

# GSE0520Q

## Ultra-low Capacitance Bidirectional Micro Packaged TVS Diodes for ESD Protection

### Product Description

The GSE0520Q is designed to protect sensitive electronics from damage or latch up due to ESD, lightning, and other voltage induced transient events.

The DFN1006 package type is provided for easy PCB layout.

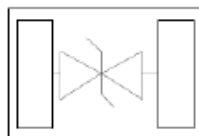
### Features

- Max. peak pulse power :  $P_{PP}=20W$  at  $t_P=8/20\mu s$
- Stand-off Voltage : 5.0V
- Low capacitance ( $<0.5pF$ ) for high-speed interfaces
- No insertion loss to 3.0GHz
- Replacement for MLV
- Protects I/O Port
- Low Clamping Voltage
- Low Leakage
- Solid-state Punch-Through TVS Process technology
- IEC61000-4-2(ESD)  $\pm 15kV$  (air),  $\pm 8kV$  (contact)
- Meets MSL 1 Requirements
- RoHS Compliant, 100%Pb & Halogen Free

### Applications

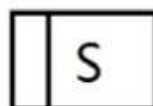
- High Speed Line :USB1.0/2.0, VGA, DVI, SDI
- Serial and Parallel Ports
- Notebooks, Desktops, Servers
- Projection TV
- Cellular handsets and accessories
- Portable instrumentation
- Peripherals

### Packages & Pin Assignments



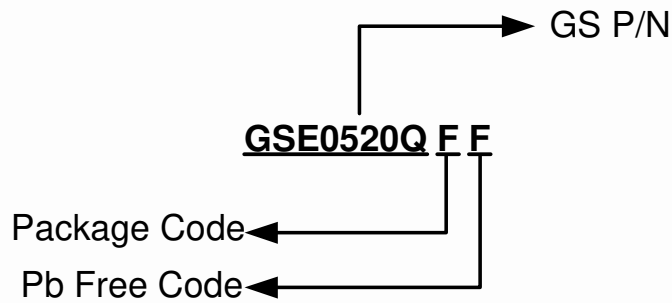
DFN1006

### Marking & Orientation



Part Number	Package	Marking
GSE0520QFF	DFN1006	S

## Ordering Information



Part Number	Package	Quantity
GSE0520QFF	DFN1006	10000 PCS

## Absolute Maximum Ratings

(T<sub>A</sub>=25°C Unless otherwise noted)

Symbol	Parameter	Typical	Unit
P <sub>pk</sub>	Peak Pulse Power (t <sub>p</sub> =8/20μs)	20	W
V <sub>PP</sub>	ESD Per IEC61000-4-2 (Air)	±15	kV
	ESD Per IEC61000-4-2 (Contact)	±8	kV
T <sub>J</sub>	Operating Junction Temperature Range	-55 to +150	°C
T <sub>STG</sub>	Storage Temperature Range	-55 to +150	°C
T <sub>L</sub>	Soldering Temperature, t(max)=10s	260	°C

Note : 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.

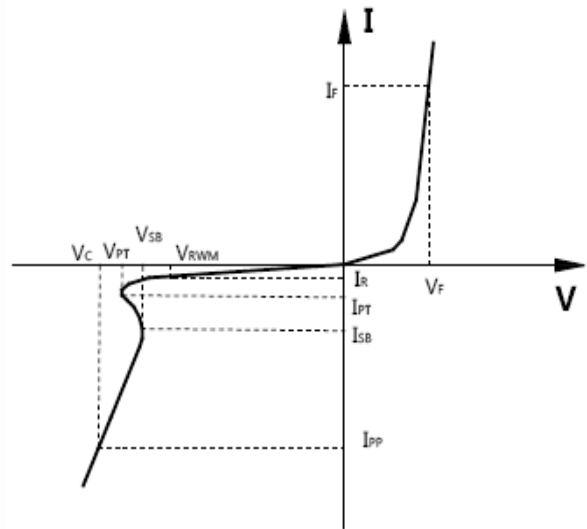
## Electrical Characteristics

(T<sub>A</sub>=25°C Unless otherwise noted)

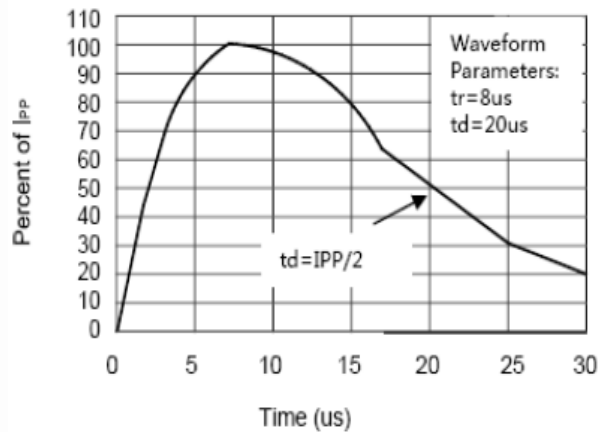
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V <sub>RWM</sub>	Reverse Stand-off Voltage	-			5.0	V
V <sub>BR</sub>	Reverse Breakdown Voltage	I <sub>R</sub> =1mA	6.0		10	V
R <sub>dyn</sub>	Resistance	-		1.4		Ω
I <sub>R</sub>	Reverse Leakage Current	V <sub>RWM</sub> =5V			1.0	uA
V <sub>C</sub>	Clamping Voltage	I <sub>PP</sub> =1A (8/20μs)			15	V
C <sub>J</sub>	Junction Capacitance	V <sub>R</sub> =0V, f=1MHz		0.3	0.5	pF

## Electrical Parameter

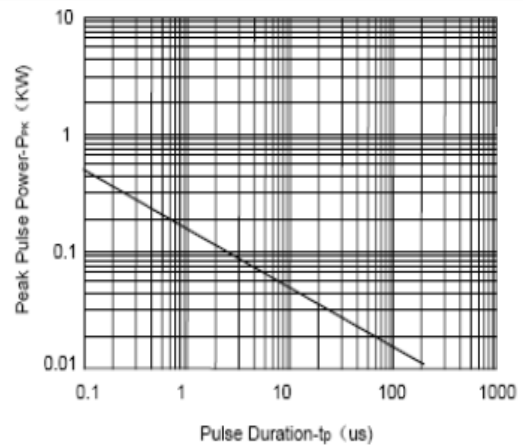
Symbol	Parameter
$V_{RWM}$	Working Peak Reverse Voltage
$V_{PT}$	Punch-Through Voltage @ $I_{PT}$
$V_{SB}$	Snap-Back Voltage @ $I_{SB}$
$V_C$	Clamping Voltage @ $I_{PP}$
$I_T$	Test Current
$I_{RM}$	Leakage current at $V_{RWM}$
$I_{PP}$	Peak pulse current
$C_O$	Off-state Capacitance
$C_J$	Junction Capacitance



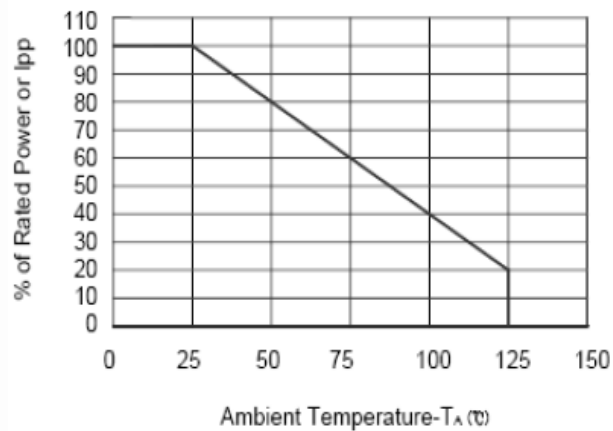
## Typical Characteristics



Pulse Waveform



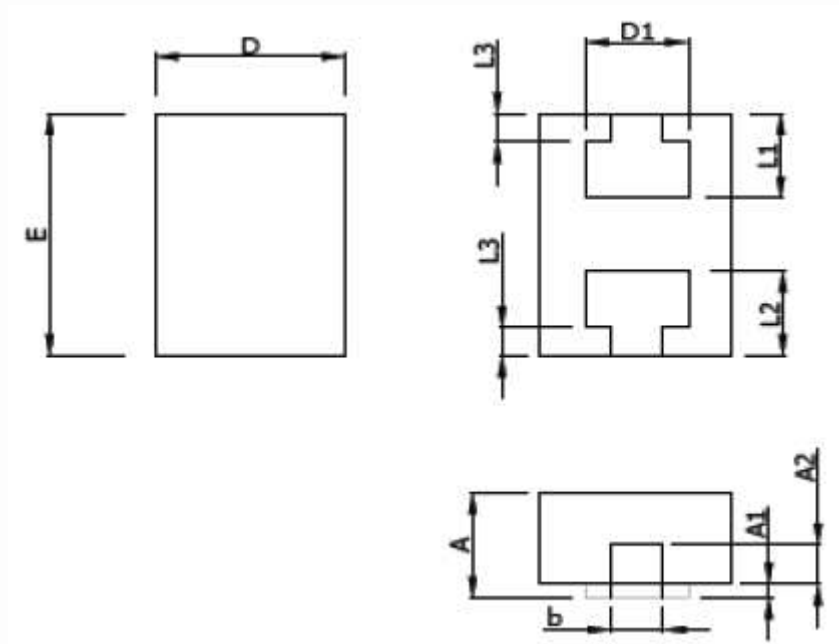
Non-Repetitive Peak Pulse Power vs. Pulse Time



Power Derating Curve

## Package Dimension

### DFN1006







### Dimensions



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
<b>A</b>	0.30	0.40	0.012	0.016
<b>A1</b>	-	0.05	-	0.002
<b>A2</b>	0.125 (REF)		0.005 (REF)	
<b>D</b>	0.55	0.65	0.022	0.026
<b>E</b>	0.95	1.05	0.037	0.041
<b>D1</b>	0.45	0.55	0.018	0.021
<b>b</b>	0.15 (REF)		0.006 (REF)	
<b>L1</b>	0.25	0.35	0.010	0.014
<b>L2</b>	0.25	0.35	0.010	0.014
<b>L3</b>	0.05 (REF)		0.002 (REF)	

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