NEC

BIPOLAR ANALOG INTEGRATED CIRCUIT

μPC1883

HORIZONTAL AND VERTICAL SYNC. SIGNAL PROCESSOR WITH GEOMETRY COMPENSATION CIRCUIT FOR MultiSync™ DISPLAY

The μPC1883 is a horizontal and vertical sync. signal processor with geometry compensation circuit for MultiSync display.

Horizontal and vertical sync. signal processing and geometry compensation for MultiSync Display are incorporated on one chip. These functions are controlled by DC voltage, so it's very easy to interface with microprocessor and D/A converter.

And components and peripheral circuits required for horizontal oscillator, horizontal delay circuit, vertical blanking and horizontal clamping circuits are incorporated. Therefore, application design is easy.

FEATURES

- Geometry compensation:
  Geometry compensation circuit is incorporated on one chip (trapezoid, side pin, side pin corner, parallelogram and side pin balance correction). All functions are controlled by DC voltage.
- Horizontal and vertical input signal polarity normalization:
  Both positive and negative polarity are acceptable.
- Horizontal position:
  Built-in picture position control circuit is independent of horizontal frequency. Capacitor for position control circuit is incorporated.
- Horizontal oscillator:
  Low jitter and low temperature coefficient realized. Capacitor for horizontal oscillator is incorporated.
  f_{HOSC} = 22.5 to 100 kHz.
- Horizontal output duty control: Duty is 33 to 55 % with DC voltage control.
- Clamp pulse output:
  Clamp pulse width is approx. 0.8 μs. This clamp pulse is mixed with vertical blanking pulse.
- Vertical oscillator: f_V = 45 to 160 Hz
- Vertical AGC:
  The output voltage of vertical saw wave is controlled by DC voltage.
- Vertical linearity correction:
  "S" and "C" curve linearity correction on vertical saw wave (DC voltage control).
- Vertical blanking pulse output: Capacitor for pulse generator is incorporated.
- Supply voltage: 9.0 V

ORDERING INFORMAITON

Part Number	Package
μPC1883CT	30-pin plastic shrink DIP (400 mil)

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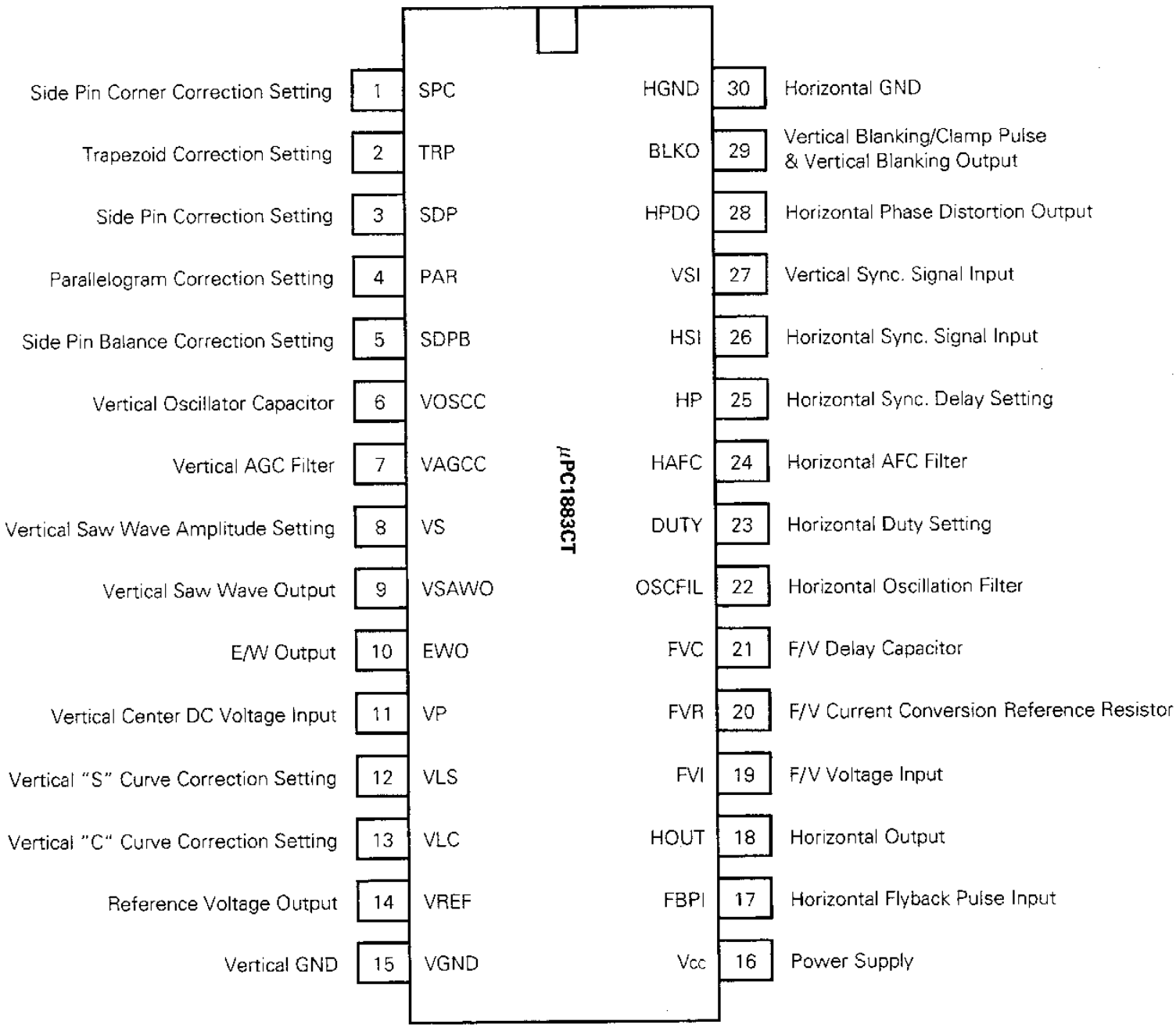
PIN CONFIGURATION (Top View)

- **30-pin plastic shrink DIP (400 mil)**



ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings (Unless otherwise specified, T_A = +25 °C, V_{CC} = 9.0 V)

Parameter	Symbol	Condition	Ratings	Unit
Power supply	V_{CC}		11	V
Horizontal sync. input signal voltage	V_{HIN}		0 to V_{CC}	V
Vertical sync. input signal voltage	V_{VIN}		0 to V_{CC}	V
Flyback pulse input voltage	V_{FBP}		0 to V_{CC}	V
Clamp pulse + vertical blanking pull-up voltage	V_{VCLP}	Pin 28	V_{CC}	V
Control pin input voltage	V_{CONT}	Pins 1, 2, 3, 4, 5, 8, 11, 12, 13, 19, 23 and 25	0 to V_{CC}	V
Horizontal output driving current	I_H	Pin 18	10	mA
Vertical, E/W and phase output source current	I_{SOMAX}	Pins 9, 10 and 28	10	mA
Vertical, E/W and phase output sink current	I_{SIMAX}		2	mA
Power dissipation	P_D	T_A = +75 °C	0.7	W
Operating ambient temperature	T_A		−10 to +75	°C
Storage temperature	T_{stg}		−40 to +125	°C

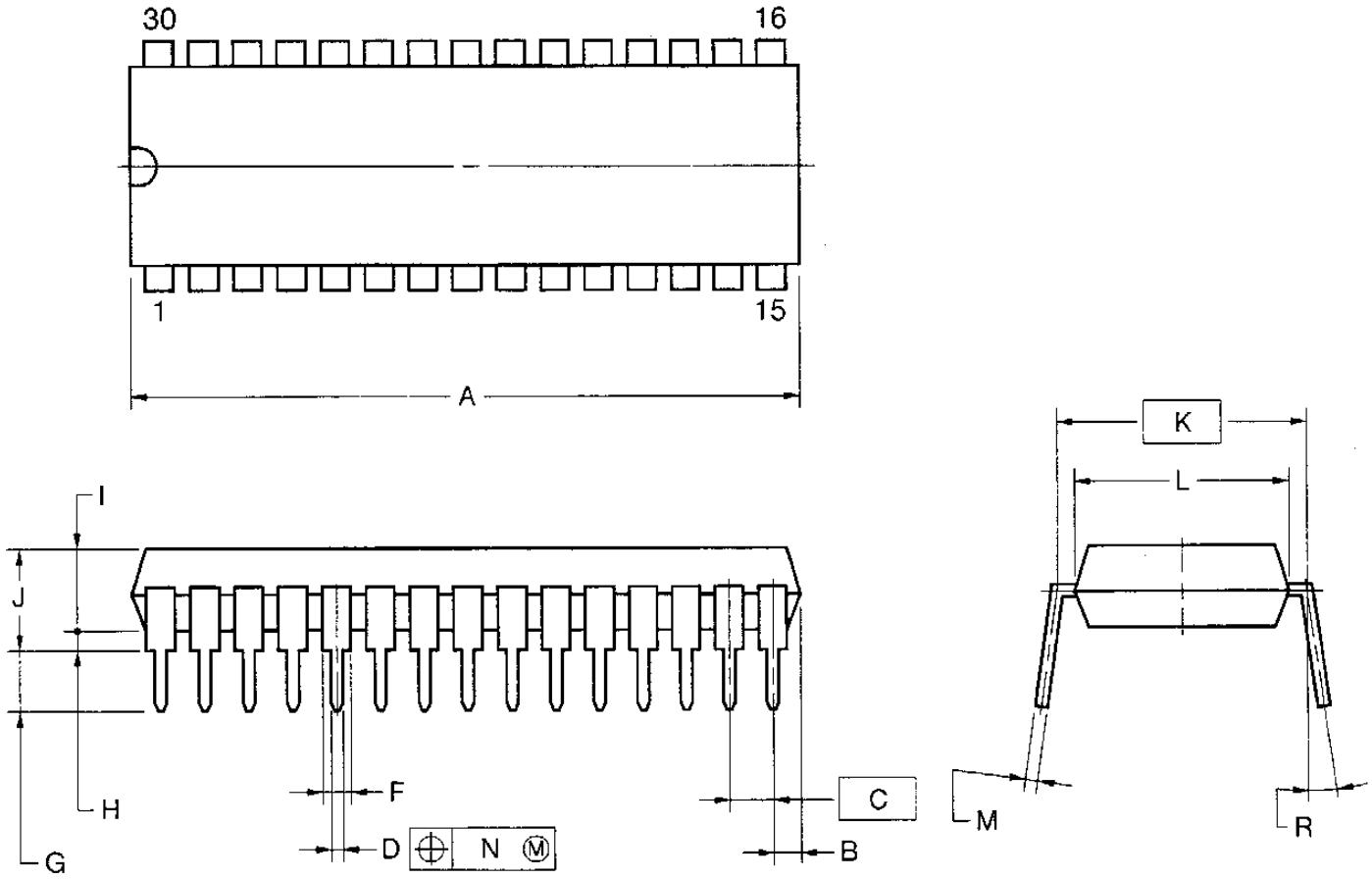
Recommended Operating Conditions (Unless otherwise specified, T_A = +25 °C, V_{CC} = 9.0 V)

Parameter	Symbol	Test Condition	MIN.	TYP.	MAX.	Unit
Power supply	V_{CC}		8.5	9.0	9.5	V
Horizontal operating frequency	f_{HO}		22.5	–	100.0	kHz
Horizontal sync. input signal voltage (Low level)	V_{HINL}		0.0	–	1.0	V
Horizontal sync. input signal voltage (High level)	V_{HINH}		3.5	–	6.0	V
Horizontal sync. input signal duty ratio 1	R_{HDIN1}			–	30	%
Horizontal sync. input signal duty ratio 2	R_{HDIN2}		70	–		%
Vertical operating frequency	f_{VO}		45	–	160	Hz
Vertical sync. input signal	V_{VIN}		1.0	2.0	3.0	V_{p-p}
Vertical sync. input signal duty ratio 1	R_{VDIN1}	V_{VIN} = 2 V_{p-p}, input capacitor = 0.1 μF		–	5	%
Vertical sync. input signal duty ratio 2	R_{VDIN2}		95	–		%
Vertical sync. input signal duty ratio 3	R_{VDIN3}	V_{VIN} = 2 V_{p-p}, input capacitor = 10 μF		–	15	%
Vertical sync. input signal duty ratio 4	R_{VDIN4}		85	–		%
Vertical blanking, and clamp pulse minimum output voltage	V_{29L}	Minimum output voltage of pin 29			1.5	V
Flyback pulse input voltage (Low level)	V_{FBPL}		0.0	–	2.0	V
Flyback pulse input voltage (High level)	V_{FBPH}		5.5	–	7.5	V
Control pin input voltage 1	V_{CONT1}	Input voltage of pins 1, 2, 3, 4, 5, 12, and 13	0.2 × V_{14}	–	0.8 × V_{14}	V
Control pin input voltage 2	V_{CONT2}	Input voltage of pin 8	0.4 × V_{14}	–	0.5 × V_{14}	V
Control pin input voltage 3	V_{CONT3}	Input voltage of pin 11	0.66 × V_{14}	–	0.74 × V_{14}	V
Control pin input voltage 4	V_{CONT4}	Input voltage of pin 23	7.5	–	8.5	V
Control pin input voltage 5	V_{CONT5}	Input voltage of pins 19 and 25	1.0	–	4.0	V

Remark V_{14}: DC voltage of pin 14

PACKAGE DRAWING

30PIN PLASTIC SHRINK DIP (400 mil)



NOTES

1) Each lead centerline is located within 0.17 mm (0.007 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	28.46 MAX.	1.121 MAX.
B	1.78 MAX.	0.070 MAX.
C	1.778 (T.P.)	0.070 (T.P.)
D	0.50 ± 0.10	$0.020^{+0.004}_{-0.005}$
F	0.85 MIN.	0.033 MIN.
G	3.2 ± 0.3	0.126 ± 0.012
H	0.51 MIN.	0.020 MIN.
I	4.31 MAX.	0.170 MAX.
J	5.08 MAX.	0.200 MAX.
K	10.16 (T.P.)	0.400 (T.P.)
L	8.6	0.339
M	$0.25^{+0.10}_{-0.05}$	$0.010^{+0.004}_{-0.003}$
N	0.17	0.007
R	0–15°	0–15°

S30C-70-400B-1