

## DESCRIPTION

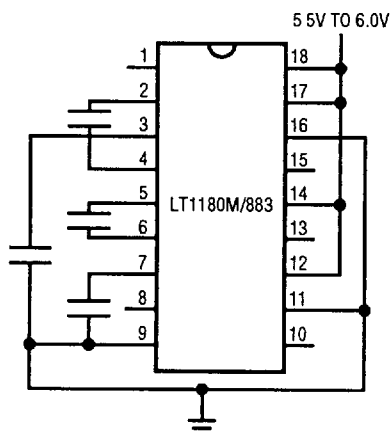
The LT1180M/883 is a dual RS232 driver/receiver which includes a capacitive voltage generator to supply RS232 voltage levels from a single 5V power supply. Each receiver will accept up to  $\pm 30\text{V}$  input and can drive either TTL or CMOS logic. The RS232 drivers accept logic inputs and output RS232 voltage levels. The driver outputs are fully protected against overload and can be shorted to ground or up to  $\pm 30\text{V}$  without damage. Additionally, when the system is in the SHUTDOWN mode, the driver and receiver outputs are at a high impedance allowing data line sharing. Bipolar circuitry makes this driver/receiver exceptionally rugged against overloads or ESD damage.

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

## ABSOLUTE MAXIMUM RATINGS

Supply Voltage ( $V_{CC}$ )	6V
$V^+$	13.2V
$V^-$	-13.2V
Input Voltage	
Driver	$V^-$ to $V^+$
Receiver	-30V to 30V
On-Off Pin	GND TO 12V
Output Voltage	
Driver	$V^- + 30\text{V}$ to $V^+ - 30\text{V}$
Receiver	-0.3V to $V_{CC} + 0.3\text{V}$
Short Circuit Duration	
$V^+$	30 sec
$V^-$	30 sec
Driver Output	Indefinite
Receiver Output	Indefinite
Operating Temperature Range	-55°C to 125°C
Storage Temperature Range	-65°C to 150°C
Lead Temperature (Soldering, 10 sec.)	300°C

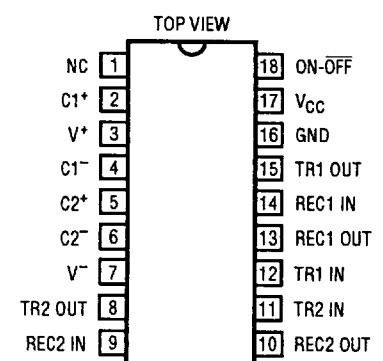
## BURN-IN CIRCUIT



1180M BI

## PACKAGE/ORDER INFORMATION

ORDER PART NUMBER	
LT1180MJ/883	
PART MARKINGS†	
LT1180MJ/883C	



TOP VIEW

J PACKAGE  
18-LEAD CERAMIC DIP

1180M PO

† The suffix letter "C" of the part mark indicates compliance per MIL-STD 883, para 1.2.1.

**TABLE 1: ELECTRICAL CHARACTERISTICS** (Note 1)

PARAMETER	CONDITIONS	NOTES	T <sub>A</sub> = 25°C		SUB- GROUP	-55°C ≤ T <sub>A</sub> ≤ 125°C		SUB- GROUP	UNITS
			MIN	MAX		MIN	MAX		
Driver									
Output Voltage Swing	Load = 3k to GND Both Outputs Positive Negative		5.0 -5.0		1 1	5.0 -5.0		2,3 2,3	V V
Logic Input Voltage Level	Input Low Level (V <sub>OUT</sub> = High) Input High Level (V <sub>OUT</sub> = Low)			0.8 2.0	1 1		0.8 2.0	2,3 2,3	V V
Logic Input Current	V <sub>IN</sub> ≥ 2.0V V <sub>IN</sub> ≤ 0.8V			20 20	1 1		20 20	2,3 2,3	μA μA
Output Short-Circuit Current	Sourcing Current, V <sub>OUT</sub> = 0V Sinking Current, V <sub>OUT</sub> = 0V		7 -7		1 1				mA mA
Output Leakage Current	SHUTDOWN, V <sub>OUT</sub> = ±30V	2		100	1		100	2,3	μA
Slew Rate	R <sub>L</sub> = 3kΩ, CL = 51pF		4	30	4				V/μs
Receiver									
Input Voltage Thresholds	Input Low Threshold (V <sub>OUT</sub> = High) Input High Threshold (V <sub>OUT</sub> = Low)		0.2 30		1 1	0.2 3.0		2,3 2,3	V V
Hysteresis			0.1	1.0	1	0.1	1.0	2,3	V
Input Resistance			3	7	1				kΩ
Output Voltage	Output Low, I <sub>OUT</sub> = -1.6mA Output High, I <sub>OUT</sub> = 160μA (V <sub>CC</sub> = 5V)			0.4 3.5	1 1		0.4 3.5	2,3 2,3	V
Output Short-Circuit Current	Sinking Current, V <sub>OUT</sub> = V <sub>CC</sub> Sourcing Current, V <sub>OUT</sub> = 0V		-10.0 0.6		1 1				mA mA
Output Leakage Current	SHUTDOWN, 0V ≤ V <sub>OUT</sub> ≤ V <sub>CC</sub>	2		10	1		10	2,3	μA
Power Supply Generator (Note 3)									
Supply Current				22	1		22 30	3 2	mA mA
Supply Leakage Current	SHUTDOWN	2		100	1		100	2,3	μA
ON-OFF Pin Current	0 ≤ V <sub>ON-OFF</sub> ≤ 5V		-15	80	1	-15	80	2,3	μA

**Note 1:** These parameters apply for  $V_{CC} = 5\text{V}$  and  $V_{ON-OFF} = 3\text{V}$ , and  $C = 0.1\mu\text{F}$  unless otherwise specified.

**Note 2:**  $V_{ON-OFF} = 0.4\text{V}$  for  $-55^\circ\text{C} \leq T_A \leq 50^\circ\text{C}$ , and  $V_{ON-OFF} = 0.2\text{V}$  for  $50^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$ .

**Note 3:** Unless otherwise specified,  $V_{CC} = 5\text{V}$ , external loading of  $V^+$  and  $V^-$  equal zero and the driver outputs are low (inputs high).

**TABLE 2: ELECTRICAL TEST REQUIREMENTS**

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

\* 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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