**SCOPE: MICROPROCESSOR SUPERVISORY CIRCUITS**

| Device Type | Generic Number |
|---|---|
| 01 | MAX705(x)/883B |
| 02 | MAX706(x)/883B |
| 03 | MAX707(x)/883B |
| 04 | MAX708(x)/883B |
| 05 | MAX813L(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 |
|---|---|---|---|---|
| MAXIM | SMD | | | |
| JA | P | GDIP1-T08 or CDIP2-T08 | 8 LEAD CERDIP | J08 |
| LP | 2 | CQCC1-N20 | 20 Pin Leadless Chip | L20 |

**Absolute Maximum Ratings**

Terminal Voltage (with respect to GND)
- $V_{CC}$ ..... -0.3V to +6.0V
- All other Inputs 1/ ..... -0.3V to (Vcc+0.3V)

Input Current
- $V_{CC}$ ..... 10mA
- GND ..... 10mA

Output Current (all outputs) ..... 10mA

Lead Temperature (soldering, 10 seconds) ..... +300°C
Storage Temperature ..... -65°C to +160°C
Continuous Power Dissipation ..... $T_A$=+70°C
8 lead CERDIP(derate 8.0mW/°C above +70°C) ..... 640mW
20 lead LCC(derate 9.1mW/°C above +70°C) ..... 727mW
Junction Temperature $T_J$ ..... +150°C
Thermal Resistance, Junction to Case, ΘJC:
- Case Outline 8 lead CERDIP..... 55°C/W
- Case Outline 20 leadless Chip carrier ..... 20°C/W

Thermal Resistance, Junction to Ambient, ΘJA:
- Case Outline 8 lead CERDIP..... 125°C/W
- Case Outline 20 leadless Chip carrier ..... 110°C/W

**Recommended Operating Conditions**

Ambient Operating Range ($T_A$) ..... -55°C to +125°C
Supply Voltage Range ($V_{CC}$) ..... +1.2V to +5.5V

NOTE 1: The input voltage limits on PFI and $\overline{MR}$ may be exceeded if the input current is less than 10mA.

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<br>-55 °C ≤$T_A$≤+125°C 2/<br>Unless otherwise specified | Group A Subgroup | Device type | Limits Min 3/ | Limits Max 3/ | Units |
|---|---|---|---|---|---|---|---|
| Operating Voltage Range | $V_{CC}$ | | 1,2,3 | All | 1.2 | 5.5 | V |
| Supply Current | I | | 1,2,3 | All | | 500 | µA |
| **RESET AND WATCHDOG TIMER** | | | | | | | |
| Reset Threshold | $V_{RT}$ | | 1,2,3 | 01,03,05 | 4.5 | 4.75 | V |
| | | | | 02,04 | 4.25 | 4.5 | |
| $\overline{\text{RESET}}$ Ouput Voltage | $V_{RSTL}$ | $I_{SOURCE}$=800µA | 1,2,3 | 01,02, 03,04 | $V_{CC}$-1.5 | | V |
| | | $I_{SINK}$-3.2mA | | | | 0.4 | |
| | | $I_{SINK}$=100µA, $V_{CC}$=1.2V | | | | 0.3 | |
| RESET Output Voltage | $V_{RSTH}$ | $I_{SOURCE}$=800µA | 1,2,3 | 03,04,05 | $V_{CC}$-1.5 | | V |
| | | $I_{SINK}$=1.2mA | | 03,04 | | 0.4 | |
| | | $I_{SOURCE}$=4µA, $V_{CC}$=1.2V | | 05 | 0.9 | | |
| | | $I_{SINK}$=3.2mA | | | | 0.4 | |
| WDI Input Threshold Logic Low | $WD_{VIL}$ | $V_{CC}$=5V | 1,2,3 | 01,02,05 | | 0.8 | V |
| WDI Input Threshold Logic High | $WDI_{VIH}$ | $V_{CC}$=5V | 1,2,3 | 01,02,05 | 3.5 | | V |
| WDI Input Current | $WDI_{IN}$ | WDI=$V_{CC}$ | 1,2,3 | 01,02,05 | | 150 | µA |
| | | WDI=0V | | | -150 | | |
| $\overline{\text{WDO}}$ Output Voltage | $\overline{\text{WDO}}_{VOH}$ | $I_{SOURCE}$=800µA | 1,2,3 | 01,02,05 | $V_{CC}$-1.5 | | V |
| | $\overline{\text{WDO}}_{VOL}$ | $I_{SINK}$=1.2mA | | | | 0.4 | |
| Reset Pulse Width | $t_{RS}$ | | 9,10,11 | All | 140 | 280 | ms |
| Watchdog Timeout Period | $t_{WD}$ | | 9,10,11 | 01,02,05 | 1.0 | 2.25 | s |
| WDI Pulse Width | $t_{WP}$ | $V_{IL}$=0.4V, $V_{IH}$=($V_{CC}$)(0.8)V | 9,10,11 | 01,02,05 | 50 | | ns |
| **MANUAL RESET** | | | | | | | |
| $\overline{\text{MR}}$ Pull-up Current | $\overline{\text{MR}}_{IPU}$ | $\overline{\text{MR}}$=0V | 1,2,3 | All | 100 | 600 | µA |
| $\overline{\text{MR}}$ Input Threshold Logic Low | $\overline{\text{MR}}_{VIL}$ | | 1,2,3 | All | | 0.8 | V |
| $\overline{\text{MR}}$ Input Threshold Logic High | $\overline{\text{MR}}_{VIH}$ | | 1,2,3 | All | 2.0 | | V |

| TEST | Symbol | CONDITIONS<br>-55 °C ≤$T_A$≤+125°C 2/<br>Unless otherwise specified | Group A Subgroup | Device type | Limits Min 3/ | Limits Max 3/ | Units |
|---|---|---|---|---|---|---|---|
| $\overline{MR}$ to Reset Out Delay | $t_{MD}$ | NOTE 4 | 9,10,11 | All | | 250 | ns |
| $\overline{MR}$ Pulse Width | $t_{MR}$ | | 9,10,11 | All | 150 | | ns |
| **POWER-FAIL DETECTOR** | | | | | | | |
| PFI Input Threshold | $PFI_{VTH}$ | $V_{CC}$=5V | 1,2,3 | All | 1.2 | 1.3 | V |
| PFI Input Current | $PFI_{IN}$ | | 1,2,3 | All | -25 | +25 | nA |
| $\overline{PFO}$ Output Voltage | $\overline{PFO}_{VO}$ | $I_{SOURCE}$=800µA<br>$I_{SINK}$=3.2mA | 1,2,3 | All | $V_{CC}$-1.5 | 0.4 | V |

NOTE 2: For device types 01, 03, and 05, $V_{CC}$=4.75V to 5.5V unless otherwise specified and for device 02, 04, $V_{CC}$=4.5V to 5.5V unless otherwise specified.

NOTE 3: The algebraic convention, whereby the most negative value is a minimum and the most positive a maximum is used for these limits. Negative current shall be defined as conventional current flow out of a device terminal.

NOTE 4: Applies to both RESET in device types 03-05 and $\overline{RESET}$ in device types 01 and 04.

| | Package | ORDERING INFORMATION: | SMD NUMBER |
|---|---|---|---|
| 01 | 8 pin CERDIP | MAX705MJA/883B | 5962-9326701MPA |
| 01 | 20 pin LCC | MAX705MLP/883B | 5962-9326701M2C |
| 02 | 8 pin CERDIP | MAX706MJA/883B | 5962-9326702MPA |
| 02 | 20 pin LCC | MAX706MLP/883B | 5962-9326702M2C |
| 03 | 8 pin CERDIP | MAX707MJA/883B | 5962-9326703MPA |
| 03 | 20 pin LCC | MAX707MLP/883B | 5962-9326703M2C |
| 04 | 8 pin CERDIP | MAX708MJA/883B | 5962-9326704MPA |
| 04 | 20 pin LCC | MAX708MLP/883B | 5962-9326704M2C |
| 05 | 8 pin CERDIP | MAX813LMJA/883B | 5962-9326705MPA |
| 05 | 20 pin LCC | MAX813LMLP/883B | 5962-9326705M2C |

**TERMINAL CONNECTIONS**:

| | MAX705/706 | MAX705/706 | MAX707/708 | MAX707/708 | MAX813L | MAX813L |
|---|---|---|---|---|---|---|
| | J8 | L20 | J8 | L20 | J8 | L20 |
| 1 | $\overline{MR}$ | NC | $\overline{MR}$ | NC | $\overline{MR}$ | NC |
| 2 | $V_{CC}$ | $\overline{MR}$ | $V_{CC}$ | $\overline{MR}$ | $V_{CC}$ | $\overline{MR}$ |
| 3 | GND | NC | GND | NC | GND | NC |
| 4 | PFI | NC | PFI | NC | PFI | NC |
| 5 | $\overline{PFO}$ | $V_{CC}$ | $\overline{PFO}$ | $V_{CC}$ | $\overline{PFO}$ | $V_{CC}$ |
| 6 | WDI | NC | NC | NC | WDI | NC |
| 7 | $\overline{RESET}$ | GND | $\overline{RESET}$ | GND | RESET | GND |
| 8 | $\overline{WDO}$ | NC | RESET | NC | $\overline{WDO}$ | NC |
| 9 | | NC | | NC | | NC |
| 10 | | PFI | | PFI | | PFI |
| 11 | | NC | | NC | | NC |
| 12 | | $\overline{PFO}$ | | $\overline{PFO}$ | | $\overline{PFO}$ |
| 13 | | NC | | NC | | NC |
| 14 | | NC | | NC | | NC |
| 15 | | WDI | | NC | | WDI |
| 16 | | NC | | NC | | NC |
| 17 | | $\overline{RST}$ | | $\overline{RST}$ | | RST |
| 18 | | NC | | NC | | NC |
| 19 | | NC | | NC | | NC |
| 20 | | $\overline{WDO}$ | | RST | | $\overline{WDO}$ |

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

* PDA applies to Subgroup 1 only.