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April 1st, 2010
Renesas Electronics Corporation

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CR25RM-12D

Thyristor

Medium Power Use

REJ03G1716-0100

Rev.1.00

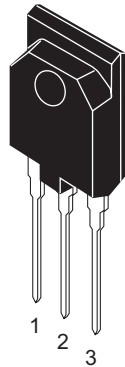
Jul 08, 2008

Features

- $I_{T(AV)}$: 25 A
- V_{DRM} : 600 V
- I_{GT} : 30 mA
- V_{ISO} : 2000 V
- Insulated Type
- Planar Passivation Type
- The product guaranteed maximum junction temperature of 150°C

Outline

RENESAS Package code: PRSS0003ZA-A
(Package name: TO-3PFM)



1. Cathode
2. Anode
3. Gate

Applications

Switching mode power supply, motor control, heater control, and other general purpose control applications

Maximum Ratings

| Parameter | Symbol | Voltage class | Unit |
|-------------------------------------|-------------|---------------|------|
| | | 12 | |
| Repetitive peak reverse voltage | V_{RRM} | 600 | V |
| Non-repetitive peak reverse voltage | V_{RSM} | 720 | V |
| DC reverse voltage | $V_{R(DC)}$ | 480 | V |
| Repetitive peak off-state voltage | V_{DRM} | 600 | V |
| DC off-state voltage | $V_{D(DC)}$ | 480 | V |

| Parameter | Symbol | Ratings | Unit | Conditions |
|--------------------------------|--------------|--------------|----------------------|---|
| RMS on-state current | $I_{T(RMS)}$ | 39.3 | A | |
| Average on-state current | $I_{T(AV)}$ | 25 | A | Commercial frequency, sine half wave 180° conduction, $T_c = 61^\circ\text{C}$ |
| Surge on-state current | I_{TSM} | 360 | A | 50 Hz sine half wave 1 full cycle, peak value, non-repetitive |
| I^2t for fusing | I^2t | 648 | A^2s | Value corresponding to 1 cycle of half wave 50 Hz, surge on-state current |
| Peak gate power dissipation | P_{GM} | 5 | W | |
| Average gate power dissipation | $P_{G(AV)}$ | 0.5 | W | |
| Peak gate forward voltage | V_{FGM} | 6 | V | |
| Peak gate reverse voltage | V_{RGM} | 10 | V | |
| Peak gate forward current | I_{FGM} | 2 | A | |
| Junction temperature | T_j | - 40 to +150 | $^\circ\text{C}$ | |
| Storage temperature | T_{stg} | - 40 to +150 | $^\circ\text{C}$ | |
| Mass | — | 5.2 | g | Typical value |
| Isolation voltage | Viso | 2000 | V | $T_a = 25^\circ\text{C}$, AC 1 minute, each terminal to case |

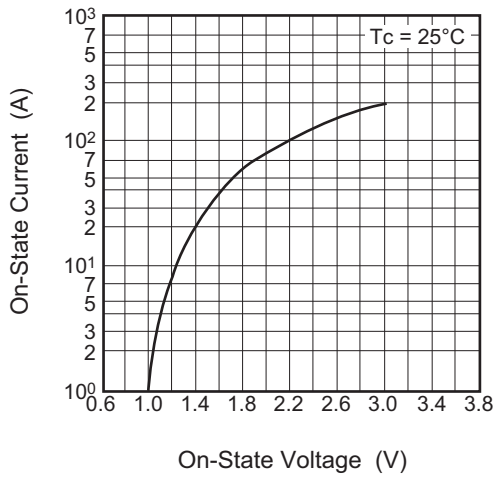
Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test conditions |
|-----------------------------------|---------------|---------|------|---------|---------------------------|--|
| Repetitive peak reverse current | I_{RRM} | — | — | 2.0/5.0 | mA | $T_j = 125^\circ\text{C}/150^\circ\text{C}$, V_{RRM} applied |
| Repetitive peak off-state current | I_{DRM} | — | — | 2.0/5.0 | mA | $T_j = 125^\circ\text{C}/150^\circ\text{C}$, V_{DRM} applied |
| On-state voltage | V_{TM} | — | — | 1.6 | V | $T_c = 25^\circ\text{C}$, $I_{TM} = 40\text{ A}$, instantaneous value |
| Gate trigger voltage | V_{GT} | — | — | 1.5 | V | $T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $I_T = 1\text{ A}$ |
| Gate non-trigger voltage | V_{GD} | 0.2/0.1 | — | — | V | $T_j = 125^\circ\text{C}/150^\circ\text{C}$, $V_D = 1/2 V_{DRM}$ |
| Gate trigger current | I_{GT} | — | — | 30 | mA | $T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $I_T = 1\text{ A}$ |
| Holding current | I_H | — | 15 | — | mA | $T_j = 25^\circ\text{C}$, $V_D = 12\text{ V}$ |
| Thermal resistance | $R_{th(j-c)}$ | — | — | 1.6 | $^\circ\text{C}/\text{W}$ | Junction to case ^{Note1} |

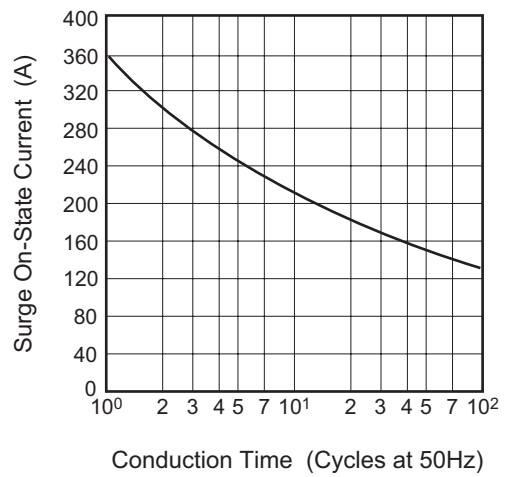
Notes: 1. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is $0.5^\circ\text{C}/\text{W}$.

Performance Curves

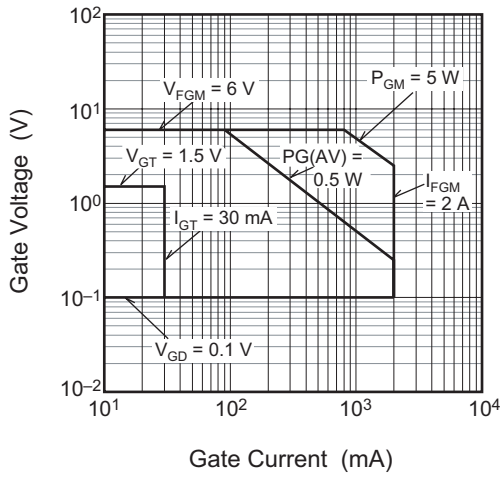
Maximum On-State Characteristics



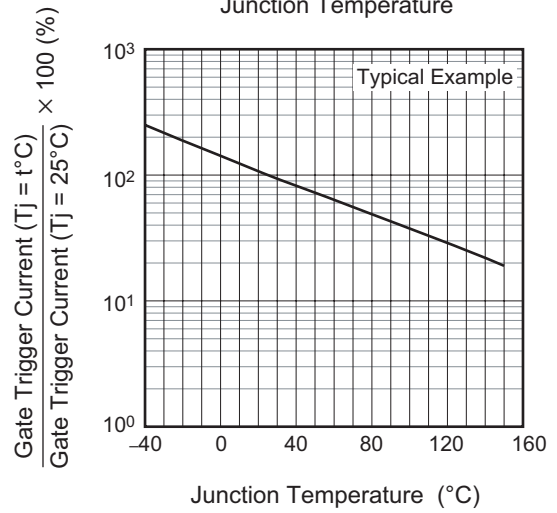
Rated Surge On-State Current



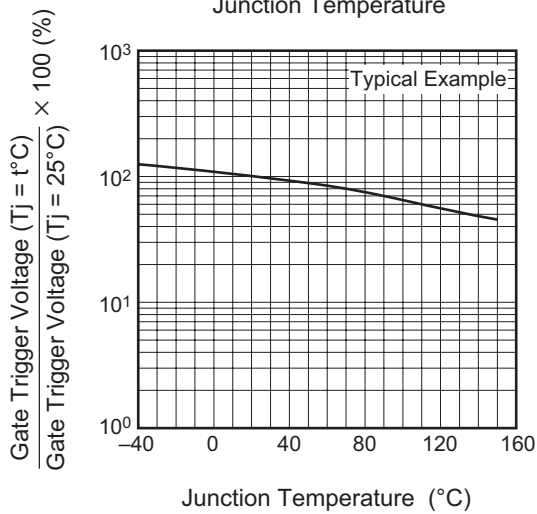
Gate Characteristics



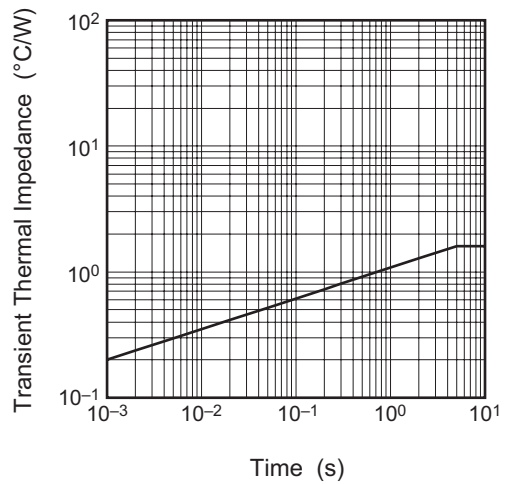
Gate Trigger Current vs. Junction Temperature

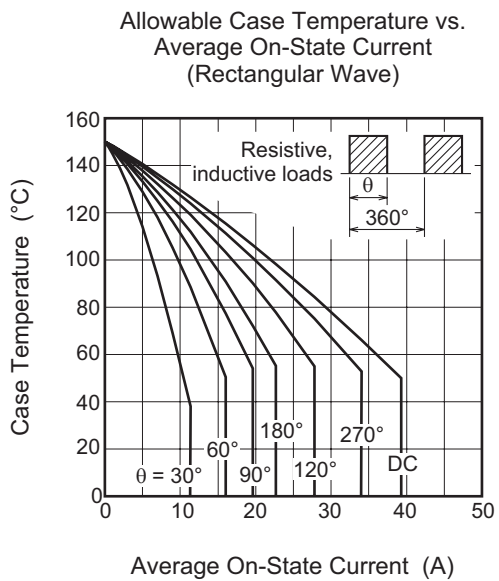
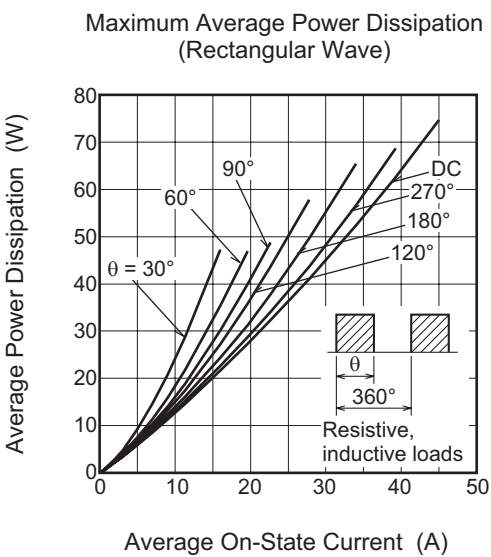
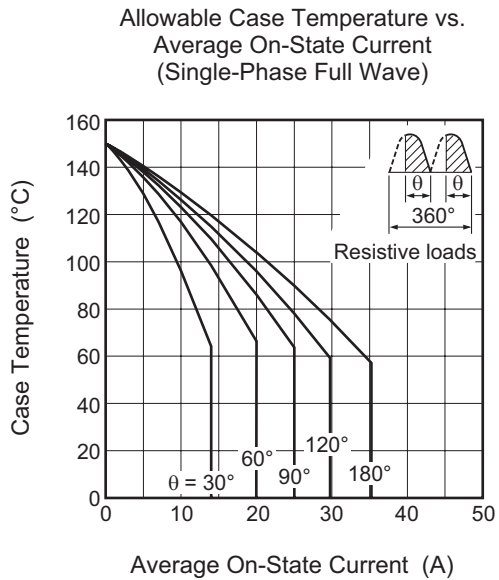
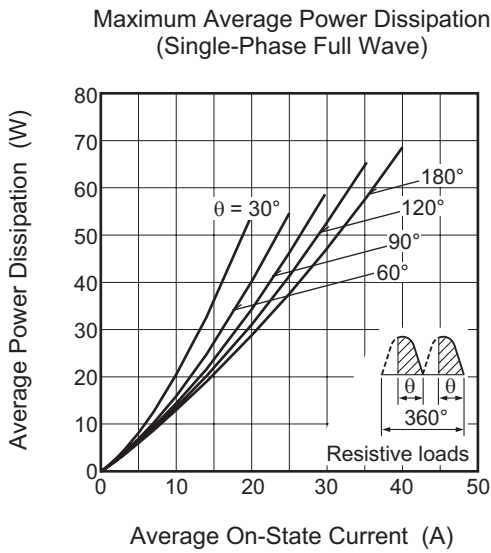
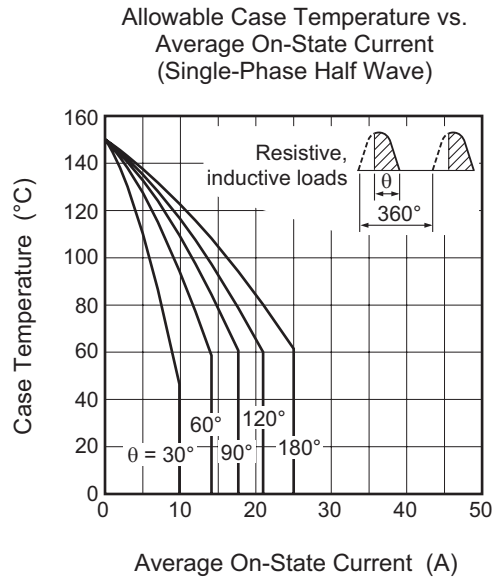
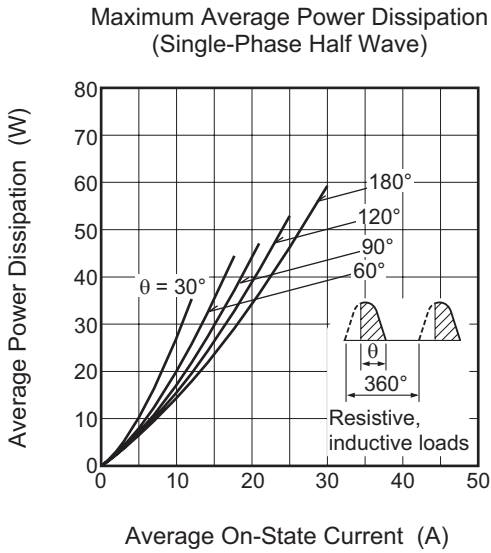


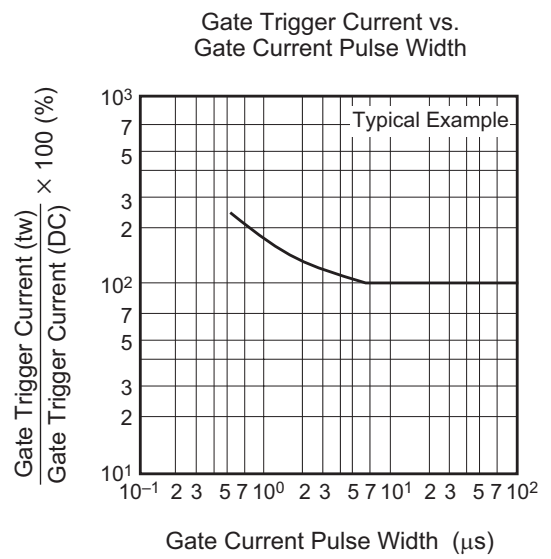
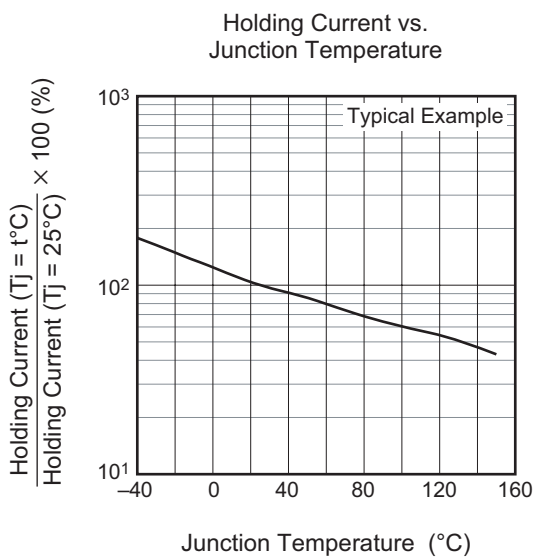
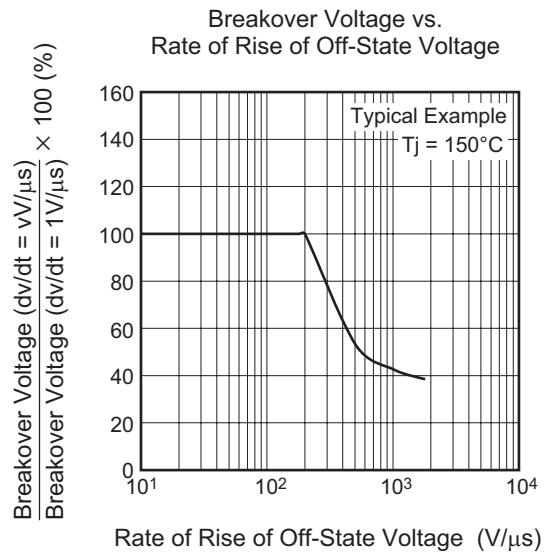
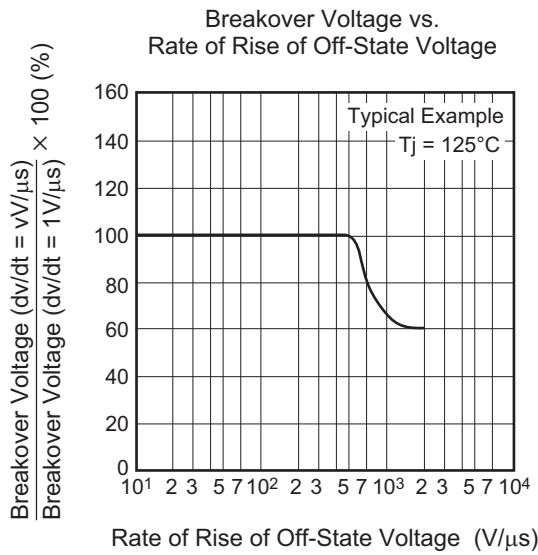
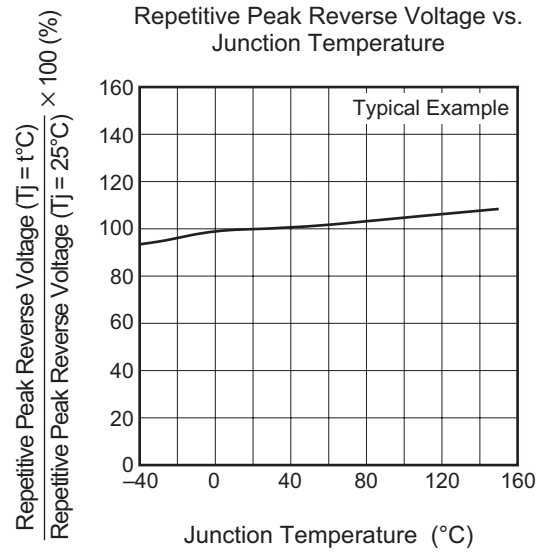
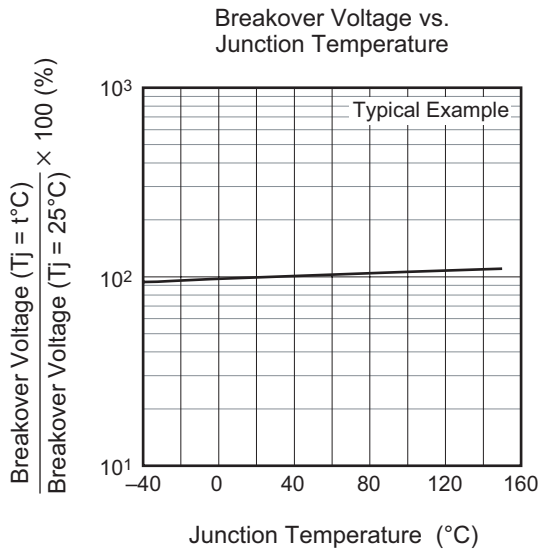
Gate Trigger Voltage vs. Junction Temperature



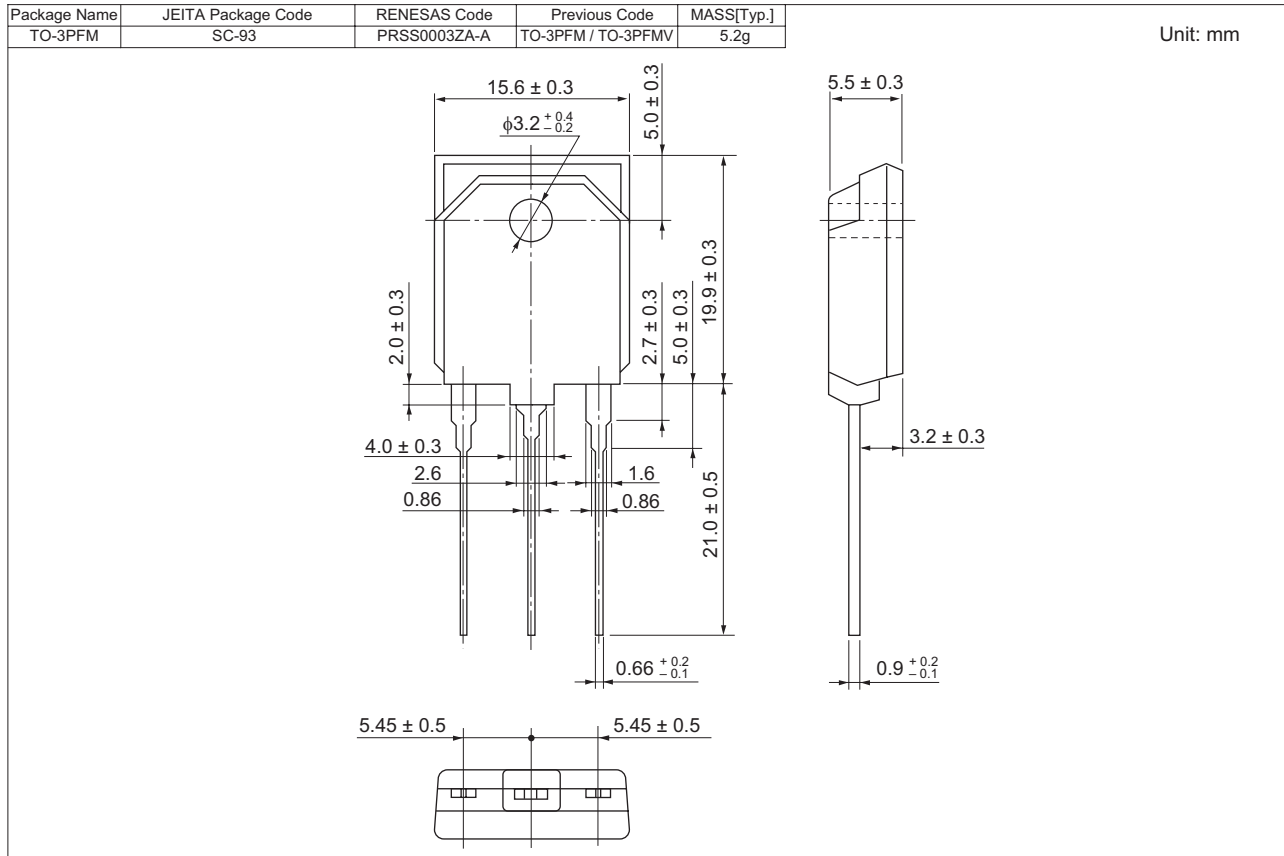
Maximum Transient Thermal Impedance Characteristics (Junction to case)







Package Dimensions



Order Code

| Lead form | Standard packing | Quantity | Standard order code | Standard order code example |
|---------------|------------------|----------|---------------------|-----------------------------|
| Straight type | Magazine (Tube) | 30 | Type name | CR25RM-12D |

Note : Please confirm the specification about the shipping in detail.

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