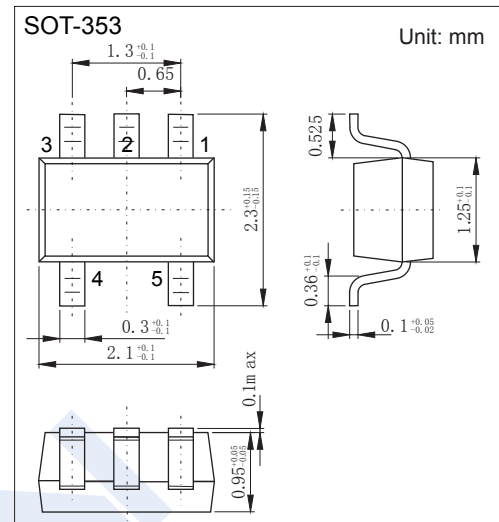
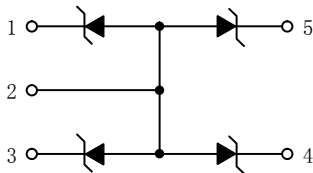


ESD Protection Diodes

MSQA6V1W5T2G

■ Features

- Low Clamping Voltage
- Stand Off Voltage 3 V
- Low Leakage < 1A @ 3 V
- IEC1000-4-2 Level 4 ESD Protection
- Pb-Free Package is Available

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Rating | Unit |
|--|-----------------|------------|---------------------------|
| ESD Discharge @ MIL STD 883C - Method 3015-6 IEC1000-4-2, Air Discharge IEC1000-4-2, Contact Discharge | V_{PP} | 16 | KV |
| | | 16 | |
| | | 9 | |
| Steady State Power - 1 Diode | P_D | 385 | mW |
| Peak Power Dissipation @ 20us | P_{PK} | 150 | W |
| Thermal Resistance Junction to Ambient | $R_{\theta JA}$ | 325 | $^\circ\text{C}/\text{W}$ |
| Above 25°C , Derate | | 3.1 | mW/ $^\circ\text{C}$ |
| Lead Solder Temperature (10 s duration) | T_L | 260 | $^\circ\text{C}$ |
| Junction Temperature | T_J | 150 | |
| Storage Temperature range | T_{stg} | -55 to 150 | |

■ Electrical Characteristics $T_a = 25^\circ\text{C}$

| Device* | Breakdown Voltage V_{BR} @ 1 mA (V_o) (Note 1) | | | Leakage Current I_{RM} @ $V_{RWM} = 3$ V (μA) | Capacitance @ 0 V Bias (pF) | Max V_F @ $I_F = 200$ mA (V) | V_C Per IEC61000-4-2 (Note 2) |
|--------------|---|-----|-----|---|--------------------------------|-----------------------------------|---|
| | Min | Nom | Max | | | | |
| MSQA6V1W5T2G | 6.1 | 6.6 | 7.2 | 1.0 | 90 | 1.25 | Figures 1 and 2 See Below |

1. V_{BR} is measured with a pulse test current I_T at an ambient temperature of 25°C .

2. For test procedure see Figures 3 and 4 and Application Note AND8307/D.

*Include SZ-prefix devices where applicable.

■ Marking

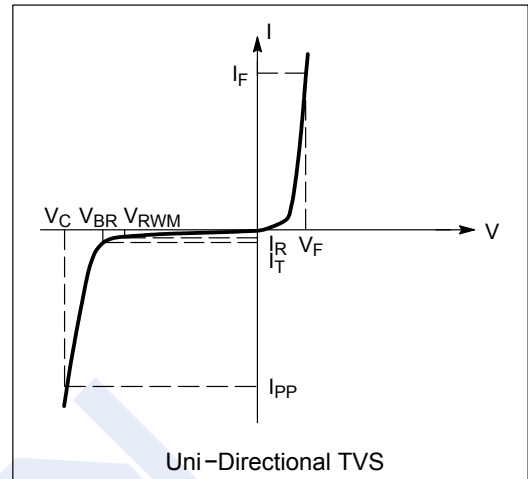
| | |
|---------|------|
| Marking | 61M• |
|---------|------|

ESD Protection Diodes

MSQA6V1W5T2G

■ Electrical Characteristics $T_a = 25^\circ\text{C}$

| Symbol | Parameter |
|-----------|---|
| I_{PP} | Maximum Reverse Peak Pulse Current |
| V_C | Clamping Voltage @ I_{PP} |
| V_{RWM} | Working Peak Reverse Voltage |
| I_R | Maximum 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 |
| P_{pk} | Peak Power Dissipation |
| C | Capacitance @ $V_R = 0$ and $f = 1.0$ MHz |



■ Typical Characteristics

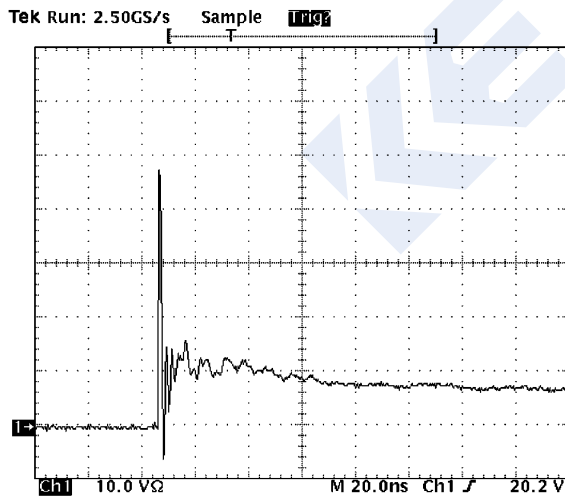


Figure 1. ESD Clamping Voltage Screenshot
Positive 8 kV Contact per IEC61000-4-2

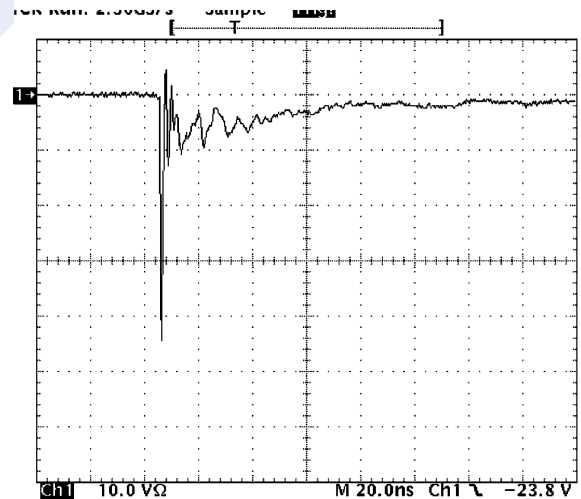


Figure 2. ESD Clamping Voltage Screenshot
Negative 8 kV Contact per IEC61000-4-2

ESD Protection Diodes

MSQA6V1W5T2G

■ Typical Characteristics

IEC 61000-4-2 Spec.

| Level | Test Voltage (kV) | First Peak Current (A) | Current at 30 ns (A) | Current at 60 ns (A) |
|-------|-------------------|------------------------|----------------------|----------------------|
| 1 | 2 | 7.5 | 4 | 2 |
| 2 | 4 | 15 | 8 | 4 |
| 3 | 6 | 22.5 | 12 | 6 |
| 4 | 8 | 30 | 16 | 8 |

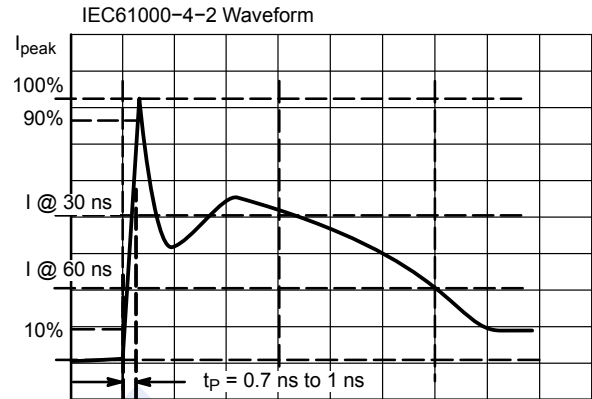


Figure 3. IEC61000-4-2 Spec

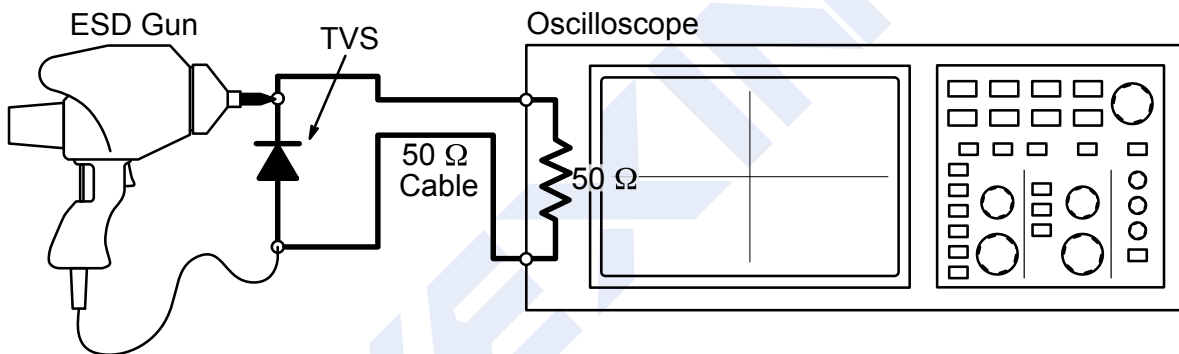


Figure 4. Diagram of ESD Test Setup

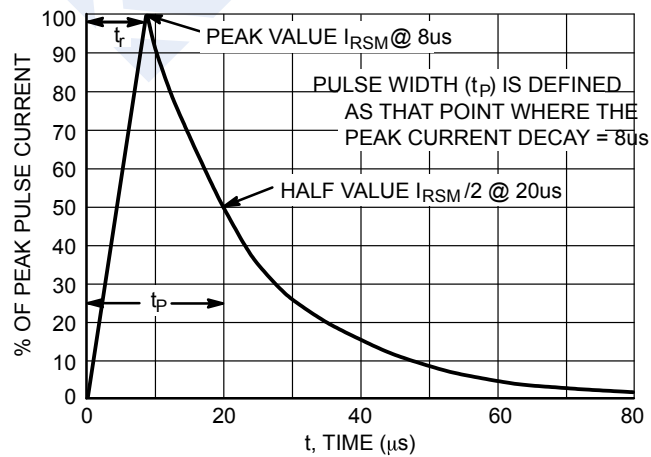


Figure 5. 8 X 20 μs Pulse Waveform

ESD Protection Diodes

MSQA6V1W5T2G

■ Typical Characteristics

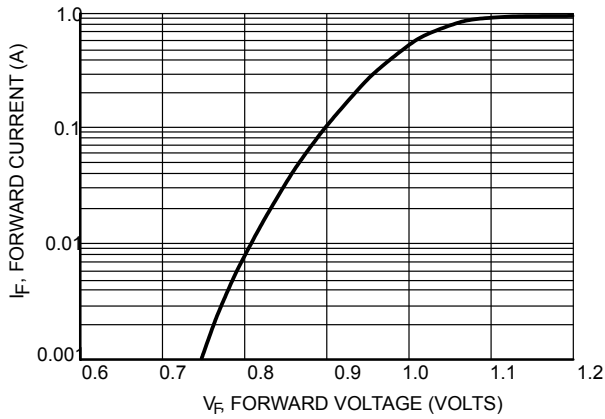


Figure 6. Forward Voltage

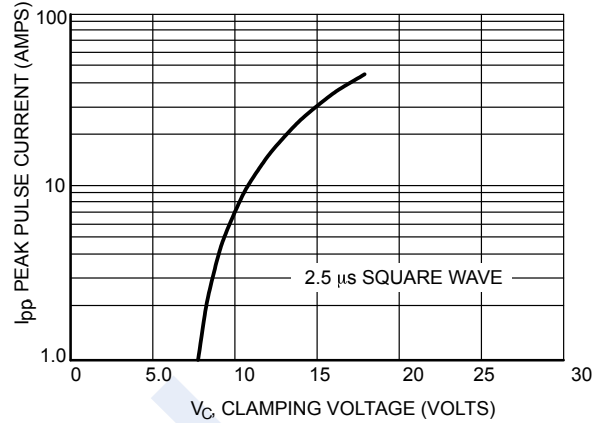


Figure 7. Clamping Voltage versus Peak Pulse Current (Reverse Direction)

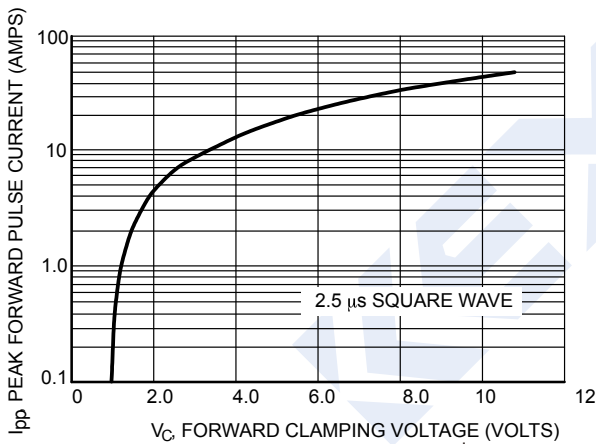


Figure 8. Clamping Voltage versus Peak Pulse Current (Forward Direction)

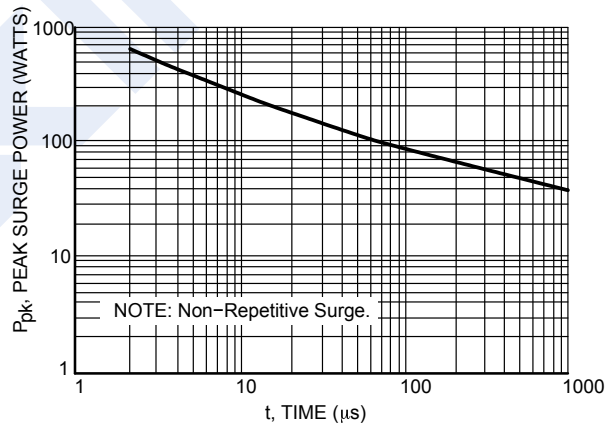


Figure 9. Pulse Width

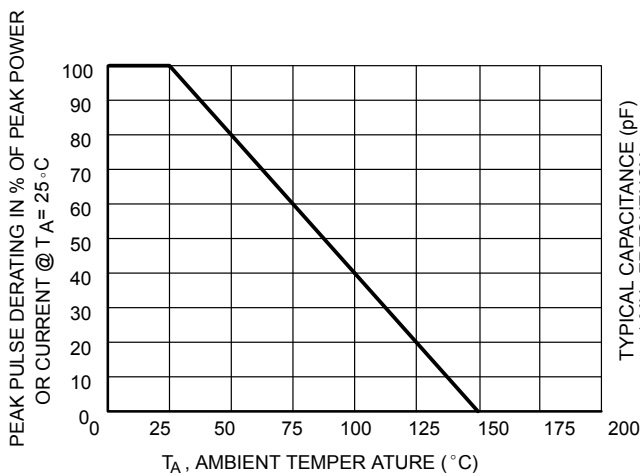


Figure 10. Pulse Derating Curve

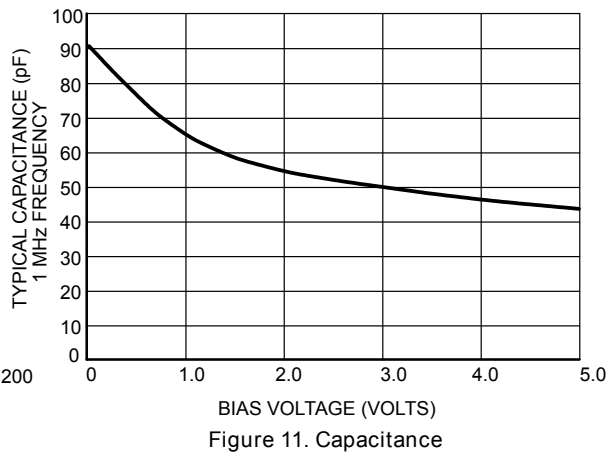


Figure 11. Capacitance