

Gas Discharge Tube: GQF3R Series



3-Electrode $\Phi 5.0 \times T7.2$ mm Type

■ Features

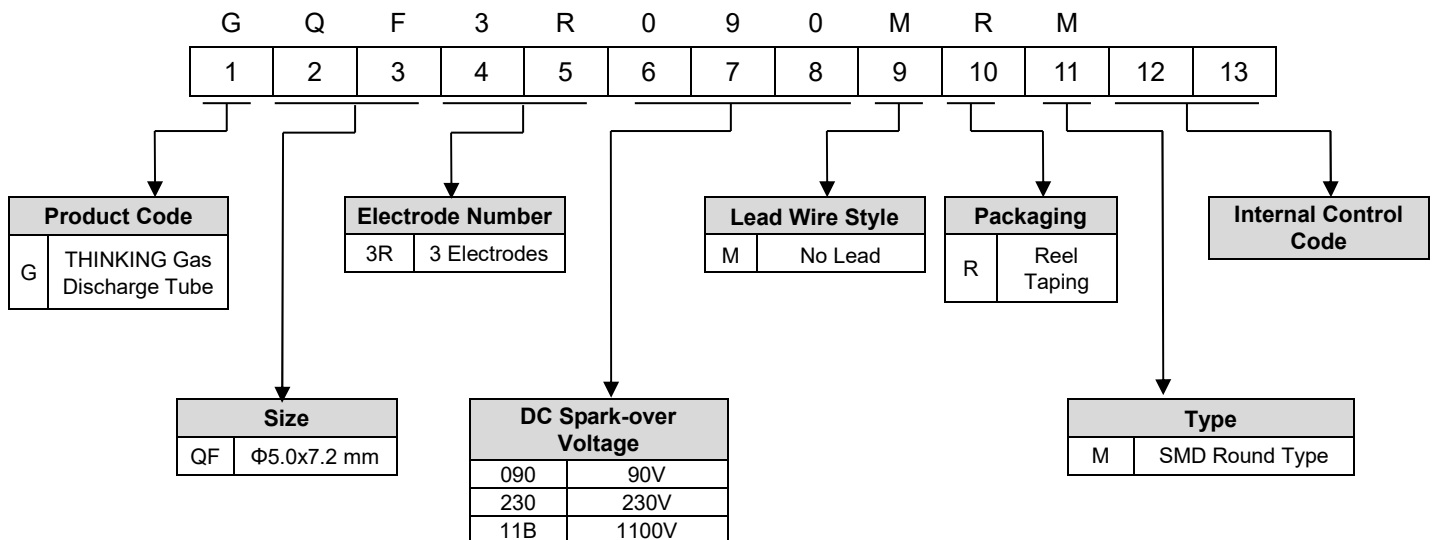
1. RoHS & HF compliant
2. Rugged ceramic-metal construction
3. DC spark-over voltage: 90~1100V
4. Low capacitance
5. Agency recognition: UL
6. Operating temperature: $-40^{\circ}\text{C} \sim +105^{\circ}\text{C}$
Storage temperature: $-40^{\circ}\text{C} \sim +115^{\circ}\text{C}$



■ Recommended Applications

1. Cable modem
2. xDSL
3. Set-top box
4. TV sets
5. Power supply
6. Consumer electronics

■ Part Number Code



Gas Discharge Tube: GQF3R Series



3-Electrode $\Phi 5.0$ x T7.2 mm Type

Characteristics

| Part No. | DC Spark-over Voltage | Max. Impulse Breakdown Voltage | | Max. Impulse Discharge Current (8/20 μ s) | | Impulse Life (10/1000 μ s) | Normal Alternating Discharge Current | DC Holdover Voltage | Minimum Insulation Resistance | Maximum Capacitance (1MHz) | Safety Approvals | | | |
|-------------|-----------------------|--------------------------------|--------------|---|----------|--------------------------------|--------------------------------------|---------------------|-------------------------------|----------------------------|------------------|------|---------|---------|
| | 100V/S | 100V/ μ s | 1KV/ μ s | 1 time | 10 times | 200A | 50Hz, 1 Sec | <150ms | | | (G Ω) | (pF) | UL 1449 | UL 497B |
| | (V) | (V) | (V) | (KA) | | (Times) | (A) | (V) | | | | | (V) | |
| GQF3R090MRM | 90 \pm 20% | 500 | 600 | 10 | 5 | 300 | 5 | 52 | 1 | 2 | | √ | | |
| GQF3R120MRM | 120 \pm 20% | 500 | 600 | | | | | 80 | | | √ | | | |
| GQF3R150MRM | 150 \pm 20% | 500 | 600 | 80 | √ | | | | | | | | | |
| GQF3R200MRM | 200 \pm 20% | 600 | 700 | 15 | 10 | | | 135 | | | √ | | | |
| GQF3R230MRM | 230 \pm 20% | 600 | 700 | | | | | 135 | | | √ | | | |
| GQF3R250MRM | 250 \pm 20% | 600 | 700 | | | | | 135 | | | √ | | | |
| GQF3R350MRM | 350 \pm 20% | 650 | 750 | | | | | 135 | | | √ | | | |
| GQF3R400MRM | 400 \pm 20% | 700 | 800 | | | | | 135 | | | √ | | | |
| GQF3R420MRM | 420 \pm 20% | 700 | 800 | | | | | 135 | | | √ | | | |
| GQF3R470MRM | 470 \pm 20% | 800 | 900 | 10 | 5 | | | 135 | | | √ | | | |
| GQF3R600MRM | 600 \pm 20% | 900 | 1000 | | | 135 | √ | | | | | | | |
| GQF3R800MRM | 800 \pm 20% | 1150 | 1400 | | | 135 | √ | | | | | | | |
| GQF3R10BMRM | 1000 \pm 20% | 1400 | 1700 | | | 135 | √ | | | | | | | |
| GQF3R11BMRM | 1100 \pm 20% | 1450 | 1750 | | | 135 | √ | | | | | | | |

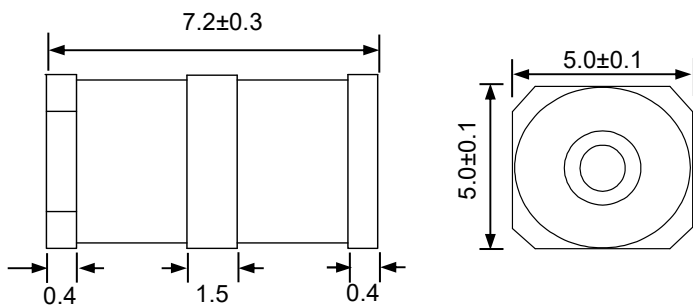
Note1: UL 497B File No: E245070, UL 1449 4th File No: E314979

Note 2: Insulation resistance test conditions:

| DC Spark-over Voltage | DC Measuring Voltage |
|-----------------------|----------------------|
| 90-150V | 50V |
| 151-400V | 100V |
| 401-1000V | 250V |
| 1001-1100V | 500V |

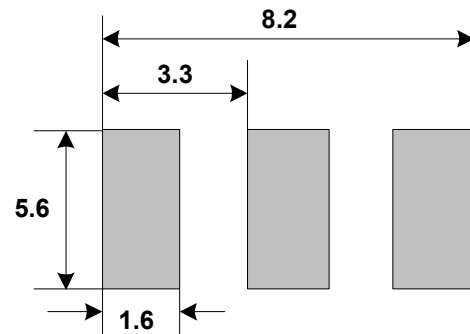
Dimension

(Unit: mm)



Recommended Pad Size

(Unit: mm)

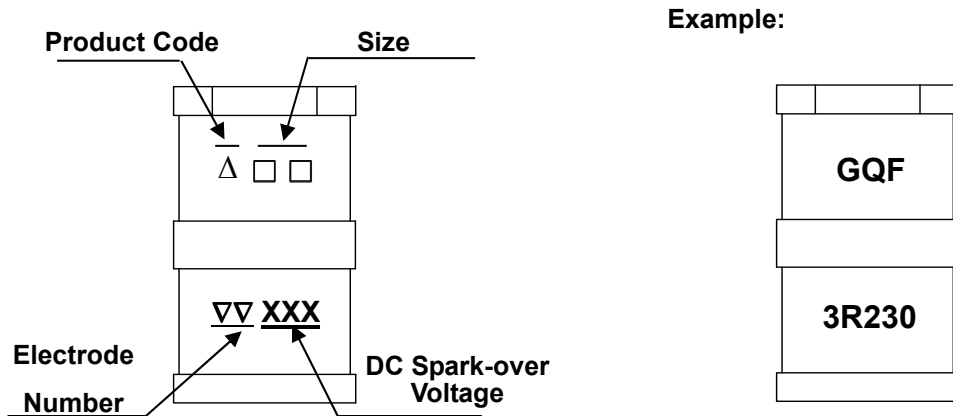


Gas Discharge Tube: GQF3R Series



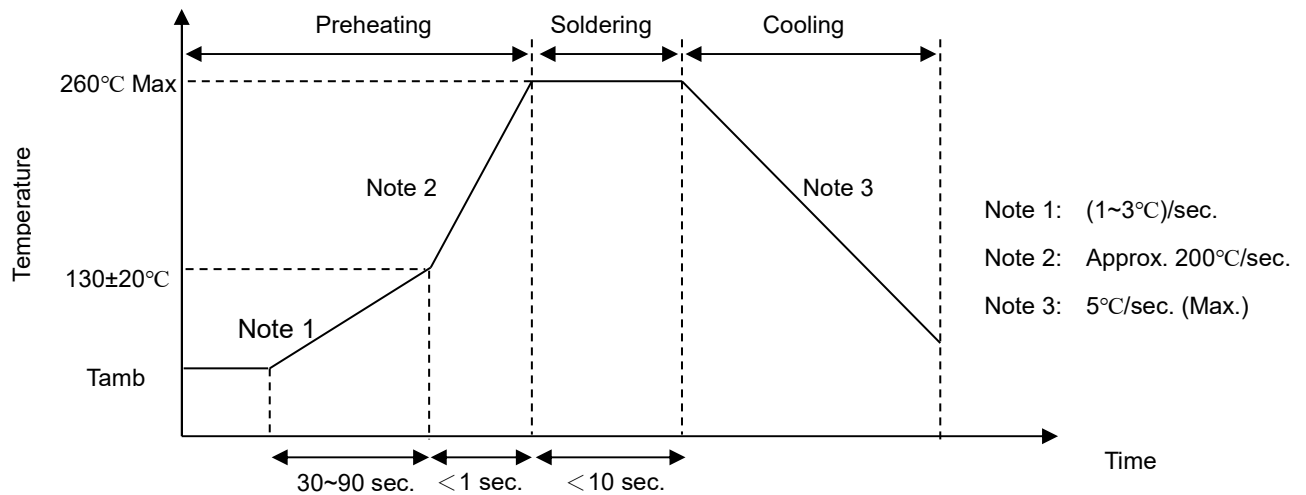
3-Electrode $\Phi 5.0$ x T7.2 mm Type

■ Marking



■ Soldering Recommendation

● Wave Soldering Profile



● Recommended Reworking Conditions with Soldering Iron

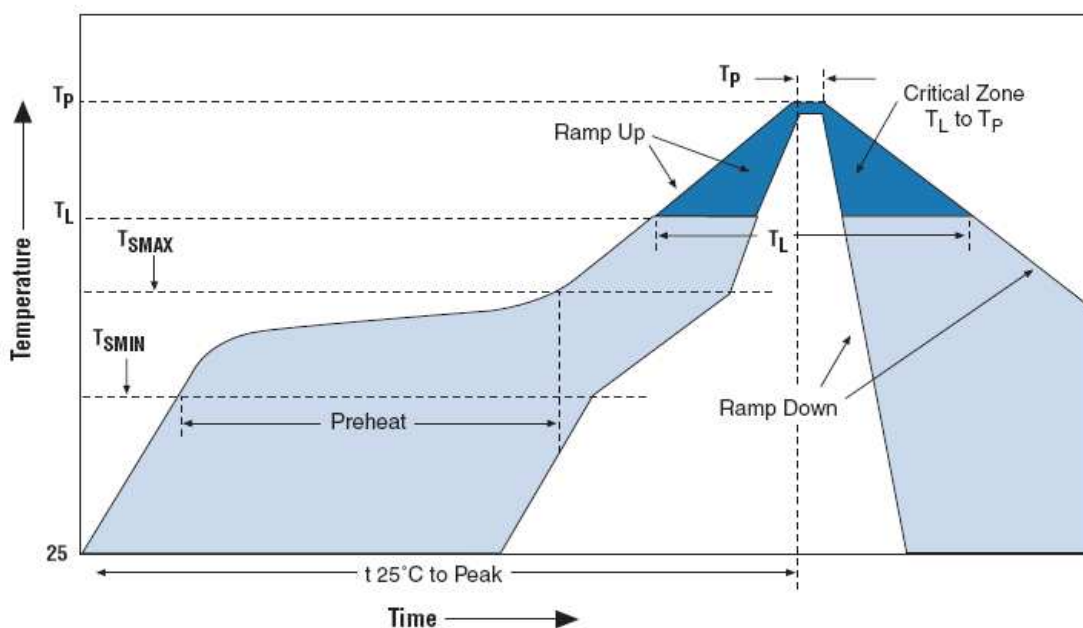
| Item | Conditions |
|--|--------------------|
| Temperature of Soldering Iron-tip | 360°C (max.) |
| Soldering Time | 3 sec. (max.) |
| Diameter of Soldering Iron-tip | $\Phi 3$ mm (max.) |
| Caution: Please do not touch the component surface with soldering iron directly to avoid its damage. | |

Gas Discharge Tube: GQF3R Series



3-Electrode $\Phi 5.0 \times T7.2$ mm Type

- IR-Reflow Soldering Profile



Lead-Free Reflow Profile Recommendation (IPC/JEDEC J-STD-020C)

| Reflow Parameter | Lead-Free Assembly |
|--|---------------------------------|
| Minimum preheat temperature (T_{SMIN}) | 150°C |
| Maximum preheat temperature (T_{SMAX}) | 200°C |
| Preheat Time | 60-180 seconds |
| T_{SMAX} to T_L ramp-up rate | 3°C/second maximum |
| Time above temperature T_L (t_L) | 217°C 60-120 seconds |
| Peak Temperature (T_P) | 245°C ~260°C(recommended 250°C) |
| Time 25°C to T_P | 6 minute maximum |
| Time within 5° of Peak T_P | 10-20 seconds |
| Ramp-down rate | 4°C/second maximum |

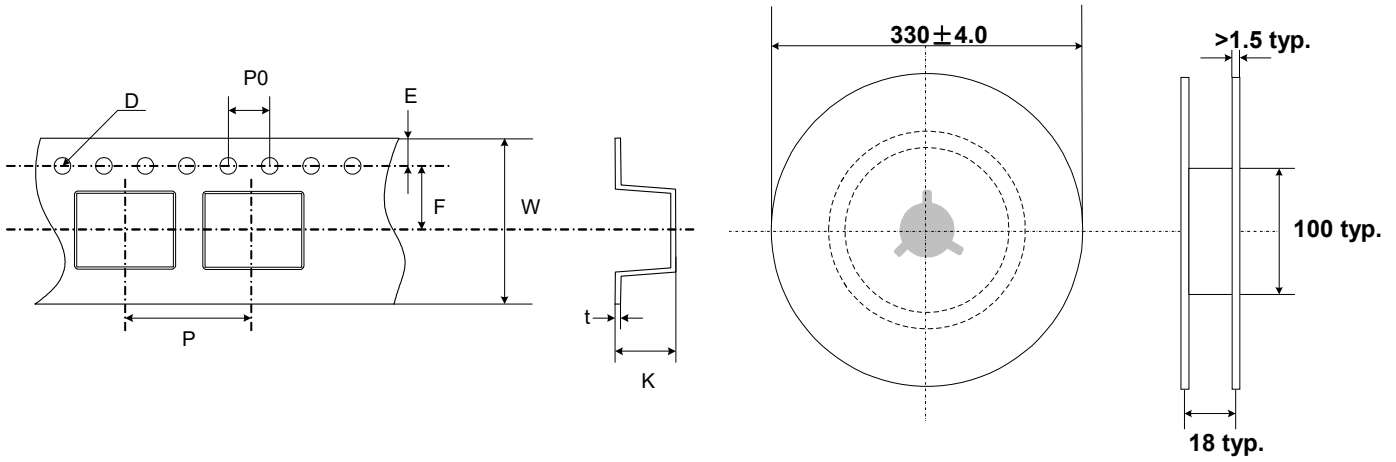
Gas Discharge Tube: GQF3R Series



3-Electrode $\Phi 5.0$ x T7.2 mm Type

Packaging

- Taping



Quantity (MPQ): 900pcs

(Unit: mm)

| ITEM | P | P0 | W | F | E | D | K | t |
|-----------|-----------|-----------|-----------|-----------|-----------|-------------|-----------|------------|
| Spec. | 12.0 | 4.0 | 16.0 | 7.5 | 1.75 | $\Phi 1.55$ | 5.5 | 0.5 |
| Tolerance | ± 0.1 | ± 0.1 | ± 0.3 | ± 0.1 | ± 0.1 | ± 0.05 | ± 0.1 | ± 0.05 |

■ Warehouse Storage Conditions of Products

- Storage Conditions:

1. Storage Temperature: $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$
2. Relative Humidity: $\leq 75\% \text{RH}$
3. Keep away from corrosive atmosphere and sunlight.

- Period of Storage: 1 year