

Description

The LY712 is designed for asymmetrical (12V to -7V) protection in multi-point data transmission application. It replace four discrete components by integrating two 17V and two 7V TVS diodes in a single package. It complies with IEC 61000-4-2 (ESD), $\pm 30\text{kV}$ air and $\pm 30\text{kV}$ contact discharge. It is assembled into a lead-free SOT-23 package. It is designed to protect components which are connected to data and transmission lines from voltage surges.

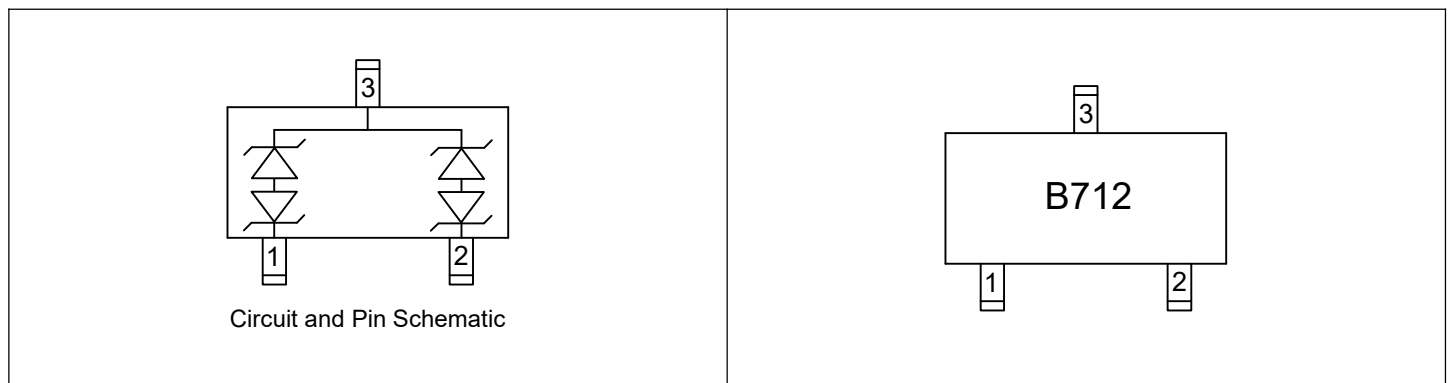
Features

- Low clamping voltage
- Ultra low leakage current
- Operating voltage: 7V or 12V
- RoHS compliant
- IEC-61000-4-2 ESD $\pm 30\text{kV}$ Air, $\pm 30\text{kV}$ Contact
- Packaging: 7 inch reel, 3000pcs/reel

Applications

- Cellular Handsets and Accessories
- Portable Instrumentation
- Personal Digital Assistants
- Notebooks and Handhelds
- Digital Cameras
- Peripherals

Pin Configuration and Marking



Absolute Maximum Ratings ($T_A=25^\circ\text{C}$)

Parameter	Symbol	Value
Peak Pulse Power (8/20 μs)	P_{PP}	325W
Peak Pulse Current (8/20 μs)	I_{PP}	13A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	$\pm 30\text{kV}$ $\pm 30\text{kV}$
Ambient Temperature Range	T_A	-55°C to $+125^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55°C to $+150^\circ\text{C}$

Electrical Characteristics ($T_A=25^\circ\text{C}$)

Pin1 to Pin3 and Pin2 to Pin3

Parameter	Symbol	Test Condition	Min.	Typ.	Max.
Reverse Working Voltage	V_{RWM}		-	-	12V
Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	13.3V	-	-
Reverse Leakage Current	I_R	$V_{RWM} = 12\text{V}$	-	-	0.5 μA
Clamping Voltage	V_C	$I_{PP} = 5\text{A}$ (8/20 μs)	-	-	20V
		$I_{PP} = 13\text{A}$ (8/20 μs)	-	-	25V
Junction Capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$	-	40pF	-

Pin3 to Pin1 and Pin3 to Pin2

Parameter	Symbol	Test Condition	Min.	Typ.	Max.
Reverse Working Voltage	V_{RWM}		-	-	7V
Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	7.5V	-	-
Reverse Leakage Current	I_R	$V_{RWM} = 7\text{V}$	-	-	0.5 μA
Clamping Voltage	V_C	$I_{PP} = 5\text{A}$ (8/20 μs)	-	-	14V
		$I_{PP} = 13\text{A}$ (8/20 μs)	-	-	16V
Junction Capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$	-	40pF	-

Typical Characteristic Curves ($T_A=25^\circ\text{C}$)

Figure 1. Peak Pulse Power Rating Curve

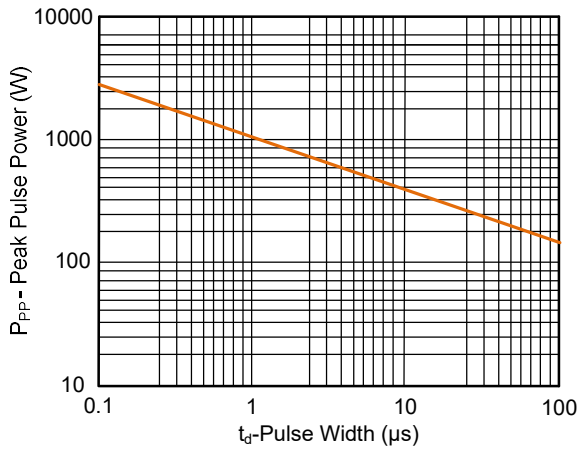


Figure 2. Pulse Derating Curve



Figure 3. Clamping Voltage vs. Peak Pulse Current

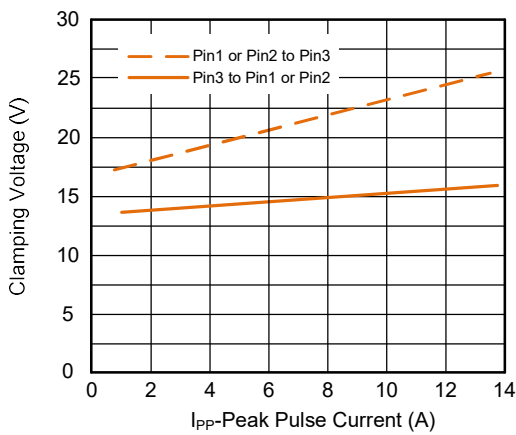


Figure 4. Junction Capacitance vs. Reverse Voltage

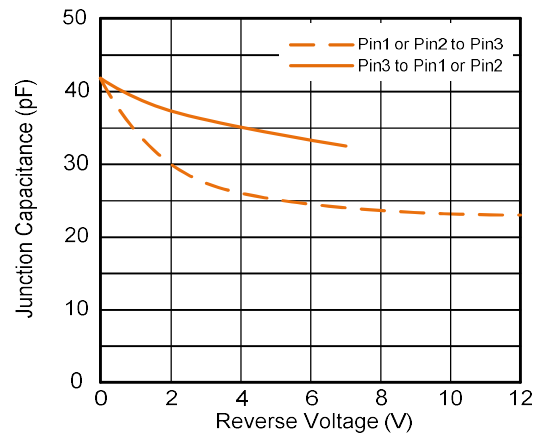


Figure 5. Pulse Waveform (8/20μs)

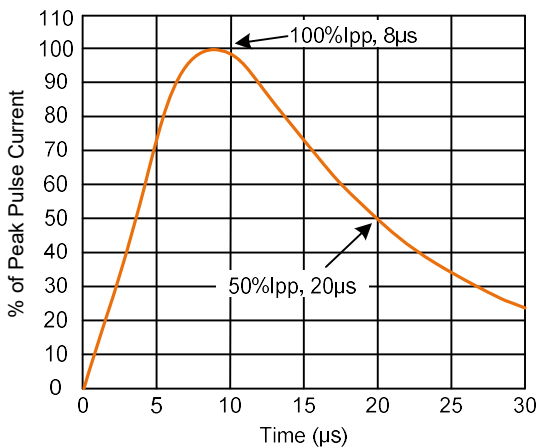
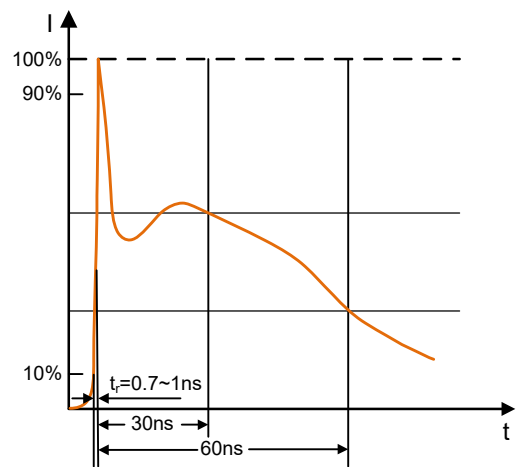


Figure 6. Pulse Waveform (IEC61000-4-2)



Soldering Parameters



Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_s)	150°C 200°C 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	3°C/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	217°C 60-150 seconds
Peak Temperature (T_P)	260°C
Time within 5°C of actual Peak Temperature (t_p)	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

Dimensions (SOT-23)

Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.00	0.110	0.118
B	2.25	2.55	0.089	0.100
B1	1.20	1.40	0.047	0.055
C	0.30	0.50	0.012	0.020
D	0.95 TYP		0.037 TYP	
D1	1.80	2.00	0.071	0.079
H	0.90	1.15	0.035	0.045
H1	0.00	0.10	0.000	0.041
H2	0.90	1.05	0.035	0.041
t	0.08	0.15	0.003	0.006

Recommended Solder Pad Layout (mm)