RClamp2891PQ

Ultra-Low Capacitance
1 Line, 28V ESD Protection

Description

RClamp2891PQ is a low capacitance RailClamp TVS for ESD and EOS protection of high-speed interfaces in automotive applications. They are designed to provide minimal capacitive loading and low-harmonic generation on RF antenna and camera lines.

RClamp2891PQ is in a 2-pin DFN 1.00 x 0.60 x 0.50mm 2-Lead package and is qualified to AEC-Q101 for automotive use. Each device protects one high-speed line operating at 28V with a maximum capacitance of 0.40pF.

Features

- High ESD withstand voltage
  - IEC 61000-4-2 (ESD): ±10kV (Contact), ±15kV (Air)
  - IEC 61000-4-5 (Lightning): 2A (8/20µs)
- Protects one high speed line
- Low capacitance: 0.40pF maximum
- Dynamic Resistance: 1.8 Ω typical
- Operating voltage: 28V
- Qualified for AEC-Q101
- Solid-state silicon-avalanche technology

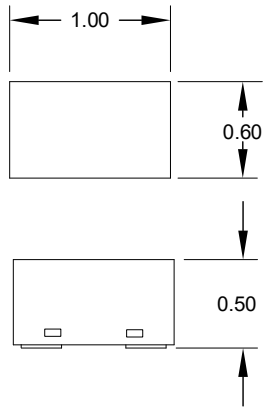
Applications

- Automotive Applications
- Power Over Coax (PoC)
- Side View Camera
- Telematic Box
- Car Radio Antenna

Mechanical Characteristics

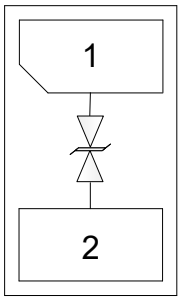
- Package: DFN 1.00 x 0.60 x 0.50mm 2-Lead
- Pb-Free, Halogen Free, RoHS/WEEE Compliant
- Lead Finish: Pb-Free
- Marking: Marking Code + Date Code
- Packaging: Tape and Reel

Package Dimension



Nominal Dimensions in mm

Schematic and Pin Configuration



DFN 1.00 x 0.60 x 0.50mm 2-Lead (Bottom View)

Absolute Maximum Rating

RATING	SYMBOL	VALUE	UNITS
Peak Pulse Power (t_p = 8/20µs)	P_{PK}	96	W
Peak Pulse Current (t_p = 8/20µs)	I_{PP}	2	A
ESD per IEC 61000-4-2 (Contact)(1)	V_{ESD}	±10	kV
ESD per IEC 61000-4-2 (Air)(1)		±15	
Operating Temperature	T_{OP}	-40 to +125	°C
Junction Temperature	T_J	-40 to +125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

Electrical Characteristics

T=25°C unless otherwise specified

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Reverse Stand-Off Voltage	V_{RWM}				28	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA	30	33.2	39	V
Reverse Leakage Current	I_R	V_{RWM} = 28V		<1	50	nA
Clamping Voltage (2)	V_C	I_{PP} = 2A, t_p = 8/20 µs		41.8	48	V
ESD Clamping Voltage (3)	V_C	I_{TLP} = 4A, t_p = 0.2/100ns (TLP)		40.8		V
		I_{TLP} = 16A, t_p = 0.2/100ns (TLP)		62.5		
Dynamic Resistance(3),(4)	R_{DYN}	t_p = 0.2/100ns (TLP)		1.8		Ω
Junction Capacitance	C_J	V_R = 0V, f = 1MHz		0.25	0.4	pF

Notes:

(1): ESD gun return path connected to Ground Reference Plane (GRP)

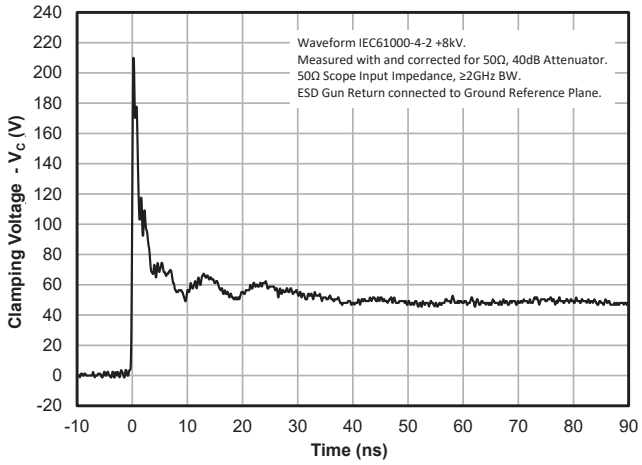
(2): Measured using an 8/20µs constant current source.

(3): Transmission Line Pulse Test (TLP) Settings: tp = 100ns, tr = 0.2ns, I_{TLP} and V_{TLP} averaging window: t_1 = 70ns to t_2 = 90ns.

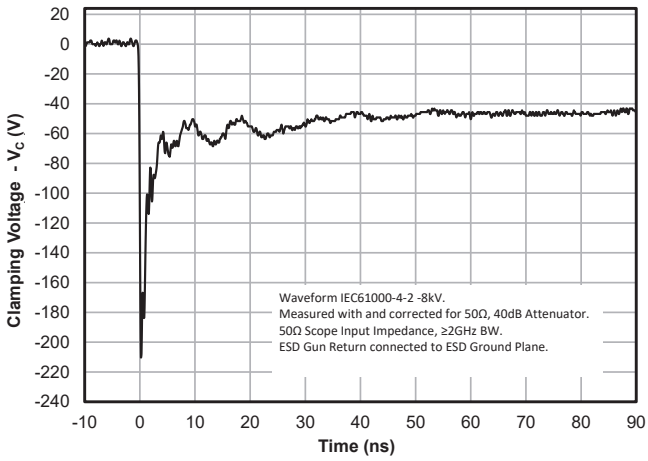
(4): Dynamic resistance calculated from I_{TLP} = 4A to I_{TLP} = 16A

Typical Characteristics

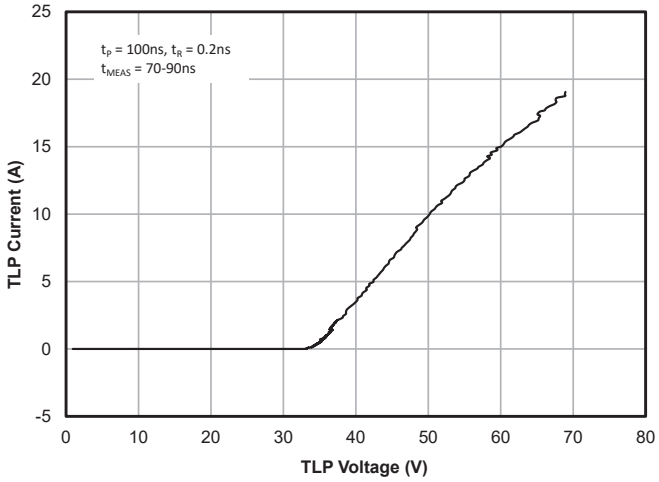
ESD Clamping (+8kV Contact per IEC 61000-4-2)



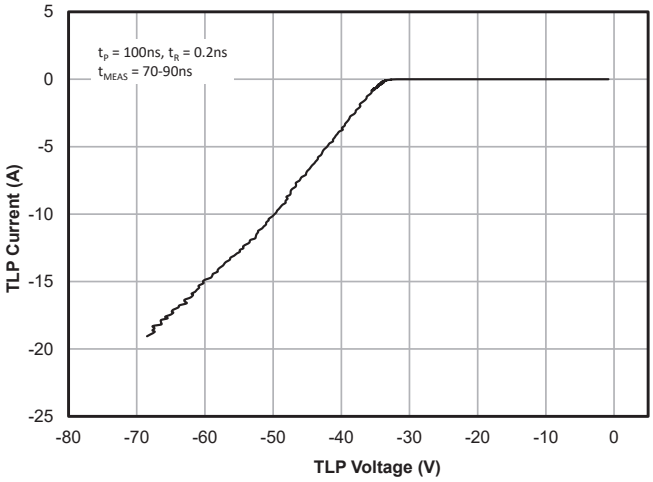
ESD Clamping (-8kV Contact per IEC 61000-4-2)



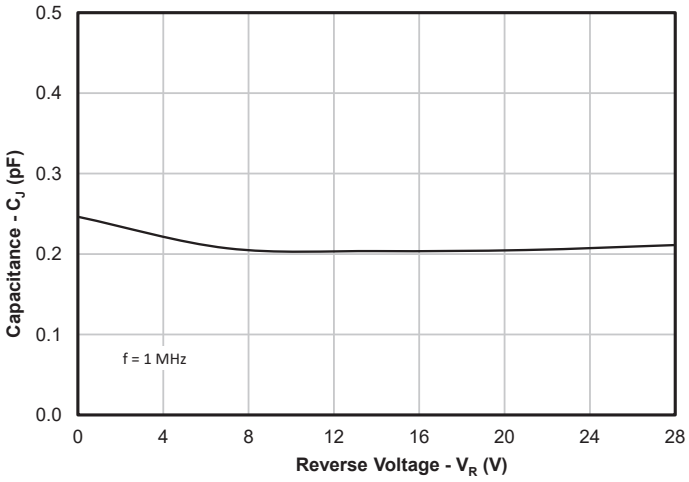
TLP Characteristics (Positive Pulse)



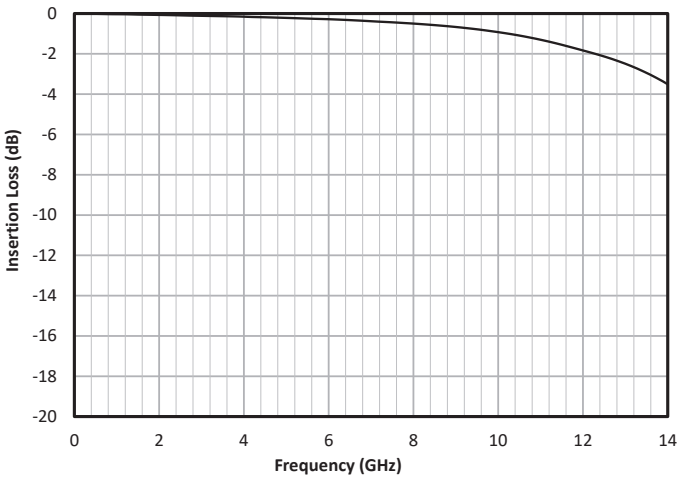
TLP Characteristics (Negative Pulse)



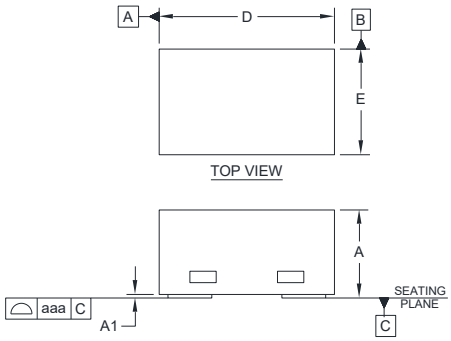
Cap vs. Reverse Voltage



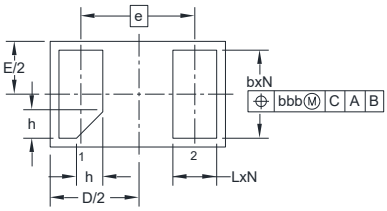
Insertion Loss - S21

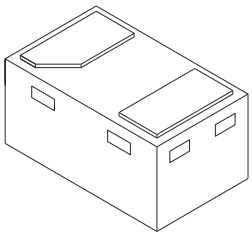


Outline Drawing - DFN 1.00 x 0.60 x 0.50mm 2-Lead



DIM	DIMENSIONS MILLIMETERS		
	MIN	NOM	MAX
A	0.45	0.50	0.54
A1	0.00	0.02	0.05
b	0.45	0.50	0.55
D	0.95	1.00	1.05
E	0.55	0.60	0.65
e	0.65 BSC		
L	0.20	0.25	0.30
h	0.10	0.15	0.20
N	2		
aaa	0.08		
bbb	0.10		

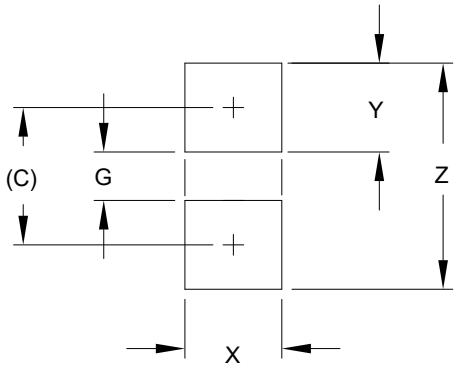




NOTES:

1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).

Landing Pattern - DFN 1.00 x 0.60 x 0.50mm 2-Lead

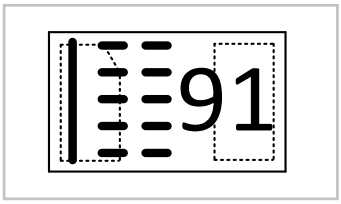


DIM	DIMENSIONS MILLIMETERS
C	(0.85)
G	0.30
X	0.60
Y	0.55
Z	1.40

NOTES:

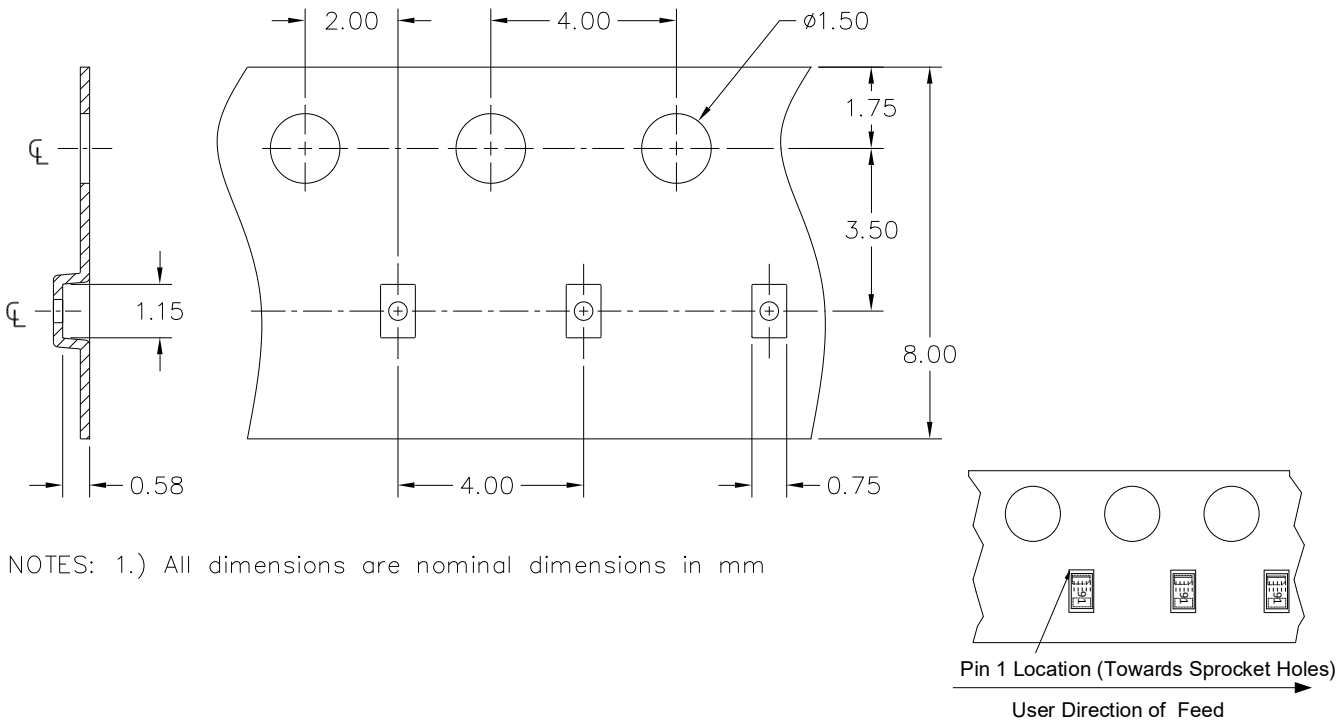
1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. THIS LAND PATTERN IS FOR REFERENCE PURPOSES ONLY. CONSULT YOUR MANUFACTURING GROUP TO ENSURE YOUR COMPANY'S MANUFACTURING GUIDELINES ARE MET.

Marking Code



Notes:
(1) Dashes indicate line matrix date code
(2) Bar indicates Pin 1 location

Tape and Reel Specification



Order Information

PART NUMBER	QTY PER REEL	MATERIAL	REEL SIZE
RClamp2891PQ.C	3,000	Plastic	7"

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