

SCOPE: BATTERY MANAGER

<u>Device Type</u>	<u>Generic Number</u>	<u>SMD Number</u>
01	MAX1259MJE/883B	5962-9326401MEA
01	MAX1259MLP/883B	5962-9326401M2C

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			
JE E	GDIP1-T16 or CDIP2-T16	16 LEAD CERDIP	J16
LP 2	CQCC1-N20	20 Pin Ceramic LCC	L20

Absolute Maximum Ratings

Voltage to Any Pin Relative to GND	-0.3V to +7V
Lead Temperature (soldering, 10 seconds)	+300°C
Storage Temperature	-65°C to +150°C
Continuous Power Dissipation	$T_A=+70^\circ\text{C}$
16 lead CERDIP(derate 10.0mW/°C above +70°C)	800mW
20 lead LCC(derate 9.1mW/°C above +70°C)	727mW
Junction Temperature T_J	+150°C
Thermal Resistance, Junction to Case, θ_{JC} :	
Case Outline 16 lead CERDIP	50°C/W
Case Outline 20 lead LCC	20°C/W
Thermal Resistance, Junction to Ambient, θ_{JA} :	
Case Outline 16 lead CERDIP	100°C/W
Case Outline 20 lead LCC	110°C/W

Recommended Operating Conditions.

Ambient Operating Range (T_A)	-55°C to +125°C
Supply Voltage Range (V_{CC})	+4.5V to 5.5V
Battery-fail trip point (V_{BATTTP}) BF Detect	2.0V
Input Capacitance (C_{IN})	10pF
Output Capacitance (C_{OUT})	10pF

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 _{CC} =+4.5V to +5.5V Unless otherwise specified	Group A Subgroup	Device type	Limits Min	Limits Max	Units
DC OPERATING CONDITIONS							
Primary Power Supply	V _{CC1}	NOTE 1	1,2,3	01		5.5	V
Input Voltage High	V _{IH}	NOTE 1	1,2,3	01	2.4	+V _{CC1} +0.3	V
Input Voltage Low	V _{IL}	NOTE 1	1,2,3	01	-0.3	0.8	V
Battery Voltage	V _{BATT}	NOTE 2, 6	1,2,3	01	2.5	3.7	V
Battery Output	BAT	NOTE 1	1,2,3	01	V _{BATT} -0.1		V
DC/AC ELECTRICAL CHARACTERISTICS							
Leakage Current	I _{LO}		1,2,3	01	-1.0	1.0	µA
Output Current, PF, BF NOTE 3	I _{OH}	V _{OH} =2.4V	1,2,3	01	-1.0		mA
Output Current, PF, BF	I _{OL}	V _{OL} =0.4V	1,2,3	01		4.0	mA
Input Supply Current NOTE 4	I _{CC1}		1,2,3	01		3.33	mA
V _{CCO} Output Current	I _{CCO}	V _{CCO} =V _{CC1} -0.2V, Both V _{CCO} pins	1,2,3	01		250	mA
Power-Fail Trip Point NOTES 2, 5	V _{TP}	PF pin	1,2,3	01	1.26 x V _{BATT} - 250mV	1.26 x V _{BATT} + 250mV	V
V _{CCO} Output Current NOTE 7	I _{CCO2}	V _{CC1} <V _{BATT} , V _{CCO} =V _{BATT} -0.2V Both V _{CCO} pins	1,2,3	01		15	mA
Battery Leakage NOTE 8	I _{BATT}	V _{CC1} <V _{BATT}	1,2,3	01		10	µA
BAT Output Current NOTE 9	I _{BATTOUT}	V _{CC1} <V _{BATT} BAT pin	1	01		100	nA
			2,3	01		10	µA
Input Capacitance	C _{IN}	NOTE 10	4	01		10	pF
Output Capacitance	C _{OUT}	NOTE 10	4	01		10	pF
V _{CC1} Fall Time	t _F	V _{CC} =4.0V to 5.5V	9,10,11	01	300		µs
V _{CC1} Rise Time	t _R	V _{CC} =4.0V to 5.5V	9,10,11	01	1		µs
Power Down to PF Low	t _{PF}	V _{CC} =4.0V to 5.5V	9,10,11	01	0		µs
PF High after Power Up	t _{REC}	V _{CC} =4.0V to 5.5V	9,10,11	01		100	µs
RST Pulse Width	RST _{PW}	V _{CC} =4.0V to 5.5V	9,10,11	01	50		ns

- NOTE 1: All voltages referenced to ground.
 NOTE 2: Trip-point voltage for Power-Fail Detect: $V_{TP}=1.26 \times V_{BATT}$. For 5% operation: $V_{BATT}=3.7V$ max.
 NOTE 3: 50pF load capacity. $\bar{\text{---}}$ $\bar{\text{---}}$
 NOTE 4: Measured with pins BF, PF, V_{CCO} and open. $\bar{\text{---}}$
 NOTE 5: $\bar{\text{---}}$ V_{TP} is the point at which PF is driven low.
 NOTE 6: V_{BATTF} is the point at which BF is driven low.
 NOTE 7: I_{CCO2} may be limited by battery capacity.
 NOTE 8: Battery leakage is the internal energy consumed by the MAX1259.
 NOTE 9: See Commercial Datasheet, Typical Operating Characteristics; BAT Switch Drop vs. Battery Voltage.
 NOTE 10: Guaranteed by design. Not tested.

Package	ORDERING INFORMATION:	SMD
16 pin CERDIP	MAX1259MJE/883B	5962-9326401MEA
20 pin LCC	MAX1259MLP/883B	5962-9326401M2C

TERMINAL CONNECTIONS AND FUNCTION:

NAME	FUNCTION	J16	20LCC
V_{BATT}	Backup Battery Input	2	2
$\bar{\text{---}}$ BF	$\bar{\text{---}}$ Battery-Fail Output. BF is high for V_{CCI} at or above V_{TP} and the backup battery greater than 2V. If the backup $\bar{\text{---}}$ battery is below 2V or V_{CCI} falls below V_{TP} , BF will be driven low.	3	4
BAT	Battery Output. During normal operation, the BAT output supplies up to 1mA of continuous battery current. In shipping mode, the BAT output is high impedance.	5	7
RST	Battery-Disconnect Input. The RST input is used to prevent battery discharge during shipping. Pulsing the RST input disconnects the battery from the V_{CCO} and BAT outputs.	6	8
GND	Ground.	7,8	10,11
$\bar{\text{---}}$ PF	$\bar{\text{---}}$ Power Fail Output. PF is high for V_{CCI} greater than $1.26 \times V_{BATT}$ (V_{TP}), indicating a valid V_{CCI} voltage.	11	12
V_{CCO}	CMOS RAM is powered from V_{CCO} . The battery switchover circuit compares V_{CCI} to the V_{BATT} input, and connects V_{CCO} to whichever is higher.	12,13	16,17
V_{CCI}	+5V V_{CC} Input	15, 16	1, 20
NC	No connect	1,4,9, 10,14	3,5,6,9, 13,14,15, 18,19

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, 9
Group A Test Requirements Method 5005	1, 2, 3, 9, 10, 11
Group C and D End-Point Electrical Parameters Method 5005	1

* PDA applies to Subgroup 1 only.