

**LV1035M****Dolby ProLogic Decoder****Preliminary****Overview**

The LV1035M is a Dolby ProLogic surround signal-processing IC that combines the functionality of the LV1016 and LA2786 products. The LV1035M allows systems that provide both Dolby ProLogic surround functionality and a wide range of additional digital surround functions to be constructed with a single IC.

Functions

- Adaptive matrix
- Center mode control (normal, phantom, and wide)
- 4-channel/3-channel logic control
- Auto-balance (on/off)
- ProLogic off mode (bypass and full bypass)
- Center trim (0 to -31 dB) in 1-dB steps
- On-chip memory (8K SRAM)
- Variable delay time (50, 40, 30, 25, 20, 15 ms)
- New A/D and D/A converter circuits adopted.
- Dolby B noise reduction
- On-chip I/O filters
- Built-in V_{DD} circuit
- Surround trim (0 to -31 dB) in 1-dB steps
- Input and output muting functions

Features

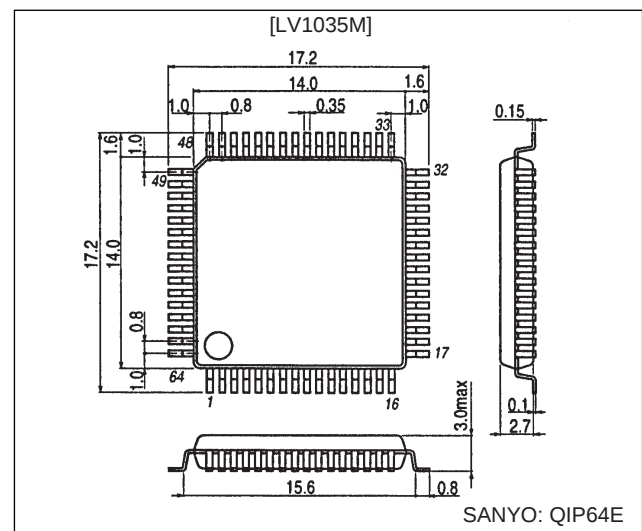
- ProLogic surround decoder implemented in a single chip
- Wide dynamic range
- All modes can be controlled over a serial data control interface using clock, data, enable signals.

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Dolby Licensing Corporation
San Francisco, CA 94103-4813
USA

Package Dimensions

unit: mm

3159-QFP64E

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC\text{ max}}$		12	V
Allowable power dissipation	$P_{d\text{ max}}$		1100	mW
Operating temperature	T_{opr}		-20 to +70	$^{\circ}\text{C}$
Storage temperature	T_{stg}		-40 to +150	$^{\circ}\text{C}$

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

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		9	V
Operating supply voltage range	$V_{CC\text{ op}}$		8 to 10	V
Input high-level voltage	V_{IH}		3.5 to 5.5	V
Input low-level voltage	V_{IL}		0 to 1.5	V
Dolby level	$V_O\text{ Dolby}$		300	mVrms

Operating Characteristics at $T_a = 25^{\circ}\text{C}$, $V_{CC} = 9\text{ V}$, $V_{IN} = 300\text{ mV rms}$ (left and right inputs), 300 mVrms x 0.707 (center and surround inputs), $f = 1\text{ kHz}$, center trim = 0 dB, surround trim = 0 dB, delay time = 20 ms.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	I_{CC}	No signal		80	100	mA
Center channel output level	V_{OC}	L = R input	-2	0	+2	dB
Output level deviation	V_{OA}	L, R, Sch from Cch	-0.5	0	+0.5	dB
Matrix rejection: left	R_{iL}	L input		-40	-25	dB
Matrix rejection: center	R_{jC}	L = R input		-40	-25	dB
Matrix rejection: right	R_{jR}	R input		-40	-25	dB
Matrix rejection: surround	R_{jS}	L = -R input		-40	-25	dB
Left channel harmonic distortion	THD L	L output		0.03	0.09	%
Center channel harmonic distortion	THD C	C output		0.03	0.09	%
Right channel harmonic distortion	THD R	R output		0.03	0.09	%
Surround channel harmonic distortion 1	THD S1	S matrix output				%
Surround channel harmonic distortion 2	THD S2	S delay output		0.1	0.7	%
S/N, L	SN, L	L output: CCIR/ARM, $R_s = 10\text{ k}\Omega$		-76	-71	dB
S/N, C	SN, C	C output: CCIR/ARM, $R_s = 10\text{ k}\Omega$		-77	-71	dB
S/N, R	SN, R	R output: CCIR/ARM, $R_s = 10\text{ k}\Omega$		-76	-71	dB
S/N, S1	SN, S	S matrix output				dB
S/N, S2	SN, S	S delay output		-75	-65	dB
Left channel signal handling	SH_L	L output: $V_{CC} = 8.5\text{ V}$, $\text{THD} \leq 1\%$	15	16		dB
Center channel signal handling	SH_C	C output: $V_{CC} = 8.5\text{ V}$, $\text{THD} \leq 1\%$	15	18		dB
Right channel signal handling	SH_R	R output: $V_{CC} = 8.5\text{ V}$, $\text{THD} \leq 1\%$	15	16		dB
Surround channel signal handling	SH_{S1}	S delay output: $V_{CC} = 8.5\text{ V}$, $\text{THD} \leq 3\%$	15	18		dB
Noise sequencer output level	V_{ns}	Each channel	50	70	90	mV
Noise reduction frequency characteristics	Dec1	0 dB, 1 kHz	-1.5	0.0	+1.5	dB
	Dec2	-20 dB, 1 kHz	-24	-22.5	-21	dB
	Dec3	0 dB, 5 kHz	-1.5	0.0	+1.5	dB
	Dec4	-20 dB, 5 kHz	-23.3	-21.8	-20.3	dB
	Dec5	-40 dB, 5 kHz	-46.8	-45.3	-43.8	dB
ProLogic off, left and right channels	THDoff	L, Rch 20 to 20 kHz BPF		0.01	0.03	%
ProLogic off, left and right channels S/N	S/NoFF	L, Rch CCIR/ARM		90	-80	dB

