TCM811/TCM812

4-Pin Reset Monitors

Features

• Precision V_{DD} Monitor for 2.0V, 2.8V, 3.0V, 3.3V, 5.0V Nominal Supplies
• Manual Reset Input
• 140 ms Minimum RESET Output Duration
• RESET Output Valid to V_{DD} = 1.0V (TCM811)
• Low 6 µA (typ.) Supply Current
• V_{DD} Transient Immunity
• Small 4-Pin SOT-143 Package
• No External Components
• Replacement for MAX811/812 and Offers a Lower Threshold Voltage Option
• Push-Pull RESET Output
• Temperature Range:
  - Commercial (C) -40°C to +85°C

Applications

• Computers
• Embedded Systems
• Battery Powered Equipment
• Critical Microcontroller Power Supply Monitoring

General Description

The TCM811 and TCM812 are cost effective system supervisory circuits designed to monitor V_{DD} in digital systems and provide a reset signal to the host controller when necessary. A manual reset input is provided to override the reset monitor and is suitable for use as a push-button reset. No external components are required.

The reset output is driven active within 20 µs (5 µs for F version) of V_{DD} falling through the reset voltage threshold. RESET is maintained active for a minimum of 140 ms after V_{DD} rises above the reset threshold. The TCM812 has an active high RESET output while the TCM811 has an active low RESET output. The output of the TCM811 is valid down to V_{DD} = 1V. Both devices are available in a 4-Pin SOT-143 package, specified with a temperature range of -40°C to +85°C.

The TCM811/TCM812 are optimized to reject fast transient glitches on the V_{DD} line. A low supply current of 6 µA (V_{DD} = 3.3V) makes these devices ideal for battery powered applications.

Applications

• Computers
• Embedded Systems
• Battery Powered Equipment
• Critical Microcontroller Power Supply Monitoring

Typical Application Circuit

![Typical Application Circuit Diagram]

Package Types:

SOT-143
1.0 ELECTRICAL CHARACTERISTICS

ABSOLUTE MAXIMUM RATINGS*

Supply Voltage (VDD to GND)..............................+6.0V
RESET, RESET.....................................-0.3V to (VDD + 0.3V)
Input Current, VDD.....................................20 mA
Output Current, RESET..................................20 mA
Operating Temperature Range............................-40°C to +85°C
Storage Temperature Range..............................-65°C to +150°C
Maximum Junction Temperature, Tj.......................150°C

*Notice: 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.

ELECTRICAL CHARACTERISTICS

VDD = 5V for L/M versions, VDD = 3.3V for T/S versions, VDD = 3V for R version, VDD = 2.0V for F version. unless otherwise noted, TA = -40°C to +85°C. Typical values are at TA = +25°C. (Note 1)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Sym</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Units</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>VDD Range</td>
<td>VDD</td>
<td>1.0</td>
<td>5.5</td>
<td>5.5</td>
<td>V</td>
<td>TCM811</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1</td>
<td></td>
<td></td>
<td></td>
<td>TCM812</td>
</tr>
<tr>
<td>Supply Current I CC</td>
<td>Icc</td>
<td>—</td>
<td>6</td>
<td>15</td>
<td>µA</td>
<td>TCM811_L/M, VDD = 5.5V, IOUT = 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.75</td>
<td>10</td>
<td>µA</td>
<td>TCM811_R/S/T/F, VDD = 3.6V, IOUT = 0</td>
</tr>
<tr>
<td>Reset Threshold V TH</td>
<td>VTH</td>
<td>4.54</td>
<td>4.63</td>
<td>4.72</td>
<td>V</td>
<td>TCM811_L: TA = +25°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.50</td>
<td></td>
<td>4.75</td>
<td>V</td>
<td>TA = –40°C to +85°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.30</td>
<td>4.38</td>
<td>4.46</td>
<td>V</td>
<td>TCM811_M: TA = +25°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.25</td>
<td></td>
<td>4.50</td>
<td>V</td>
<td>TA = –40°C to +85°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.03</td>
<td>3.08</td>
<td>3.14</td>
<td>V</td>
<td>TCM811_T: TA = +25°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.00</td>
<td></td>
<td>3.15</td>
<td>V</td>
<td>TA = –40°C to +85°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.88</td>
<td>2.93</td>
<td>2.98</td>
<td>V</td>
<td>TCM811_S: TA = +25°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.85</td>
<td></td>
<td>3.00</td>
<td>V</td>
<td>TA = –40°C to +85°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.58</td>
<td>2.63</td>
<td>2.68</td>
<td>V</td>
<td>TCM811_R: TA = +25°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.55</td>
<td></td>
<td>2.70</td>
<td>V</td>
<td>TA = –40°C to +85°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.71</td>
<td>1.75</td>
<td>1.79</td>
<td>V</td>
<td>TCM811_F: TA = +25°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.70</td>
<td></td>
<td>1.80</td>
<td>V</td>
<td>TA = –40°C to +85°C</td>
</tr>
<tr>
<td>Reset Threshold Tempco</td>
<td>—</td>
<td>30</td>
<td></td>
<td></td>
<td>ppm/°C</td>
<td></td>
</tr>
<tr>
<td>VDD to Reset Delay</td>
<td>—</td>
<td>20</td>
<td></td>
<td></td>
<td>µs</td>
<td>VDD = VTH to VTH –125 mV; TCM811_L/M</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>5</td>
<td></td>
<td></td>
<td>µs</td>
<td>VDD = VTH to VTH –125 mV; TCM811_R/S/T/F</td>
</tr>
<tr>
<td>Reset Active Timeout Period t RP</td>
<td>140</td>
<td>280</td>
<td>560</td>
<td>ms</td>
<td>VDD = VTH(MAX)</td>
<td></td>
</tr>
<tr>
<td>MR Minimum Pulse Width t MR</td>
<td>10</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>µs</td>
<td></td>
</tr>
<tr>
<td>MR Glitch Immunity</td>
<td>—</td>
<td>100</td>
<td></td>
<td></td>
<td>ns</td>
<td></td>
</tr>
<tr>
<td>MR to Reset Propagation Delay t MD</td>
<td>—</td>
<td>0.5</td>
<td></td>
<td>—</td>
<td>µs</td>
<td></td>
</tr>
</tbody>
</table>

*Note 1:* Production testing done at TA = +25°C and +85°C, overtemperature limits are tested with periodic QA tests in production.
$$V_{DD} = 5V \text{ for L/M versions, } V_{DD} = 3.3V \text{ for T/S versions, } V_{DD} = 3V \text{ for R version, } V_{DD} = 2.0V \text{ for F version.}$$

Unless otherwise noted, $$T_A = -40^\circ C \text{ to } +85^\circ C. \text{ Typical values are at } T_A = +25^\circ C. \text{ (Note 1)}$$

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Sym</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Units</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MR Input Threshold</strong></td>
<td>$V_{IH}$</td>
<td>2.3</td>
<td>—</td>
<td>—</td>
<td>V</td>
<td>$V_{DD} &gt; V_{TH(MAX)}, \text{TMC811L/M}$</td>
</tr>
<tr>
<td></td>
<td>0.7 $V_{DD}$</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>V</td>
<td>$V_{DD} &gt; V_{TH(MAX)}, \text{TMC811R/S/T/F}$</td>
</tr>
<tr>
<td></td>
<td>$V_{IL}$</td>
<td>—</td>
<td>—</td>
<td>0.8</td>
<td>V</td>
<td>$V_{DD} &gt; V_{TH(MAX)}, \text{TMC811L/M}$</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>—</td>
<td>0.25 $V_{DD}$</td>
<td>—</td>
<td>V</td>
<td>$V_{DD} &gt; V_{TH(MAX)}, \text{TMC811R/S/T/F}$</td>
</tr>
<tr>
<td><strong>MR Pull-up Resistance</strong></td>
<td></td>
<td>10</td>
<td>20</td>
<td>40</td>
<td>kΩ</td>
<td></td>
</tr>
<tr>
<td><strong>RESET Output Voltage Low</strong></td>
<td>$V_{OL}$</td>
<td>—</td>
<td>—</td>
<td>0.3</td>
<td>V</td>
<td>TMC811R/S/T only; $I_{SINK} = 1.2mA, V_{DD} = V_{TH(MIN)}$</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>—</td>
<td>0.4</td>
<td>V</td>
<td>TMC811F only; $I_{SINK} = 500\mu A, V_{DD} = V_{TH(MIN)}$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>—</td>
<td>0.3</td>
<td>V</td>
<td>TMC811L/M only; $I_{SINK} = 3.2mA, V_{DD} = V_{TH(MIN)}$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>—</td>
<td>0.3</td>
<td>V</td>
<td>TMC811L/M only; $I_{SINK} = 3.2mA, V_{DD} = V_{TH(MIN)}$</td>
<td></td>
</tr>
<tr>
<td><strong>RESET Output Voltage High</strong></td>
<td>$V_{OH}$</td>
<td>0.8 $V_{DD}$</td>
<td>—</td>
<td>—</td>
<td>V</td>
<td>TMC811R/S/T/F only; $I_{SOURCE} = 500\mu A, V_{DD} &gt; V_{TH(MAX)}$</td>
</tr>
<tr>
<td></td>
<td>$V_{DD} - 1.5$</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>V</td>
<td>TMC811L/M only; $I_{SOURCE} = 800\mu A, V_{DD} &gt; V_{TH(MAX)}$</td>
</tr>
<tr>
<td><strong>RESET Output Voltage Low</strong></td>
<td>$V_{OL}$</td>
<td>—</td>
<td>—</td>
<td>0.2</td>
<td>V</td>
<td>TMC812F only; $I_{SINK} = 500\mu A, V_{DD} = V_{TH(MAX)}$</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>—</td>
<td>0.3</td>
<td>V</td>
<td>TMC812R/S/T only; $I_{SINK} = 1.2mA, V_{DD} = V_{TH(MAX)}$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>—</td>
<td>0.4</td>
<td>V</td>
<td>TMC812L/M only; $I_{SINK} = 1.2mA, V_{DD} = V_{TH(MAX)}$</td>
<td></td>
</tr>
<tr>
<td><strong>RESET Output Voltage High</strong></td>
<td>$V_{OH}$</td>
<td>0.8 $V_{DD}$</td>
<td>—</td>
<td>—</td>
<td>V</td>
<td>$I_{SOURCE} = 150\mu A, V_{DD} \leq V_{TH(MIN)}$</td>
</tr>
</tbody>
</table>

**Note 1:** Production testing done at $T_A = +25^\circ C$ and $+85^\circ C$, overtemperature limits are tested with periodic QA tests in production.
2.0 TYPICAL PERFORMANCE CHARACTERISTICS

Note: The graphs provided following this note are a statistical summary based on a limited number of samples and are provided for informational purposes only. The performance characteristics listed herein are not tested or guaranteed. In some graphs, the data presented may be outside the specified operating range (e.g., outside specified power supply range) and therefore outside the warranted range.

FIGURE 2-1: Supply Current vs. Temperature.

FIGURE 2-2: Power-Down Reset Delay vs. Temperature.

FIGURE 2-3: Power-Up Reset Timeout vs. Temperature.

FIGURE 2-4: Supply Current vs. Temperature.

FIGURE 2-5: Power-Down Reset Delay vs. Temperature.

FIGURE 2-6: Power-Down Reset Delay vs. Temperature.
FIGURE 2-7: Normalized Reset Threshold vs. Temperature.
3.0 PIN DESCRIPTIONS

The descriptions of the pins are listed in Table 3-1.

### TABLE 3-1: PIN FUNCTION TABLE

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>2</td>
<td>RESET</td>
<td>RESET push-pull output remains low while V_{DD} is below the reset voltage threshold, and for at least 140 ms (min.) after V_{DD} rises above reset threshold</td>
</tr>
<tr>
<td></td>
<td>(TCM811)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>RESET</td>
<td>Reset push-pull output remains high while V_{DD} is below the reset voltage threshold, and for at least 140 ms (min.) after V_{DD} rises above reset threshold</td>
</tr>
<tr>
<td></td>
<td>(TCM812)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>MR</td>
<td>Manual Reset input generates a Reset when MR is below V_{IL}</td>
</tr>
<tr>
<td>4</td>
<td>V_{DD}</td>
<td>Supply voltage</td>
</tr>
</tbody>
</table>

### 3.1 Ground Terminal (GND)

GND provides the negative reference for the analog input voltage. Typically, the circuit ground is used.

### 3.2 Reset Output (RESET) (TCM811)

RESET output remains low while V_{DD} is below the Reset voltage threshold (V_{TRIP}). Once the device voltage (V_{DD}) returns to a high level (V_{TRIP} + V_{HYS}), the device will remain in Reset for the Reset delay timer (T_{RST}). After that time expires, the RESET pin will be driven to the high state.

### 3.3 Reset Output (RESET) (TCM812)

RESET output remains high while V_{DD} is below the Reset voltage threshold (V_{TRIP}). Once the device voltage (V_{DD}) returns to a high level (V_{TRIP} + V_{HYS}), the device will remain in Reset for the Reset delay timer (T_{RST}). After that time expires, the RESET pin will be driven to the low state.

### 3.4 Manual Reset (MR)

The Manual Reset (MR) input pin allows a push button switch to easily be connected to the system. When the push button is depressed, it forces a system Reset. This pin has circuitry that filters noise that may be present on the MR signal.

The MR pin is active-low and has an internal pull-up resistor.

### 3.5 Supply Voltage (V_{DD})

V_{DD} can be used for power supply monitoring or a voltage level that requires monitoring.
4.0 APPLICATIONS INFORMATION

The TCM811/TCM812 provides accurate VDD monitoring and reset timing during power-up, power-down, and brownout/sag conditions. These devices also reject negative-going transients (glitches) on the power supply line. Figure 4-1 shows the maximum transient duration vs. maximum negative excursion (overdrive) for glitch rejection. Any combination of duration and overdrive that is under the curve will not generate a reset signal. Combinations above the curve are detected as a brownout or power-down. Transient immunity can be improved by adding a 0.1 µF capacitor in close proximity to the VDD pin of the TCM811/TCM812.

![Figure 4-1: Maximum Transient Duration vs. Overdrive for Glitch Rejection at +25°C.](image)

4.1 RESET Signal Integrity During Power-Down

The TCM811 RESET push-pull output is valid to VDD = 1.0V. Below this voltage the output becomes an "open circuit" and does not sink current. This means CMOS logic inputs to the microcontroller will be floating at an undetermined voltage. Most digital systems are completely shutdown well above this voltage. However, in situations where RESET must be maintained valid to VDD = 0V, a pull-down resistor must be connected from RESET to ground to discharge stray capacitances and hold the output low (Figure 4-2). This resistor value, though not critical, should be chosen such that it does not appreciably load RESET under normal operation (100 kΩ will be suitable for most applications). Similarly, a pull-up resistor to VDD is required for the TCM812 to ensure a valid high RESET for VDD below 1.1V.

![Figure 4-2: The addition of R1 at the RESET output of the TCM811 ensures that the RESET output is valid to VDD = 0V.](image)

4.2 Controllers and Processors With Bidirectional I/O Pins

Some microcontrollers have bidirectional reset pins. Depending on the current drive capability of the controller pin, an indeterminate logic level may result if there is a logic conflict. This can be avoided by adding a 4.7 kΩ resistor in series with the output of the TCM811/TCM812 (Figure 4-3). If there are other components in the system which require a reset signal, they should be buffered so as not to load the reset line. If the other components are required to follow the reset I/O of the microcontroller, the buffer should be connected as shown with the solid line.

![Figure 4-3: Interfacing the TCM811 to a Bidirectional Reset I/O.](image)
5.0 PACKAGING INFORMATION

5.1 Package Marking Information

① & ② = part number code + reset threshold voltage (two-digit code)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>(V)</th>
<th>TCM811 Code</th>
</tr>
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<tbody>
<tr>
<td>TCM811LERCTR</td>
<td>4.63</td>
<td>U1</td>
</tr>
<tr>
<td>TCM811MERCTR</td>
<td>4.38</td>
<td>U2</td>
</tr>
<tr>
<td>TCM811TERCTR</td>
<td>3.08</td>
<td>U3</td>
</tr>
<tr>
<td>TCM811SERCTR</td>
<td>2.93</td>
<td>U4</td>
</tr>
<tr>
<td>TCM811RERCTR</td>
<td>2.63</td>
<td>U5</td>
</tr>
<tr>
<td>TCM811FERCTR</td>
<td>1.75</td>
<td>U7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part Number</th>
<th>(V)</th>
<th>TCM812 Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCM812LERCTR</td>
<td>4.63</td>
<td>V1</td>
</tr>
<tr>
<td>TCM812MERCTR</td>
<td>4.38</td>
<td>V2</td>
</tr>
<tr>
<td>TCM812TERCTR</td>
<td>3.08</td>
<td>V3</td>
</tr>
<tr>
<td>TCM812SERCTR</td>
<td>2.93</td>
<td>V4</td>
</tr>
<tr>
<td>TCM812RERCTR</td>
<td>2.63</td>
<td>V5</td>
</tr>
<tr>
<td>TCM812FERCTR</td>
<td>1.75</td>
<td>V7</td>
</tr>
</tbody>
</table>

③ represents year and two-month period code
④ represents production lot ID code

Note: In the event the full Microchip part number cannot be marked on one line, it will be carried over to the next line thus limiting the number of available characters for customer specific information.

5.2 Taping Form

<table>
<thead>
<tr>
<th>Package</th>
<th>Carrier Width (W)</th>
<th>Pitch (P)</th>
<th>Part Per Full Reel</th>
<th>Reel Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Pin SOT-143</td>
<td>8 mm</td>
<td>4 mm</td>
<td>3000</td>
<td>7 in.</td>
</tr>
</tbody>
</table>
### 4-Lead Plastic Small Outline Transistor (RC) [SOT-143]

**Note:** For the most current package drawings, please see the Microchip Packaging Specification located at [http://www.microchip.com/packaging](http://www.microchip.com/packaging)

<table>
<thead>
<tr>
<th>Units</th>
<th>MILLIMETERS</th>
<th>Dimension Limits</th>
<th>MIN</th>
<th>NOM</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Pins</td>
<td>N</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pitch</td>
<td>e</td>
<td>1.92 BSC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pin1 Offset</td>
<td>e1</td>
<td>0.20 BSC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Height</td>
<td>A</td>
<td>0.80 –</td>
<td></td>
<td></td>
<td>1.22</td>
</tr>
<tr>
<td>Molded Package Thickness</td>
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<td>0.90</td>
<td>1.07</td>
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<td></td>
<td>0.15</td>
</tr>
<tr>
<td>Overall Width</td>
<td>E</td>
<td>2.10 –</td>
<td></td>
<td></td>
<td>2.64</td>
</tr>
<tr>
<td>Molded Package Width</td>
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<td>1.20</td>
<td>1.30</td>
<td>1.40</td>
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<tr>
<td>Overall Length</td>
<td>D</td>
<td>2.67</td>
<td>2.90</td>
<td>3.05</td>
<td></td>
</tr>
<tr>
<td>Foot Length</td>
<td>L</td>
<td>0.13</td>
<td>0.50</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>Footprint</td>
<td>L1</td>
<td>0.54 REF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foot Angle</td>
<td>φ</td>
<td>0° –</td>
<td></td>
<td></td>
<td>8°</td>
</tr>
<tr>
<td>Lead Thickness</td>
<td>c</td>
<td>0.08 –</td>
<td></td>
<td></td>
<td>0.20</td>
</tr>
<tr>
<td>Lead 1 Width</td>
<td>b1</td>
<td>0.76 –</td>
<td></td>
<td></td>
<td>0.94</td>
</tr>
<tr>
<td>Leads 2, 3 &amp; 4 Width</td>
<td>b</td>
<td>0.30 –</td>
<td></td>
<td></td>
<td>0.54</td>
</tr>
</tbody>
</table>

**Notes:**
1. § Significant Characteristic.
2. Dimensions D and E1 do not include mold flash or protrusions. Mold flash or protrusions shall not exceed 0.25 mm per side.
3. Dimensioning and tolerancing per ASME Y14.5M.
   - BSC: Basic Dimension. Theoretically exact value shown without tolerances.
   - REF: Reference Dimension, usually without tolerance, for information purposes only.

Microchip Technology Drawing C04-031B
APPENDIX A: REVISION HISTORY

Revision C (February 2007)

• Section 5.0 “Packaging Information”: Corrected SOT-143 packaging information.
• Section 3.0 “Pin Descriptions”: Added pin descriptions.
• Added disclaimer on package outline drawing.
• Updated package outline drawing.
• Section 1.0 “Electrical Characteristics”: Reformatted Electrical Characteristics

Revision B (January 2002)

• Undocumented changes.

Revision A (October 2001)

• Original Release of this Document.
# TCM811/TCM812

## PRODUCT IDENTIFICATION SYSTEM

To order or obtain information, e.g., on pricing or delivery, refer to the factory or the listed sales office.

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>Device</th>
<th>VDD Reset Threshold</th>
<th>Temperature Range</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXXX</td>
<td>X X X</td>
<td></td>
<td></td>
<td>RCTR</td>
</tr>
</tbody>
</table>

### Device:
- **TCM811**: 4-Pin µP Reset Monitor (RESET low)
- **TCM812**: 4-Pin µP Reset Monitor (RESET high)

### Threshold Voltage:
- **L** = 4.63V
- **M** = 4.38V
- **T** = 3.08V
- **S** = 2.93V
- **R** = 2.63V
- **F** = 1.75V

### Temperature Range:
- **E** = -40°C to +85°C

### Package:
- **RCTR** = Plastic Small Outline Transistor (RC) SOT-143, 4 lead, (tape and reel).

### Examples:
- a) TCM811LERCTR: 4.63V
- b) TCM811MERCTR: 4.38V
- c) TCM811TERCTR: 3.08V
- d) TCM811SERCTR: 2.93V
- e) TCM811RERCTR: 2.63V
- f) TCM811FERCTR: 1.75V

- a) TCM812LERCTR: 4.63V
- b) TCM812MERCTR: 4.38V
- c) TCM812TERCTR: 3.08V
- d) TCM812SERCTR: 2.93V
- e) TCM812RERCTR: 2.63V
- f) TCM812FERCTR: 1.75V
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