



**Current Sensing Resistors**  
**RLT Series**  
**AEC-Q 200-Ver D qualified**

|             |               |
|-------------|---------------|
| Document No | TRLT-XX0S001H |
| Issued date | 2022/12/19    |
| page        | 1/8           |

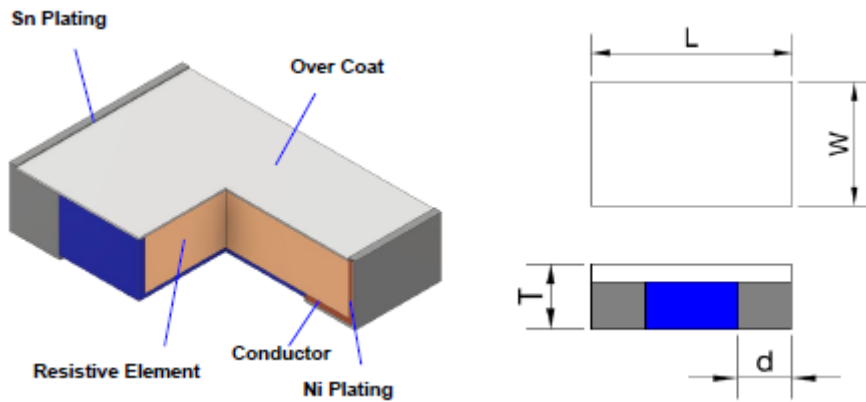
**1. Scope**

This specification applied to the products of current sensing resistor of metal alloy for RLT series manufactured by TA-I TECHNOLOGY CO., LTD.

**2. Type Designation**

| RLT10                               | F                           | T                | S                              | R002                             |
|-------------------------------------|-----------------------------|------------------|--------------------------------|----------------------------------|
| <b>Series No.</b>                   | <b>Tolerance</b>            | <b>Packaging</b> | <b>Power</b>                   | <b>Resistance</b>                |
| 06 : 0603<br>10 : 0805<br>12 : 1206 | F= ±1%<br>G= ±2 %<br>J= ±5% | T= Paper         | S= 0.5W<br>I= 0.75W<br>C= 1.0W | e.g.<br>R002= 2mΩ<br>R0015=1.5mΩ |

**3. Construction and Dimension**



| Type  | L         | W         | d                        | T                       |
|-------|-----------|-----------|--------------------------|-------------------------|
| RLT06 | 1.60±0.15 | 0.80±0.20 | 0.6 ± 0.20<br>(R = 1mΩ)  | 0.40±0.10               |
|       |           |           | 0.35 ± 0.20<br>(R > 1mΩ) |                         |
| RLT10 | 2.05±0.15 | 1.30±0.20 | 0.35±0.20                | 0.40 ±0.10<br>(R ≤ 2mΩ) |
|       |           |           |                          | 0.25 ±0.10<br>(R > 2mΩ) |
| RLT12 | 3.2±0.15  | 1.6±0.20  | 0.9±0.30                 | 0.40±0.10               |

UNIT: mm



**Current Sensing Resistors**  
**RLT Series**  
**AEC-Q 200-Ver D qualified**

|             |               |
|-------------|---------------|
| Document No | TRLT-XX0S001H |
| Issued date | 2022/12/19    |
| page        | 2/8           |

#### 4. Features

| Characteristics             | Feature                |       |       | Measurement Method        |
|-----------------------------|------------------------|-------|-------|---------------------------|
|                             | RLT06                  | RLT10 | RLT12 |                           |
| Size                        | 0603                   | 0805  | 1206  |                           |
| Power Ratings (W)           | 0.5W                   | 0.75W | 1W    | JIS Code 3A / JIS Code 3D |
| Resistance Value (mΩ)       | 1~3mΩ                  | 1~3mΩ | 1~3mΩ | Refer to JIS C 5201-1 4.5 |
| T.C.R (ppm/°C)              | ±50 ppm/°C             |       |       | Refer to JIS C 5201-1 4.8 |
| Operation Temperature Range | -55 ~ +155             |       |       |                           |
| Resistance Tolerance (%)    | ±1% 、 ±2% 、 ±5%        |       |       | JIS C 5201 4.2.5          |
| Insulation Resistance (MΩ)  | Over 100               |       |       | Refer to JIS C 5201-1 4.6 |
| Maximum Working Voltage (V) | (P * R) <sup>1/2</sup> |       |       |                           |

#### 5. Reliability Tests

| Test Items                            | Reference  | Condition of Test  | Test Limits                                     |
|---------------------------------------|--|--|---|
| Temperature Coefficient of Resistance | IEC60115-1 4.8                                   | +25 ~ 125°C  | Refer 4.0                                       |
| High Temperature Exposure (Storage)   | AEC-Q200-REV D-Test 3<br>MIL-STD202 Method 108   | T=125°C, 1000hrs, Measurement at 24hrs after test conclusion.  | < ±1%   |
| Temperature Cycling                   | AEC-Q200-REV D-Test 4<br>JESD22 Method JA-104    | 1000Cycle (-55°C to 125°C) Measurement at 24hrs after test conclusion.   | < ±1%   |
| Short time overload                   | IEC60115-1 4.13                                  | 5 X rated power for 5s   | < ±1%   |
| Moisture Resistance                   | AEC-Q200-REV D-Test 6<br>MIL-STD-202 Method 106  | T=24 hours / Cycle ,10 Cycles.<br>Notes: Steps 7a& 7b not required.<br>Unpowered   | < ±1%   |
| Biased Humidity                       | AEC-Q200-REV D-Test 7<br>MIL-STD-202 Method 103  | 10% Rated power at 85°C, RH:85%,<br>1000Hrs, Measurement at 24hrs after test conclusion.   | < ±1%   |
| Operation life                        | AEC-Q200-REV D-Test 8<br>MIL-STD-202 Method 108  | 1000 hours TA=125°C at 35% rated power.<br>Measurement at 24±4 hours after test conclusion.  | < ±1%   |
| External Visual                       | AEC-Q200-REV D-Test 9<br>MIL-STD-883 Method 2009 | Electrical test not required.<br>Inspect device construction, marking and workmanship  |   |
| Physical Dimension                    | AEC-Q200-REV D-Test 10<br>JESD22 Method JB-100   | Verify physical dimensions to the applicable device detail specification.<br>Note: User(s) and Suppliers spec. Electrical test not required.                                       |   |
| Resistance to Solvents                | AEC-Q200-REV D-Test 12<br>MIL-STD-202 Method 215 | a: Isopropyl Alcohol : Mineral Spirits= 1 : 3<br>b: Terpene Defluxer (Bioact EC-7R)<br>c: Deionized water : Propylene Glycol<br>Monomethyl Ether : monoethanolamine<br>=42 : 1 : 1 | Marking and protective layer Cannot be detached |



**Current Sensing Resistors**  
**RLT Series**  
**AEC-Q 200-Ver D qualified**

|             |               |
|-------------|---------------|
| Document No | TRLT-XX0S001H |
| Issued date | 2022/12/19    |
| page        | 3/8           |

|                              |   |  |                             |
|------------------------------|---|--|-----------------------------|
| Resistance to Soldering Heat | AEC-Q200-REV D-Test 15<br>MIL-STD-202 Method 210        | T=260+/-5°C solder,10+/-1 sec dwell  | < ±0.5%                     |
| Mechanical Shock             | AEC-Q200-REV D-Test 13<br>MIL-STD-202 Method 213        | 100g's, Normal duration is 6ms, half sine shock pulse  | < ±1%                       |
| Resistance to vibration      | AEC-Q200-REV D-Test 14<br>MIL-STD-202 Method 204        | 5g's for 20min.12cycles, 10-2000Hz   | <±1%                        |
| Board Flex                   | AEC-Q200-REV D-Test 21<br>AEC-Q200-005                  | Min 2mm deflection ,60sec.   | < ±0.5%                     |
| Flammability                 | AEC-Q200-REV D-Test 20<br>UL-94                         | V-0 or V-1are acceptable, Electrical test not required   | V-0                         |
| Thermal Shock                | AEC-Q200-REV D-Test 16<br>MIL-STD-202 Method 107        | -55°C/+155°C. Note: Number of cycles required-300, Maximum transfer time-20 seconds, Dwell time-15 minutes. Air-Air. | < ±1.0%                     |
| ESD                          | AEC-Q200-REV D-Test 17<br>AEC-Q200-002 or ISO/DIS 10605 | verify the voltage setting at 500V   | < ±1.0%                     |
| Solderability                | AEC-Q200-REV D-Test 18<br>J-STD-002                     | Method B, aging 4 hours at 155 °C dry heat Lead-free solder bath at 235±3 °C Dipping time: 3±0.5 seconds             | > 95% area covered with tin |
| Terminal Strength (SMD)      | AEC-Q200-REV D-Test 22<br>AEC-Q200-006                  | Force of 1.8kg for 60 seconds<br>Remarks: 0201-NA  | < ±1.0%                     |

### 5.1 Derating Curve

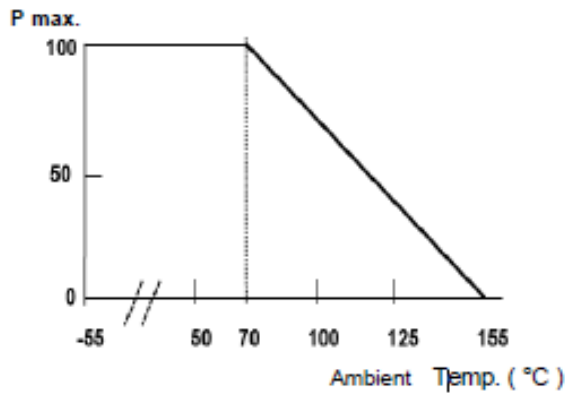


Figure 1

### 5.2 Rated Current

The rated current is calculated by the following formula:

$$I = \sqrt{P \div R}$$

I: Rated Current (A)

P: Rated Power (W)

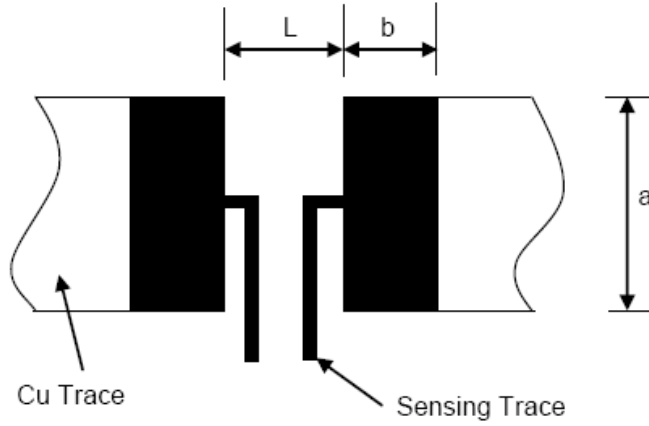
R: Resistance Value (Ω)



**Current Sensing Resistors**  
**RLT Series**  
**AEC-Q 200-Ver D qualified**

|             |               |
|-------------|---------------|
| Document No | TRLT-XX0S001H |
| Issued date | 2022/12/19    |
| page        | 4/8           |

**6. Recommended Solder Pad Dimension**



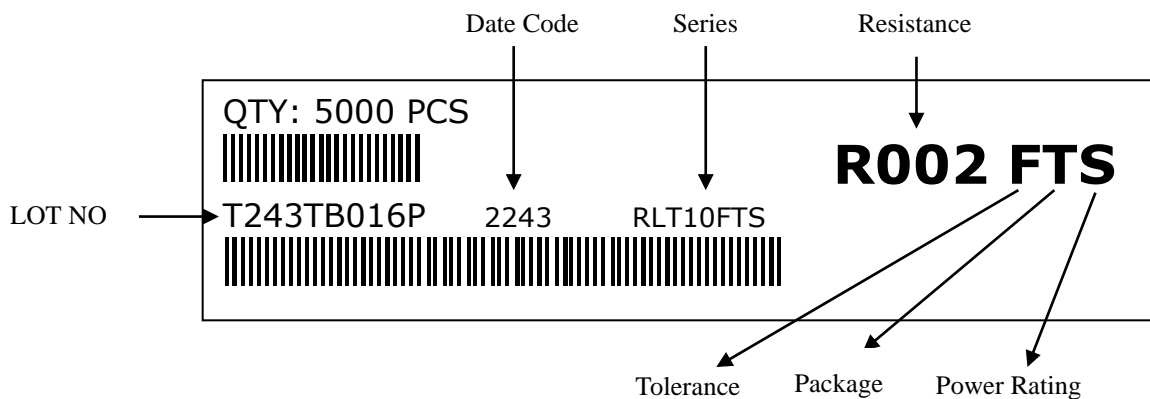
| Land pattern |           | Dimension (mm) |      |                |
|--------------|-----------|----------------|------|----------------|
| Type         | Size      | A              | B    | L              |
| RLT          | 06 (0603) | 1.0            | 0.75 | 0.45 (R = 1mΩ) |
|              |           | 1.0            | 0.75 | 0.80 (R > 1mΩ) |
| RLT          | 10 (0805) | 1.4            | 1.20 | 0.80           |
| RLT          | 12 (1206) | 1.8            | 1.70 | 1.60           |

UNIT: mm

**7. Number of Package**

|      |            |
|------|------------|
| Type | Paper Tape |
|      | 4 mm pitch |
|      | 178mm/R    |
| RLT  | 5000       |

**8. Label**



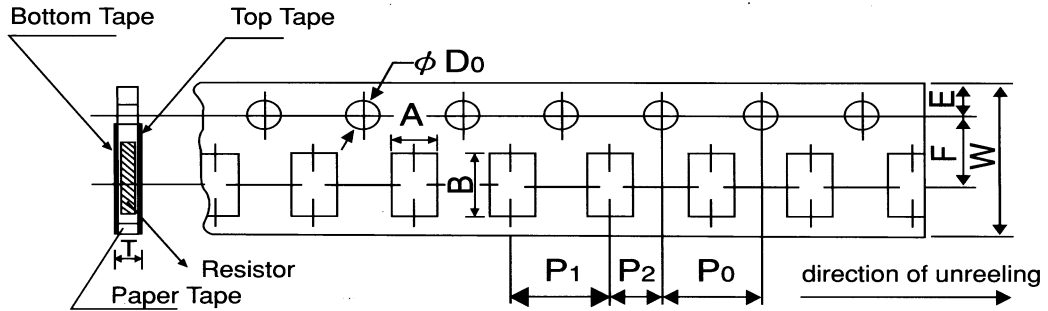


**Current Sensing Resistors**  
**RLT Series**  
**AEC-Q 200-Ver D qualified**

|             |               |
|-------------|---------------|
| Document No | TRLT-XX0S001H |
| Issued date | 2022/12/19    |
| page        | 5/8           |

**9. Packaging**

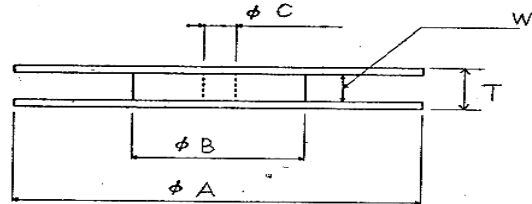
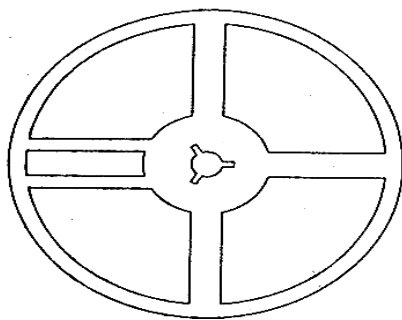
4mm pitch paper



| Packing    | Type  | A         | B        | W       | F        | E        | P <sub>1</sub> | P <sub>2</sub> | P <sub>0</sub> | $\psi D_0$ | T         |
|------------|-------|-----------|----------|---------|----------|----------|----------------|----------------|----------------|------------|-----------|
| Paper Tape | RLT06 | 1.1 ±0.1  | 1.9 ±0.1 | 8.0±0.2 | 3.5±0.05 | 1.75±0.1 | 4.0±0.1        | 2.0±0.05       | 4.0±0.1        | $\phi 1.5$ | 0.64 ±0.1 |
|            | RLT10 | 1.6 ±0.15 | 2.4 ±0.2 |         |          |          |                |                |                |            |           |
|            | RLT12 | 2.0 ±0.15 | 3.6 ±0.2 |         |          |          |                |                |                |            |           |

Unit: mm

**10. Reel Specification**



| Series | $\psi A$   | $\psi B$  | $\psi C$  | W        | T         |
|--------|------------|-----------|-----------|----------|-----------|
| RLT    | 178.0 ±2.0 | 60.0 ±1.0 | 13.0 ±1.0 | 9.0 ±1.0 | 11.5 ±1.0 |

Unit: mm

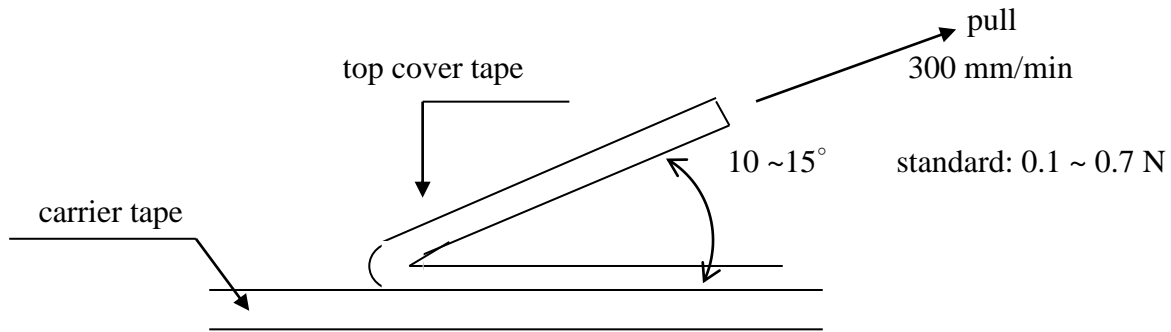


**Current Sensing Resistors**  
**RLT Series**  
**AEC-Q 200-Ver D qualified**

|             |               |
|-------------|---------------|
| Document No | TRLT-XX0S001H |
| Issued date | 2022/12/19    |
| page        | 6/8           |

**11. Peeling Strength of Top Cover Tape**

Peel – off force of paper and blister tape is in accordance with “JIS” that is, 0.1 to 0.7 N at a peel-off speed of 300 mm / minute.



**12. Storage Conditions:**

Temperature: 5°C~35°C, Humidity:40%~75%

**13. Shelf Life:**

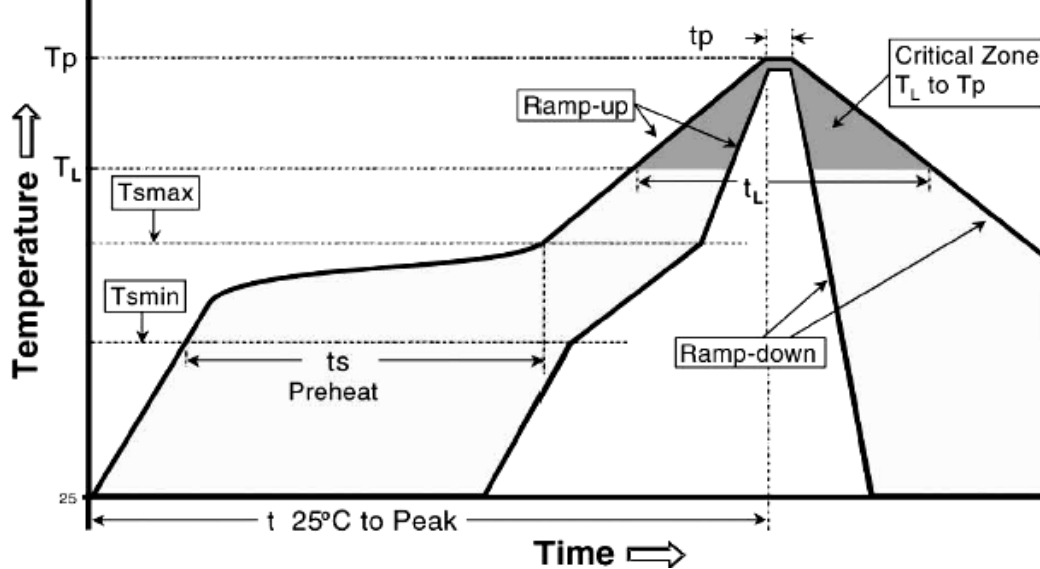
2 years from manufacturing date.



**Current Sensing Resistors  
RLT Series  
AEC-Q 200-Ver D qualified**

|             |               |
|-------------|---------------|
| Document No | TRLT-XX0S001H |
| Issued date | 2022/12/19    |
| page        | 7/8           |

**14. Recommend IR – Reflow profile** (solder: Sn96.5 / Ag3 / Cu0.5)



| Profile Feature  | Lead (Pb)-Free Assembly           |
|--|-----------------------------------|
| Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> )  | 3°C / second max.                 |
| Preheat<br>- Temperature Min (T <sub>Amin</sub> )<br>- Temperature Max (T <sub>smax</sub> )<br>- Time (T <sub>Amin</sub> to T <sub>smax</sub> ) (ts) | 150°C<br>200°C<br>60 -120 seconds |
| Time maintained above:<br>- Temperature (T <sub>l</sub> )<br>- Time (T <sub>l</sub> )  | 217°C<br>60-150 seconds           |
| Peak Temperature (T <sub>p</sub> )   | 260°C                             |
| Time within $\begin{matrix} +0 \\ -5 \end{matrix}$ °C of actual Peak Temperature (tp) <sup>2</sup>   | 10 seconds                        |
| Ramp-down Rate   | 6°C/second max.                   |
| Time 25°C to Peak Temperature  | 8minutes max.                     |

**Allowed Re-flow times: 3 times**

**Remark: To avoid discoloration phenomena of chip on terminal electrodes,  
please use N2 Re-flow furnace.**



**Current Sensing Resistors  
RLT Series  
AEC-Q 200-Ver D qualified**

|             |               |
|-------------|---------------|
| Document No | TRLT-XX0S001H |
| Issued date | 2022/12/19    |
| page        | 8/8           |

**15. ECN**

Engineering Change Notice: The customer will be informed with ECN if there is significant modification on the characteristics and materials described in Approval Sheet.

**16. Manufacturing Country & City:**

TA-I TECHNOLOGY CO., LTD. (Taiwan– Tao Yuan)

Tel: (+886) 3-3246169 Fax: (+886) 3-3246167

**Associated companies:**

(1) TA-I TECHNOLOGY (SU ZHOU) CO., LTD. (China – Su Zhou)

Tel :(+86) 512-63457879 Fax: (+86) 512-63457869

(2) TA-I TECHNOLOGY ELECTRONIC (DONGGUAN) CO., LTD. (China –Dongguan)

Tel : (+86) 769-8339-4790~3 Fax: (+86) 769-8339-4794

(3) FORTUNE TASK RESISTOR FACTORY (China – Dongguan)

Tel : (+86) 769-8339-4790~3 Fax: (+86) 769-8339-4794

(4) TAI OHM ELECTRONICS (M) SDN. BHD. (Malaysia – Penang)

Tel :(+60) 4- 3900480 Fax: (+60) 4-3901481

(5) P.T.TAI ELECTRONIC Indonesia (Indonesia – Jakarta)

Tel: 62-21-89830123 Fax: 62-21-89830703



## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Thick Film Resistors - SMD category](#):*

*Click to view products by [TA-I Tech manufacturer](#):*

Other Similar products are found below :

[CR-05FL7--150R](#) [CR-05FL7--698K](#) [CR-12JP4--680R](#) [CRCW04021K20FKEE](#) [CRCW04028R20JNEE](#) [CRCW06032K10FKEC](#)  
[CRCW06036K80FKEE](#) [M55342K03B499DRS6](#) [M55342K06B6E19RWL](#) [M55342K09B5D62RS6](#) [M55342M06B26E7RS3](#) [742C083750JTR](#)  
[MCR01MRTF1001](#) [MCR01MZPF1202](#) [MCR01MZPF1601](#) [MCR01MZPF1800](#) [MCR01MZPF6201](#) [MCR01MZPF9102](#) [MCR01MZPJ121](#)  
[MCR01MZPJ125](#) [MCR01MZPJ751](#) [MCR03EZHZ103](#) [MCR03EZPF2004](#) [MCR03EZPJ270](#) [MCR03EZPJ821](#) [MCR10EZPF1102](#)  
[MCR10EZPF2700](#) [MCR18EZPJ330](#) [RC1005F1152CS](#) [RC1005F1372CS](#) [RC1005F2052CS](#) [RC1005F471CS](#) [RC1005F4751CS](#)  
[RC1005F5621CS](#) [RC1005F6041CS](#) [RC1005J121CS](#) [RC1005J122CS](#) [RC1005J180CS](#) [RC1005J181CS](#) [RC1005J202CS](#) [RC1005J391CS](#)  
[RC1005J512CS](#) [RC1005J683CS](#) [RC1005J823CS](#) [RC1608F333CS](#) [RC1608F5110CS](#) [RC1608J121CS](#) [RC2012F2493CS](#) [RC2012F2740CS](#)  
[RC2012J105CS](#)