



Figure 1. The Photos of Actual AGDT350V2KAS1812

KEY FEATURES

- Fast Response Time for Reliable Protection
- Stable and Dependable Operation without Aging
- High Current Capability for Variety of Applications
- Low Capacitance and High Insulation Resistance to Minimize Burden to the Signal
- RoHS & REACH Compliant

APPLICATIONS

- Broadband Devices
- CATV and Satellite Equipment
- MDF (Main Distribution Frame) Module
- Base Station and Antenna
- XDSL (X Digital Subscriber Line) Modems
- Power Supply and RF Systems
- Consumer Electronics
- N-PE (Neutral and Protective Earth) Mode Protection in AC Power Systems

DESCRIPTION

A gas discharge tube (GDT) is a type of protective device consisting of metal electrodes and metallized ceramics enclosed in a sealed space. It is filled with a discharge medium, such as an inert gas or gas mixture, at varying atmospheric pressures to create a single-gap or multi-gap switch. GDTs are designed to protect



electronic equipment and systems from voltage surges or transients by providing a low-impedance discharge path.

GDTs have a high insulation resistance, low capacitance, and minimal leakage, ensuring that they have little to no impact on the normal operation of equipment. They are widely used in surge protectors, lightning arrestors, telecommunications systems, power distribution, automotive electronics, medical devices, industrial controls, and aerospace and defense applications.

Using AGDT350V2KAS1812

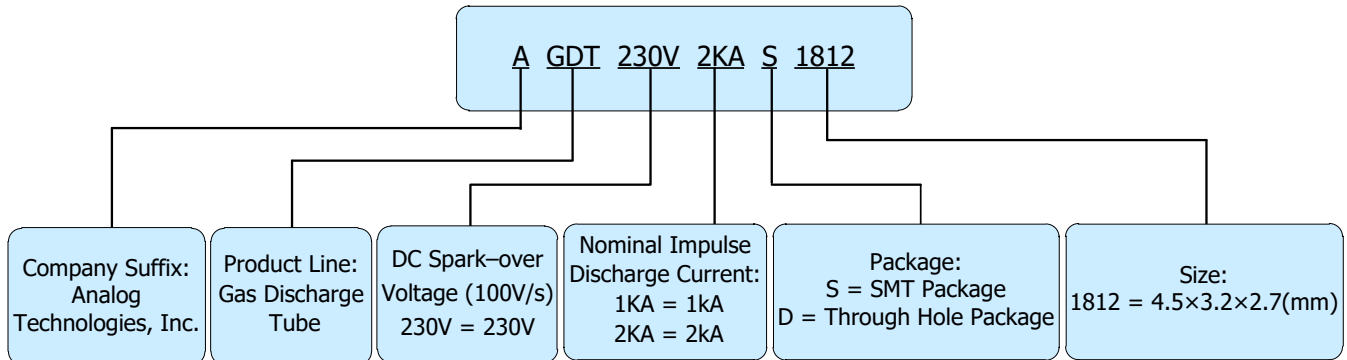
1. To ensure safe operation, do not use a gas discharge tube (GDT) in power supply networks where the maximum voltage exceeds the minimum spark-over voltage of the GDT.
2. Prolonged current stress may cause the GDT to become hot and pose a burn risk. Overload may cause the connectors to fail or the component to be destroyed.
3. Defective contacts on surge arresters can lead to sparks and loud noises under current load.
4. The GDT is designed to operate in a range of air pressure between 55kPa to 106kPa, which corresponds to an altitude of +5000m to -500m, respectively.
5. The packaged GDT should be stored in a dry, ventilated, and non-corrosive environment to ensure optimal performance.
6. To avoid electrical shock, do not install the GDT in a location where it can be touched by humans.
7. When assembling, avoid violent actions such as knocking that may cause product failure.

AGENCY APPROVALS

| Agency | Standard | File Number |
|---|----------|-------------|
|  | UL497B | E513446 |
|  | TUV | In Process |



NAMING PRINCIPLE



Naming Principle of AGDT350V2KAS1812

SPECIFICATIONS

Table 1. Specifications for AGDT350V2KAS1812 Families

| Part Number | DC Spark-over Voltage | | | Impulse Spark-over Voltage | Arc Voltage | AC Discharge Current | Insulation Resistance | | Capacitance | Max Impulse Discharge Current |
|------------------|-----------------------|-----|-----|----------------------------|-------------|----------------------|-----------------------|------------|--------------|-------------------------------|
| | @100V/ μ s | | | @1000V/ μ s | @1A | @50Hz, 1s | V _{DC} | IR | 0.5VDC @1MHz | @8/20 μ s |
| | V | | | V | V | A | V | G Ω | pF | kA |
| | Min | Typ | Max | Max | Typ | - | - | Min | Max | Max |
| AGDT90V1KAS1812 | 72 | 90 | 108 | 600 | 8 | 1 | 50 | 1 | 0.6 | 1 |
| AGDT150V1KAS1812 | 120 | 150 | 180 | 600 | 8 | 1 | 50 | 1 | 0.6 | 1 |
| AGDT200V1KAS1812 | 160 | 200 | 240 | 700 | 10 | 1 | 100 | 1 | 0.6 | 1 |
| AGDT230V1KAS1812 | 184 | 230 | 280 | 700 | 10 | 1 | 100 | 1 | 0.6 | 1 |
| AGDT300V1KAS1812 | 240 | 300 | 360 | 800 | 10 | 1 | 100 | 1 | 0.6 | 1 |
| AGDT350V1KAS1812 | 280 | 350 | 420 | 1000 | 10 | 1 | 100 | 1 | 0.6 | 1 |
| AGDT400V1KAS1812 | 320 | 400 | 480 | 1000 | 12 | 1 | 100 | 1 | 0.6 | 1 |
| AGDT420V1KAS1812 | 336 | 420 | 504 | 1000 | 12 | 1 | 100 | 1 | 0.6 | 1 |
| AGDT470V1KAS1812 | 376 | 470 | 564 | 1200 | 12 | 1 | 100 | 1 | 0.6 | 1 |
| AGDT600V1KAS1812 | 480 | 600 | 720 | 1400 | 15 | 1 | 100 | 1 | 0.6 | 1 |
| AGDT90V2KAS1812 | 72 | 90 | 108 | 600 | 8 | 2 | 50 | 1 | 0.6 | 2 |
| AGDT150V2KAS1812 | 120 | 150 | 180 | 600 | 8 | 2 | 50 | 1 | 0.6 | 2 |
| AGDT200V2KAS1812 | 160 | 200 | 240 | 700 | 10 | 2 | 100 | 1 | 0.6 | 2 |
| AGDT230V2KAS1812 | 184 | 230 | 280 | 700 | 10 | 2 | 100 | 1 | 0.6 | 2 |
| AGDT300V2KAS1812 | 240 | 300 | 360 | 800 | 10 | 2 | 100 | 1 | 0.6 | 2 |
| AGDT350V2KAS1812 | 280 | 350 | 420 | 1000 | 10 | 2 | 100 | 1 | 0.6 | 2 |
| AGDT400V2KAS1812 | 320 | 400 | 480 | 1000 | 12 | 2 | 100 | 1 | 0.6 | 2 |
| AGDT420V2KAS1812 | 336 | 420 | 504 | 1000 | 12 | 2 | 100 | 1 | 0.6 | 2 |
| AGDT470V2KAS1812 | 376 | 470 | 564 | 1200 | 12 | 2 | 100 | 1 | 0.6 | 2 |
| AGDT600V2KAS1812 | 480 | 600 | 720 | 1400 | 15 | 2 | 100 | 1 | 0.6 | 2 |



ELECTRICAL CHARACTERISTIC

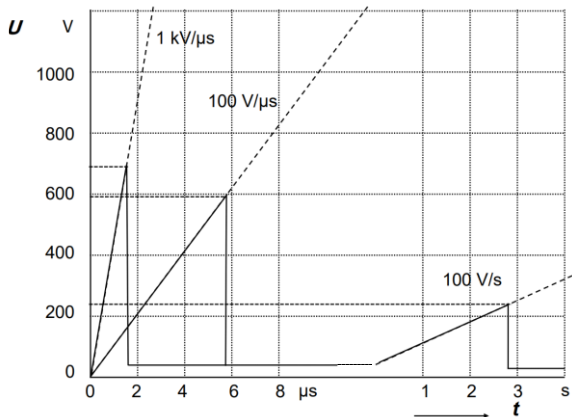


Figure 2. Spark-over Voltage Waveform

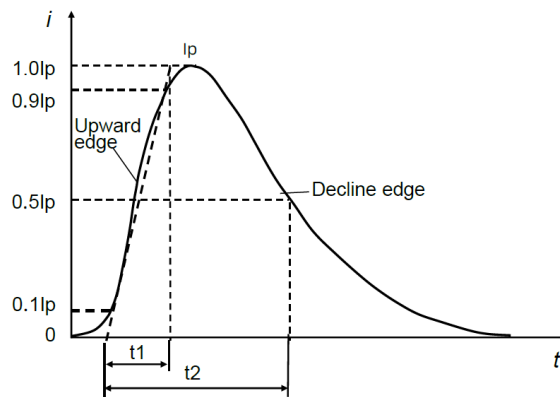
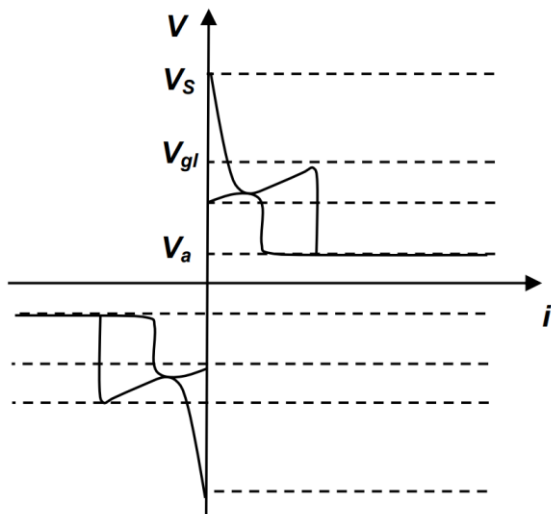


Figure 3. Impulse Discharge Current Waveform



V_s : Spark - over Voltage
 V_{gl} : Glow Voltage
 V_a : Arc Voltage
 G : Glow Mode
 A : Arc Mode

Figure 4. Voltage vs. Current characteristics

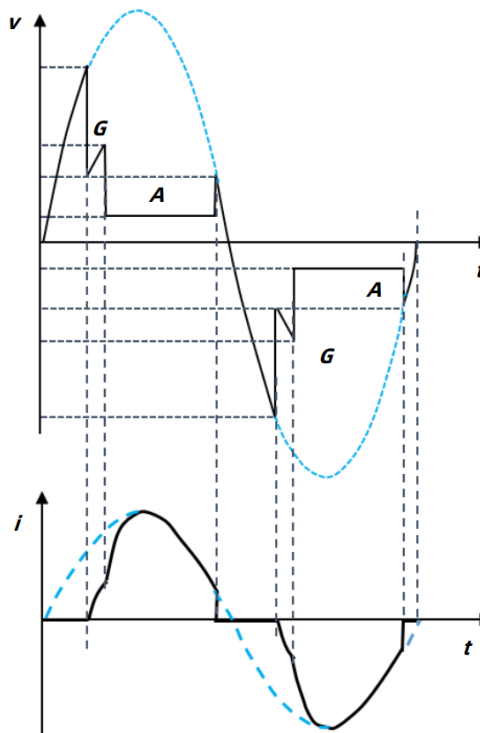


Figure 5. Voltage and Current Waveforms



APPLICATION CIRCUITS

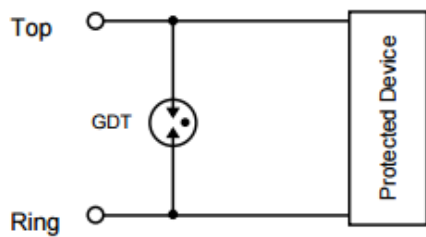
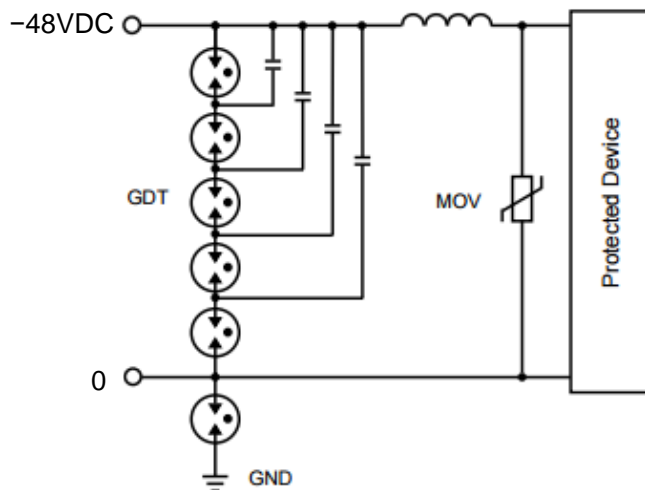


Figure 6. Signal Input Protection Circuit



NOTE: MOV means Varistor

Figure 8. Power Supply Input Protection Circuit

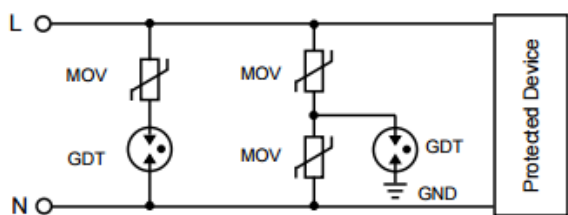


Figure 7. AC Power Input Protection Circuit

RECOMANDED SOLDERING PROFILE and CONDITIONS

During the soldering process, it is important to ensure that the GDT is not subjected to excessive thermal stress or mechanical stress, which can also damage the GDT. Care should be taken to avoid overheating the GDT and to avoid applying excessive force or pressure during the soldering process. It can be soldered by reflow oven or hand soldering.

Reflow Soldering

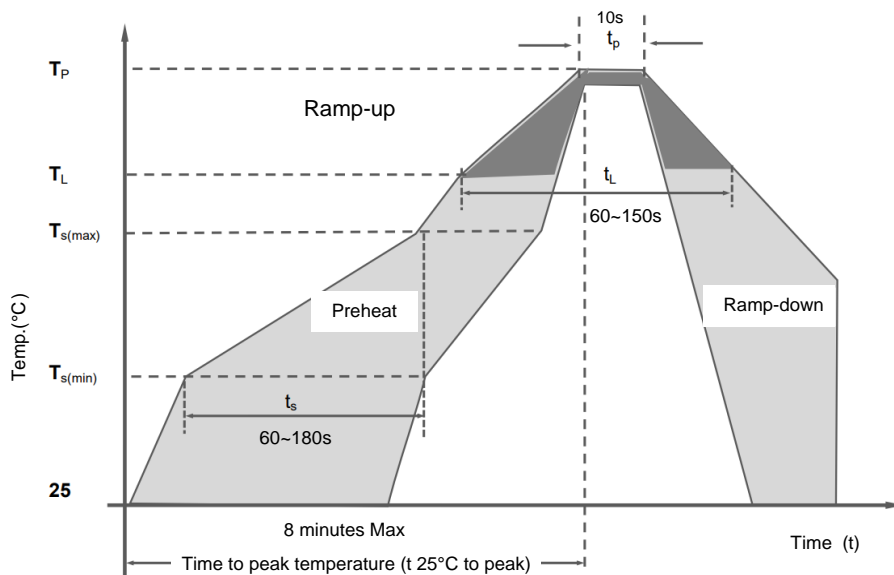


Figure 9. Reflow Soldering



| Reflow Condition | | Pb-Free Assembly |
|--|----------------------------------|------------------|
| Pre Heat | Temp. Min $T_{s(min)}$ | 150°C |
| | Temp. Max $T_{s(max)}$ | 200°C |
| | Time (Min to Max) t_s | (60 ~ 180)s |
| Average ramp up rate (Liquidus Temp (T_L) to peak) | | 3°C/second max |
| $T_{s(max)}$ to T_L Ramp-up Rate | | 5°C/second max |
| Reflow | Temperature (T_L) (Liquidus) | 217°C |
| | Temperature (t_L) | (60 ~ 150)s |
| Peak Temperature (T_P) | | (255 ~ 260)°C |
| Time within 5°C of actual peak Temperature (t_P) | | ≈ 10s |
| Ramp-down Rate | | 6°C/second max |
| Time 25°C to peak Temperature (T_P) | | 8 minutes max |
| Do not exceed | | 260°C |

Hand Solder Parameters

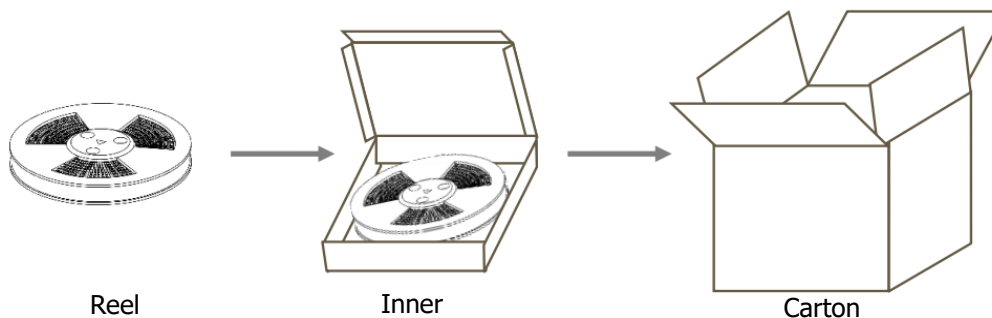
| Items | Condition |
|---|------------|
| Iron Temperature | 350°C |
| Soldering Time | 4s (Max.) |
| Space between Soldering Point and the Bottom of Product | 2mm (Min.) |

PACKAGING INFORMATION

This GDT is packaged in reels: up to 2500/reel; inner boxes: 2 reels/inner box; and carton outer box: 8 inner box/carton box.

| Item | Reel | Inner | Carton |
|-----------------|-------------|----------------|-----------------|
| Dimensions (mm) | Φ330 × 12.8 | 340 × 340 × 40 | 360 × 360 × 360 |
| Quantity (Pcs) | 2500 | 5000 | 40000 |

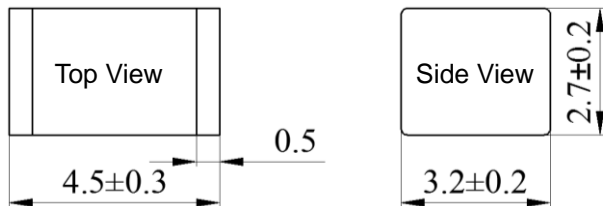
Note: The dimensions and quantity of packaging are for reference only.





DIMENSIONS

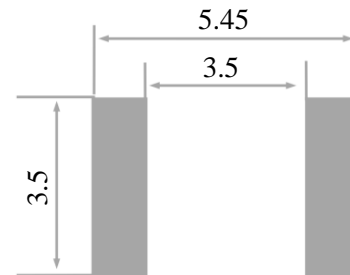
Outline Dimensions



Unit: mm

Figure 10. Outline Dimensions

Recommended Pad Size



Unit: mm

Figure 11. Recommended PCB Pad Size

NOTICE

1. It is important to carefully read and follow the warnings, cautions, and product- specific notes provided with electronic components. These instructions are designed to ensure the safe and proper use of the component and to prevent damage to the component or surrounding equipment. Failure to follow these instructions could result in malfunction or failure of the component, damage to surrounding equipment, or even injury or harm to individuals. Always take the necessary precautions and seek professional assistance if unsure about proper use or handling of electronic components.
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