DESCRIPTION

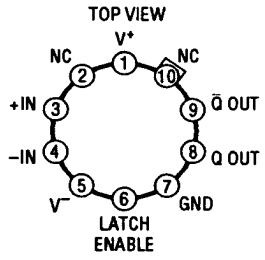
The LT1016M/883 is an ultra fast (10ns) compatator specifically designed to interface directly to TTL logic while operating off either a dual ±5V supply or a single 5V supply. Tight offset voltage specifications and high gain allow the LT1016M/883 to be used in precision applications. Matched complementary outputs further extend the versatility of this new comparator.

The device is processed to the requirements of MIL-STD-883 Class B to yield circuits usable in precision military applications.

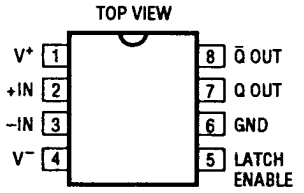
ABSOLUTE MAXIMUM RATINGS

Positive Supply Voltage (Note 4) 7V
Negative Supply Voltage ..... –7V
Differential Input Voltage ..... ±5V
Input Voltage (Either Input) ..... Equal to Supplies
Latch Pin Voltage ..... Equal to Supplies
Output Current (Continuous) ..... ±20mA
Operating Temperature Range ..... –55°C to 125°C
Storage Temperature Range ..... –65°C to 150°C
Lead Temperature (Soldering, 10 sec) ..... 300°C

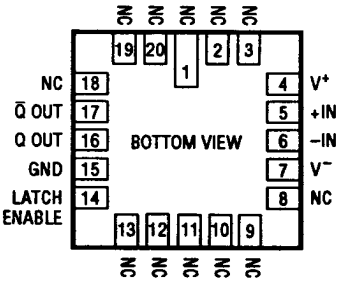
PACKAGE/ORDER INFORMATION



H PACKAGE
10-LEAD TO-5 METAL CAN



J8 PACKAGE
8-LEAD CERAMIC DIP



L PACKAGE
20-TERMINAL LCC

ORDER PART NUMBER	PART MARKINGS†	ORDER PART NUMBER	PART MARKINGS†	ORDER PART NUMBER	PART MARKINGS†
LT1016MH/833	LT1016MH/833C	LT1016MJ8/833	LT1016MJ8/833C	LT1016ML/833	LT1016ML/833C

† The suffix letter "C" of the part mark indicates compliance per MIL-STD-883, para 1.2.1.1.

BURN-IN CIRCUIT

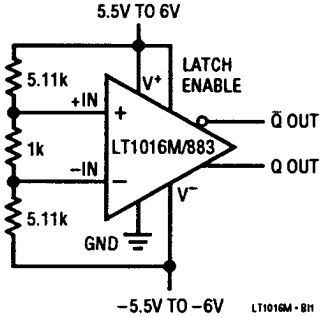


TABLE 1: ELECTRICAL CHARACTERISTICS

$V^+ = 5V$, $V^- = 5V$, $V_{OUT(Q)} = 1.4V$, $V_{LATCH} = 0V$, unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS	NOTES	$T_A = 25°C$ MIN	TYP	MAX	SUB-GROUP	$-55°C \le T_A \le 125°C$ MIN	TYP	MAX	SUB-GROUP	UNITS
V_{OS}	Input Offset Voltage	$R_S \le 100\Omega$	1			±2	1			±3	2,3	mV
I_{OS}	Input Offset Current		1			1	1			1.3	2,3	µA
I_B	Input Bias Current		2			10	1			13	2,3	µA
	Input Voltage Range		5	−3.75		3.5	1	−3.75		3.5	2,3	V
		Single 5V Supply		1.25		3.5	1	1.25		3.5	2,3	V
CMRR	Common-Mode Rejection Ratio	$-3.75 \le V_{CM} \le 3.5V$		80			1	80			2,3	dB
PSRR	Power Supply Rejection Ratio	+Supply $4.6 \le V^+ \le 5.4V$	4	54			1	54			2,3	dB
		−Supply $-7V \le V^- \le -2V$	4	80			1	80			2,3	dB
A_V	Small-Signal Voltage Gain	$1V \le V_{OUT} \le 2V$		1400			4					V/V
V_{OH}	Output High Voltage	$V^+ \le 4.6V$ $I_{OUT} = 1mA$		2.7			1	2.7			2,3	V
		$I_{OUT} = 10mA$		2.4			1	2.4			2,3	V
V_{OL}	Output Low Voltage	$I_{SINK} = 4mA$				0.5	1			0.5	2,3	V
I^+	Positive Supply Current					35	1			35	2,3	mA
I^-	Negative Supply Current					5	1			5	2,3	mA
V_{IH}	Latch Pin High Input Voltage			2			1	2			2,3	V
V_{IL}	Latch Pin Low Input Voltage					0.8	1			0.8	2,3	V
I_{IL}	Latch Pin Current	$V_{LATCH} = 0V$				500	1			500	2,3	µA
t_{PD}	Propagation Delay	$\Delta V_{IN} = 100mV$, OD = 5mV	3,6			14				16		ns
		$\Delta V_{IN} = 100mV$, OD = 20mV	6			12				15		ns
Δt_{PD}	Differential Propagation Delay	$\Delta V_{IN} = 100mV$, OD = 5mV	6			3				3		ns

Note 1: Input offset voltage is defined as the average of the two voltages measured by forcing first one output, then the other to 1.4V. Input offset current is defined in the same way.

Note 2: Input bias current (I_B) is defined as the average of the two input currents.

Note 3: Propagation delay is measured with the overdrive added to actual V_{OS}. Units are sample tested only.

Note 4: Electrical specifications apply only up to 5.4V.

Note 5: See the LT1016 data sheet for a discussion of input voltage range for supplies other than ±5V or 5V.

Note 6: Guaranteed by design, characterization, or correlation to other tested parameters.

TABLE 2: ELECTRICAL TEST REQUIREMENTS

MIL-STD-883 TEST REQUIREMENTS	SUBGROUP
Final Electrical Test Requirements (Method 5004)	1*,2,3,4
Group A Test Requirements (Method 5005)	1,2,3,4
Group C and D End Point Electrical Parameters (Method 5005)	1

* PDA Applies to subgroup 1. See PDA Test Notes.

PDA Test Notes

The PDA is specified as 5% based on failures from group A, subgroup 1, tests after cooldown as the final electrical test in accordance with method 5004 of MIL-STD-883 Class B. The verified failures of group A, subgroup 1, after burn-in divided by the total number of devices submitted for burn-in in that lot shall be used to determine the percent for the lot.

Linear Technology Corporation reserves the right to test to tighter limits than those given.

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