



# LA5310M

Monolithic Linear IC

## Voltage Divider for LCD Applications

### Overview

The LA5310M is a voltage divider IC for use in LCD matrix multidrive applications.

### Features

- Power supply for 1/9 bias LCD applications.
- 5 operational amplifiers producing 5 voltage outputs.
- Low current drain (1.0mA max).
- Miniflat package.

### Specifications

#### Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V <sub>CC</sub> max		35	V
Output current	I <sub>OUT</sub>		5	mA
Allowable power dissipation	P <sub>d</sub> max		300	mW
Operating temperature	T <sub>opr</sub>		-20 to +75	°C
Storage temperature	T <sub>stg</sub>		-30 to +125	°C

#### Operating Conditions at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage range	V <sub>CC</sub> op		11 to 25	V
Recommended output current	I <sub>1</sub>		0 to 3	mA
	I <sub>2, I3</sub>		-3 to +3	mA
	I <sub>4, I5</sub>		-3 to 0	mA

#### Operating Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current drain	I <sub>CC</sub>	V <sub>CC</sub> =25V			1.0	mA
Output Voltage	V <sub>1</sub>	V <sub>CC</sub> =0V, V <sub>ref</sub> =-12V, GND=-25V	-1.25	-1.20	-1.15	V
Output ratio1	R <sub>a1</sub>	V <sub>2</sub> / V <sub>1</sub> , V <sub>CC</sub> =0V, V <sub>ref</sub> =-12V, GND=-25V	1.96	2.00	2.04	-
Output ratio2	R <sub>a2</sub>	V <sub>5</sub> -V <sub>3</sub> / V <sub>5</sub> -V <sub>4</sub> , V <sub>CC</sub> =0V, V <sub>ref</sub> =-12V, GND=-25V	1.96	2.00	2.04	-

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**SANYO Semiconductor Co., Ltd.**

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

80906 / 12506 SY IM / 31500TN (KT) / 40194HK / 7227KI / 6203KI, TS No.1340-1/4

# LA5310M

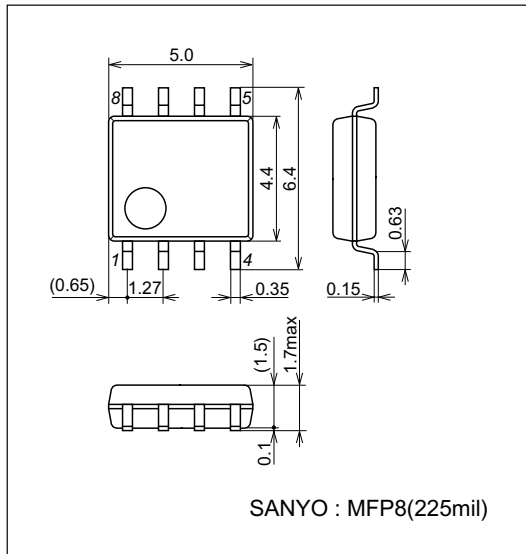
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output ratio3	R <sub>b1</sub>	-V <sub>5</sub> / -V <sub>1</sub> , V <sub>CC</sub> =0V, V <sub>ref</sub> =-12V, GND=-25V	8.73	9.00	9.27	-
Output ratio4	R <sub>b2</sub>	-V <sub>5</sub> / -V <sub>2</sub> , V <sub>CC</sub> =0V, V <sub>ref</sub> =-12V, GND=-25V	4.37	4.50	4.63	-
Output ratio5	R <sub>b3</sub>	-V <sub>5</sub> / -V <sub>5</sub> +V <sub>3</sub> , V <sub>CC</sub> =0V, V <sub>ref</sub> =-12V, GND=-25V	4.37	4.50	4.63	-
Output ratio6	R <sub>b4</sub>	-V <sub>5</sub> / -V <sub>5</sub> +V <sub>4</sub> , V <sub>CC</sub> =0V, V <sub>ref</sub> =-12V, GND=-25V	8.73	9.00	9.27	-
Load regulation	ΔV <sub>1</sub>	+100μA<I <sub>OUT</sub> <+3mA				20 mV
	ΔV <sub>2</sub>	+100μA<I <sub>OUT</sub> <+3mA				20 mV
	ΔV <sub>3</sub>	+100μA<I <sub>OUT</sub> <+3mA				20 mV
	-ΔV <sub>2</sub>	-3mA<I <sub>OUT</sub> <-100μA				20 mV
	-ΔV <sub>3</sub>	-3mA<I <sub>OUT</sub> <-100μA				20 mV
	-ΔV <sub>4</sub>	-3mA<I <sub>OUT</sub> <-100μA				20 mV
	-ΔV <sub>5</sub>	-3mA<I <sub>OUT</sub> <-100μA				20 mV

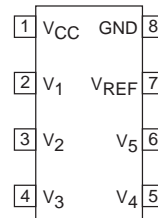
## Package Dimensions

unit : mm

3032D



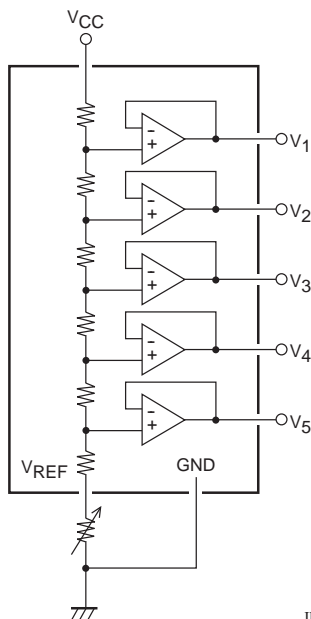
## Pin Assignment



Top view

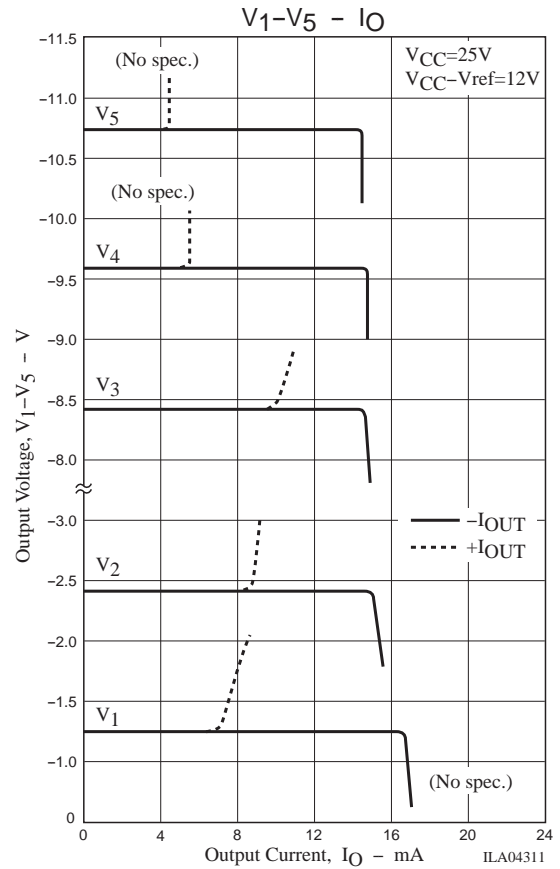
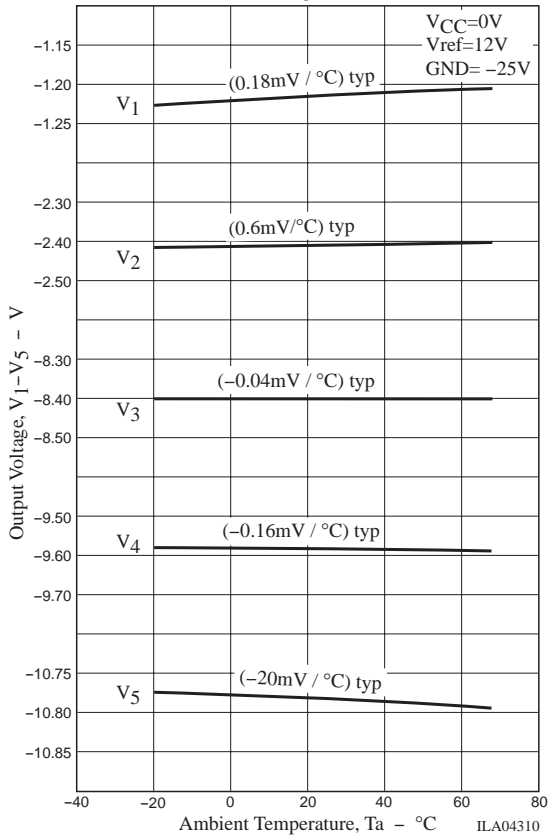
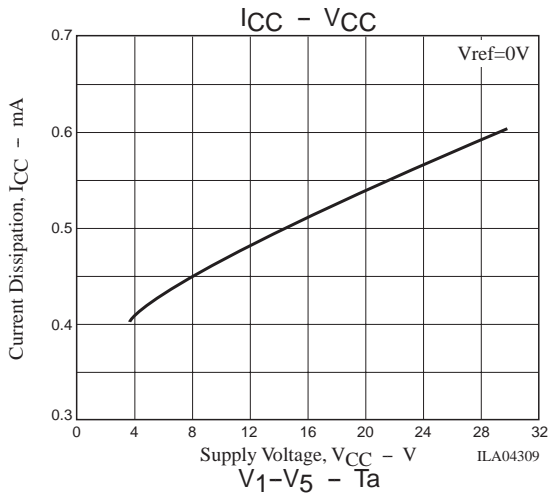
ILA04307

## Equivalent Circuit



ILA04308

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