

**SCOPE: FIXED/ADJUSTABLE, LOW POWER CMOS, STEP-UP SWITCHING REGULATOR**

<u>Device Type</u>	<u>Generic Number</u>
01	MAX631AM(x)/883B
02	MAX631BM(x)/883B
03	MAX632AM(x)/883B
04	MAX632BM(x)/883B
05	MAX633AM(x)/883B
06	MAX633BM(x)/883B

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

<u>Outline Letter</u>	<u>Mil-Std-1835</u>	<u>Case Outline</u>	<u>Package Code</u>
MAXIM SMD JA P	GDIP1-T8 or CDIP2-T8	8 LEAD CERDIP	J8

Absolute Maximum Ratings

Supply Voltage, $V_{OUT}$ .....	+18V
Output Voltage, $L_X$ and LBO .....	+18V
Input Voltage, LBI, VFB .....	-0.3V to ( $+V_{OUT}+0.3V$ )
$L_X$ Output Current .....	450 mA Peak
LBO Output Current .....	50mA

Lead Temperature (soldering, 10 seconds) .....	+300°C
Storage Temperature .....	-65°C to +150°C

Continuous Power Dissipation .....	$T_A=+70^\circ C$
8 lead CERDIP(derate 8.0mW/°C above +70°C) .....	640mW
Junction Temperature $T_J$ .....	+150°C
Thermal Resistance, Junction to Case	
8 lead CERDIP, $\theta_{JC}$ : .....	55°C/W
Thermal Resistance, Junction to Ambient	
8 lead CERDIP. $\theta_{JA}$ : .....	125°C/W

Recommended Operating Conditions.

Ambient Operating Range ( $T_A$ ) .....	-55°C to +125°C
Input Voltage Range ( $V_{IN}$ ).....	2.4V dc to 16.5V dc
Output Voltage Range ( $V_{OUT}$ ) .....	2.4V dc to 16.5V dc

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

PARAMETER	Symbol	CONDITIONS -55 °C ≤ T <sub>A</sub> ≤ +125 °C V <sub>IN</sub> =+3.0V Unless otherwise specified	Group A Subgroup	Device type	Limits Min 1/	Limits Max 1/	Units
Operating Voltage	+V <sub>S</sub>	Voltage at V <sub>OUT</sub>	1,2,3	All	2.4	16.4	V
Start-up Voltage	V <sub>SU</sub>	Voltage at V <sub>OUT</sub>	1 2,3	All	1.5 2.0		V
Supply Current NOTE 2	I <sub>S</sub>	L <sub>X</sub> Off, V <sub>OUT</sub> =+5V L <sub>X</sub> Off, V <sub>OUT</sub> =+12V L <sub>X</sub> Off, V <sub>OUT</sub> =+15V	1,2,3	01,02 03,04 05,06		0.4 2.0 2.5	mA
Reference Voltage	V <sub>REF</sub>		1 2,3	All	1.24 1.20	1.38 1.42	μA
Output Voltage	V <sub>OUT</sub>	No load, V <sub>FB</sub> =GND, NOTE 2	1,2,3	01 02 03 04 05 06	4.75 4.5 11.4 10.8 14.25 13.5	5.25 5.5 12.6 13.2 15.75 16.5	V
Line Regulation	VR <sub>LINE</sub>	R3=816kΩ, R4=100kΩ NOTE 3 3V < V <sub>IN</sub> < 6V	1,2,3	All		0.2	%/V <sub>OUT</sub>
Load Regulation	VR <sub>LOAD</sub>	R3=816kΩ, R4=100kΩ NOTE 3 V <sub>IN</sub> =6V, I <sub>OUT</sub> =1mA, 20mA	1,2,3	All		1.0	%/V <sub>OUT</sub>
Oscillator Duty Cycle	O <sub>DC</sub>	NOTE 2	4	All	40	60	%
LX On Resistance	R <sub>LXON</sub>	I <sub>X</sub> =100mA, V <sub>OUT</sub> =5V	1	All		12	Ω
Low-Battery Input Bias Current	I <sub>LBI</sub>		1	All		10	nA
Leakage Current	I <sub>LX</sub>	V <sub>LX</sub> =16.5V	1 2,3	All		1 100	μA
Low Battery Input Threshold Voltage	V <sub>LBI</sub>		1	All	1.18	1.44	V
Low-Battery Output Current	I <sub>LBO</sub>	V <sub>LBO</sub> =0.4V, V <sub>LBI</sub> =1.18V	1,2,3	All	500		μA
Oscillator Frequency Range NOTE 2	f <sub>O</sub>	V <sub>OUT</sub> =+5V	4	01 02	40 35	50 60	kHz
		V <sub>OUT</sub> =+12V	4	03 04	45.5 40	56 65	
		V <sub>OUT</sub> =+15V	4	05 06	45.5 40	56 65	
VFB Input Bias Current	I <sub>FB</sub>		1	All		10	nA
Diode Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =100mA	1	All		1.0	V
On Resistance, CP Leakage Current	RCP <sub>ON</sub>	V <sub>OUT</sub> =5.0V, I <sub>OUT</sub> =±10mA	1	All		140	Ω
Low Battery Output Leakage Current	I <sub>LBOL</sub>	V <sub>LBO</sub> =+16.5V, V <sub>LBI</sub> =+1.44V	1,2,3	All		3.0	μA

NOTE 1: The algebraic convention, whereby the most negative value is a minimum and the most positive a maximum, is used in this table. Negative current shall be defined as conventional current flow out of a device terminal.

NOTE 2: S1 set to B and S2 open provides a nominal output voltage of 5 volts for device types 01 and 02; 12 volts for device types 03 and 04; 15 volts for device types 05, 06.

NOTE 3: R3 and R4 give a nominal output voltage of 12 volts with S1 set to A and S2 closed.

ORDERING INFORMATION	MAXIM PART NUMBER	SMD NUMBER
01	MAX631AMJA/883B	5962-9214101MPA
02	MAX631BMJA/883B	5962-9214102MPA
03	MAX632AMJA/883B	5962-9214103MPA
04	MAX632BMJA/883B	5962-9214104MPA
04	MAX633AMJA/883B	5962-9214105MPA
05	MAX633BMJA/883B	5962-9214106MPA

TERMINAL NUMBER	8 LEAD CERDIP
1	LBI
2	LBO
3	GND
4	LX
5	VOUT
6	CP
7	V <sub>FB</sub>
8	COMP

## 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, 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 only.