



LA2615, 2615M

Analog Surround IC Featuring the AViS™ 3D Surround Algorithm*

*: AViS is a trademark of SANYO Electric Co., Ltd.

Overview

The LA2615 and LA2615M are sound field playback processing ICs for use in audio equipment, TVs, and PCs. These ICs allow equipment to easily reproduce a spatial realistic sound field from a stereo signal from a music, video, or other audio source.

Features

- Supports a wide operating supply voltage range, and can be used in a wide range of applications.
- The added surround signal level can be adjusted.
- Low-noise low-distortion bypass mode
- Provides a natural feeling of spaciousness without degrading the tonal coloration of the source.
- Clear vocal positioning without any apparent loss of center to the sound
- Miniature packages: 16-pin DIP (LA2615) and 16-pin MFP (LA2615M)

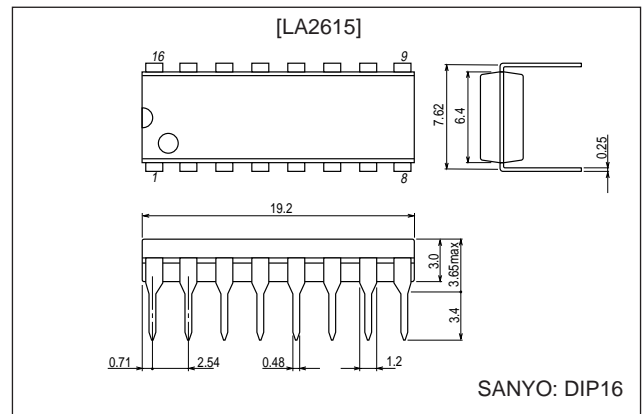
Functions

- Surround signal processing
- Variable surround effect
- Surround/bypass switching
- LED drive circuit

Package Dimensions

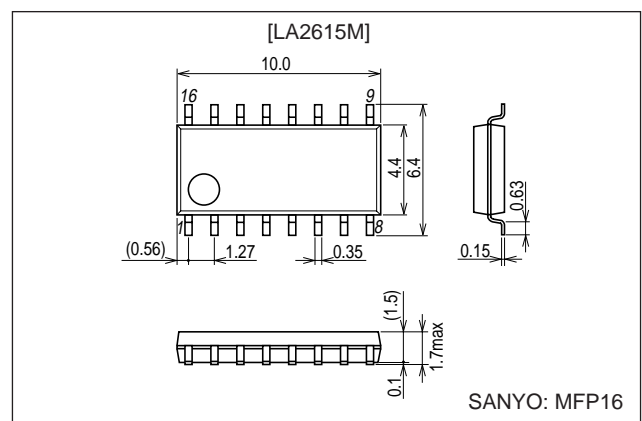
unit: mm

3008B-DIP16



unit: mm

3035B-MFP16



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Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		13	V
Allowable power dissipation	P_d max		250	mW
Operating temperature	T_{opr}		-25 to +70	$^\circ\text{C}$
Storage temperature	T_{stg}		-40 to +125	$^\circ\text{C}$

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

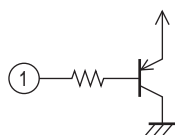
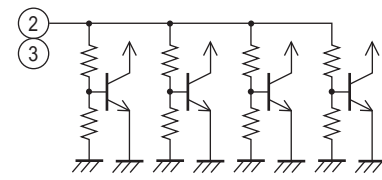
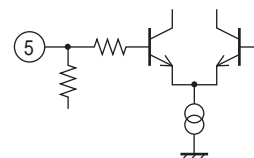
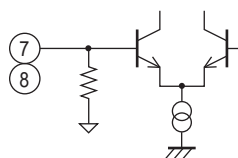
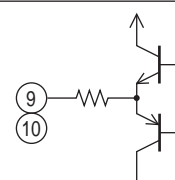
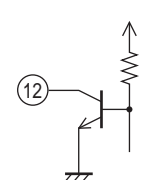
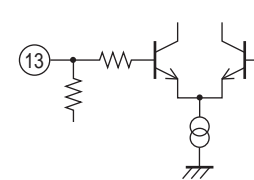
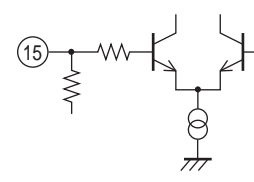
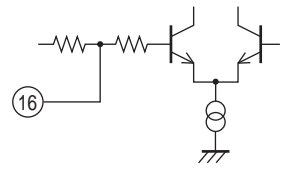
Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		9.0	V

Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 9\text{ V}$, $V_I = 300\text{ mVrms}$ (left and right inputs), $f = 1\text{ kHz}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	$I_{CC T}$	No signal, surround off		4	8	mA
Voltage gain	V_{GT}	Surround off	-2	0	+2	dB
	V_{GS}	Surround on	-2	0	+2	dB
Maximum output voltage	$V_{Omax T}$	THD = 3%, surround off	1	2.5		Vrms
	$V_{Omax S}$	THD = 3%, surround on	1	2.5		Vrms
Total harmonic distortion	THD T	Surround off		0.01	0.03	%
	THD S	Surround on		0.2	0.5	%
Crosstalk	CT T	Surround off	80	85		dB
Output noise voltage	$V_{NO T}$	Surround off		-100	-90	dB
	$V_{NO S}$	Surround off		-90	-80	dB
LED current	I_{LED}			6	10	mA

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Pin Functions

Pin No.	Pin	Pin voltage	Pin function	Equivalent circuit
1	CONT1	0 V, 5 V	Surround on/off control	 <p style="text-align: right;">A13471</p>
2 3	CONT2 CONT3	0 V, 5 V	Surround effect selection	 <p style="text-align: right;">A13472</p>
5	HPEC	$1/2 V_{CC}$	High-pass filter capacitor connection	 <p style="text-align: right;">A13473</p>
7 8	L-IN R-IN	$1/2 V_{CC}$	Input	 <p style="text-align: right;">A13474</p>
9 10	R-OUT L-OUT	$1/2 V_{CC}$	Output	 <p style="text-align: right;">A13475</p>
12	LED	V_{CC}	LED connection	 <p style="text-align: right;">A13476</p>
13	LPFC	$1/2 V_{CC}$	Low-pass filter capacitor connection	 <p style="text-align: right;">A13477</p>
15	GUR	$1/2 V_{CC}$	Surround effect maximum value setting	 <p style="text-align: right;">A13478</p>
16	GDR	$1/2 V_{CC}$	Surround effect maximum value setting	 <p style="text-align: right;">A13479</p>

Surround Effect

The maximum value of the surround effect is set with pins 15 and 16.

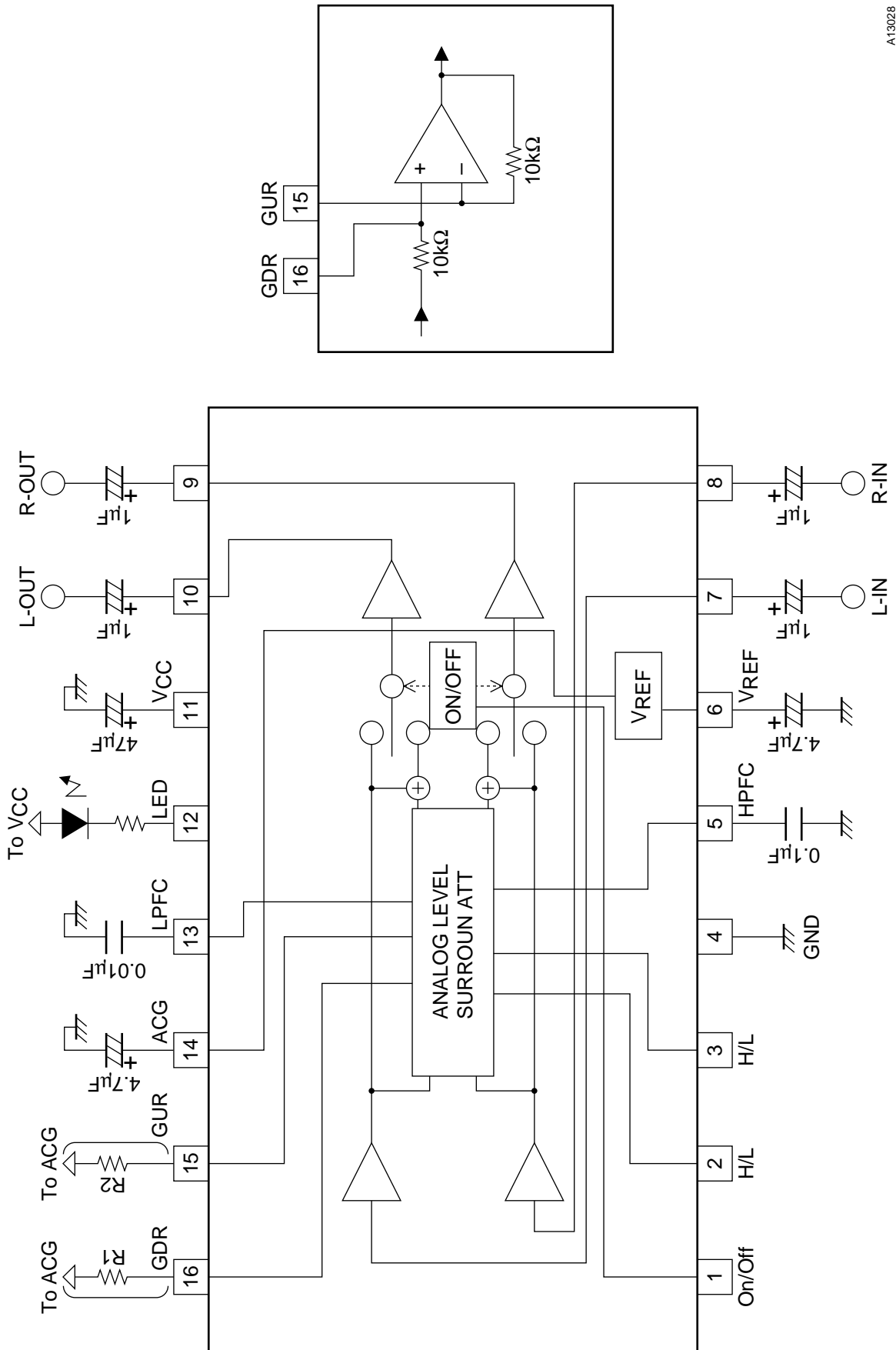
- The surround effect is increased by connecting an external resistor to pin 15.
- The surround effect is decreased by connecting an external resistor to pin 16.
- The device may be used with no external resistors on pins 15 and 16.

The level of the surround effect is controlled by pins 1 to 3.

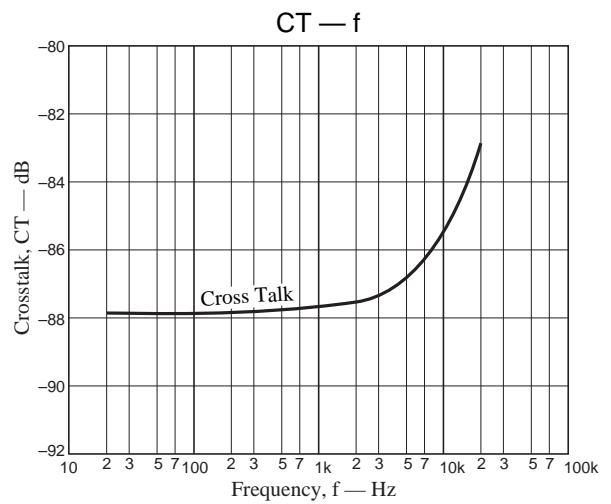
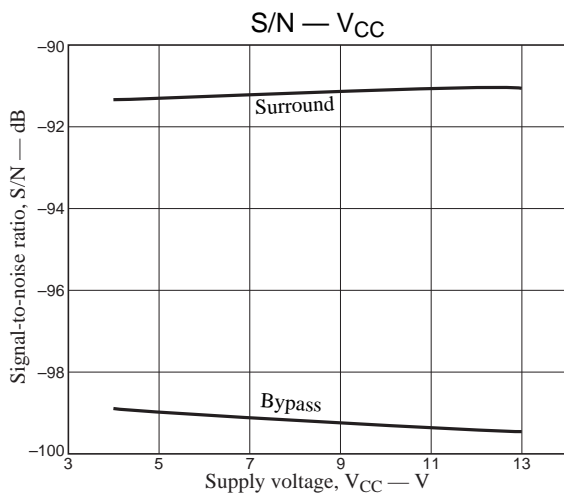
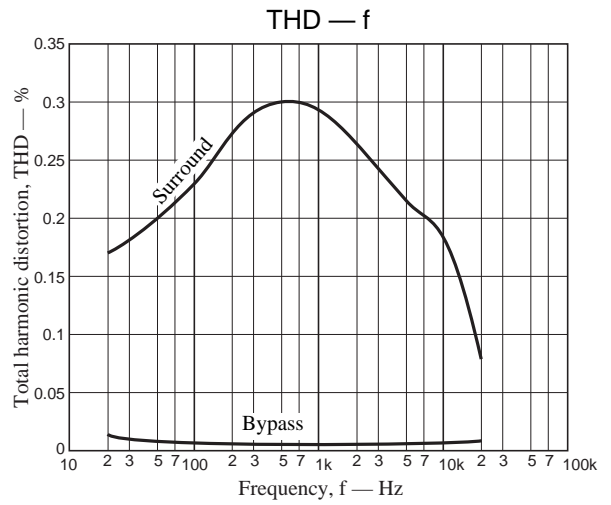
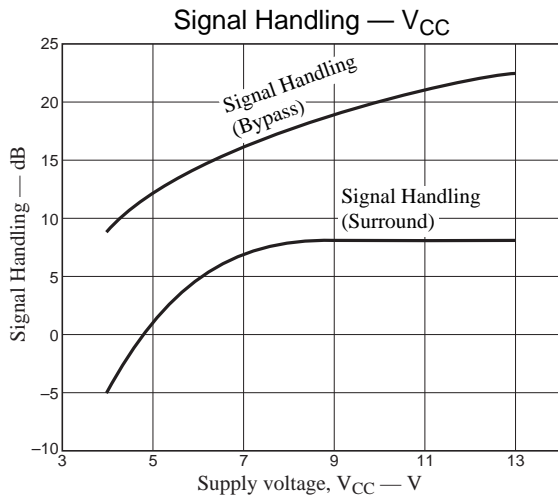
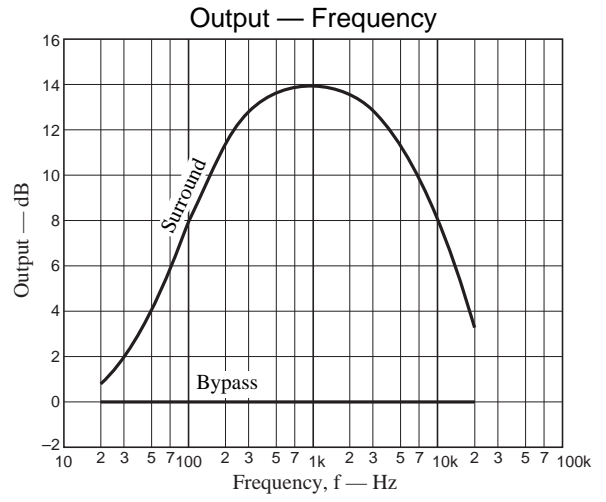
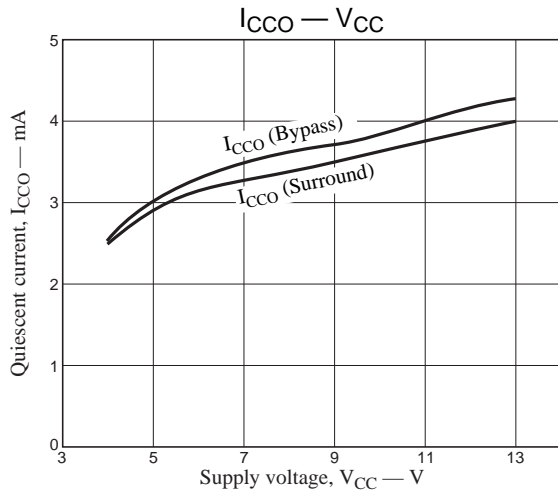
Pin 1	Pin 2	Pin 3	Effect
Low	Low	Low	Maximum
	High	Low	Midiam
	Low	High	Minimum
High	Bypass		

Note*: For the high level, a potential over 3 V and under V_{CC} must be used.

Block Diagram



A13028



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