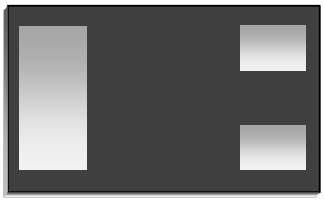
# WE05MGC

**Transient Voltage Suppressor**

## Features

- 36 Watts Peak Power per Line (tp = 8/20μs)
- Protects two I/O lines
- Low operating voltage: 5V
- Low capacitance(<0.45pF)
- Solid-state technology



**DFN1006-3L**

### IEC COMPATIBILITY (EN61000-4)

- **IEC 61000-4-2 (ESD) ±12kV (air), ±12kV (contact)**
- **IEC 61000-4-4 (EFT) 40A (5/50ns)**
- **IEC 61000-4-5 (Lightning) 3A (8/20μs)**

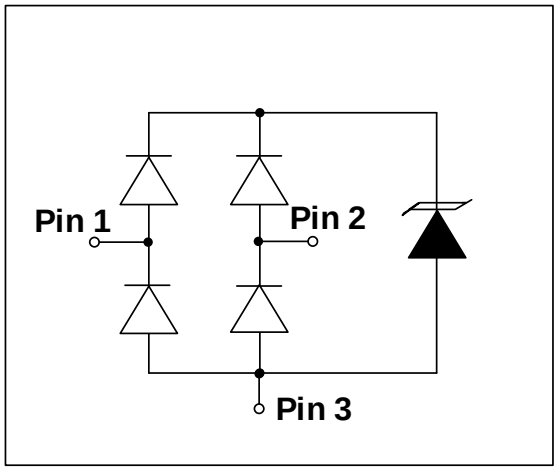
## Mechanical Characteristics

- JEDEC DFN1006-3L package
- Marking : Making Code
- Packaging : Tape and Reel per EIA 481
- RoHS Compliant & HF
- Device meets MSL1 requirement

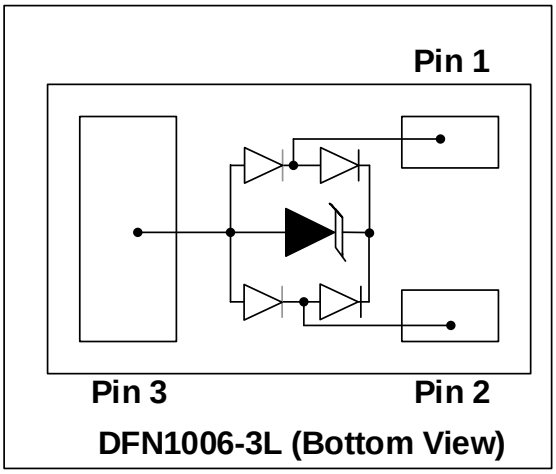
## Applications

- FireWire & USB
- Sensitive Analog Inputs
- Portable Electronics
- LAN/WAN equipment
- Video Line Protection
- Microcontroller Input Protection

## Circuit Diagram




## Schematic & PIN Configuration

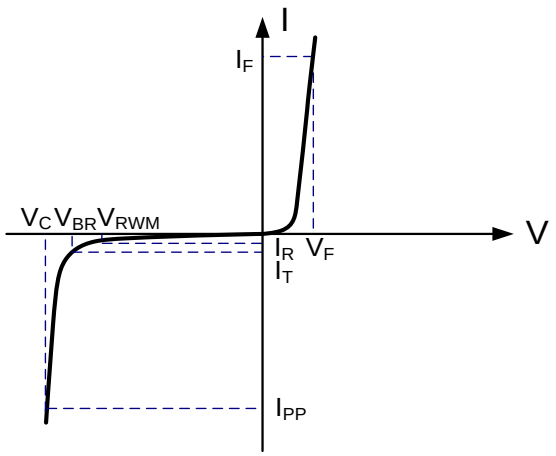


## Absolute Maximum Rating

| Rating | Symbol | Value | Units |
|---|---|---|---|
| Peak Pulse Power（$t_p$=8/20μs） | $P_{PP}$ | 36 | Watts |
| Peak Pulse Current（$t_p$=8/20μs） | $I_{PP}$ | 3 | A |
| Operating Temperature | $T_J$ | -55 to + 125 | °C |
| Storage Temperature | $T_{STG}$ | -55 to +150 | °C |

## Electrical Parameters

| Symbol | Parameter |
|---|---|
| $I_{PP}$ | Reverse Peak Pulse Current |
| $V_C$ | Clamping Voltage @ $I_{PP}$ |
| $V_{RWM}$ | Reverse Stand-Off Voltage |
| $I_R$ | Reverse Leakage Current @ $V_{RWM}$ |
| $V_{BR}$ | Breakdown Voltage @ $I_T$ |
| $I_T$ | Test Current |
| $I_F$ | Forward Current |
| $V_F$ | Forward Voltage @ $I_F$ |




## Electrical Characteristics (T=25℃ unless otherwise noted)

| WE05MGC | | | | | | |
|---|---|---|---|---|---|---|
| **Parameter** | **Symbol** | **Conditions** | **Minimum** | **Typical** | **Maximum** | **Units** |
| Reverse Stand-Off Voltage | $V_{RWM}$ | | | | 5.0 | V |
| Breakdown Voltag | $V_{BR}$ | $I_T$=1mA | 6.0 | | | V |
| Forward Voltage | $V_F$ | $I_F$=10mA | 0.6 | | 1.2 | V |
| Reverse Leakage Current | $I_R$ | $V_{RWM}$=5V | | | 200 | nA |
| Clamping Voltage | $V_C$ | $I_{PP}$=3A, $t_p$=8/20μs | | 10.5 | 12 | V |
| Dynamic Resistance[1,2] | $R_{DYN}$ | TLP=0.2/100ns | | 0.5 | | Ω |
| ESD Clamping Voltage[1] | $V_C$ | IPP = 4A,<br>tp = 0.2/100ns (TLP) | | 9.8 | | V |
| ESD Clamping Voltage[1] | $V_C$ | IPP = 16A,<br>tp = 0.2/100ns (TLP) | | 15.8 | | V |
| Junction Capacitance | $C_j$ | $V_R$=0V, f=1MHz<br>Between I/O pins and Gnd | | 0.35 | 0.45 | pF |
| | | $V_R$=0V, f=1MHz<br>Between I/O pins | | 0.20 | 0.30 | pF |

Notes：1、TLP Setting：$t_p$=100ns, $t_r$=0.2ns, $I_{TLP}$ and $V_{TLP}$ sample window:$t_1$=70ns to $t_2$=90ns.
2、Dynamic resistance calculated from $I_{PP}$=4A to $I_{PP}$=16A using “Best Fit”.

# Typical Characteristics

**Figure 1: Peak Pulse Power vs. Pulse Time**

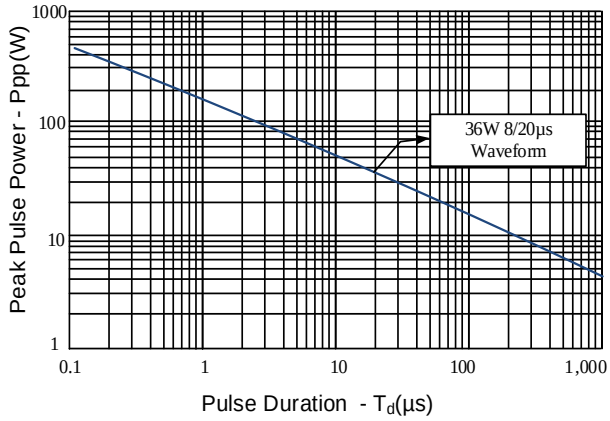



**Figure 2: Power Derating Curve**

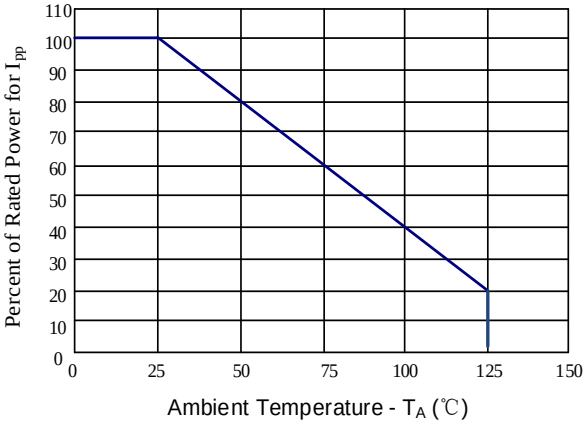



**Figure 3: Clamping Voltage vs. Peak Pulse Current**

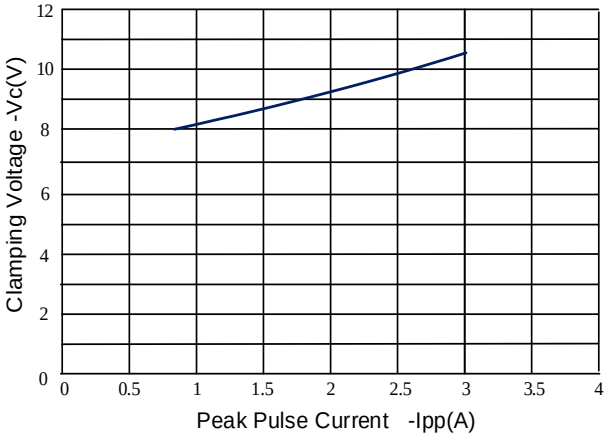



**Figure 4: Normalized Junction Capacitance vs. Reverse Voltage**

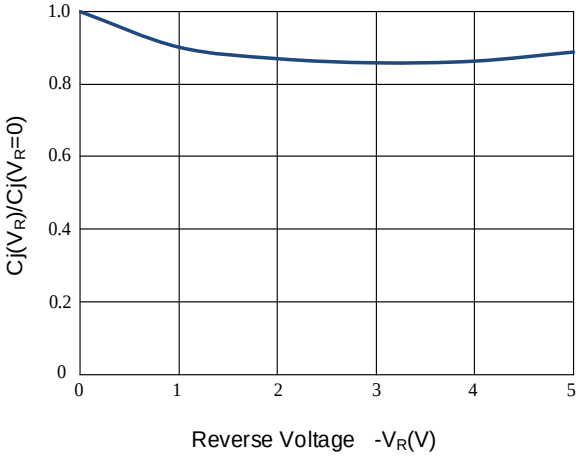



**Figure 5: Pulse Waveform**

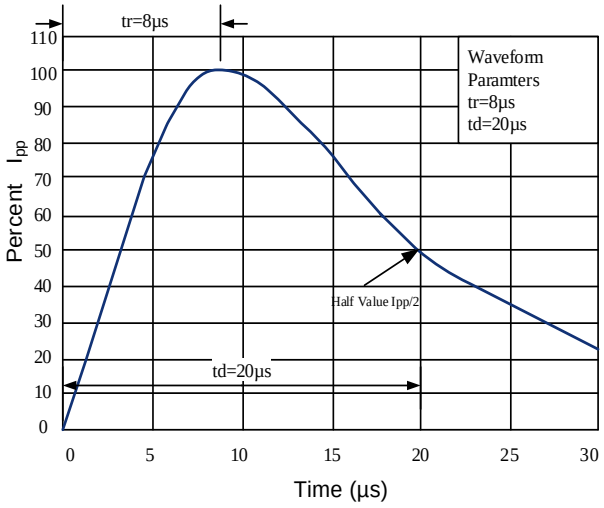
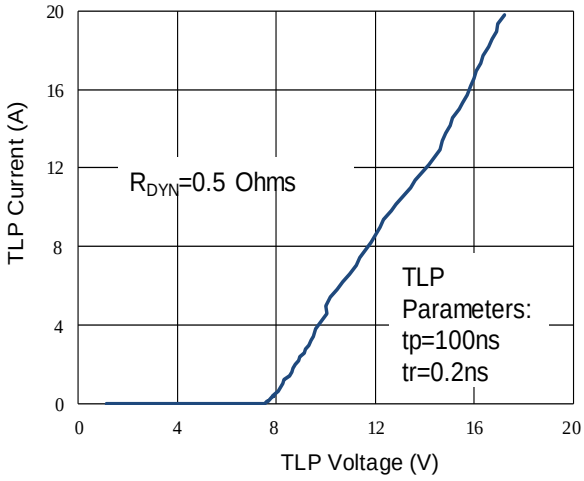
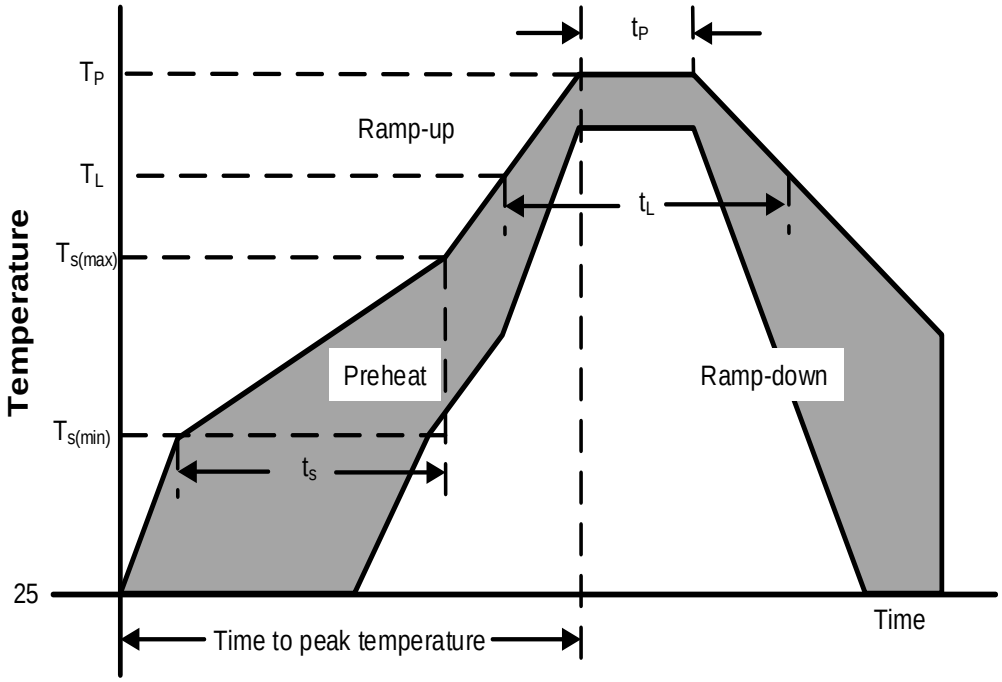



**Figure 6: TLP I-V Curve**



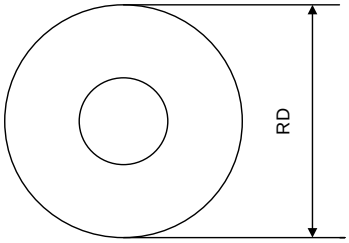
## Soldering Parameters

| Reflow Condition | | Pb – Free assembly |
|---|---|---|
| Pre Heat | Temperature Min ($T_{s(min)}$) | 150°C |
| | Temperature Max ($T_{s(max)}$) | 200°C |
| | Time (min to max) (ts ) | 60 – 190 secs |
| Average ramp up rate (Liquidus Temp) ($T_L$) to peak | | 5°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 seconds |
| Peak Temperature ($T_P$) | | 260+0/-5 °C |
| Time within actual peak Temperature ($t_p$ ) | | 20 – 40 seconds |
| Ramp-down Rate | | 5°C/second max |
| Time 25°C to peak Temperature ($T_P$) | | 8 minutes Max. |
| Do not exceed | | 280°C |

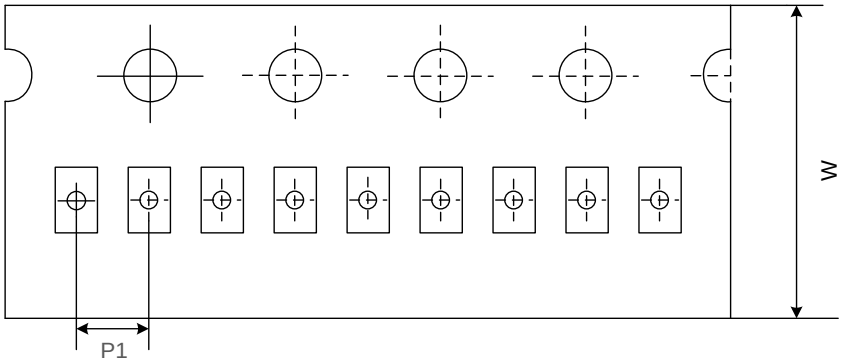


# Tape And Reel Information

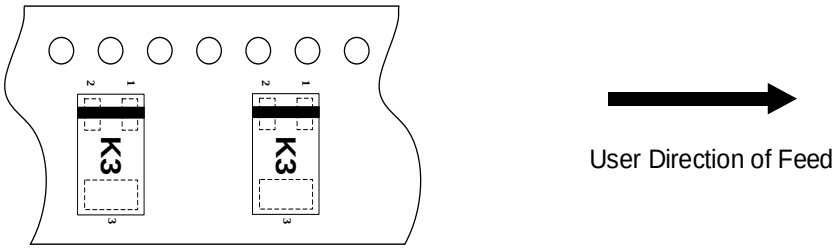
### Reel Dimensions




### Tape Dimensions



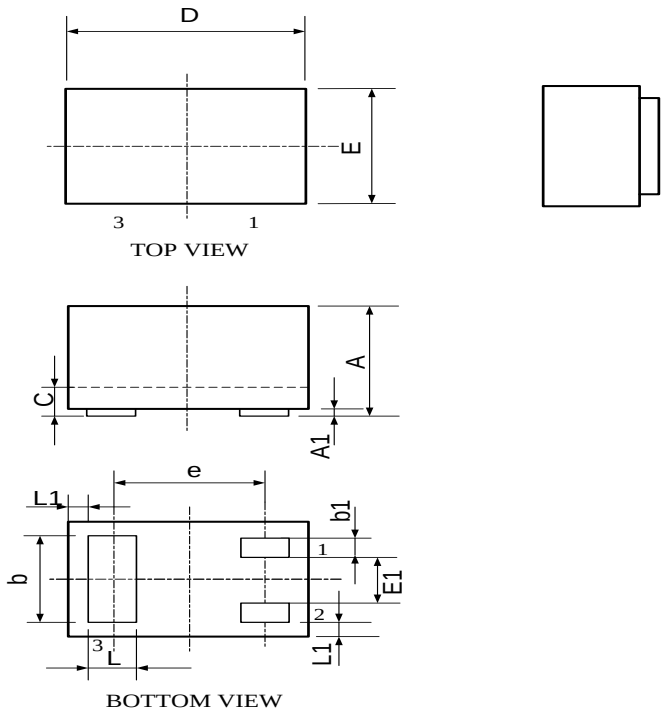

### Quadrant Assignments For PIN1 Orientation In Tape




| | | |
|---|---|---|
| RD | Reel Dimensions | 7 inch |
| W | Overall width of the carrier tape | 8 mm |
| P1 | Pitch between successive cavity centers | 2mm |

## Outline Drawing – DFN1006-3L

### PACKAGE OUTLINE

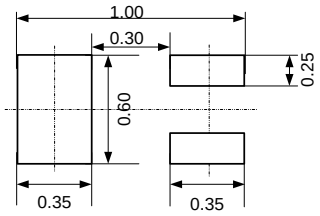




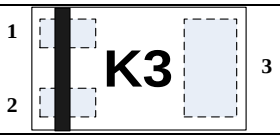

**DFN1006-3L**

| SYMBOL | MILLIMETERS | | |
|---|---|---|---|
| | MIN | NOM | MAX |
| A | 0.45 | 0.50 | 0.60 |
| A1 | 0 | 0.02 | 0.05 |
| b | 0.45 | 0.50 | 0.55 |
| b1 | 0.10 | 0.15 | 0.20 |
| C | 0.12 | 0.15 | 0.18 |
| D | 0.95 | 1.00 | 1.05 |
| e | 0.65BSC | | |
| E | 0.55 | 0.60 | 0.65 |
| E1 | 0.15 | 0.20 | 0.25 |
| L | 0.20 | 0.25 | 0.30 |
| L1 | 0.05REF | | |

### Land Pattern




## Marking Codes

| Part Number | Marking Code |
|---|---|
| WE05MGC |  |



## Package Information

Qty：10k/Reel

### CONTACT INFORMATION

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WAYON website: **http://www.way-on.com**
For additional information, please contact your local Sales Representative.

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*The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.*
*Users should verify actual device performance in their specific applications.*