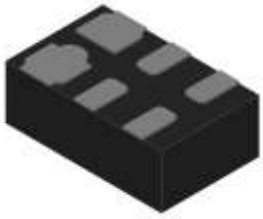
# TQS0522P

The TQS0522P TVS array is designed to protect sensitive electronics from damage or latch-up due to ESD and other voltage-induced transient events. It is designed for use in applications where board space is at a premium. Each device will protect up to two lines. It is unidirectional devices and may be used on lines where the signal polarities are above ground.TVS Diode Array For ESD and Latch-Up Protection

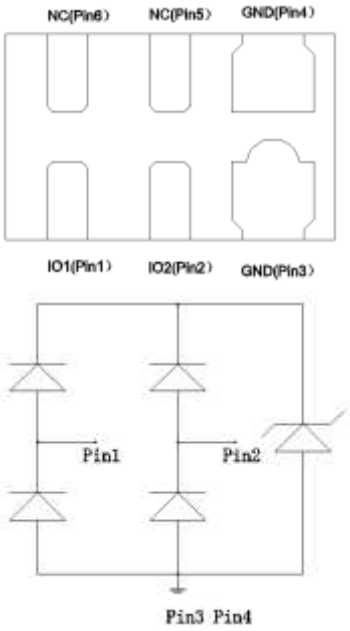
It has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from overvoltage caused by ESD(electrostatic discharge), CDE (Cable Discharge Events),and EFT (electrical fast transients).

## Features

- Peak Power Dissipation − 30 W (8 x 20 us Waveform)
- Stand-off Voltage: 5.0 V
- Low capacitance (<0.5pF) for high-speed interfaces
- No insertion loss to 3.0GHz
- Protects I/O Port
- Low Clamping Voltage
- Low Leakage
- Low Capacitance
- Meets MSL 1 Requirements
- ROHS compliant
- TECHIP technology



**DFN1610-6L**




**Pin Confi guration (Top View)**

## Main applications

- High Speed Line :USB1.0/2.0/3.0/3.1, VGA, DVI, SDI,
- High Definition Multi-Media Interface (HDMI1.3/1.4/2.0)
- Serial and Parallel Ports
- Notebooks, Desktops, Servers
- Projection TV
- Cellular handsets and accessories
- Portable instrumentation
- Peripherals

## Protection solution to meet

- IEC61000-4-2 (ESD) ±30kV (air), ±20kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning) 3A (8/20μs)

## Ordering Information

| Device | Marking | Qty per Reel | Reel Size |
|---|---|---|---|
| TQS0522P | 2R2P | 3000 | 7 Inch |

## Maximum ratings (Tamb=25℃ Unless Otherwise Specified)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Peak Pulse Power (tp=8/20μs waveform) | $P_{PPP}$ | 30 | Watts |
| ESD Rating per IEC61000-4-2： Contact<br>Air | | 20<br>30 | KV |
| Lead Soldering Temperature | $T_L$ | 260 (10 sec.) | ℃ |
| Operating Temperature Range | $T_J$ | -55 ~ 150 | ℃ |
| Storage Temperature Range | $T_{STG}$ | -55 ~ 150 | ℃ |
| Lead Solder Temperature – Maximum (10 Second Duration) | $T_L$ | 260 | ℃ |

*Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.*

**Other voltages may be available upon request.*

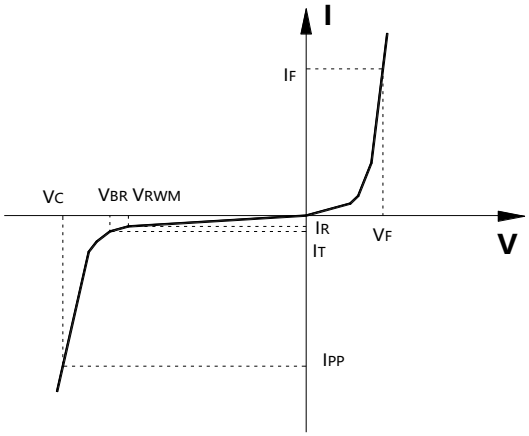
*1. Non-repetitive current pulse, per Figure 1.*

## Electrical characteristics ( Tamb=25℃ Unless Otherwise Specified)

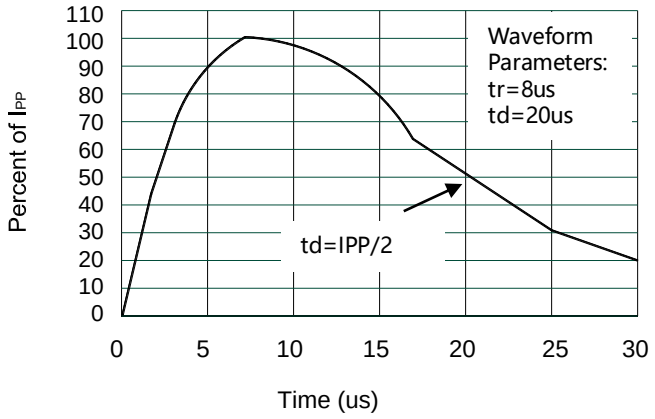
| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| $V_{RWM}$ | Reverse Working Voltage | Any I/O to Ground | | | 5.0 | V |
| $V_{BR}$ | Reverse Breakdown Voltage | IT = 1mA,<br>Any I/O to Ground | 6.0 | | | V |
| $I_R$ | Reverse Leakage Current | $V_{RWM}$ = 5V,<br>Any I/O to Ground | | | 1 | μA |
| $V_F$ | Diode Forward Voltage | IF = 15mA | | 0.85 | 1.2 | V |
| $V_C$ | Clamping Voltage | $I_{PP}$ = 1A, tp =8/20μs,<br>any I/O pin to Ground | | 8.7 | | V |
| | | $I_{PP}$ =3A, tp =8/20μs,<br>any I/O pin to Ground | | 10.7 | 12 | V |
| $I_{PP}$ | Peak Pulse Current | tp =8/20μs | | | 3 | A |
| $C_J$ | Junction Capacitance | $V_R$ = 0V, f = 1MHz,<br>any I/O pin to Ground | | 0.3 | 0.5 | pF |

*Junction capacitance is measured in VR=0V,F=1MHz*

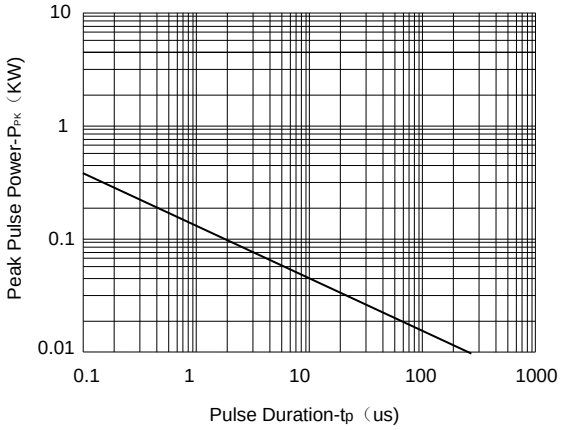
| Symbol | Parameter |
|---|---|
| $V_{RWM}$ | Working Peak Reverse Voltage |
| $V_{BR}$ | Breakdown Voltage @ $I_T$ |
| $V_C$ | Clamping Voltage @ $I_{PP}$ |
| $I_T$ | Test Current |
| $I_{RM}$ | Leakage current at $V_{RWM}$ |
| $I_{PP}$ | Peak pulse current |
| $C_O$ | Off-state Capacitance |
| $C_J$ | Junction Capacitance |



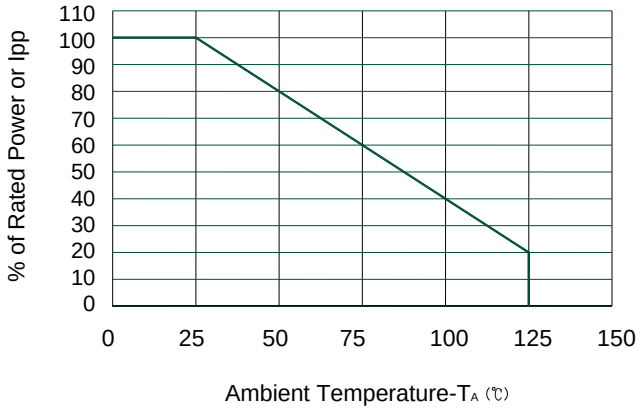
## Typical electrical characterist applications



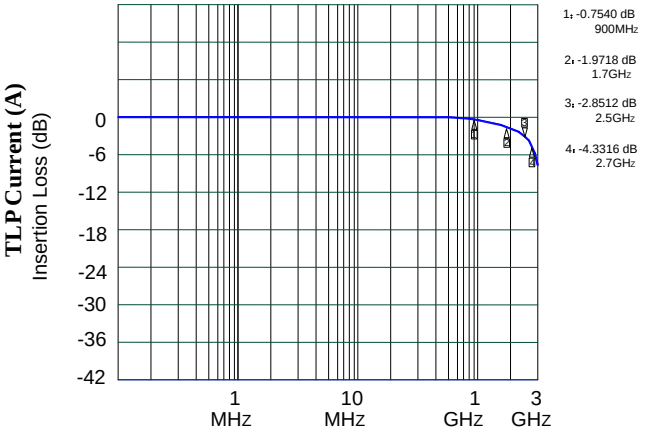

**Pulse Waveform**




**Non-Repetitive Peak Pulse Power vs. Pulse Time**




**Power Derating Curve**




**Insertion Loss S21**

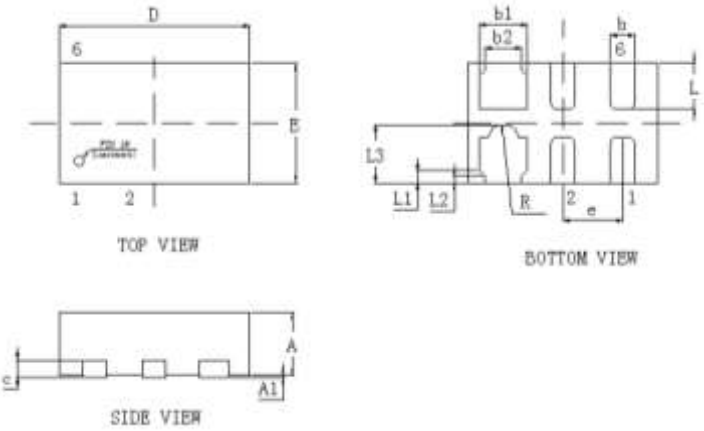
## Package Information

### DFN1610-6L

## Mechanical Data

Case:DFN1610-6L

Case Material: Molded Plastic. UL Flammability




| DIM | Millimeters | | |
|---|---|---|---|
| | Min | NOM | Max |
| A | 0.50 | 0.55 | 0.60 |
| A1 | - | 0.02 | 0.05 |
| b | 0.15 | 0.20 | 0.25 |
| b1 | 0.35 | 0.40 | 0.45 |
| b2 | 0.20 | 0.25 | 0.30 |
| c | 0.10 | 0.15 | 0.20 |
| D | 1.55 | 1.60 | 1.65 |
| e | 0.50BSC | | |
| E | 0.95 | 1.00 | 1.05 |
| L | 0.33 | 0.38 | 0.43 |
| L1 | 0.100REF | | |
| L2 | 0.05REF | | |
| L3 | 0.49REF | | |
| R | 0.08 | 0.13 | 0.18 |

## Recommended Pad outline