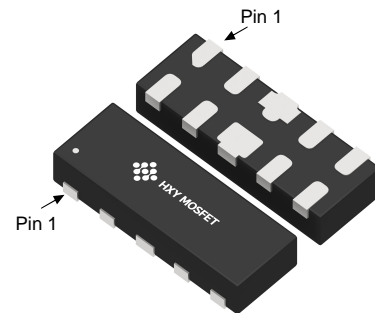




## Discription

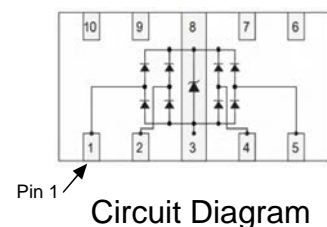
The HAZ1013-04F is a 4-channel ultra low capacitance rail clam ESD protection diodes array. Each channel consists of a pair of diodes that steer positive or negative ESD current to either the positive or negative rail . A zener diode is integrated in to the array between the positive and negative supply rails. In the typical applications,the negative rail pin (assigned as GND) is connected with system ground. The Positive ESD current is steered to the ground through an ESD diode and Zener diode and the positive ESD voltage is clamped to the zener voltage.



DFN2510-10L

## Features

- ★ 4 channels of ESD protection;
- ★ Provides ESD protection to IEC61000-4-2 level 4
  - $\pm 15\text{kV}$  air discharge
  - $\pm 10\text{kV}$  contact discharge;
- ★ Channel I/O to GND capacitance: 0.4pF (Max)
- ★ Channel I/O to I/O capacitance: 0.6pF (Max)
- ★ Low clamping voltage;
- ★ Low operating voltage;
- ★ Improved zener structure;
- ★ Optimized package for easy high speed data lines PCB layout
- ★ RoHS compliant and Halogen Free.



Circuit Diagram

## Ordering information

Product ID	Pack	Qty(PCS)
HAZ1013-04F	DFN2510-10L	3000

## Absolute Ratings( $T_{amb} = 25^{\circ}\text{C}$ )

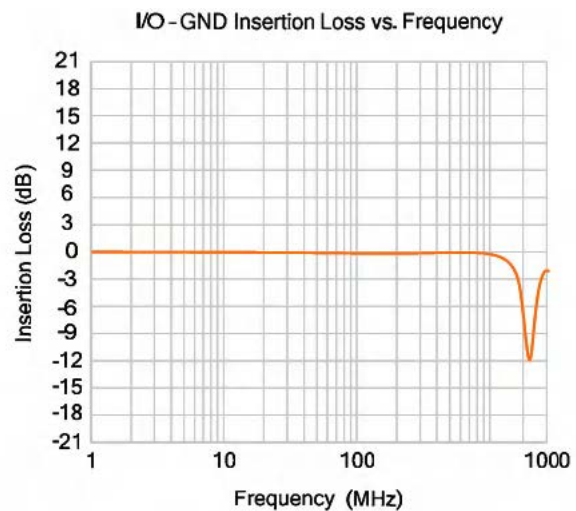
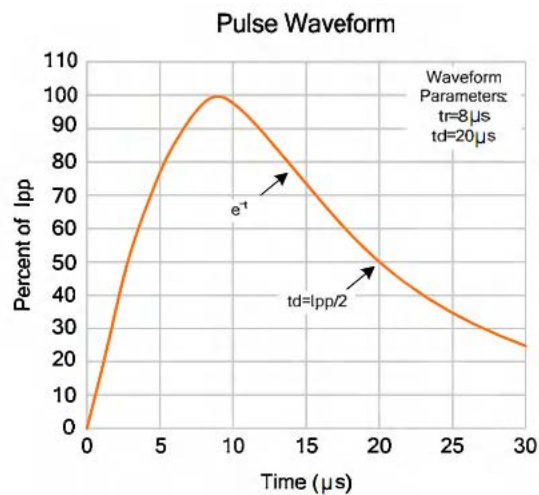
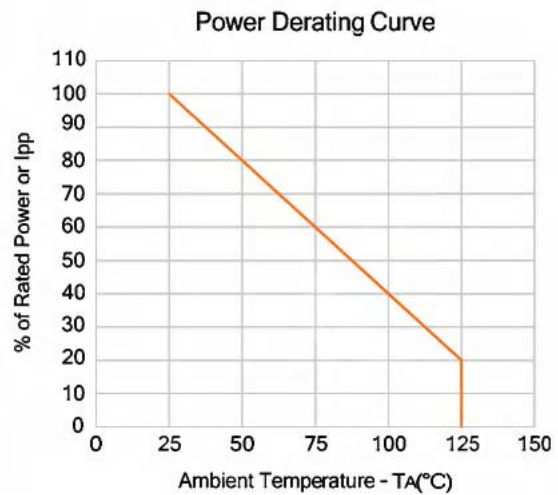
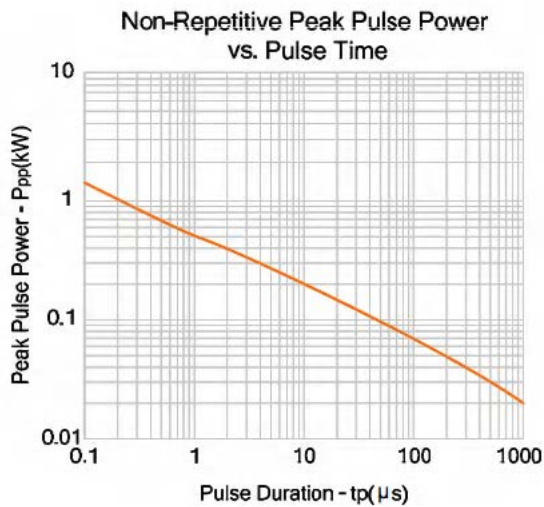
Symbol	Parameter	Value	Units
$P_{PP}$	Peak Pulse Power ( $t_p = 8/20\mu\text{s}$ )	70	W
$I_{PP}$	Peak Pulse Current(8/20us)	4	A
$T_L$	Maximum lead temperature for soldering during 10s	260	$^{\circ}\text{C}$
$T_{stg}$	Storage Temperature Range	-55 to +150	$^{\circ}\text{C}$
$T_{op}$	Operating Temperature Range	-40 to +125	$^{\circ}\text{C}$
$T_j$	Maximum junction temperature	150	$^{\circ}\text{C}$
	IEC61000-4-2 (ESD)	air discharge contact discharge	$\pm 15$ $\pm 10$ KV



### Electrical Characteristics (Ta= 25°C)

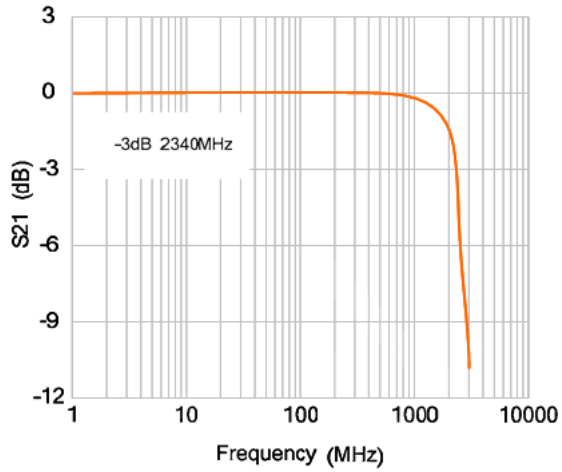
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Reverse Working Voltage	VRWM	–	–	3.3	V	Any I/O pin to GND
Reverse Breakdown Voltage	VBR	5.6	–	–	V	It =1mA; Any I/O pin to GND
Reverse Leakage Current	IR	–	–	1	μA	VRWM =3.3V, T=25°C; Any I/O pin to GND
Positive Clamping Voltage	VC1	–	8	20	V	I <sub>PP</sub> =4A, t <sub>P</sub> =8/20μs; Positive pulse; Any I/O pin to GND
Negative Clamping Voltage	VC2	–	1.8	–	V	I <sub>PP</sub> =1A, t <sub>P</sub> =8/20μs; Negative pulse; Any I/O pin to GND
Junction Capacitance Between Channel	CJ1	–	0.3	0.4	pF	VR=0V, f=1MHz; Between I/O pins
Junction Capacitance Between I/O And GND	CJ2	–	0.6	0.8	pF	VR=0V, f=1MHz; Any I/O pin to GND

### Typical Characteristics

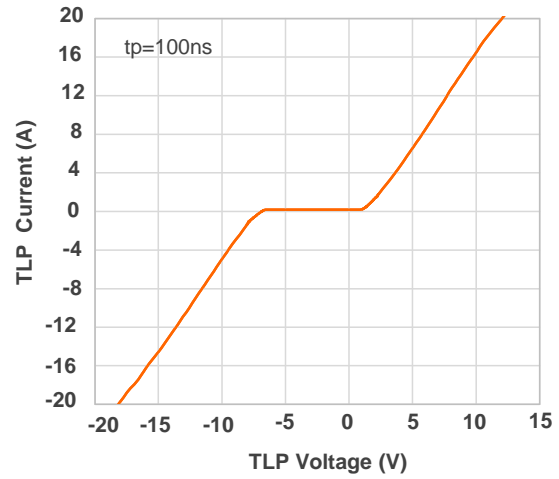




Insertion Loss vs. Frequency

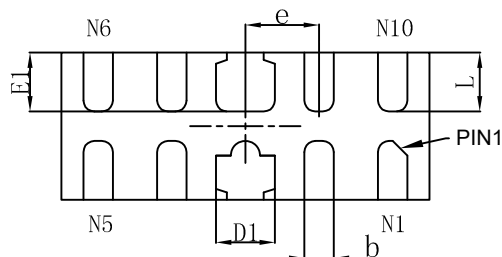
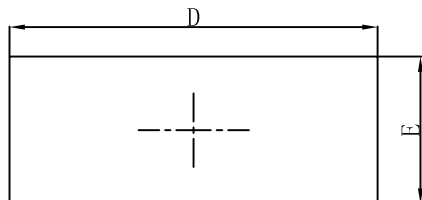


TLP Measurement

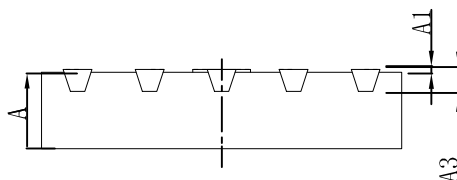




## Outline And Dimensions



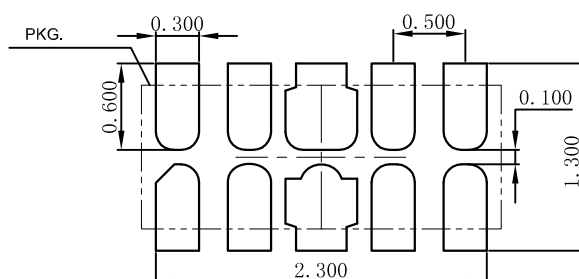
Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.450	0.550	0.017	0.022
A1	0.000	0.050	0.000	0.002
A3	0.152REF.		0.006REF.	
D	2.450	2.550	0.096	0.100
E	0.950	1.050	0.037	0.041
D1	0.350	0.450	0.014	0.018
E1	0.350	0.450	0.014	0.018
b	0.150	0.250	0.006	0.010
e	0.500TYP.		0.020TYP.	
L				

## Soledering Footprint





### **Attention**

- Any and all HUA XUAN YANG ELECTRONICS products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your HUA XUAN YANG ELECTRONICS representative nearest you before using any HUA XUAN YANG ELECTRONICS products described or contained herein in such applications.
- HUA XUAN YANG ELECTRONICS assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein.
- Specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- HUA XUAN YANG ELECTRONICS CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all HUA XUAN YANG ELECTRONICS products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of HUA XUAN YANG ELECTRONICS CO.,LTD.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. HUA XUAN YANG ELECTRONICS believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the HUA XUAN YANG ELECTRONICS product that you intend to use.