SCOPE: +5V, +12V, +15V STEP-UP, CURRENT-MODE PWM DC-DC CONVERTER

Device Type	Generic Number	Circuit Function
01	MAX731(x)/883B	+5V
02	MAX732(x)/883B	+12V
03	MAX733(x)/883B	+15V

Case Outline(s). The case outlines shall be designated in Mil-Std-1835 and as follows:

Outline Letter		Mil-Std-1835	Case Outline	Package Code
Maxim	SMD			
JA	P	GDIP1-T8 or CDIP2-T8	8 LEAD CERDIP	J8
LP	2	CQCC1-N20	20 LEADLESS CHIP	L20

Absolute Maximum Ratings

V+, LX to GND ..... +17V, -0.3V
V_{OUT} ..... ±25V

Input Voltage, SS, CC, $\overline{SHDN}$ ..... -0.3V to (V+ +0.3V)
Peak Switch Current (I_{LX}) 1.5A
Reference Current (I_{VREF}) 2.5mA
Lead Temperature (soldering, 10 seconds) ..... +300°C
Storage Temperature ..... -65°C to +150°C

Continuous Power Dissipation ..... T_A=+70°C
8 pin CERDIP(derate 8.0mW/°C above +70°C) 640mW
20 pin LCC(derate 9.1mW/°C above +70°C) 727mW
Junction Temperature T_J ..... +150°C
Thermal Resistance, Junction to Case, ΘJC
8 pin CERDIP..... 55°C/W
20 pin LCC ..... 20°C/W
Thermal Resistance, Junction to Ambient, ΘJA:
8 pin CERDIP..... 125°C/W
20 pin LCC ..... 110°C/W

Recommended Operating Conditions

Ambient Operating Range (T_A) ..... -55°C to +125°C

PART	INPUT SUPPY RANGE	OUTPUT VOLTAGE	GUARANTEED OUTPUT CURRENT (mA)
MAX731	2.7V to 4.65V	+5V	200
MAX732	4.5V to 9.3V	+12V	150
MAX732	6.0V to 9.3V	+12V	200
MAX733	4.5V to 11.0V	+15V	100
MAX733	6.0V to 11.0V	+15V	200

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TABLE 1. ELECTRICAL TESTS:

TEST	Symbol	CONDITIONS -55 °C ≤T_A≤+125°C 1/ V_{IN}=+3V for 01, V+=5V for 02, 03, GND=0V, I_{LOAD}=0mA Unless otherwise specified	Group A Subgroup	Device type	Limits Min	Limits Max	Units
Output Voltage NOTE 1	V_{OUT}	V_{IN}=2.7V to 4.65V, 2/ 0mA<I_{LOAD}<200mA	1,2,3	01	4.75	5.25	V
		V+=4.5V to 9.3V, 0mA<I_{LOAD}<150mA	1,2,3	02	11.40	12.60	
		V+=6.0V to 9.3V, 0mA<I_{LOAD}<200mA			11.40	12.60	
		V+=4.5V to 11V, 0mA<I_{LOAD}<100mA	1,2,3	03	14.25	15.75	
		V+=6.0V to 11V, 0mA<I_{LOAD}<125mA			14.25	15.75	
Input Voltage Range	V_{IR}		1,2,3	01 02 03	2.7 4.0 4.0	4.65 9.3 11.0	V
Supply Current	I_S	Includes switch current	1,2,3	01 02,03		4.0 3.0	mA
Standby Current	I_{STDBY}	$\overline{SHDN}$ = 0V, entire circuit	1,2,3	All		100.0	µA
Shutdown input threshold		V_{IH}	1,2,3	All	2.0		V
		V_{IL}				0.25	
Shutdown input leakage current	I_{SIL}		1,2,3	All		1.0	µA
Undervoltage Lockout	V_{UL}		1,2,3	02,03		4.0	V
Reference Voltage	V_{REF}		1,2,3	All	1.15	1.30	V
Oscillator frequency	f_O		1,2,3	01 02,03	125 130	215 210	kHz
Minimum Start-up Input Voltage		I_{LOAD}=200mA	1,2,3	01		2.5	V
Output Current			1,2,3	01	200		mA

NOTE 1: Capacitors used in automatic test setup may be different from value suggested.
Capacitor suggested values are:
V+ to GND: 150µF & 0.1µF (01,02,03). Output to GND: 300µF (02,03), 150µF (01).
V_{OUT} to CC: 0.15µF (01,02,03). CC to GND: 2200µF (02,03), 0.15µF (01).
VREF to GND: 0.01µF (02,03), 4.7µF (01). SS to GND: 0.1µF (02,03), 0.15µF (01).

NOTE 2: Circuit will regulate properly with input voltage as high as 5.25V due to voltage drop across the external diode.

ORDERING INFORMATION:

Package	Device	Part #	SMD #
8 pin CERDIP	01	MAX731MJA/883B	5962-9462101MPA
20 pin LCC	01	MAX731MLP/883B	5962-9462101M2C
8 pin CERDIP	02	MAX732MJA/883B	5962-9462102MPA
20 pin LCC	02	MAX732MLP/883B	5962-9462102M2C
8 pin CERDIP	03	MAX733MJA/883B	5962-9462103MPA
20 pin LCC	03	MAX733MLP/883B	5962-9462103M2C

TERMINAL CONNECTIONS

	J8	L20
1	$\overline{\text{SHDN}}$	$\overline{\text{SHDN}}$
2	V_{REF}	NC
3	SS	NC
4	CC	V_{REF}
5	GND	NC
6	LX	NC
7	V_{OUT}	SS
8	V+	NC
9		CC
10		GND
11		GND
12		GND
13		NC
14		NC
15		NC
16		LX
17		NC
18		VOUT
19		NC
20		V+

QUALITY ASSURANCE

Sampling and inspection procedures shall be in accordance with MIL-Prf-38535, Appendix A as specified in Mil-Std-883.

Screening shall be in accordance with Method 5004 of Mil-Std-883. Burn-in test Method 1015:

1. Test Condition, A, B, C, or D.
2. TA = +125°C minimum.
3. Interim and final electrical test requirements shall be specified in Table 2.

Quality conformance inspection shall be in accordance with Method 5005 of Mil-Std-883, including Groups A, B, C, and D inspection.

Group A inspection:

1. Tests as specified in Table 2.
2. Selected subgroups in Table 1, Method 5005 of Mil-Std-883 shall be omitted.

Group C and D inspections:

a. End-point electrical parameters shall be specified in Table 1.
b. Steady-state life test, Method 1005 of Mil-Std-883:
   1. Test condition A, B, C, D.
   2. TA = +125°C, minimum.
   3. Test duration, 1000 hours, except as permitted by Method 1005 of Mil-Std-883.

TABLE 2. ELECTRICAL TEST REQUIREMENTS

Mil-Std-883 Test Requirements	Subgroups per Method 5005, Table 1
Interim Electric Parameters Method 5004	1
Final Electrical Parameters Method 5005	1*, 2, 3
Group A Test Requirements Method 5005	1, 2, 3
Group C and D End-Point Electrical Parameters Method 5005	1

* PDA applies to Subgroup 1 only.