NEC

MOS INTEGRATED CIRCUIT

μPD6211

I²C-BUS COMPATIBLE OCTAL 8BIT D/A CONVERTER

DESCRIPTION

The μPD6211 is an 8-bit monolithic CMOS digital-to-analog converter using the register-string technique. The μPD6211 incorporates an 8-channel digital-to-analog converters and I²C-bus compatible interface. The designer needs only 2 signals (Serial Data and Serial Clock) to interface and can use 8-ICs (64-channels) on same bus to control chip-select terminals.

The μPD6211 incorporates Output CMOS Buffer to achieve wide output voltage range and two reference voltage terminals.

The μPD6211 is ideal for automatic control for color-television.

FEATURES

- 8-channel 8-bit digital-to-analog converter using the register-string technique
- I²C-bus compatible serial interface (Serial Data and Serial Clock)
- 8-ICs (64-channels) can be connected by chip-select terminals
- Output CMOS Buffer to achieve wide output voltage range
- Two reference voltage

ORDERING INFORMATION

PART NO.	PACKAGE
μPD6211CX	20-pin plastic DIP (300 mil)
μPD6211GS	20-pin plastic SOP (300 mil)

Caution Purchase of NEC I²C components conveys a license under the Philips I²C patent Right to use these components in an I²C system, provided that the system conforms to the I²C Standard Specification as defined by Philips.

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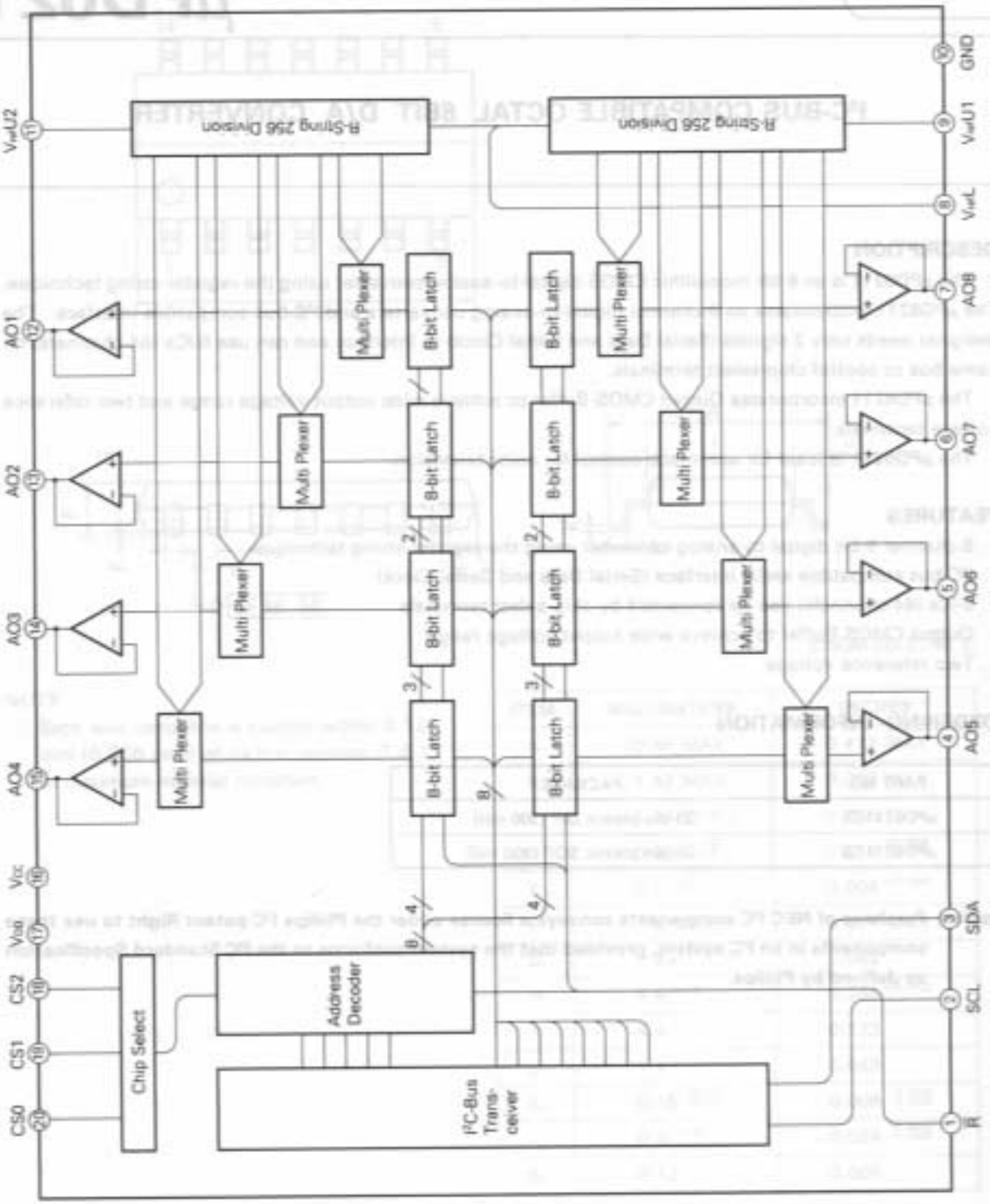
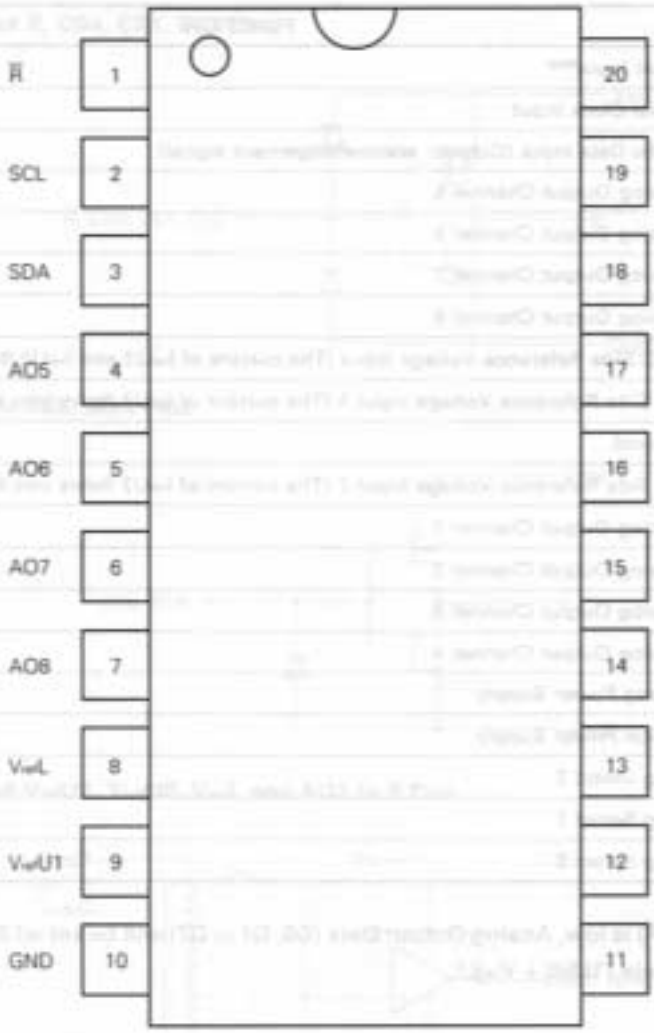
BLOCK DIAGRAM



PIN CONNECTION DIAGRAM (Top View)



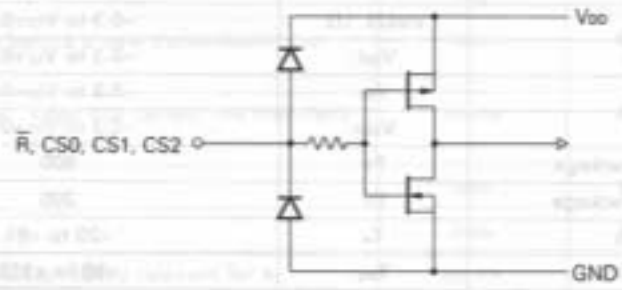
PIN CONFIGURATION

PIN NO.	SYMBOL	FUNCTION
1	$\overline{R}$	Reset Input[Note]
2	SCL	Serial Clock Input
3	SDA	Serial Data Input (Output: acknowledgement signal)
4	AO5	Analog Output Channel 5
5	AO6	Analog Output Channel 6
6	AO7	Analog Output Channel 7
7	AO8	Analog Output Channel 8
8	V_{refL}	GND Side Reference Voltage Input (The current of I_{refU1} and I_{refU2} flow out from IC.)
9	V_{refU1}	V_{CC} Side Reference Voltage Input 1 (The current of I_{refU1} flows into IC.)
10	GND	Ground
11	V_{refU2}	V_{CC} Side Reference Voltage Input 2 (The current of I_{refU2} flows into IC.)
12	AO1	Analog Output Channel 1
13	AO2	Analog Output Channel 2
14	AO3	Analog Output Channel 3
15	AO4	Analog Output Channel 4
16	V_{CC}	Anaog Power Supply
17	V_{DD}	Digital Power Supply
18	CS2	Chip Select 2
19	CS1	Chip Select 1
20	CS0	Chip Select 0

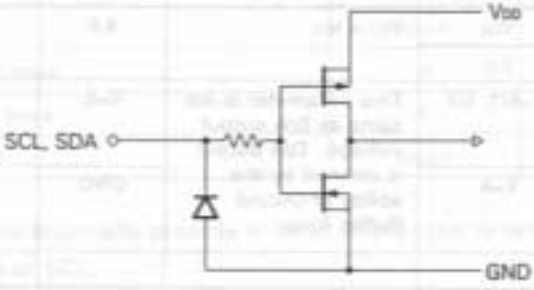
Note When the Reset Input ($\overline{R}$) is low, Analog Output Data (D0, D1 ··· D7) will be set all 0. And the all Analog Output will be Zero Scale (1LSB + V_{refL}).

EQUIVALENT CIRCUIT OF PIN

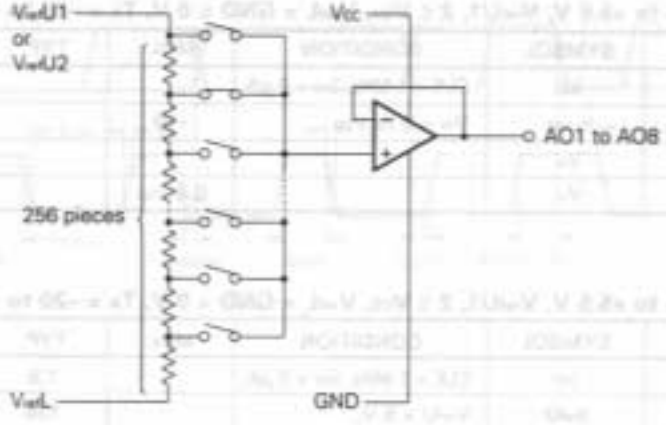
- **Equivalent Circuit of $\overline{R}$, CS0, CS1, CS2 Pins**



- **Equivalent Circuit of SCL, SDA Pins**

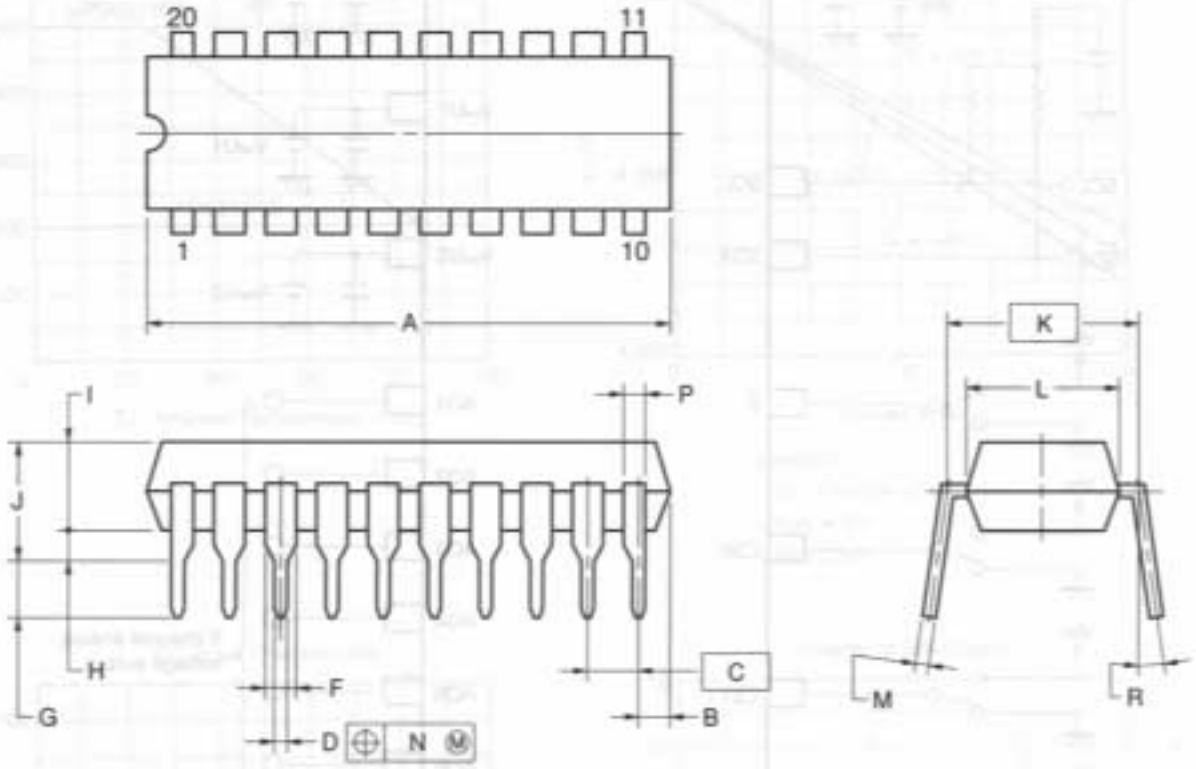


- **Equivalent Circuit of $V_{ref}U1$, $V_{ref}U2$, $V_{ref}L$ and AO1 to 8 Pins**



PACKAGE DIMENSIONS

20PIN PLASTIC DIP (300 mil)



NOTES

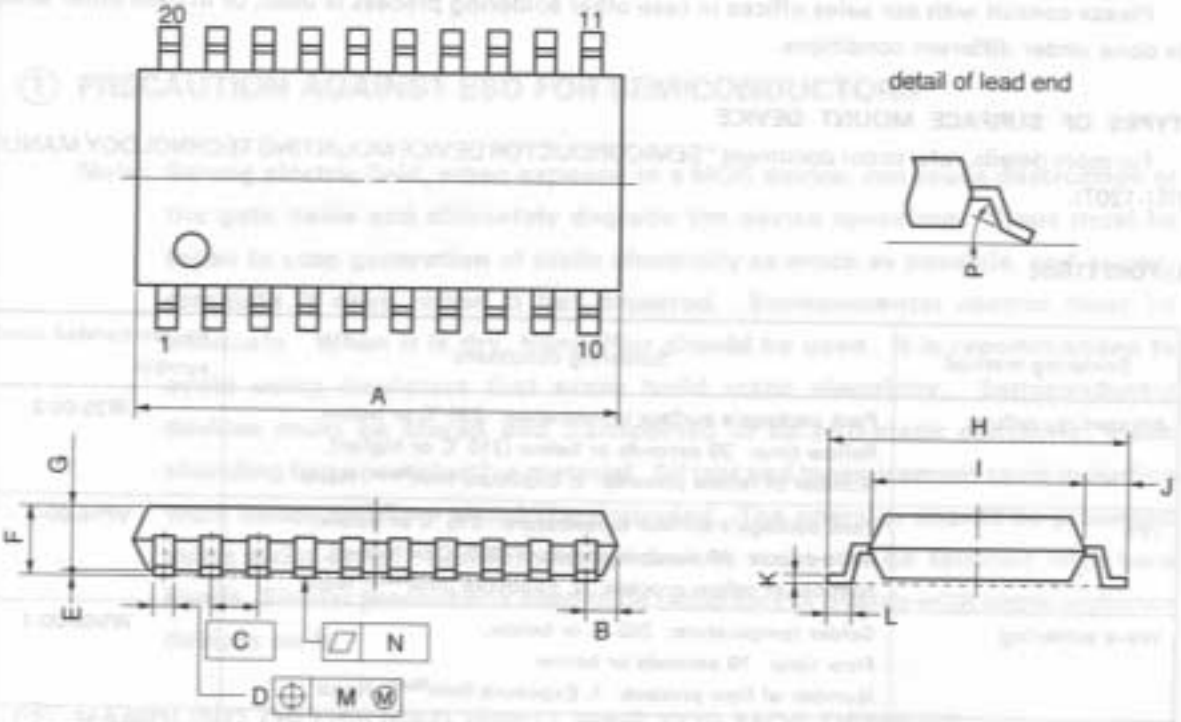
1) Each lead centerline is located within 0.25 mm (0.01 inch) of its true position (T.P.) at maximum material condition.

2) Item "K" to center of leads when formed parallel.

ITEM	MILLIMETERS	INCHES
A	25.40 MAX.	1.000 MAX.
B	1.27 MAX.	0.050 MAX.
C	2.54 (T.P.)	0.100 (T.P.)
D	0.50 ± 0.10	$0.020^{+0.004}_{-0.005}$
F	1.1 MIN.	0.043 MIN.
G	3.5 ± 0.3	0.138 ± 0.012
H	0.51 MIN.	0.020 MIN.
I	4.31 MAX.	0.170 MAX.
J	5.08 MAX.	0.200 MAX.
K	7.62 (T.P.)	0.300 (T.P.)
L	6.4	0.252
M	$0.25^{+0.10}_{-0.05}$	$0.010^{+0.004}_{-0.003}$
N	0.25	0.01
P	0.9 MIN.	0.035 MIN.
R	0~15°	0~15°

P20C-100-300A,C-1

20 PIN PLASTIC SOP (300 mil)



NOTE

Each lead centerline is located within 0.12 mm (0.005 inch) of its true position (T.P.) at maximum material condition.

ITEM	MILLIMETERS	INCHES
A	13.00 MAX.	0.512 MAX.
B	0.78 MAX.	0.031 MAX.
C	1.27 (T.P.)	0.050 (T.P.)
D	$0.40^{+0.10}_{-0.05}$	$0.016^{+0.004}_{-0.003}$
E	0.1±0.1	0.004±0.004
F	1.8 MAX.	0.071 MAX.
G	1.55	0.061
H	7.7±0.3	0.303±0.012
I	5.6	0.220
J	1.1	0.043
K	$0.20^{+0.10}_{-0.05}$	$0.008^{+0.004}_{-0.002}$
L	0.6±0.2	$0.024^{+0.008}_{-0.009}$
M	0.12	0.005
N	0.10	0.004
P	$3°^{+7°}_{-3°}$	$3°^{+7°}_{-3°}$

P20GM-50-300B, C-4