SCOPE: **FIXED OUTPUT, 10W CMOS, STEP-UP SWITCHING REGULATOR**

Device Type	Generic Number
01	MAX641AM(x)/883B
02	MAX642AM(x)/883B
03	MAX643AM(x)/883B

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
JA	GDIP1-T8 or CDIP2-T8	8 LEAD CERDIP	J8
FB	GDFP3-F10	10 Lead Flatpack	F10
LP	CQCC1-N20	20 Leadless chip carrier	L20

Absolute Maximum Ratings

Supply Voltage, V_{OUT} ..... +18V
Output Voltage, L_X and LBO ..... +18V
Input Voltage, LBI, LBO, V_{FB} and COMP..... -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°C
8 lead CERDIP(derate 8.0mW/°C above +70°C) 640mW
10 lead FLATPACK(derate 5.3mW/°C above +70°C) 421mW
20 leadless chip carrier (derate 9.1mW/°C above +70°C) 727mW
Junction Temperature T_J ..... +150°C
Thermal Resistance, Junction to Case
8 lead CERDIP, ΘJC: ..... 55°C/W
10 lead Flatpack, ΘJC: ..... 85°C/W
20 leadless chip carrier, ΘJC: ..... 20°C/W
Thermal Resistance, Junction to Ambient
8 lead CERDIP. ΘJA: ..... 125°C/W
10 lead Flatpack, ΘJC: ..... 190°C/W
20 leadless chip carrier, ΘJC: ..... 110°C/W

Recommended Operating Conditions.

Ambient Operating Range (T_A) ..... -55°C to +125°C
Supply Voltage Range (V_S)..... 2.4V dc to 16.5V dc
OutputVoltage 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_A≤ +125°C V_{IN}=+3.0V Unless otherwise specified	Group A Subgroup	Device type	Limits Min 1/	Limits Max 1/	Units
Operating Voltage	$+V_S$	Voltage at V_{OUT}	1,2,3	All	2.0	16.4	V
Start-up Voltage	V_{SU}	Voltage at V_{OUT}	1 2,3	All	1.5 1.8		V
Supply Current NOTE 1	I_S	L_X Off, V_{OUT}=+5V L_X Off, V_{OUT}=+12V L_X Off, V_{OUT}=+15V	1,2,3	01 02 03		0.4 2.0 2.5	mA
Reference Voltage	V_{REF}		1 2,3	All	1.24 1.20	1.38 1.42	V
Output Voltage	V_{OUT}	No load, V_{FB}=GND, NOTE 1	1,2,3	01 02 03	4.75 11.4 14.25	5.25 12.6 15.75	V
Oscillator Frequency Range	f_O	V_{OUT}=+5V V_{OUT}=+12V V_{OUT}=+15V	4	01 02 03	40 45.5 45.5	50 56 56	kHz
Oscillator Duty Cycle	O_{DC}		4	All	40	60	%
LX On Resistance	R_{LXON}	I_X=100mA, V_{OUT}=5V V_{OUT}=15V	1	All		12 7	Ω
Leakage Current	I_{LX}	V_{LX}=16.5V	1 2,3	All		1 100	µA
Diode Forward Voltage	V_F	I_F=100mA	1	All		1.0	V
VFB Input Bias Current	I_{FB}		1	All		10	nA
Low Battery Input Bias Current	I_{LBI}		1	All		10	nA
Low-Battery Output Current	I_{LBO}	V_{LBO}=0.4V, V_{LBI}=1.1V	1,2,3	All	0.5		mA
Low Battery Output Leakage Current	I_{LBOL}	V_{LBO}=+16.5V, V_{LBI}=+1.4V	1,2,3	All		3.0	µA

NOTE 1: Guaranteed by correlation with DC pulse measurements.

ORDERING INFORMATION	MAXIM PART NUMBER
01	MAX641AMJA/883B
01	MAX641AMFB/883B
01	MAX641AMLP/883B
02	MAX642AMJA/883B
02	MAX642AMFB/883B
02	MAX642AMLP/883B
03	MAX643AMJA/883B
03	MAX643AMFB/883B
03	MAX643AMLP/883B

TERMINAL NUMBER	8 LEAD CERDIP	10 Lead Flatpack	20 pin LCC
1	LBI	NC	LBI
2	LBO	LBI	S2
3	GND	LBO	NC
4	LX	GND	LBO
5	VOUT	LX	NC
6	EXT	VOUT	NC
7	V_{FB}	EXT	GND
8	COMP	V_{FB}	NC
9		COMP	LX
10		NC	VOUT
11			NC
12			NC
13			NC
14			NC
15			NC
16			EXT
17			NC
18			V_{FB}
19			NC
20			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.