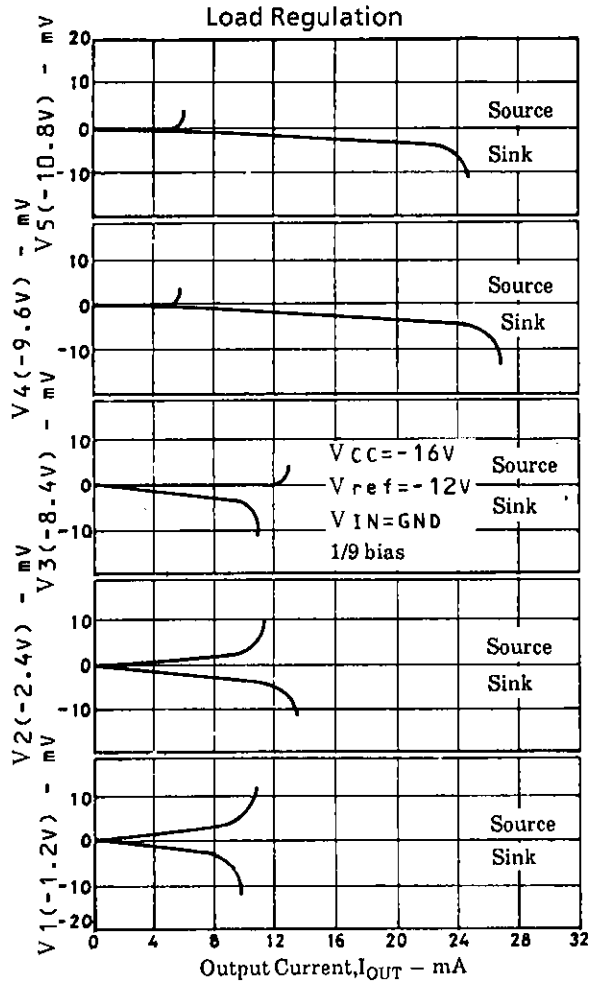
Pin Assignment



Equivalent Circuit Block Diagram



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