

## ADM1810 to ADM1813/ADM1815 to ADM1818

### FEATURES

Reliable low cost voltage monitor with reset output

Suitable for monitoring 2.5 V, 3 V, 3.3 V, and 5 V power supply voltages

Reset threshold levels: 4.62 V, 4.35 V, 3.06 V, 2.88 V, 2.55 V, 2.31 V, and 2.18 V typical

Active high and low push-pull output choices: ADM1810, ADM1812, ADM1815, and ADM1817

Open-drain output choices: ADM1811, ADM1813, ADM1816, and ADM1818

Can be used with a manual push-button to generate a reset: ADM1813, ADM1818

Initialization of microprocessor systems with added safety

Available in 3-lead SOT-23 and SC70 packages

### APPLICATIONS

Microprocessor systems

Computers

Controllers

Intelligent instruments

Automotive systems

### GENERAL DESCRIPTION

The ADM181x range of voltage monitoring circuits is used in any application where an electronic system needs to be reset when a voltage increases above or below a predetermined value.

Because of the reset delay time incorporated into the ADM181x series, these devices provide a safe startup for electronic systems.

Before a system initializes, the power supply must stabilize.

Using the ADM181x series ensures that there are typically 150 ms for the power supply to stabilize before the system resets and safe system initialization begins.

The ADM181x series of microprocessor reset circuits are available in low cost, space-saving SOT-23 and SC70 packages.

### FUNCTIONAL BLOCK DIAGRAMS



Figure 1.

### Rev. E

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# ADM1810 to ADM1813/ADM1815 to ADM1818

## TABLE OF CONTENTS

|  |   |  |   |
|--|---|--|---|
| Features .....                                     | 1 | Typical Performance Characteristics .....    | 6 |
| Applications.....                                  | 1 | Theory of Operation.....                     | 7 |
| General Description .....                          | 1 | Timing Diagrams for All Devices .....        | 7 |
| Functional Block Diagrams.....                     | 1 | ADM1813 and ADM1818.....                     | 7 |
| Revision History .....                             | 2 | ADM1810, ADM1812, ADM1815, and ADM1817 ..... | 7 |
| Specifications.....                                | 3 | ADM1811 and ADM1816.....                     | 7 |
| Absolute Maximum Ratings.....                      | 4 | Outline Dimensions .....                     | 8 |
| ESD Caution.....                                   | 4 | Ordering Guide .....                         | 9 |
| Pin Configurations and Function Descriptions ..... | 5 |  |   |

## REVISION HISTORY

### 8/08—Rev. D to Rev. E

|                                  |   |
|----------------------------------|---|
| Changes to Table 3.....          | 5 |
| Updated Outline Dimensions ..... | 8 |
| Changes to Ordering Guide .....  | 9 |

### 10/05—Rev. C to Rev. D

|                                  |           |
|----------------------------------|-----------|
| Updated Format.....              | Universal |
| Added Figure 3.....              | 5         |
| Changes to Table 3.....          | 5         |
| Updated Outline Dimensions ..... | 8         |
| Editsto Ordering Guide .....     | 9         |

### 9/03—Rev. B to Rev. C.

|                                  |           |
|----------------------------------|-----------|
| Added SC70.....                  | Universal |
| Edits to Specifications .....    | 2         |
| Edits to Ordering Guide .....    | 4         |
| Updated Outline Dimensions ..... | 7         |

### 2/03—Rev. A to Rev. B.

|  |   |
|--|---|
| Edits to Features.....   | 1 |
| Deleted Table I .....  | 1 |
| Edits to Specifications.....                                     | 2 |
| Edits to Absolute Maximum Ratings.....                           | 3 |
| Edits to Ordering Guide .....                                    | 3 |
| Added Typical Performance Characteristics .....                  | 4 |
| Edits to ADM1813 AND ADM1818 section .....                       | 5 |
| Edits to ADM1810, ADM1812, ADM1815, and<br>ADM1817 Section ..... | 5 |
| Edits to ADM1811 and ADM1816 Section .....                       | 5 |
| Updated Outline Dimensions.....                                  | 6 |

### 3/02—Rev. 0 to Rev. A.

|   |   |
|---|---|
| Addition of Table .....                                   | 1 |
| Edits to Ordering Guide .....                             | 3 |
| Addition of New Text to ADM1813 and ADM1818 Section ..... | 4 |

### 4/99—Rev.0: Initial Version

# ADM1810 to ADM1813/ADM1815 to ADM1818

## SPECIFICATIONS

$V_{CC}$  = full operating range,  $T_A$  =  $-40^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$ , unless otherwise noted.

**Table 1.**

| Parameter   | Min            | Typ            | Max  | Unit          | Comments   |
|---|----------------|----------------|------|---------------|--|
| <b>SUPPLY</b>   |                |                |      |               |  |
| Voltage   | 1              |                | 5.5  | V             | $T_A = 0^{\circ}\text{C}$ to $105^{\circ}\text{C}$   |
|   | 1.2            |                | 5.5  | V             | $T_A = -40^{\circ}\text{C}$ to $+105^{\circ}\text{C}$  |
| Current   |                | 9              | 16   | $\mu\text{A}$ | $V_{CC} = 5.5\text{ V}$ , $V_{CC} > V_{TH}$ , no load  |
|   |                | 4              | 10   | $\mu\text{A}$ | $V_{CC} = 3.6\text{ V}$ , $V_{CC} > V_{TH}$ , no load  |
| <b>OUTPUT CURRENT</b>   |                |                |      |               |  |
| $\overline{\text{RST}}$ Output Source Current                   |                | 350            |      | $\mu\text{A}$ | $V_{CC} \geq V_{TH}$ (max), reset not asserted (ADM1810/ADM1815)   |
| RST Output Source Current                                       |                | 350            |      | $\mu\text{A}$ | $V_{CC} \leq V_{TH}$ (min), reset asserted (ADM1812/ADM1817)   |
| $\overline{\text{RST}}$ Output Sink Current                     | 8              |                |      | mA            | $V_{CC} \geq 2.7\text{ V}$ , reset asserted, $V_{OUT} = 0.4\text{ V}$<br>(ADM1810/ADM1811/ADM1813/ADM1815/ADM1816/<br>ADM1818) |
| RST Output Sink Current   | 8              |                |      | mA            | $V_{CC} \geq 2.7\text{ V}$ , reset not asserted, $V_{OUT} = 0.4\text{ V}$<br>(ADM1812/ADM1817)                                 |
| <b>OUTPUT VOLTAGE</b>   |                |                |      |               |  |
|   | $V_{CC} - 0.5$ | $V_{CC} - 0.1$ |      | V             | ADM1810/ADM1812/ADM1815/ADM1817 @ $0\ \mu\text{A}$ to $500\ \mu\text{A}$   |
| <b><math>V_{CC}</math> TRIP POINT</b>                           |                |                |      |               |  |
| ADM1810-5, ADM1811-5, ADM1812-5,<br>ADM1813-5                   | 4.50           | 4.62           | 4.75 | V             |  |
| ADM1810-10, ADM1811-10,<br>ADM1812-10, ADM1813-10               | 4.25           | 4.35           | 4.49 | V             |  |
| ADM1815-5, ADM1816-5, ADM1817-5,<br>ADM1818-5                   | 2.98           | 3.06           | 3.15 | V             |  |
| ADM1815-10, ADM1816-10,<br>ADM1817-10, ADM1818-10               | 2.80           | 2.88           | 2.97 | V             |  |
| ADM1815-20, ADM1816-20,<br>ADM1817-20, ADM1818-20               | 2.47           | 2.55           | 2.64 | V             |  |
| ADM1815-R23, ADM1816-R23,<br>ADM1817-R23, ADM1818-R23           | 2.25           | 2.31           | 2.37 | V             |  |
| ADM1815-R22, ADM1816-R22,<br>ADM1817-R22, ADM1818-R22           | 2.12           | 2.18           | 2.25 | V             |  |
| <b>INTERNAL PULL-UP RESISTOR</b>                                |                |                |      |               |  |
| ADM1811/ADM1816   | 3.5            | 5.5            | 7.5  | k $\Omega$    |  |
| ADM1813/ADM1818   | 3.1            | 5.5            | 7.5  | k $\Omega$    |  |
| <b>OUTPUT CAPACITANCE</b>                                       |                |                |      |               |  |
|   |                |                | 10   | pF            |  |
| <b>RESET ACTIVE TIME</b>  |                |                |      |               |  |
|   | 100            | 150            | 250  | ms            |  |
| <b><math>V_{CC}</math> DETECT TO RESET</b>                      |                |                |      |               |  |
| Falling   |                | 10             |      | $\mu\text{s}$ |  |
| Rising  | 100            | 150            | 250  | ms            | $t_R = 5\ \mu\text{s}$   |
| <b>PUSH-BUTTON DETECT TO <math>\overline{\text{RST}}</math></b> |                |                |      |               |  |
|   | 1              |                |      | $\mu\text{s}$ | (ADM1813/ADM1818)  |
| <b>PUSH-BUTTON RESET</b>  |                |                |      |               |  |
|   | 100            | 150            | 250  | ms            | (ADM1813/ADM1818)  |

# ADM1810 to ADM1813/ADM1815 to ADM1818

## ABSOLUTE MAXIMUM RATINGS

T<sub>A</sub> = 25°C, unless otherwise noted.

Table 2.

| Parameter                                 | Rating           |
|---|------------------|
| V <sub>CC</sub>                           | −0.3 V to +6.0 V |
| Input Current                             | 20 mA            |
| Operating Temperature Range               | −40°C to +105°C  |
| Storage Temperature Range                 | −65°C to +150°C  |
| θ <sub>JA</sub> Thermal Impedance, SOT-23 | 270°C/W          |
| θ <sub>JA</sub> Thermal Impedance, SC70   | 146°C/W          |
| Lead Temperature (Soldering, 10 sec)      | 300°C            |
| Vapor Phase (60 sec)                      | 215°C            |
| Infrared (15 sec)                         | 220°C            |

Stresses above those listed under Absolute Maximum Ratings may cause permanent damage to the device. This is a stress rating only; functional operation of the device at these or any other conditions above those indicated in the operational section of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

### ESD CAUTION



**ESD (electrostatic discharge) sensitive device.** Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

## PIN CONFIGURATIONS AND FUNCTION DESCRIPTIONS



Figure 2. 3-Lead SOT-23 Pin Configuration



Figure 3. 3-Lead SC70 Pin Configuration

Table 3. Pin Function Descriptions

| Pin No. |      | Mnemonic                | Function  |
|---------|------|-------------------------|---|
| SOT-23  | SC70 |                         |   |
| 1       | 2    | RST                     | Active High Reset Output. RST remains high while V <sub>CC</sub> is below the reset threshold and remains high for 150 ms typical after V <sub>CC</sub> rises above the reset threshold. Applies to the ADM1812 and ADM1817 only.   |
|         |      | $\overline{\text{RST}}$ | Active Low Reset Output. $\overline{\text{RST}}$ remains low while V <sub>CC</sub> is below the reset threshold and remains low for 150 ms typical after V <sub>CC</sub> rises above the reset threshold. Applies to the ADM1810, ADM1811, ADM1813, ADM1815, ADM1816, and ADM1818 only. |
| 2       | 1    | V <sub>CC</sub>         | Supply Voltage. The supply voltage being monitored.   |
| 3       | 3    | GND                     | Ground. 0 V ground reference for all signals.   |

# ADM1810 to ADM1813/ADM1815 to ADM1818

## TYPICAL PERFORMANCE CHARACTERISTICS



Figure 4. Supply Current vs. Temperature



Figure 7. Normalized Reset Threshold vs. Temperature



Figure 5. Power-Down Reset Delay vs. Temperature



Figure 8. Maximum Transient Duration Without Causing a Reset Pulse vs. Reset Comparator Overdrive



Figure 6. Power-Up Reset Timeout vs. Temperature

## THEORY OF OPERATION

### TIMING DIAGRAMS FOR ALL DEVICES

The following two timing diagrams are valid for ADM1810, ADM1811, ADM1812, ADM1813, ADM1815, ADM1816, ADM1817, and ADM1818.



Figure 9. Power-Down Timing Diagram



Figure 10. Power-Up Timing Diagram

### ADM1813 AND ADM1818

The ADM1813 and ADM1818 are low cost voltage monitoring devices featuring an open-drain output and optional push-button reset function.



Figure 11. ADM1813/ADM1818 Typical Application

An optional push-button reset switch can be connected between RST and ground. Pressing this switch pulls the reset output low. If the push-button reset button pulls the RST output low for a period greater than 1  $\mu$ s when the reset button releases the RST line to float high, then the RST line stays low for another 150 ms typical.



Figure 12. Push-Button Reset Timing Diagram

The ADM1818 range has 2.88 V and 2.55 V (typical) trip point options that allow the user to monitor 3.3 V and 3 V supplies. For 5 V monitoring requirements, the ADM1813 range has 4.62 V and 4.35 V (typical) trip point options.

### ADM1810, ADM1812, ADM1815, AND ADM1817

The ADM1812 is a 5 V supply monitor with an active high push-pull output and trip point options of 4.62 V and 4.35 V typical. The ADM1810 is similar to the ADM1812, except that the ADM1810 has an active low push-pull output stage. The ADM1817 is suitable for monitoring 3.3 V, 3 V, and 2.5 V supplies, with an active high push-pull output and trip point options of 3.06 V, 2.88 V, 2.55 V, 2.31 V, and 2.18 V typical. The ADM1815 is similar to the ADM1817, except that the ADM1815 has an active low push-pull output stage.

The ADM1810/ADM1812/ADM1815/ADM1817 can connect directly to most microprocessor reset inputs without the need for external components.



Figure 13. ADM1810/ADM1812/ADM1815/ADM1817 Typical Application

### ADM1811 AND ADM1816

The ADM1811 is a 5 V supply monitor with an active low open-drain output and trip point options of 4.62 V and 4.35 V typical. The ADM1816 also has an active low open-drain output but is suitable for monitoring lower voltage supplies of 3.3 V, 3 V, and 2.5 V.



Figure 14. ADM1811/ADM1816 Typical Application

# ADM1810 to ADM1813/ADM1815 to ADM1818

## OUTLINE DIMENSIONS



COMPLIANT TO JEDEC STANDARDS TO-236-AB

Figure 15. 3-Lead Small Outline Transistor Package [SOT-23] (RT-3)

Dimensions shown in millimeters

092707-A



ALL DIMENSIONS COMPLIANT WITH EIAJ SC70

Figure 16. 3-Lead Thin Shrink Small Outline Transistor Package [SC70] (KS-3)

Dimensions shown in millimeters

111505-0



# ADM1810 to ADM1813/ADM1815 to ADM1818

## ORDERING GUIDE

| Model <sup>1</sup>              | Temperature Range | Trip Point | Package Option | Branding |
|---------------------------------|-------------------|------------|----------------|----------|
| ADM1810-5AKS-REEL               | -40°C to +105°C   | 4.62 V     | KS-3 (SC70)    | MZV      |
| ADM1810-5AKS-RL7                | -40°C to +105°C   | 4.62 V     | KS-3 (SC70)    | MZV      |
| ADM1810-5AKSZ-REEL <sup>2</sup> | -40°C to +105°C   | 4.62 V     | KS-3 (SC70)    | M4Y      |
| ADM1810-5AKSZ-RL7 <sup>2</sup>  | -40°C to +105°C   | 4.62 V     | KS-3 (SC70)    | M4Y      |
| ADM1810-5ART-REEL               | -40°C to +105°C   | 4.62 V     | RT-3 (SOT-23)  | MZV      |
| ADM1810-5ART-REEL7              | -40°C to +105°C   | 4.62 V     | RT-3 (SOT-23)  | MZV      |
| ADM1810-5ARTZ-REEL <sup>2</sup> | -40°C to +105°C   | 4.62 V     | RT-3 (SOT-23)  | M4Y      |
| ADM1810-5ARTZ-RL7 <sup>2</sup>  | -40°C to +105°C   | 4.62 V     | RT-3 (SOT-23)  | M4Y      |
| ADM1810-10AKS-REEL              | -40°C to +105°C   | 4.35 V     | KS-3 (SC70)    | MZT      |
| ADM1810-10AKS-RL7               | -40°C to +105°C   | 4.35 V     | KS-3 (SC70)    | MZT      |
| ADM1810-10AKSZ-RL <sup>2</sup>  | -40°C to +105°C   | 4.35 V     | KS-3 (SC70)    | M4Z      |
| ADM1810-10AKSZ-RL7 <sup>2</sup> | -40°C to +105°C   | 4.35 V     | KS-3 (SC70)    | M4Z      |
| ADM1810-10ART-REEL              | -40°C to +105°C   | 4.35 V     | RT-3 (SOT-23)  | MZT      |
| ADM1810-10ART-RL7               | -40°C to +105°C   | 4.35 V     | RT-3 (SOT-23)  | MZT      |
| ADM1810-10ARTZ-RL <sup>2</sup>  | -40°C to +105°C   | 4.35 V     | RT-3 (SOT-23)  | M4Z      |
| ADM1810-10ARTZ-RL7 <sup>2</sup> | -40°C to +105°C   | 4.35 V     | RT-3 (SOT-23)  | M4Z      |
| ADM1811-5AKS-REEL               | -40°C to +105°C   | 4.62 V     | KS-3 (SC70)    | M1V      |
| ADM1811-5AKS-RL7                | -40°C to +105°C   | 4.62 V     | KS-3 (SC70)    | M1V      |
| ADM1811-5AKSZ-REEL <sup>2</sup> | -40°C to +105°C   | 4.62 V     | KS-3 (SC70)    | M6Z      |
| ADM1811-5AKSZ-RL7 <sup>2</sup>  | -40°C to +105°C   | 4.62 V     | KS-3 (SC70)    | M6Z      |
| ADM1811-5ART-REEL               | -40°C to +105°C   | 4.62 V     | RT-3 (SOT-23)  | M1V      |
| ADM1811-5ART-REEL7              | -40°C to +105°C   | 4.62 V     | RT-3 (SOT-23)  | M1V      |
| ADM1811-5ARTZ-REEL <sup>2</sup> | -40°C to +105°C   | 4.62 V     | RT-3 (SOT-23)  | M6Z      |
| ADM1811-5ARTZ-RL7 <sup>2</sup>  | -40°C to +105°C   | 4.62 V     | RT-3 (SOT-23)  | M6Z      |
| ADM1811-10AKS-REEL              | -40°C to +105°C   | 4.35 V     | KS-3 (SC70)    | M1T      |
| ADM1811-10AKS-RL7               | -40°C to +105°C   | 4.35 V     | KS-3 (SC70)    | M1T      |
| ADM1811-10AKSZ-RL <sup>2</sup>  | -40°C to +105°C   | 4.35 V     | KS-3 (SC70)    | M70      |
| ADM1811-10AKSZ-RL7 <sup>2</sup> | -40°C to +105°C   | 4.35 V     | KS-3 (SC70)    | M70      |
| ADM1811-10ART-REEL              | -40°C to +105°C   | 4.35 V     | RT-3 (SOT-23)  | M1T      |
| ADM1811-10ART-RL7               | -40°C to +105°C   | 4.35 V     | RT-3 (SOT-23)  | M1T      |
| ADM1811-10ARTZ-RL <sup>2</sup>  | -40°C to +105°C   | 4.35 V     | RT-3 (SOT-23)  | M70      |
| ADM1811-10ARTZ-RL7 <sup>2</sup> | -40°C to +105°C   | 4.35 V     | RT-3 (SOT-23)  | M70      |
| ADM1812-5AKS-REEL               | -40°C to +105°C   | 4.62 V     | KS-3 (SC70)    | MTV      |
| ADM1812-5AKS-RL7                | -40°C to +105°C   | 4.62 V     | KS-3 (SC70)    | MTV      |
| ADM1812-5AKSZ-REEL <sup>2</sup> | -40°C to +105°C   | 4.62 V     | KS-3 (SC70)    | M72      |
| ADM1812-5AKSZ-RL7 <sup>2</sup>  | -40°C to +105°C   | 4.62 V     | KS-3 (SC70)    | M72      |
| ADM1812-5ART-REEL               | -40°C to +105°C   | 4.62 V     | RT-3 (SOT-23)  | MTV      |
| ADM1812-5ART-REEL7              | -40°C to +105°C   | 4.62 V     | RT-3 (SOT-23)  | MTV      |
| ADM1812-5ARTZ-REEL <sup>2</sup> | -40°C to +105°C   | 4.62 V     | RT-3 (SOT-23)  | M72      |
| ADM1812-5ARTZ-RL7 <sup>2</sup>  | -40°C to +105°C   | 4.62 V     | RT-3 (SOT-23)  | M72      |
| ADM1812-10AKS-REEL              | -40°C to +105°C   | 4.35 V     | KS-3 (SC70)    | MTT      |
| ADM1812-10AKS-RL7               | -40°C to +105°C   | 4.35 V     | KS-3 (SC70)    | MTT      |
| ADM1812-10AKSZ-RL <sup>2</sup>  | -40°C to +105°C   | 4.35 V     | KS-3 (SC70)    | M71      |
| ADM1812-10AKSZ-RL7 <sup>2</sup> | -40°C to +105°C   | 4.35 V     | KS-3 (SC70)    | M71      |
| ADM1812-10ART-REEL              | -40°C to +105°C   | 4.35 V     | RT-3 (SOT-23)  | MTT      |
| ADM1812-10ART-RL7               | -40°C to +105°C   | 4.35 V     | RT-3 (SOT-23)  | MTT      |
| ADM1812-10ARTZ-RL <sup>2</sup>  | -40°C to +105°C   | 4.35 V     | RT-3 (SOT-23)  | M71      |
| ADM1812-10ARTZ-RL7 <sup>2</sup> | -40°C to +105°C   | 4.35 V     | RT-3 (SOT-23)  | M71      |

# ADM1810 to ADM1813/ADM1815 to ADM1818

| Model <sup>1</sup>              | Temperature Range | Trip Point | Package Option | Branding |
|---------------------------------|-------------------|------------|----------------|----------|
| ADM1813-5AKS-REEL               | -40°C to +105°C   | 4.62 V     | KS-3 (SC70)    | M3V      |
| ADM1813-5AKS-RL7                | -40°C to +105°C   | 4.62 V     | KS-3 (SC70)    | M3V      |
| ADM1813-5AKSZ-REEL <sup>2</sup> | -40°C to +105°C   | 4.62 V     | KS-3 (SC70)    | M6X      |
| ADM1813-5AKSZ-RL7 <sup>2</sup>  | -40°C to +105°C   | 4.62 V     | KS-3 (SC70)    | M6X      |
| ADM1813-5ART-RL                 | -40°C to +105°C   | 4.62 V     | RT-3 (SOT-23)  | M3V      |
| ADM1813-5ART-RL7                | -40°C to +105°C   | 4.62 V     | RT-3 (SOT-23)  | M3V      |
| ADM1813-5ARTZ-RL <sup>2</sup>   | -40°C to +105°C   | 4.62 V     | RT-3 (SOT-23)  | M6X      |
| ADM1813-5ARTZ-RL7 <sup>2</sup>  | -40°C to +105°C   | 4.62 V     | RT-3 (SOT-23)  | M6X      |
| ADM1813-10AKS-REEL              | -40°C to +105°C   | 4.35 V     | KS-3 (SC70)    | M3T      |
| ADM1813-10AKS-RL7               | -40°C to +105°C   | 4.35 V     | KS-3 (SC70)    | M3T      |
| ADM1813-10AKSZ-RL <sup>2</sup>  | -40°C to +105°C   | 4.35 V     | KS-3 (SC70)    | M6Y      |
| ADM1813-10AKSZ-RL7 <sup>2</sup> | -40°C to +105°C   | 4.35 V     | KS-3 (SC70)    | M6Y      |
| ADM1813-10ART-REEL              | -40°C to +105°C   | 4.35 V     | RT-3 (SOT-23)  | M3T      |
| ADM1813-10ART-RL7               | -40°C to +105°C   | 4.35 V     | RT-3 (SOT-23)  | M3T      |
| ADM1813-10ARTZ-RL <sup>2</sup>  | -40°C to +105°C   | 4.35 V     | RT-3 (SOT-23)  | M6Y      |
| ADM1813-10ARTZ-RL7 <sup>2</sup> | -40°C to +105°C   | 4.35 V     | RT-3 (SOT-23)  | M6Y      |
| ADM1815-5AKS-REEL               | -40°C to +105°C   | 3.06 V     | KS-3 (SC70)    | M5K      |
| ADM1815-5AKS-RL7                | -40°C to +105°C   | 3.06 V     | KS-3 (SC70)    | M5K      |
| ADM1815-5AKSZ-REEL <sup>2</sup> | -40°C to +105°C   | 3.06 V     | KS-3 (SC70)    | M73      |
| ADM1815-5AKSZ-RL7 <sup>2</sup>  | -40°C to +105°C   | 3.06 V     | KS-3 (SC70)    | M73      |
| ADM1815-5ART-REEL               | -40°C to +105°C   | 3.06 V     | RT-3 (SOT-23)  | M5K      |
| ADM1815-5ART-REEL7              | -40°C to +105°C   | 3.06 V     | RT-3 (SOT-23)  | M5K      |
| ADM1815-5ARTZ-REEL <sup>2</sup> | -40°C to +105°C   | 3.06 V     | RT-3 (SOT-23)  | M73      |
| ADM1815-5ARTZ-RL7 <sup>2</sup>  | -40°C to +105°C   | 3.06 V     | RT-3 (SOT-23)  | M73      |
| ADM1815-10AKS-REEL              | -40°C to +105°C   | 2.88 V     | KS-3 (SC70)    | M5E      |
| ADM1815-10AKS-RL7               | -40°C to +105°C   | 2.88 V     | KS-3 (SC70)    | M5E      |
| ADM1815-10AKSZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.88 V     | KS-3 (SC70)    | M4F      |
| ADM1815-10AKSZ-RL7 <sup>2</sup> | -40°C to +105°C   | 2.88 V     | KS-3 (SC70)    | M4F      |
| ADM1815-10ART-REEL              | -40°C to +105°C   | 2.88 V     | RT-3 (SOT-23)  | M5E      |
| ADM1815-10ART-RL7               | -40°C to +105°C   | 2.88 V     | RT-3 (SOT-23)  | M5E      |
| ADM1815-10ARTZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.88 V     | RT-3 (SOT-23)  | M4F      |
| ADM1815-10ARTZ-RL7 <sup>2</sup> | -40°C to +105°C   | 2.88 V     | RT-3 (SOT-23)  | M4F      |
| ADM1815-20AKS-REEL              | -40°C to +105°C   | 2.55 V     | KS-3 (SC70)    | M5A      |
| ADM1815-20AKS-RL7               | -40°C to +105°C   | 2.55 V     | KS-3 (SC70)    | M5A      |
| ADM1815-20AKSZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.55 V     | KS-3 (SC70)    | M76      |
| ADM1815-20AKSZ-RL7 <sup>2</sup> | -40°C to +105°C   | 2.55 V     | KS-3 (SC70)    | M76      |
| ADM1815-20ART-RL                | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M5A      |
| ADM1815-20ART-RL7               | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M5A      |
| ADM1815-20ARTZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M76      |
| ADM1815-20ARTZ-RL7 <sup>2</sup> | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M76      |
| ADM1815-R22AKS-RL               | -40°C to +105°C   | 2.18 V     | KS-3 (SC70)    | M5B      |
| ADM1815-R22AKS-RL7              | -40°C to +105°C   | 2.18 V     | KS-3 (SC70)    | M5B      |
| ADM1815-R22AKSZ-RL <sup>2</sup> | -40°C to +105°C   | 2.18 V     | KS-3 (SC70)    | M74      |
| ADM1815-R22AKSZ-R7 <sup>2</sup> | -40°C to +105°C   | 2.18 V     | KS-3 (SC70)    | M74      |
| ADM1815-R22ART-RL               | -40°C to +105°C   | 2.18 V     | RT-3 (SOT-23)  | M5B      |
| ADM1815-R22ART-RL7              | -40°C to +105°C   | 2.18 V     | RT-3 (SOT-23)  | M5B      |
| ADM1815-R22ARTZ-RL <sup>2</sup> | -40°C to +105°C   | 2.18 V     | RT-3 (SOT-23)  | M74      |
| ADM1815-R22ARTZ-R7 <sup>2</sup> | -40°C to +105°C   | 2.18 V     | RT-3 (SOT-23)  | M74      |
| ADM1815-R23AKS-RL               | -40°C to +105°C   | 2.31 V     | KS-3 (SC70)    | M5C      |
| ADM1815-R23AKS-RL7              | -40°C to +105°C   | 2.31 V     | KS-3 (SC70)    | M5C      |
| ADM1815-R23AKSZ-RL <sup>2</sup> | -40°C to +105°C   | 2.31 V     | KS-3 (SC70)    | M75      |
| ADM1815-R23AKSZ-R7 <sup>2</sup> | -40°C to +105°C   | 2.31 V     | KS-3 (SC70)    | M75      |

# ADM1810 to ADM1813/ADM1815 to ADM1818

| Model <sup>1</sup>              | Temperature Range | Trip Point | Package Option | Branding |
|---------------------------------|-------------------|------------|----------------|----------|
| ADM1815-R23ART-RL               | -40°C to +105°C   | 2.31 V     | RT-3 (SOT-23)  | M5C      |
| ADM1815-R23ART-RL7              | -40°C to +105°C   | 2.31 V     | RT-3 (SOT-23)  | M5C      |
| ADM1815-R23ARTZ-RL <sup>2</sup> | -40°C to +105°C   | 2.31 V     | RT-3 (SOT-23)  | M75      |
| ADM1815-R23ARTZ-R7 <sup>2</sup> | -40°C to +105°C   | 2.31 V     | RT-3 (SOT-23)  | M75      |
| ADM1816-5AKS-REEL               | -40°C to +105°C   | 3.06 V     | KS-3 (SC70)    | M6K      |
| ADM1816-5AKS-REEL7              | -40°C to +105°C   | 3.06 V     | KS-3 (SC70)    | M6K      |
| ADM1816-5AKSZ-REEL <sup>2</sup> | -40°C to +105°C   | 3.06 V     | KS-3 (SC70)    | M77      |
| ADM1816-5AKSZ-RL7 <sup>2</sup>  | -40°C to +105°C   | 3.06 V     | KS-3 (SC70)    | M77      |
| ADM1816-5ART-REEL               | -40°C to +105°C   | 3.06 V     | RT-3 (SOT-23)  | M6K      |
| ADM1816-5ART-REEL7              | -40°C to +105°C   | 3.06 V     | RT-3 (SOT-23)  | M6K      |
| ADM1816-5ARTZ-REEL <sup>2</sup> | -40°C to +105°C   | 3.06 V     | RT-3 (SOT-23)  | M77      |
| ADM1816-5ARTZ-RL7 <sup>2</sup>  | -40°C to +105°C   | 3.06 V     | RT-3 (SOT-23)  | M77      |
| ADM1816-10AKS-REEL              | -40°C to +105°C   | 2.88 V     | KS-3 (SC70)    | M6E      |
| ADM1816-10AKS-RL7               | -40°C to +105°C   | 2.88 V     | KS-3 (SC70)    | M6E      |
| ADM1816-10AKSZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.88 V     | KS-3 (SC70)    | M54      |
| ADM1816-10AKSZ-RL7 <sup>2</sup> | -40°C to +105°C   | 2.88 V     | KS-3 (SC70)    | M54      |
| ADM1816-10ART-REEL              | -40°C to +105°C   | 2.88 V     | RT-3 (SOT-23)  | M6E      |
| ADM1816-10ART-RL7               | -40°C to +105°C   | 2.88 V     | RT-3 (SOT-23)  | M6E      |
| ADM1816-10ARTZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.88 V     | RT-3 (SOT-23)  | M54      |
| ADM1816-10ARTZ-RL7 <sup>2</sup> | -40°C to +105°C   | 2.88 V     | RT-3 (SOT-23)  | M54      |
| ADM1816-20AKS-REEL              | -40°C to +105°C   | 2.55 V     | KS-3 (SC70)    | M6A      |
| ADM1816-20AKS-RL7               | -40°C to +105°C   | 2.55 V     | KS-3 (SC70)    | M6A      |
| ADM1816-20AKSZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.55 V     | KS-3 (SC70)    | M6H      |
| ADM1816-20AKSZ-RL7 <sup>2</sup> | -40°C to +105°C   | 2.55 V     | KS-3 (SC70)    | M6H      |
| ADM1816-20ART-REEL              | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M6A      |
| ADM1816-20ART-RL7               | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M6A      |
| ADM1816-20ARTZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M6H      |
| ADM1816-20ARTZ-RL7 <sup>2</sup> | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M6H      |
| ADM1816-20ARTZ-RL7 <sup>2</sup> | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M6H      |
| ADM1816-R22AKS-RL               | -40°C to +105°C   | 2.18 V     | KS-3 (SC70)    | M6B      |
| ADM1816-R22AKS-RL7              | -40°C to +105°C   | 2.18 V     | KS-3 (SC70)    | M6B      |
| ADM1816-R22AKSZ-RL <sup>2</sup> | -40°C to +105°C   | 2.18 V     | KS-3 (SC70)    | M78      |
| ADM1816-R22AKSZ-R7 <sup>2</sup> | -40°C to +105°C   | 2.18 V     | KS-3 (SC70)    | M78      |
| ADM1816-R22ART-RL               | -40°C to +105°C   | 2.18 V     | RT-3 (SOT-23)  | M6B      |
| ADM1816-R22ART-RL7              | -40°C to +105°C   | 2.18 V     | RT-3 (SOT-23)  | M6B      |
| ADM1816-R22ARTZ-RL <sup>2</sup> | -40°C to +105°C   | 2.18 V     | RT-3 (SOT-23)  | M78      |
| ADM1816-R22ARTZ-R7 <sup>2</sup> | -40°C to +105°C   | 2.18 V     | RT-3 (SOT-23)  | M78      |
| ADM1816-R23AKS-RL               | -40°C to +105°C   | 2.31 V     | KS-3 (SC70)    | M6C      |
| ADM1816-R23AKS-RL7              | -40°C to +105°C   | 2.31 V     | KS-3 (SC70)    | M6C      |
| ADM1816-R23AKSZ-RL <sup>2</sup> | -40°C to +105°C   | 2.31 V     | KS-3 (SC70)    | M79      |
| ADM1816-R23AKSZ-R7 <sup>2</sup> | -40°C to +105°C   | 2.31 V     | KS-3 (SC70)    | M79      |
| ADM1816-R23ART-RL               | -40°C to +105°C   | 2.31 V     | RT-3 (SOT-23)  | M6C      |
| ADM1816-R23ART-RL7              | -40°C to +105°C   | 2.31 V     | RT-3 (SOT-23)  | M6C      |
| ADM1816-R23ARTZ-RL <sup>2</sup> | -40°C to +105°C   | 2.31 V     | RT-3 (SOT-23)  | M79      |
| ADM1816-R23ARTZ-R7 <sup>2</sup> | -40°C to +105°C   | 2.31 V     | RT-3 (SOT-23)  | M79      |
| ADM1817-5AKS-REEL               | -40°C to +105°C   | 3.06 V     | KS-3 (SC70)    | M7K      |
| ADM1817-5AKS-REEL7              | -40°C to +105°C   | 3.06 V     | KS-3 (SC70)    | M7K      |
| ADM1817-5AKSZ-REEL <sup>2</sup> | -40°C to +105°C   | 3.06 V     | KS-3 (SC70)    | M7F      |
| ADM1817-5AKSZ-RL7 <sup>2</sup>  | -40°C to +105°C   | 3.06 V     | KS-3 (SC70)    | M7F      |
| ADM1817-5ART-REEL               | -40°C to +105°C   | 3.06 V     | RT-3 (SOT-23)  | M7K      |
| ADM1817-5ART-REEL7              | -40°C to +105°C   | 3.06 V     | RT-3 (SOT-23)  | M7K      |
| ADM1817-5ARTZ-REEL <sup>2</sup> | -40°C to +105°C   | 3.06 V     | RT-3 (SOT-23)  | M7F      |
| ADM1817-5ARTZ-RL7 <sup>2</sup>  | -40°C to +105°C   | 3.06 V     | RT-3 (SOT-23)  | M7F      |

# ADM1810 to ADM1813/ADM1815 to ADM1818

| Model <sup>1</sup>              | Temperature Range | Trip Point | Package Option | Branding |
|---------------------------------|-------------------|------------|----------------|----------|
| ADM1817-10AKS-REEL              | -40°C to +105°C   | 2.88 V     | KS-3 (SC70)    | M7E      |
| ADM1817-10AKS-RL7               | -40°C to +105°C   | 2.88 V     | KS-3 (SC70)    | M7E      |
| ADM1817-10AKSZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.88 V     | KS-3 (SC70)    | M7G      |
| ADM1817-10AKSZ-RL7 <sup>2</sup> | -40°C to +105°C   | 2.88 V     | KS-3 (SC70)    | M7G      |
| ADM1817-10ART-REEL              | -40°C to +105°C   | 2.88 V     | RT-3 (SOT-23)  | M7E      |
| ADM1817-10ART-RL7               | -40°C to +105°C   | 2.88 V     | RT-3 (SOT-23)  | M7E      |
| ADM1817-10ARTZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.88 V     | RT-3 (SOT-23)  | M7G      |
| ADM1817-10ARTZ-RL7 <sup>2</sup> | -40°C to +105°C   | 2.88 V     | RT-3 (SOT-23)  | M7G      |
| ADM1817-20AKS-REEL              | -40°C to +105°C   | 2.55 V     | KS-3 (SC70)    | M7A      |
| ADM1817-20AKS-RL7               | -40°C to +105°C   | 2.55 V     | KS-3 (SC70)    | M7A      |
| ADM1817-20AKSZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.55 V     | KS-3 (SC70)    | M7H      |
| ADM1817-20AKSZ-RL7 <sup>2</sup> | -40°C to +105°C   | 2.55 V     | KS-3 (SC70)    | M7H      |
| ADM1817-20ART-REEL              | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M7A      |
| ADM1817-20ART-RL7               | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M7A      |
| ADM1817-20ARTZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M7H      |
| ADM1817-20ARTZ-RL7 <sup>2</sup> | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M7H      |
| ADM1817-R22AKS-RL               | -40°C to +105°C   | 2.18 V     | KS-3 (SC70)    | M7B      |
| ADM1817-R22AKS-RL7              | -40°C to +105°C   | 2.18 V     | KS-3 (SC70)    | M7B      |
| ADM1817-R22AKSZ-RL <sup>2</sup> | -40°C to +105°C   | 2.18 V     | KS-3 (SC70)    | M7J      |
| ADM1817-R22AKSZ-R7 <sup>2</sup> | -40°C to +105°C   | 2.18 V     | KS-3 (SC70)    | M7J      |
| ADM1817-R22ART-RL               | -40°C to +105°C   | 2.18 V     | RT-3 (SOT-23)  | M7B      |
| ADM1817-R22ART-RL7              | -40°C to +105°C   | 2.18 V     | RT-3 (SOT-23)  | M7B      |
| ADM1817-R22ARTZ-RL <sup>2</sup> | -40°C to +105°C   | 2.18 V     | RT-3 (SOT-23)  | M7J      |
| ADM1817-R22ARTZ-R7 <sup>2</sup> | -40°C to +105°C   | 2.18 V     | RT-3 (SOT-23)  | M7J      |
| ADM1817-R23AKS-RL               | -40°C to +105°C   | 2.31 V     | KS-3 (SC70)    | M7C      |
| ADM1817-R23AKS-RL7              | -40°C to +105°C   | 2.31 V     | KS-3 (SC70)    | M7C      |
| ADM1817-R23AKSZ-RL <sup>2</sup> | -40°C to +105°C   | 2.31 V     | KS-3 (SC70)    | M7L      |
| ADM1817-R23AKSZ-R7 <sup>2</sup> | -40°C to +105°C   | 2.31 V     | KS-3 (SC70)    | M7L      |
| ADM1817-R23ART-RL               | -40°C to +105°C   | 2.31 V     | RT-3 (SOT-23)  | M7C      |
| ADM1817-R23ART-RL7              | -40°C to +105°C   | 2.31 V     | RT-3 (SOT-23)  | M7C      |
| ADM1817-R23ARTZ-RL <sup>2</sup> | -40°C to +105°C   | 2.31 V     | RT-3 (SOT-23)  | M7L      |
| ADM1817-R23ARTZ-R7 <sup>2</sup> | -40°C to +105°C   | 2.31 V     | RT-3 (SOT-23)  | M7L      |
| ADM1818-5AKS-REEL               | -40°C to +105°C   | 3.06 V     | KS-3 (SC70)    | M8K      |
| ADM1818-5AKS-REEL7              | -40°C to +105°C   | 3.06 V     | KS-3 (SC70)    | M8K      |
| ADM1818-5AKSZ-REEL <sup>2</sup> | -40°C to +105°C   | 3.06 V     | KS-3 (SC70)    | M4T      |
| ADM1818-5AKSZ-RL7 <sup>2</sup>  | -40°C to +105°C   | 3.06 V     | KS-3 (SC70)    | M4T      |
| ADM1818-5ART-REEL               | -40°C to +105°C   | 3.06 V     | RT-3 (SOT-23)  | M8K      |
| ADM1818-5ART-REEL7              | -40°C to +105°C   | 3.06 V     | RT-3 (SOT-23)  | M8K      |
| ADM1818-5ARTZ-REEL <sup>2</sup> | -40°C to +105°C   | 3.06 V     | RT-3 (SOT-23)  | M4T      |
| ADM1818-5ARTZ-RL7 <sup>2</sup>  | -40°C to +105°C   | 3.06 V     | RT-3 (SOT-23)  | M4T      |
| ADM1818-10AKS-REEL              | -40°C to +105°C   | 2.88 V     | KS-3 (SC70)    | M8E      |
| ADM1818-10AKS-RL7               | -40°C to +105°C   | 2.88 V     | KS-3 (SC70)    | M8E      |
| ADM1818-10AKSZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.88 V     | KS-3 (SC70)    | M7P      |
| ADM1818-10AKSZ-RL7 <sup>2</sup> | -40°C to +105°C   | 2.88 V     | KS-3 (SC70)    | M7P      |
| ADM1818-10ART-REEL              | -40°C to +105°C   | 2.88 V     | RT-3 (SOT-23)  | M8E      |
| ADM1818-10ART-RL7               | -40°C to +105°C   | 2.88 V     | RT-3 (SOT-23)  | M8E      |
| ADM1818-10ARTZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.88 V     | RT-3 (SOT-23)  | M7P      |
| ADM1818-20AKS-REEL              | -40°C to +105°C   | 2.55 V     | KS-3 (SC70)    | M8A      |
| ADM1818-20AKS-RL7               | -40°C to +105°C   | 2.55 V     | KS-3 (SC70)    | M8A      |
| ADM1818-20AKSZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.55 V     | KS-3 (SC70)    | M59      |
| ADM1818-20AKSZ-RL7 <sup>2</sup> | -40°C to +105°C   | 2.55 V     | KS-3 (SC70)    | M59      |
| ADM1818-20ART-REEL              | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M8A      |

## ADM1810 to ADM1813/ADM1815 to ADM1818

| Model <sup>1</sup>              | Temperature Range | Trip Point | Package Option | Branding |
|---------------------------------|-------------------|------------|----------------|----------|
| ADM1818-20ART-RL7               | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M8A      |
| ADM1818-20ARTZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M59      |
| ADM1818-20ARTZ-RL <sup>2</sup>  | -40°C to +105°C   | 2.55 V     | RT-3 (SOT-23)  | M59      |
| ADM1818-R22AKS-RL               | -40°C to +105°C   | 2.18 V     | KS-3 (SC70)    | M8B      |
| ADM1818-R22AKS-RL7              | -40°C to +105°C   | 2.18 V     | KS-3 (SC70)    | M8B      |
| ADM1818-R22AKSZ-RL <sup>2</sup> | -40°C to +105°C   | 2.18 V     | KS-3 (SC70)    | M7M      |
| ADM1818-R22AKSZ-R7 <sup>2</sup> | -40°C to +105°C   | 2.18 V     | KS-3 (SC70)    | M7M      |
| ADM1818-R22ART-RL               | -40°C to +105°C   | 2.18 V     | RT-3 (SOT-23)  | M8B      |
| ADM1818-R22ART-RL7              | -40°C to +105°C   | 2.18 V     | RT-3 (SOT-23)  | M8B      |
| ADM1818-R23AKS-RL               | -40°C to +105°C   | 2.31 V     | KS-3 (SC70)    | M8C      |
| ADM1818-R23AKS-RL7              | -40°C to +105°C   | 2.31 V     | KS-3 (SC70)    | M8C      |
| ADM1818-R23AKSZ-RL <sup>2</sup> | -40°C to +105°C   | 2.31 V     | KS-3 (SC70)    | M7N      |
| ADM1818-R23AKSZ-R7 <sup>2</sup> | -40°C to +105°C   | 2.31 V     | KS-3 (SC70)    | M7N      |
| ADM1818-R23ART-RL               | -40°C to +105°C   | 2.31 V     | RT-3 (SOT-23)  | M8C      |
| ADM1818-R23ART-RL7              | -40°C to +105°C   | 2.31 V     | RT-3 (SOT-23)  | M8C      |

<sup>1</sup> Available only in reels.

<sup>2</sup> Z = RoHS Compliant Part.

**NOTES**

**NOTES**

**NOTES**



Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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