



LA5311M

Variable Divided Voltage Generator for LCD

Overview

The LA5311M is a variable divided voltage generator IC for multiple drive of LCD matrix.

Features

- Power supply for variable bias LCD drive.
- 4 operational amplifiers deliver 4 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 _{CC} max		30	V
Output current	I _{OUT}		5	mA
Allowable power dissipation	P _d max		300	mW
Operating temperature	T _{opr}		-20 to +75	°C
Storage temperature	T _{stg}		-40 to +125	°C

Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage range	V _{CC} op	V _{CC} -V ₁ >1.0V	11 to 28	V
Recommended output current	I ₁		0 to 3	mA
	I ₂ , I ₃		-3 to +3	mA
	I ₄		-3 to 0	mA

Operating Characteristics at Ta = 25°C, V_{CC}=20V

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current drain	I _{CC}				1.0	mA
Output ratio1	R1	V ₂ /V ₁ , V _{CC} =0, GND=-20V=V ₅ External R _A =100kΩ	1.94		2.06	
Output ratio2	R2	V ₅ -V ₃ /V ₅ -V ₄ , V _{CC} =0, GND=-20V=V ₅ External R _A =100kΩ	1.94		2.06	

Continued on next page.

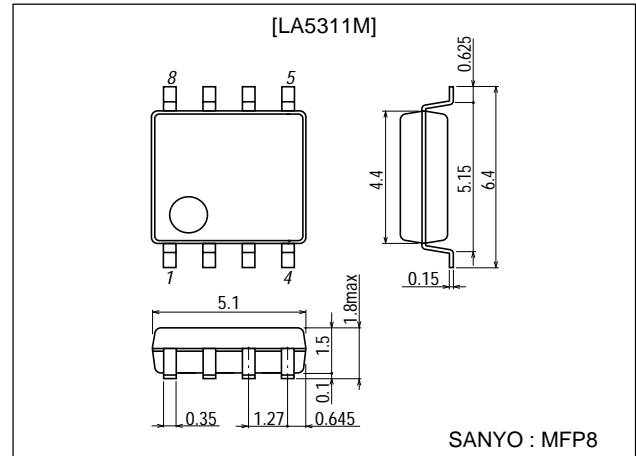
■ Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your SANYO representative nearest you before using any SANYO products described or contained herein in such applications.

■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

Package Dimensions

unit:mm

3032B-MFP8

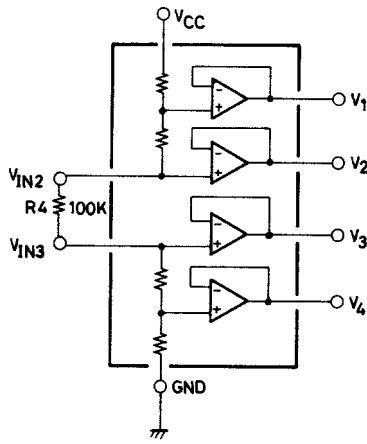


LA5311M

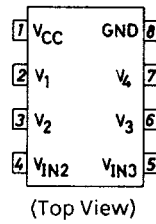
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output ratio3	R3	V2/V5-V3, V _{CC} =0, GND=-20V=V ₅ External R _A =100kΩ	0.97		1.03	
Output ratio4	R4	V1/V5-V4, V _{CC} =0, GND=-20V=V ₅ External R _A =100kΩ	0.97		1.03	
Load regulation	ΔV1	+100μA<I _{OUT} <+3mA			20	mV
	ΔV2	+100μA<I _{OUT} <+3mA			20	mV
	ΔV3	+100μA<I _{OUT} <+3mA			20	mV
	-ΔV2	-3mA<I _{OUT} <-100μA			20	mV
	-ΔV3	-3mA<I _{OUT} <-100μA			20	mV
R ₁ +R ₂	R	0.5V applied across R ₁ +R ₂	33	40	47	kΩ

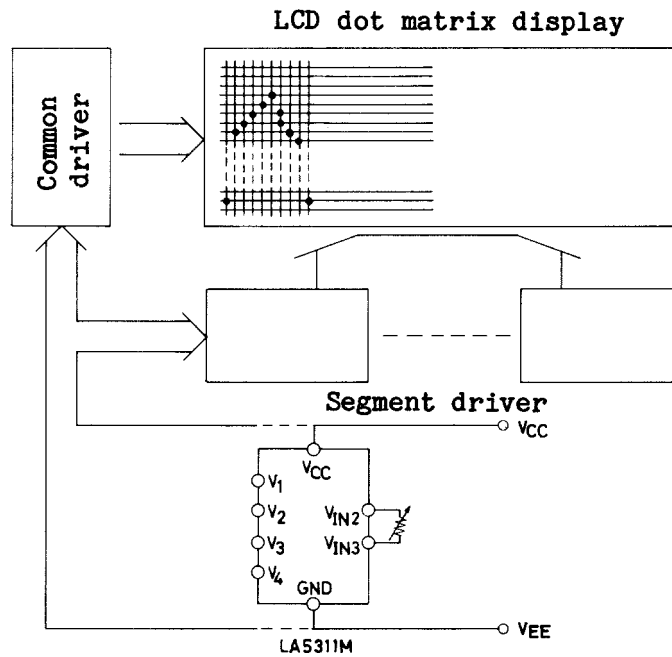
Equivalent Circuit



Pin Assingment



Sample Application Circuit



- Specifications of any and all SANYO products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- SANYO Electric Co., Ltd. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all SANYO products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of SANYO Electric Co., Ltd.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the SANYO product that you intend to use.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of March, 2000. Specifications and information herein are subject to change without notice.