## GENERAL DESCRIPTION

The M62343P,FP is a CMOS 3 channel D-A converter with output buffer amplifiers.

It can communicate with a microcontroller via few wiring thanks to the adoption of the three-line DI,CLK,LD.

The output buffer amplifier employs AB class output with sinking and sourcing capability of more than 1.0mA , and an output voltage range is nearly between ground and Vcc.

PIN CONFIGURATION (TOP VIEW)

		M62343		
Ao1	1		8	L D
Ao2	2		7	CLK
Ao3	3		6	D I
Vcc	4		5	GND
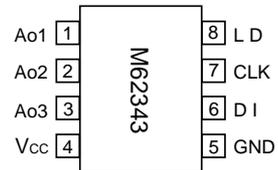
Outline   8P4 (P)
   8P2S-A (FP)

FEATURES

• 10bit serial data input (3-wire serial transfer method)

• Wide output voltage range
   Nearly between ground and Vcc(0 to 5V)

• High output current drive capability
   over ±1.0mA

APPLICATION

Conversion from digital data to analog control data for both consumer and industrial equipment.
Gain control and automatic adjustment of DISPLAY-MONITOR or CTV.

BLOCK DIAGRAM
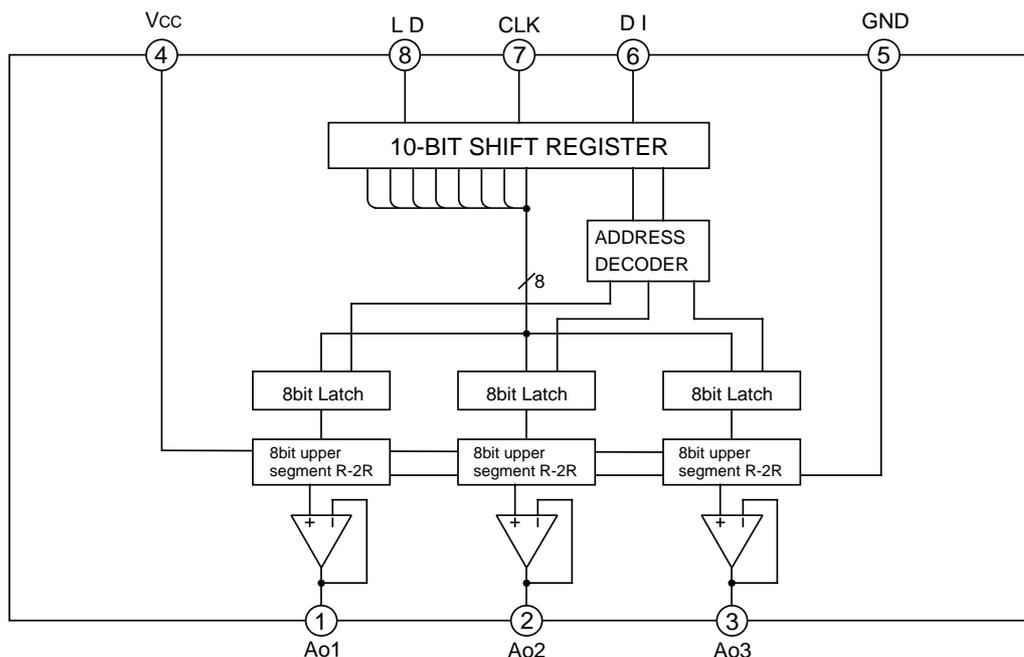
EXPLANATION OF TERMINALS

PIN No.	Symbol	Function
⑥	D I	Serial data input terminal
⑦	CLK	Shift clock input terminal. Input signal at DI pin is input to 10-bit shift register at rise of shift clock pulse.
⑧	L D	When H-level signal is input to this terminal,the value stored in 10-bit shift register is loaded in decoder and D-A converter output register.
①	Ao1	
②	Ao2	8bit D–A converter output terminal
③	Ao3	
④	Vcc	Power supply terminal
⑤	GND	GND

ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Conditions	Ratings	Unit
Vcc	Supply voltage		-0.3 to 7.0	V
Vin	Input voltage		-0.3 to Vcc+0.3	V
Vo	Output voltage		-0.3 to Vcc+0.3	V
Pd	Power dissipation		417 (DIP) / 272 (FP)	mW
Topr	Operating temperature		-20 to +85	°C
Tstg	Storage temperature		-55 to +125	°C

ELECTRICAL CHARACTERISTICS (Vcc=+5V±10%,GND=0V,Ta=–20 to 85°C unless otherwise noted)

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
Vcc	Supply voltage		2.7	5.0	5.5	V
Icc	Supply current	CLK=1MHz, IAO=0μA DACdata:6Ah(at maximum current)	0	0.8	2.7	mA
		DI=CLK=LD=GND,IAO=0μA	0	0.6	1.8	mA
IILK	Input leak current	VIN=0 to Vcc	-10		10	μA
VIL	Input low voltage				0.2Vcc	V
VIH	Input high voltage		0.5Vcc			V
VAO	Buffer amplifier output voltage range	IAO=±100μA	0.1		Vcc-0.1	V
		IAO=±500μA	0.2		Vcc-0.2	V
IAO	Buffer amplifier output drive range	Upper side saturation voltage=0.3V Lower side saturation voltage=0.2V	-1.0		1.0	mA
SDL	Differential nonlinearity		-1.0		1.0	LSB
SL	Nonlinearity	Vcc=5.12V (20mV/LSB)	-1.5		1.5	LSB
SZERO	Zero code error	without load (IAO=0)	-2.0		2.0	LSB
SFULL	Full scale error		-2.0		2.0	LSB
Co	Output capacitive load				0.1	μF
Ro	Buffer amplifier output impedance			5.0		Ω

AC CHARACTERISTICS (Vcc=+5V±10%,GND=0V,Ta=−20 to 85°C unless otherwise noted)

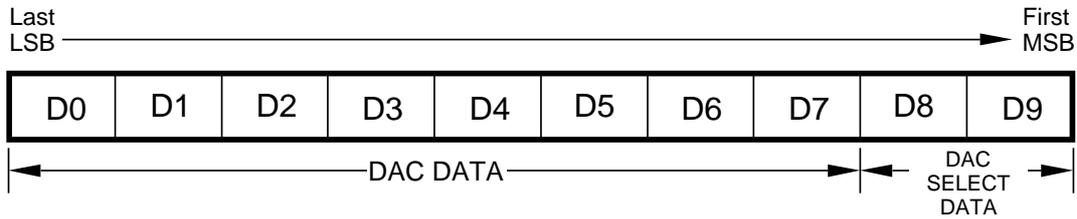| Symbol	Parameter	Test condition	Limits			Unit
			Min	Typ	Max	
tCKL	Clock "L" pulse width		200			nS
tCKH	Clock "H" pulse width		200			nS
tCR	Clock rise time				200	nS
tCF	Clock fall time					
tDCH	Data setup time		30			nS
tCHD	Data hold time		60			nS
tCHL	LD setup time		200			nS
tLDC	LD hold time		100			nS
tLDH	LD "H" pulse time		100			nS
tLDD	D-A output setting time	CL≤100pF VAO:0.5V<=>4.5V The time until the output becomes the final value of 1/2LSB			300	μS

TIMING CHART
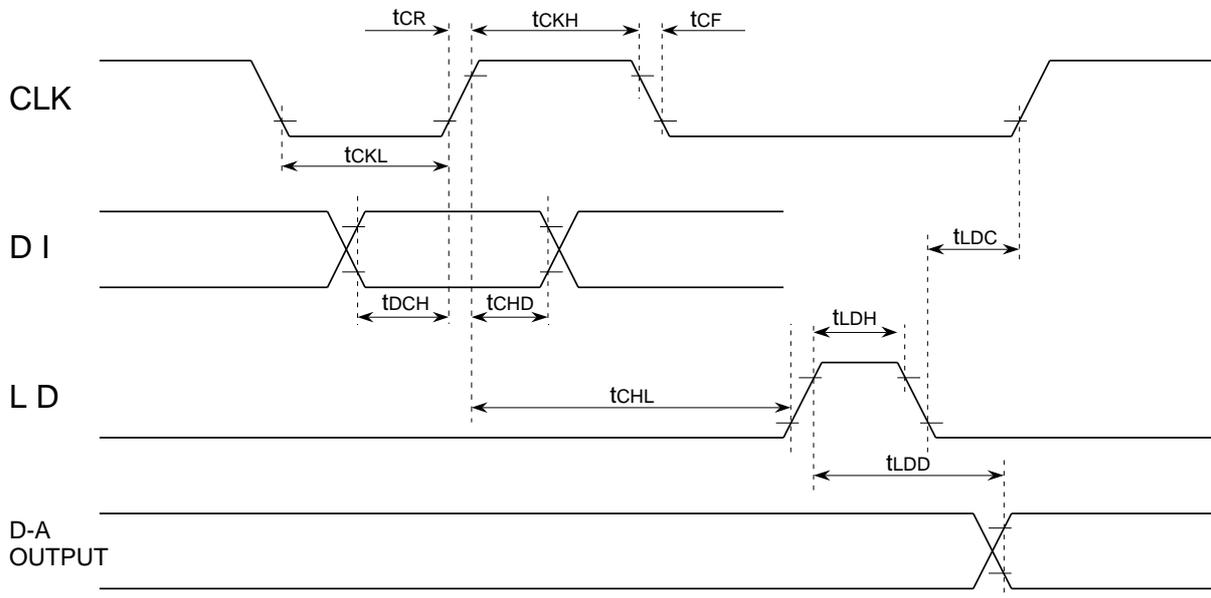
DIGITAL DATA FORMAT

Last
LSB ————————————————————————————————→ First
MSB

D0	D1	D2	D3	D4	D5	D6	D7	D8	D9

|←————————————————— DAC DATA —————————————————→|←— DAC SELECT DATA —→|

(1) DAC SELECT DATA

D8	D9	DAC selection
0	0	AO1selection
1	0	Ao2selection
0	1	Ao3selection
1	1	Don't care

(2) DAC DATA

D0	D1	D2	D3	D4	D5	D6	D7	DAC output
0	0	0	0	0	0	0	0	Vcc/256 X1
1	0	0	0	0	0	0	0	Vcc/256 X2
0	1	0	0	0	0	0	0	Vcc/256 X3
1	1	0	0	0	0	0	0	Vcc/256 X4
:	:	:	:	:	:	:	:	:
0	1	1	1	1	1	1	1	Vcc/256 X255
1	1	1	1	1	1	1	1	Vcc/256 X256

TIMING CHART (MODEL)

D I   D9 D8 D7 D6 D5 ------- D2 D1 D0

CLK

L D

D-A OUTPUT
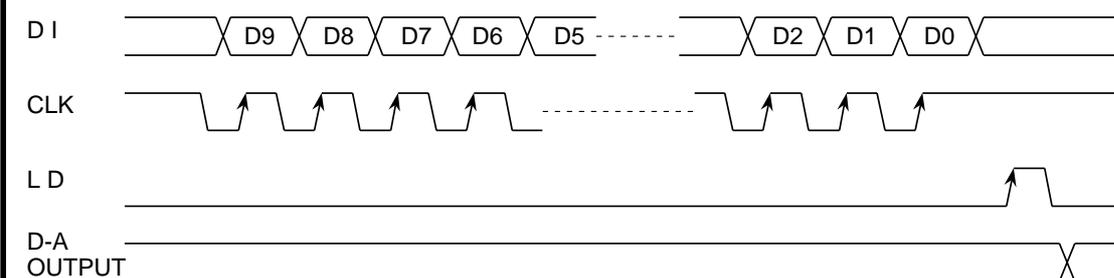
PRECAUTION FOR USE

Supply voltage terminal(Vcc) is also used for D-A converter upper reference voltage setting. IF ripple or spike is input this terminal,accuracy of D-A conversion is down. So,when use this device,please connect capacitor among Vcc to GND for stable D-A conversion.

This IC's output amplifier has an advantage to capacitive load.So it's no problem at device action when connect capacitor (0.1μF MAX) among output to GND for every noise eliminate.

< Standard application circuit >
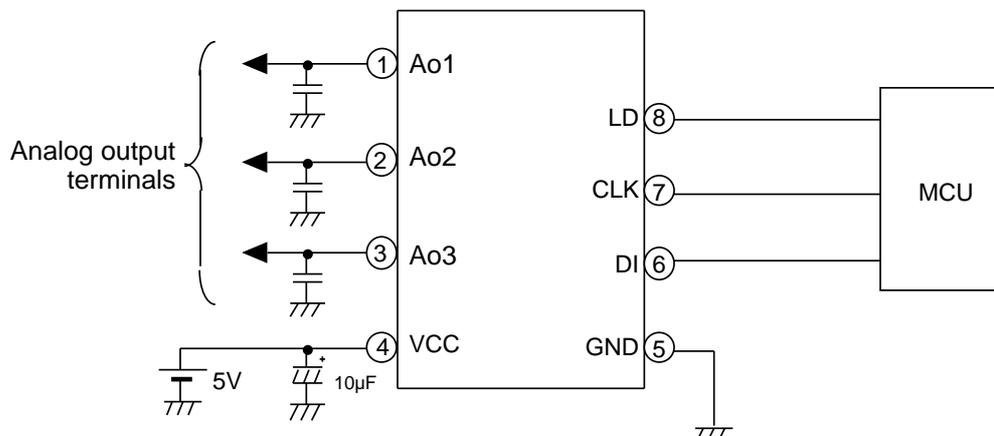
Keep safety first in your circuit designs!

• Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better andmore reliable, but there is always the possibility that trouble may occur with them. Trouble withsemiconductors may lead to personal injury,fire or property damage. Remember to give due considerationto safety when making your circuit design, in order to prevent fires from spreading, redundancy, malfunctionor other mishap.