



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

Monolithic Linear IC

## LA6571 — 5CH Driver for Mini Disk and Compact Disk

### Overview

The LA6571 is 5-channel driver for mini disk and compact disk applications (BTL-AMP: 5CH).

### Features

- Power amplifier 5-channel built-in.
- $I_O$  max 1A
- Level shift circuit built-in.
- Mute circuit (output ON/OFF) with three built-in channels (2-2-1).  
(Operates independently for each of MUTE1: CH1 and 2, MUTE2: CH3 and 4, and MUTE3: CH5.  
Not operating for the regulator (REG))
- Regulator (REG) built-in (external PNP transistor).  
Voltage setting (typ: 1.5V or more) with an external resistor
- Overheat protection circuit (thermal shutdown) built-in.

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	$V_{CC}$ max		14	V
Maximum output current	$I_O$ max	Each output for channel 1 to 5.	1	A
Maximum input voltage	$V_{INB}$		13	V
MUTE pin voltage	$V_{MUTE}$		13	V
Allowable loss	$P_d$ max	Independent IC	0.8	W
		Mounted on a specified board*	2	W
Operating temperature	$T_{opr}$		-30 to +85	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

\* Mounted on a specified board: 76.1mm×114.3mm×1.6mm glass epoxy

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

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage 1	$V_{CC1}$		4.5 to $V_{CC2}$	V
Supply voltage 2	$V_{CC2}$		6 to 13	V

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# LA6571

**Electrical Characteristics** at  $T_a = 25^\circ\text{C}$ ,  $V_{CC1} = 5\text{V}$ ,  $V_{CC2} = 12\text{V}$ ,  $V_{REF-IN} = 1.65\text{V}$ , unless especially specified

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[ALL Blocks]						
No-load current drain ON	$I_{CC\ ON}$	All outputs ON *1		30	50	mA
No-load current drain OFF	$I_{CC\ OFF}$	All outputs OFF *1		10	20	mA
VREF input voltage range	$V_{REF-IN}$		1		$V_{CC2-1}$	V
Thermal shutdown temperature	TSD	*7	150	175	200	$^\circ\text{C}$
[BTL AMP Block] (CH1 to CH5)						
Output offset voltage	$V_{OFF}$	Voltage difference in output between BTL AMP and each channel.	-50		50	mV
Output offset voltage	$V_{OFF1}$	Voltage difference in output between BTL AMP and each channel.	-80		80	mV
Output voltage	$V_O$	CH1,CH2 *3	3.2	4.0		V
Output voltage	$V_{O1}$	CH3,CH4,CH5 *4	9.7	10.5		V
Closed-circuit voltage gain	$V_G1$	Gain between input and output for CH1, CH2, and CH5 *2	4.2	5.0	6.0	times
Closed-circuit voltage gain	$V_G3$	Gain between input and output for CH3 and CH4 *2	8.2	9.0	11.0	times
Slew rate	SR	AMP Independent. Multiply 2 between outputs. *7		0.5		$\text{V}/\mu\text{s}$
MUTE ON voltage	$V_{MUTE\ ON}$	Each MUTE *6	2			V
MUTE OFF voltage	$V_{MUTE\ OFF}$	Each MUTE *6			0.5	V
[Input AMP Block]						
Input voltage range	$V_{IN\ op}$		0		$V_{CC2-1.5}$	V
Output offset voltage	$V_{OFF\ op}$		-10		10	mV
Output current (SINK)	SINK op		2			mA
Output current (SOURCE)	SOURCE op	*5	300	500		$\mu\text{A}$
[Power Supply Block] (PNP transistor: 2SB632K)						
Regulator output	$V_{OUT}$	For error Amp, $R_L = 10\text{k}\Omega$ at buffer	1.2	1.3	1.4	V
REG-IN SINK current	REG-IN-SINK	Base current to external PNP	5	10		mA
Line regulation	$\Delta V_{OLN}$	$6\text{V} \leq V_{CC} \leq 12\text{V}$ , $I_O = 200\text{mA}$		20	150	mV
Load regulation	$\Delta V_{OLD}$	$5\text{mA} \leq I_O \leq 200\text{mA}$		50	200	mV

\*1. Current dissipation that is a sum of  $V_{CC1}$  and  $V_{CC2}$  at no load.

\*2. Input AMP is a BUFFER AMP.

\*3. Voltage difference between both ends of load ( $8\Omega$ ). Output saturated.

\*4. Voltage difference between both ends of load ( $12\Omega$ ). Output saturated.

\*5. The source of input OP-AMP is a constant current. (See the specified block diagram.)

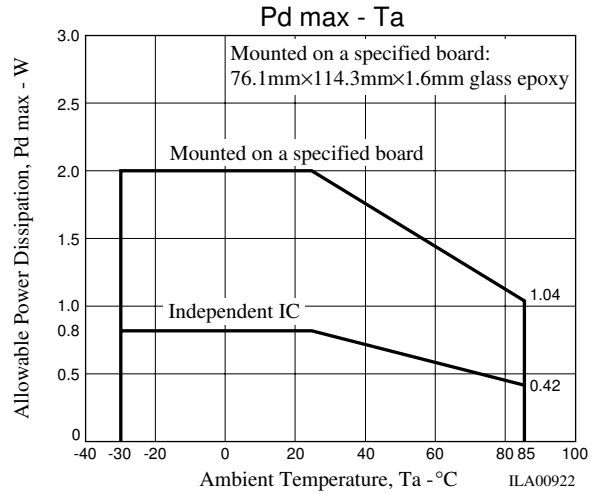
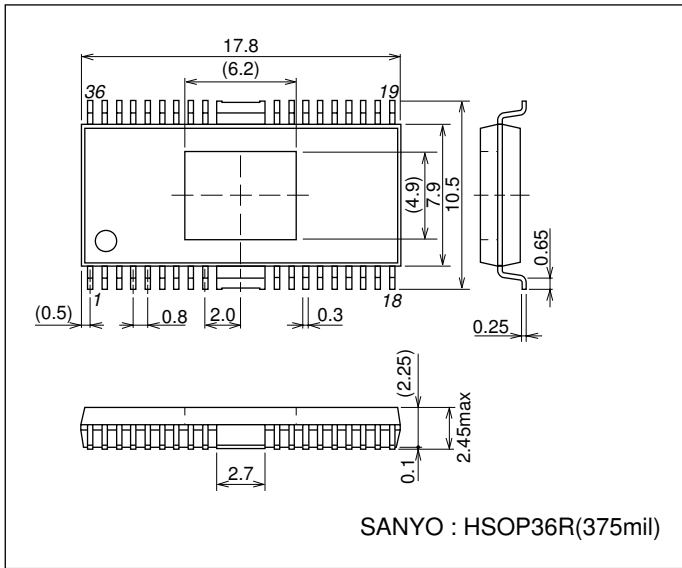
As the  $11\text{k}\Omega$  resistance to the next stage is a load, pay due attention when setting the input OP-AMP gain.

\*6. Output ON with MUTE: [H] and OFF with MUTE: [L] (HI impedance).

\*7. Design guarantee value

Package Dimensions

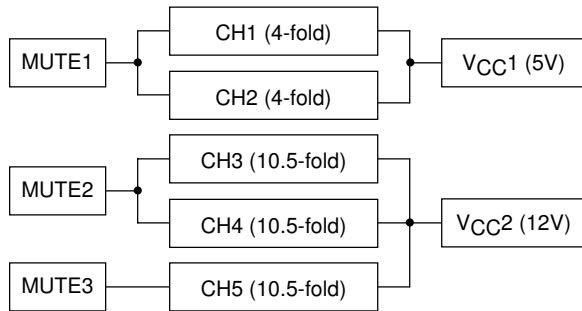
unit : mm  
3251



Pin Description

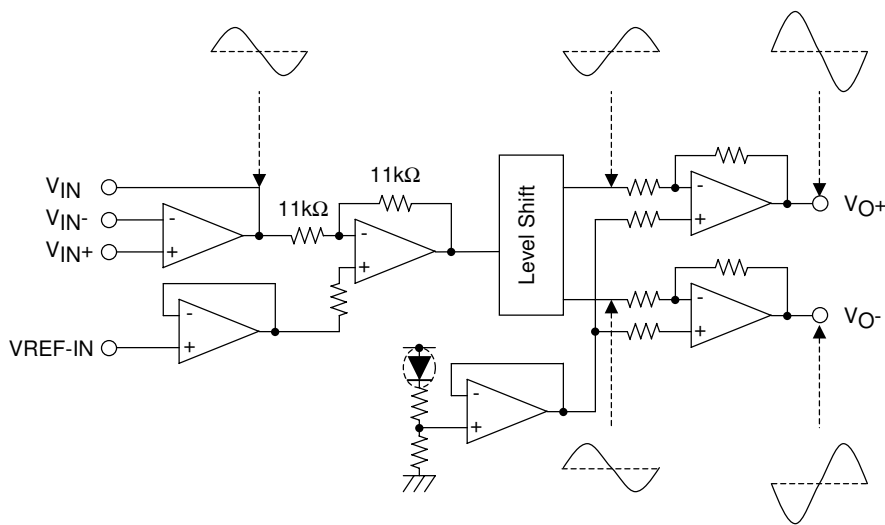
Pin Name	Pin Name	Pin No.	Equivalent Circuit Diagram	Description
Input	V <sub>IN1+</sub> V <sub>IN1-</sub> V <sub>IN1</sub> V <sub>IN2+</sub> V <sub>IN2-</sub> V <sub>IN2</sub> V <sub>IN3+</sub> V <sub>IN3-</sub> V <sub>IN3</sub> V <sub>IN4-</sub> V <sub>IN4+</sub> V <sub>IN4</sub> V <sub>IN5+</sub> V <sub>IN5-</sub> V <sub>IN5</sub>	17 16 15 20 19 18 23 22 21 30 29 31 32 33 34		Each input pin
Output	V <sub>O1+</sub> V <sub>O1-</sub> V <sub>O2+</sub> V <sub>O2-</sub> V <sub>O3+</sub> V <sub>O3-</sub> V <sub>O4+</sub> V <sub>O4-</sub> V <sub>O5+</sub> V <sub>O5-</sub>	12 13 10 11 8 9 6 7 5 4		Each output
MUTE	MUTE1 MUTE2 MUTE3	1 2 36		Turns ON/OFF the output for MUTE1: CH1, 2 MUTE2: CH3, 4, and MUTE3: CH5. Each MUTE operates independently. MUTE: H output ON MUTE: L output OFF With the output OFF, the output has a high impedance.

**Relationship between MUTE and Power (VCC)**

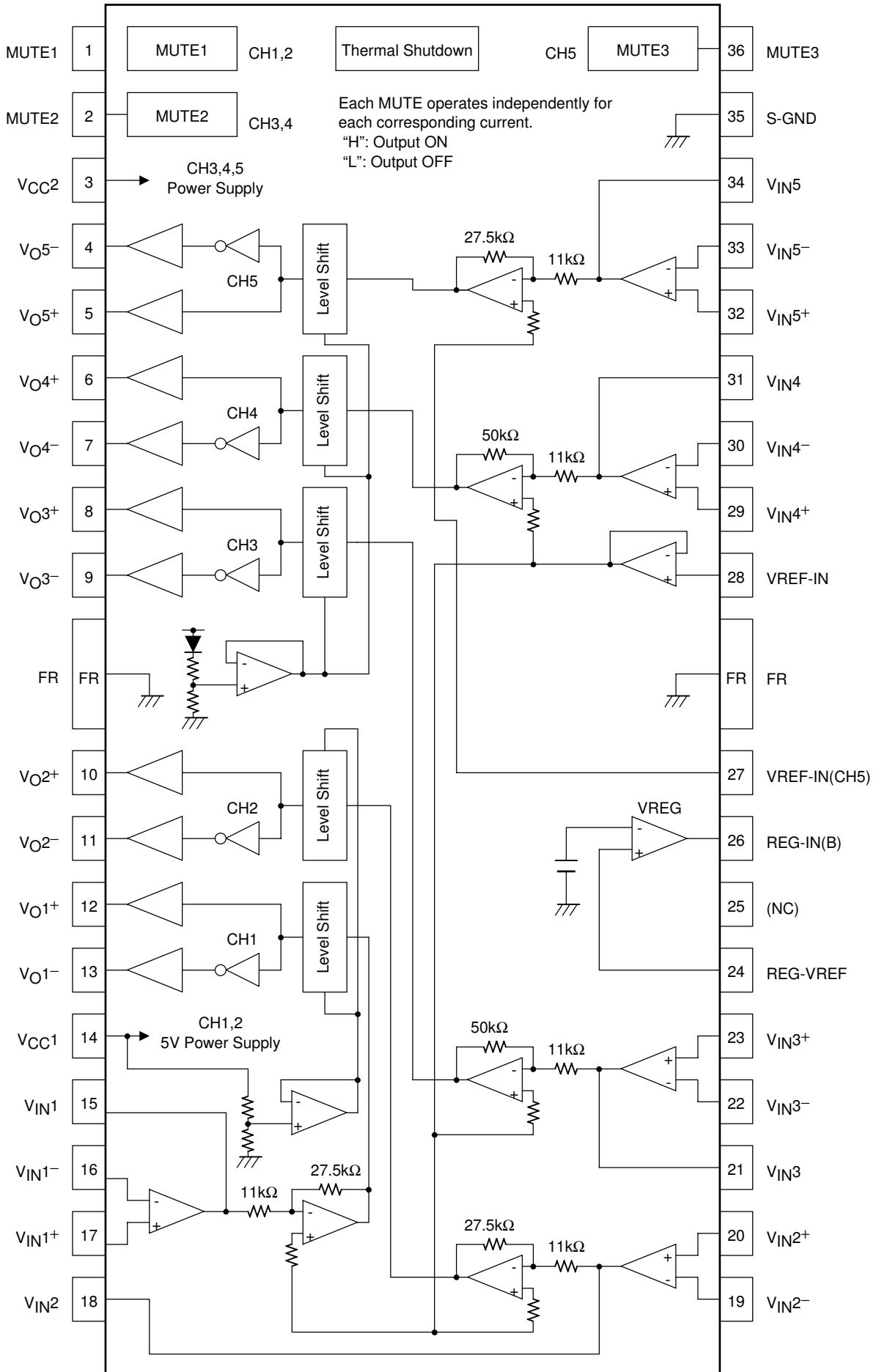


\* MUTE operates independently for each corresponding channel.

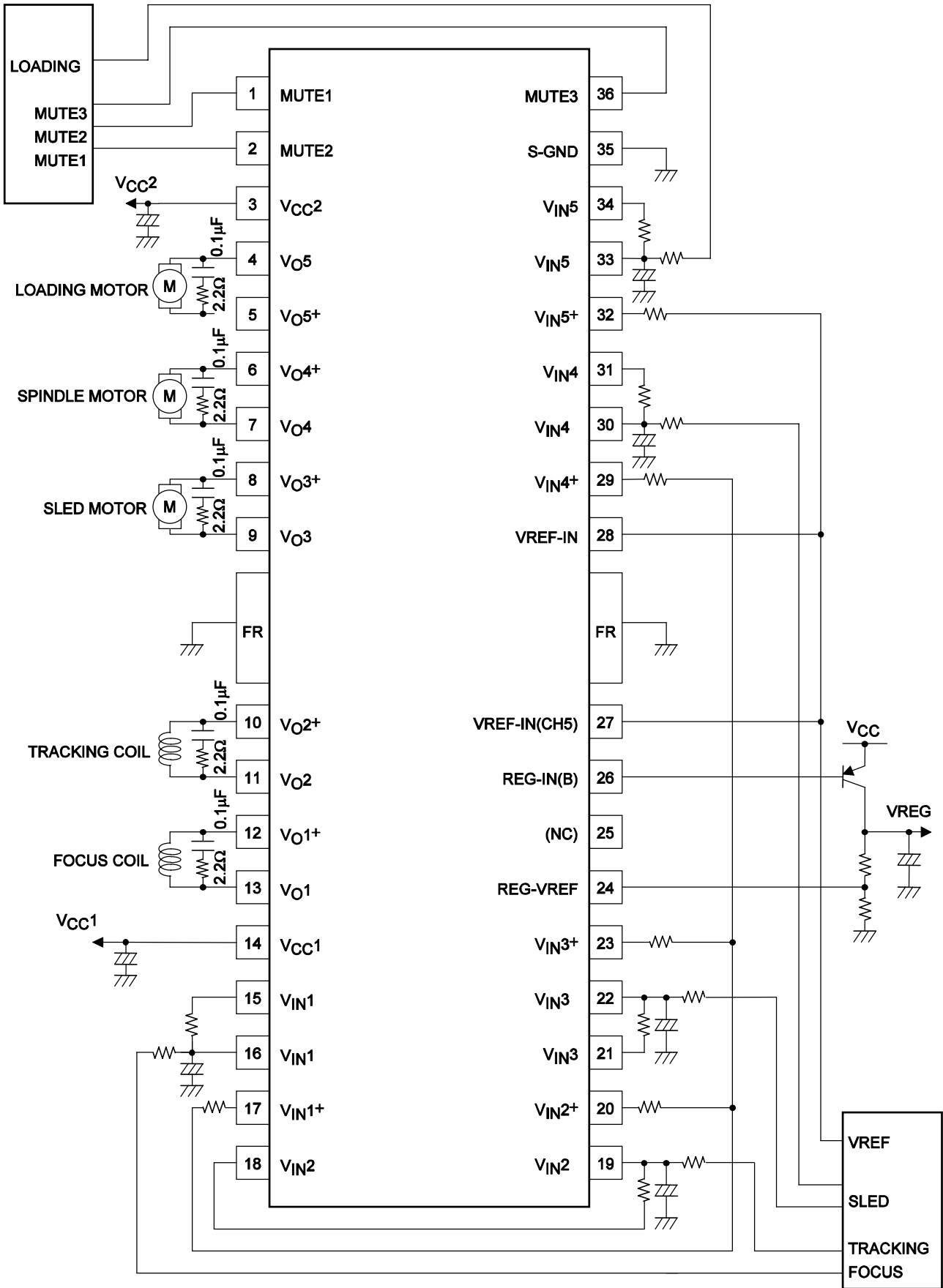
**Schematic Diagram of I/O Related Components**



Block Diagram



Sample Application Circuit



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