DESCRIPTION

The LT1170M/883 Series are monolithic high power switching regulators. They can be operated in all standard switching configurations including buck, boost, flyback, forward, inverting and Cuk. A high current, high efficiency switch is included on the die along with all oscillator, control, and protection circuitry.

These devices are processed to the requirements of MIL-STD-883 Class B to yield circuits usable in precision military applications. Please refer to standard datasheets, and design manual AN-19 for further information.

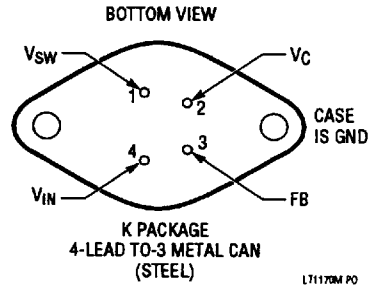
ABSOLUTE MAXIMUM RATINGS

Supply Voltage
- LT117XHVM/883 ..... 60V
- LT117XM/883 ..... 40V

Switch Output Voltage
- LT117XHVM/883 ..... 75V
- LT117XM/883 ..... 65V

Feedback Pin Voltage (Transient, 1ms) ..... ±15V
Operating Junction Temperature ..... –55°C to 150°C
Storage Temperature Range ..... –65°C to 150°C
Lead Temperature (Soldering, 10 sec.) ..... 300°C

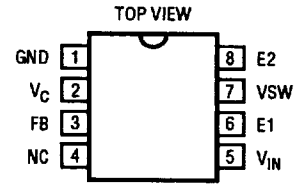
PACKAGE/ORDER INFORMATION



K PACKAGE
4-LEAD TO-3 METAL CAN
(STEEL)

LT1170M PO

ORDER PART NUMBER
LT1170MK/883 LT1170HVMK/883 LT1171MK/883 LT1171HVMK/883 LT1172MK/883 LT1172HVMK/883
PART MARKINGS†
LT1170MK/883C LT1170HVMK/883C LT1171MK/883C LT1171HVMK/883C LT1172MK/883C LT1172HVMK/883C



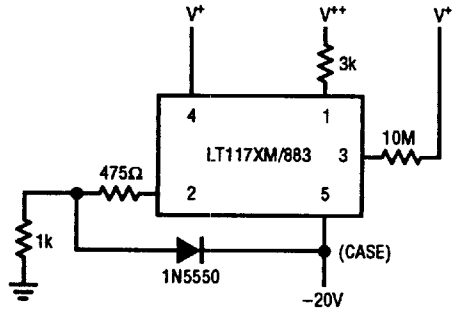
J PACKAGE
8-LEAD HERMETIC DIP

LT1170M PO

ORDER PART NUMBER
LT1172MJ8/883
PART MARKINGS†
LT1172MJ8/883C

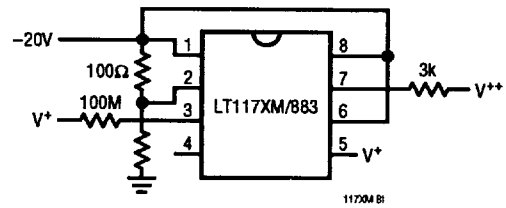
† The suffix letter "C" of the part mark indicates compliance per MIL-STD-883, para 1.2.1.1.

BURN-IN CIRCUIT



V+ = +20V FOR LT107XM, +40V FOR LT107XHVM
V++ = +45V FOR LT107XM, +55V FOR LT107XHVM
X = 0, 1, OR 2

11700M BI



11700M BI

TABLE 1: ELECTRICAL CHARACTERISTICS (Note 1)

PARAMETER	CONDITIONS		NOTES	$T_A = 25°C$ MIN	$T_A = 25°C$ MAX	SUB GROUP	$-55°C \le T_J \le 150°C$ MIN	$-55°C \le T_J \le 150°C$ MAX	SUB-GROUP	UNITS
Reference Voltage	Measured at FB Pin, $V_C = 0.8V$			1.224	1.264	1	1.214	1.274	2,3	V
Feedback Input Current	$V_{FB} = V_{REF}$				750	1		1100	2,3	nA
Error Amplifier Transconductance	$\Delta Ic = \pm 25\mu A$			3000	6000	4	2400	7000	5,6	µmho
Error Amplifier Source or Sink Current	$V_C = 1.5V$			150	350	4	120	400	5,6	µA
Error Amplifier Clamp Voltage	Hi Clamp, $V_{FB} = 1V$ Lo Clamp, $V_{FB} = 1.5V$			1.8 0.25	2.3 0.52	4 4				V V
Reference Voltage Line Regulation	$3V \le V_{IN} \le V_{MAX}$, $V_C = 0.8$				0.03	1		0.03	2,3	%/V
Error Amplifier Voltage Gain	$0.9 \le V_C \le 1.4V$			500		4				V/V
Minimum Input Voltage					3.0	1		3.0	2,3	V
Supply Current	$3V \le V_{IN} \le V_{MAX}$, $V_C = 0.6V$				9	1				mA
Control Pin Threshold	Duty Cycle = 0			0.8	1.08	1	0.6	1.25	2,3	V
Normal/Flyback Threshold on FB Pin				0.4	0.54	1				V
Flyback Reference Voltage	$I_{FB} = 50\mu A$			15.0	17.6	1	14	18	2,3	V
Change in Flyback Reference Voltage	$50\mu A \le I_{FB} \le 1mA$			4.5	8.5	1				V
Flyback Reference Voltage Line Regulation	$I_{FB} = 50\mu A$, $3V \le V_{IN} \le V_{MAX}$		2		0.03	1				%/V
Flyback Amplifier Source and Sink Current	$V_C = 0.6V$ $I_{FB} = 50\mu A$	Source Sink		15 25	70 70	4 4	15 25	70 70	5,6 5,6	µA µA
Output Switch Breakdown Voltage	$3V \le V_{IN} \le V_{MAX}$ $I_{SW} = 1.5mA$	LT107X LT107XHV		65 75		1 1	65 75		2,3 2,3	V V
Output Switch "On" Resistance	LT1070 LT1071 LT1072	$I_{SW} = 5A$ $I_{SW} = 2.5A$ $I_{SW} = 1.25A$	3 3 3		0.24 0.5 1.0	1 1 1		0.24 0.5 1.0	2,3 2,3 2,3	Ω Ω Ω
Switch Current Limit	LT1070, Duty Cycle = 50% LT1070, Duty Cycle = 80% LT1071, Duty Cycle = 50% LT1071, Duty Cycle = 80% LT1072, Duty Cycle = 50% LT1072, Duty Cycle = 80%			5 4 2.5 2 1.25 1	10 10 5 5 3 2.5	4 4 4 4 4 4	5 4 2.5 2 1.25 1	11 10 5.5 5 3.5 2.5	5,6 5,6 5,6 5,6 5,6 5,6	A A A A A A
Supply Current Increase During Switch On-Time					35	1				mA/A
Switching Frequency				88	112	4	85	115	5,6	kHz
Maximum Switch Duty Cycle				90	97	1				%
Shutdown Mode Supply Current	$3V \le V_{IN} \le V_{MAX}$, $V_C = 0.05V$				250	1				µA
Shutdown Mode Threshold Voltage	$3V \le V_{IN} \le V_{MAX}$			100	250	1	50	300	2,3	mV

Note 1: Unless otherwise specified, $V_{IN} = 15V$, and $V_C = 0.5V$, output pin open.

Note 2: $V_{MAX} = 55V$ to comply with output switch breakdown voltage

Note 3: Measured with V_C in hi clamp, $V_{FB} = 0.8V$.

TABLE 2: ELECTRICAL TEST REQUIREMENTS

MIL-STD-883 TEST REQUIREMENTS	SUBGROUP
Final Electrical Test Requirements (Method 5004)	1*,2,3,4,5,6
Group A Test Requirements (Method 5005)	1,2,3,4,5,6
Group C and D End Point Electrical Parameters	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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