CHERRY SEMICONDUCTOR

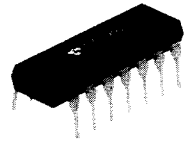
CS-188

PULSE-LOAD BATTERY MONITOR

DESCRIPTION

The CS-188 Pulse-Load Battery Monitor is designed for use in critical battery powered medical, security or environmental systems where prior notification of an impending battery failure is important. The low standby power of the CS-188 permits continuous connection to the system, eliminating any required external monitor switches or enabling control functions.

The CS-188 contains an internal timer which can be set to test load a battery from as often as 5 times per minute to as seldom as once every 5 minutes. During test the battery is loaded with up to 200mA for an adjustable time period of 0.1 to 4 milliseconds. This checks for an increase in battery impedance indicating reduced capacity prior to failure. The loaded battery is compared to a compensated internal reference and if out of preset limits will trigger alarm logic. The alarm output is pulsed at the same rate as the battery test and, in addition to being compatible to both MOS and bipolar logic, is also capable of sinking over 0.3 Amps for horns or lights.



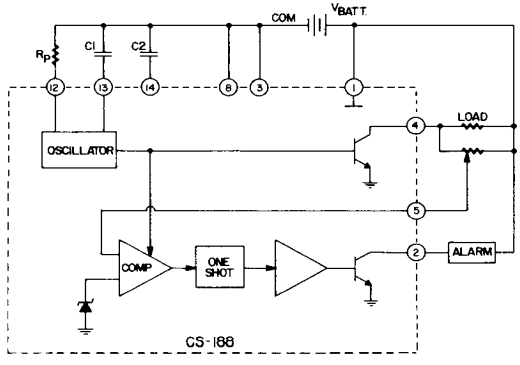
FEATURES

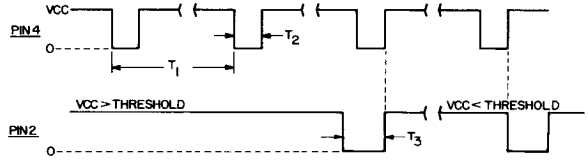
- Adjustable battery sense from 6.2 to 12 volts
- Pulse-loads battery at up to 1/4 amp
- Standby current under 10μA
- Test period, rate and load adjustable
- On chip 0.3 amp output driver

APPLICATIONS:

- Standby power battery monitor
- Emergency light battery monitor
- Rechargeable battery protection
- Medical and security systems

BLOCK DIAGRAM





Cherry Semiconductor Corporation, 2000 South County Trail, East Greenwich, Rhode Island 02818
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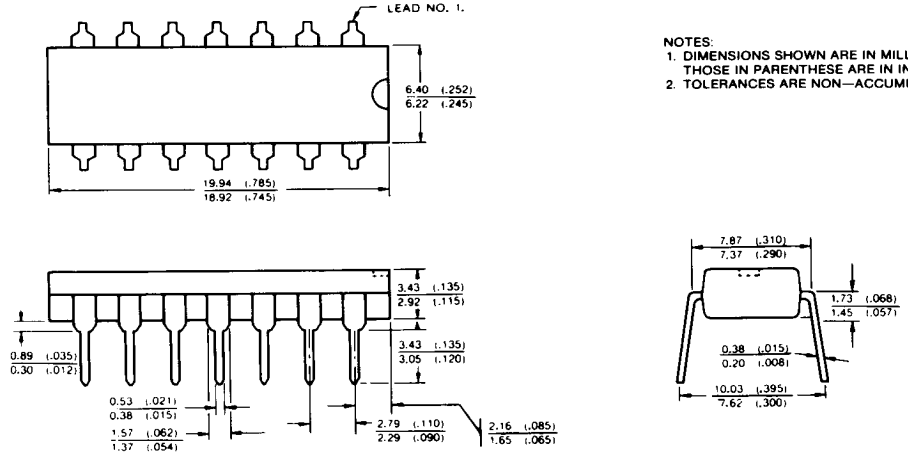
ELECTRICAL CHARACTERISTICS (T_A=25°C): V_{BAT}=9V, C_1=4.7μF±1%, C_2=.005μF±1%, R_P=9.1 MEG ±1%, except where noted.

PARAMETER	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
V_{OUT} Output Driver ON Voltage	I_{OUT}=300mA, V_{BAT}=5.5V		0.20	0.50	V
I_{OUT} Output Driver Leakage	V_{BAT}=V_{OUT}=10.0V, Output Driver OFF		0.10	1.0	μA
V_{LOAD}1 Battery Load Driver ON Voltage	I_{LOAD}=250mA, V_{BAT}=9.0V	0.25	0.50	0.75	V
V_{LOAD}2 Battery Load Driver ON Voltage	I_{LOAD}=190mA, V_{BAT}=6.5V	0.20	0.40	0.60	V
V_{BAT}1 Standby Operating Current (Note 1)	Output and Load Drivers OFF and tied to V_{BAT}	3.0	7	10	μA
V_{BAT}2 Output Driver ON	Output and Load Drivers Disconnected, Pin 5=Low	23	33	45	mA
V_{BAT}3 Load Driver ON	Output and Load Drivers Disconnected, Pin 15=Low	25	34	45	mA
V_Z Trip Point Voltage	I_{LOAD}=250mA	5.0	5.8	6.5	V
V_{TTC} Trip Point Temp. Coefficient	Battery Pulser Load=33 Ohms		+1.7	+4	mV/°C
T_P Battery Loading Period (Note 2)	V_{CC}=6.5-9.0V	30	40	50	Sec
T_W Battery Loading Pulse (Note 3)	V_{CC}=6.5-9.0V	0.50	0.75	1.0	mSec
T_{BP} Low Battery Alarm Beep Pulse (Note 4)	V_{CC}=6.5-8.0V	25	42	60	mSec

PROGRAMMING NOTES:
1. Typical Standby Current≈2μA+6 (V_{CC}/R_P)
2. Loading Period (Sec)≈C_1R_P(C in μF, R in Megohms)
3. Loading Pulse Width (mSec)≈C_1 in μF/6.2
4. Alarm Pulse Width (Sec)≈.9R_PC_2 (C in μF, R in Megohms)

PERMISSIBLE VALUES:
R_P 910K to 15M
C_1 .22μF to 20μF
C_2 .001μF to .01μF

MECHANICAL SPECIFICATIONS: 14 PIN PLASTIC



NOTES:
1. DIMENSIONS SHOWN ARE IN MILLIMETERS, THOSE IN PARENTHESE ARE IN INCHES.
2. TOLERANCES ARE NON—ACCUMULATIVE.

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Our Sales Representative in Your Area is: