

HA16853MP

Optical Communication Receiver/Amplifier

The HA16853MP is a receiving amplifier-IC for digital data receiver via optical fiber. The circuit includes a pre-main Amplifier, a comparator, ATC and TTL output stage, in a mini-square package.

Features

- Single 5 V Supply
- DC to 10 Mbits/s NRZ Data rate
- TTL Compatibility
- Internal Automatic Threshold Control
- 18-pin Surface mount package

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit	Notes
Supply Voltage	Vcc	0 to 7	V	Vcc1. Vcc2. Vcc3
Input Current	Iinp	0 to 1	mA	Pin
Output Current	Ioutp	-1 to 1	mA	Pout
	ISIG	0 to 2	mA	SIG
Power Dissipation	Pd	500	mW	
Operating Temperature	Topr	-20 to +75	°C	
Storage Temperature	Tstg	-55 to +125	°C	

Electrical Characteristics

DC characteristics (Ta = 25°C, VCC = 5 V)

Item	Symbol	Test conditions	Min	Typ	Max	Unit	Notes
Supply Voltage	Vcc		4.75	5.00	5.25	V	
Supply Current	Icc	Vcc = 5 V, Iin = 0 μ A	15	19	27	mA	
Offset Voltage	Voff	Vcc = 5 V, Iin = 0 μ A (refL-Cin)	19	40	67	mV	1
Output Voltage	Vol	Iin = 0 μ A	—	—	0.4	V	
	VOH	Vcc = 4.75 V IOL = 2 mA Iin = 20 μ A IOH = -400 μ A	2.7	—	—	V	

Note: 1. Voltage difference from Cin to ref.

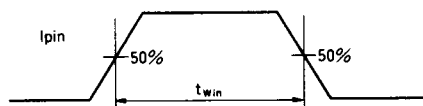
AC Characteristics (Ta = 25°C, f = 5 MHz, VCC = 5 V)

Item	Symbol	Test conditions	Min	Typ	Max	Unit	Notes
Propagation Delay-time	trLH	Vcc = 5 V, Ipin = 2 μ A	—	—	80	ns	
Delay-time	trHL		—	—	80	ns	
Output Pulse Width fluctuation	Δ tw	Vcc = 5 V, Ipin = 2 μ A	-10	—	+10	%	

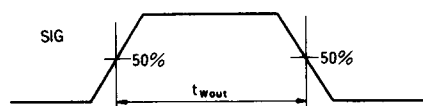
Note: Ipin is input Current of Pin terminal.

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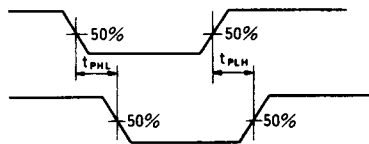
Output Pulse Width Fluctuation



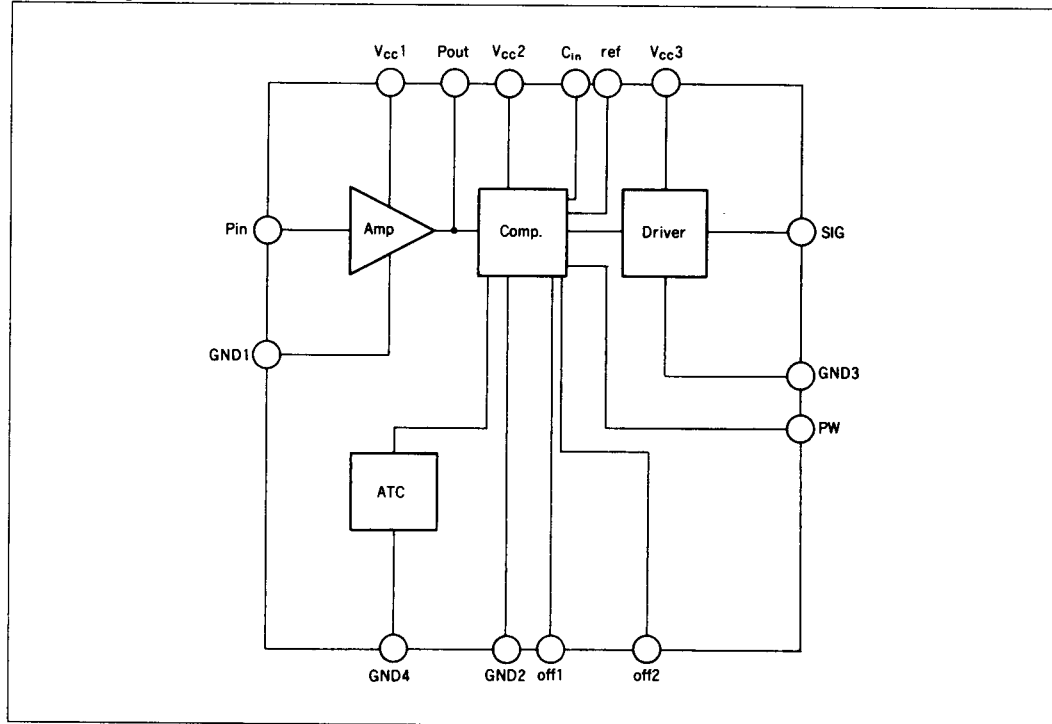
$$\Delta tw = \left(\frac{t_{wout}}{t_{win}} - 1 \right) \times 100$$



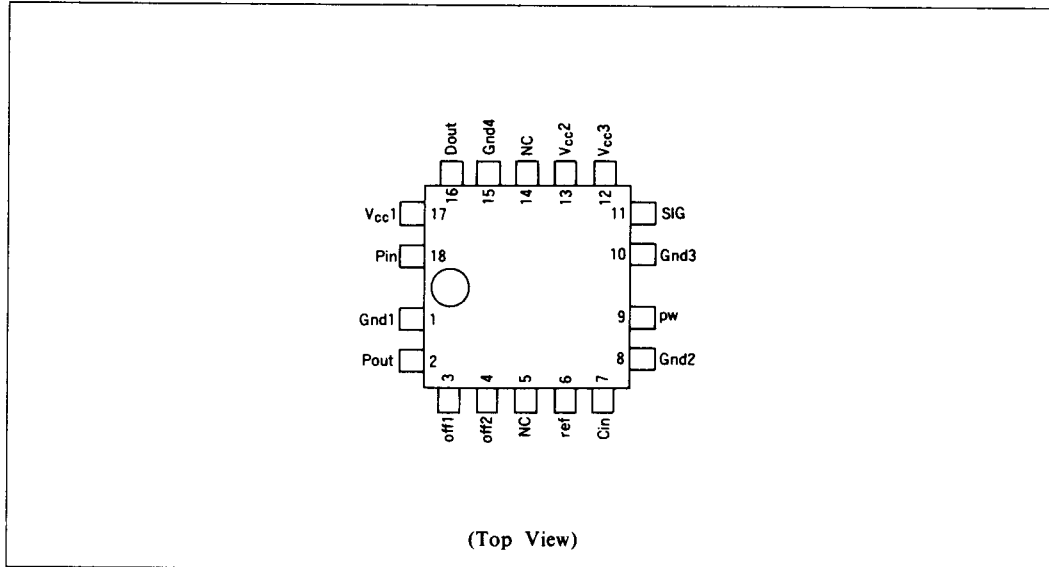
Propagation Delay Time



Block Diagram



Pin Arrangement



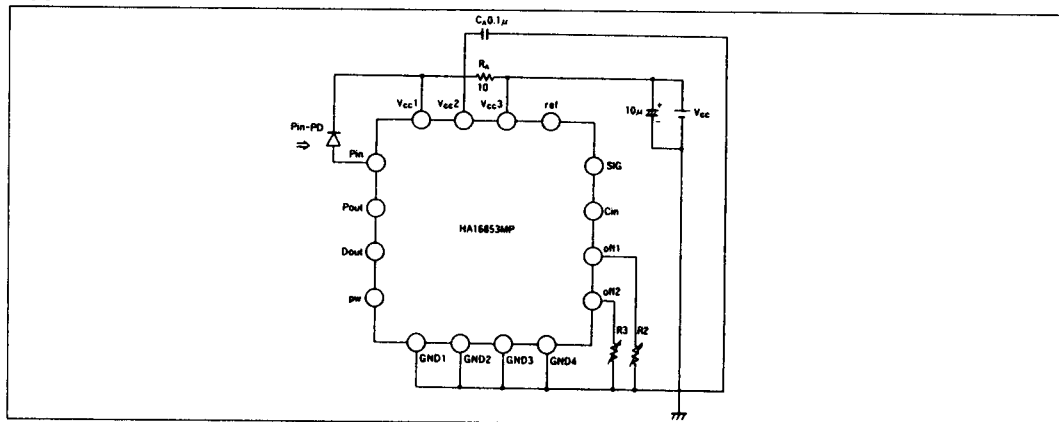
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Pin Description

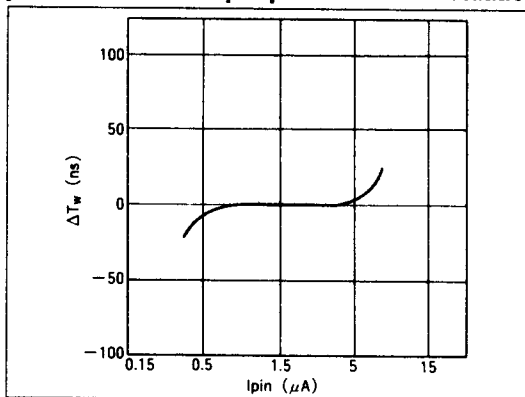
Pin No	Pin Name	Function Description
1	Gnd1	Ground pin (Internal Receiver Amp. Circuit Ground)
2	Pout	Receiver Amp. output
3	off1	Resistor run between this terminal and ground for (ref) terminal output level adjustment
4	off2	Resistor run between this terminal and ground for (Cin) comparator input level adjustment
5	N-C	No Connection pin
6	ref	Automatic Threshold Control Circuit Output
7	Cin	Comparator input
8	Gnd2	Ground pin (Internal Comparator, ATC Circuit Ground)
9	pw	Output adjustment (Connect to ground through the resistor)
10	Gnd3	Ground Pin (TTL Output Circuit Ground)
11	SIG	TTL Digital output
12	Vcc3	5 V Voltage source input for TTL output circuit
13	Vcc2	5 V Voltage source input for Comparator and ATC
14	N-C	No Connection pin
15	Gnd4	Connected to ground
16	Dout	Reference Amplifier Output
17	Vcc1	5V Voltage Source input for Receiver Amp.
18	Pin	Receiver Amp. input

Packaging Information

Part No.	Package
HA16853MP	MP-18



Input Current vs. Output pulse Width Fluctuation



Output pulse Width Fluctuation VS. Temperature

