

MSTronic Co., Ltd.

2F, 12, Gongshang Rd., Wugu District, New Taipei City, 248, Taiwan

TEL:886-2-2293-0159 FAX:886-2-2292-8851

E.MAIL: mse@mse.com.tw

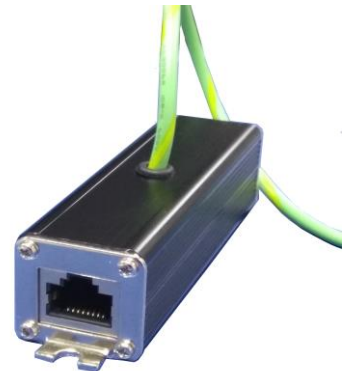
WEB: <http://www.mse.com.tw>

MS-T901T

Network Lightning/Surge Protector
PoE Compatible

Feature

- + **Shielded RJ45 jack and metal housing for EMI noise suppression**
- + **CAT5/CAT5e compatible**
- + **10 Gigabit Ethernet available**
- + **5 Gigabit PoE available**
- + **Cast aluminum construction**
- + **Integrated mounting brackets**
- + **DIN rail mount available (Option Kit)**
- + **802.3af/at/bt/PoH compliant**
- + **AC/DC, DC/DC PoE available**



Specification

1. Nominal voltage operating DC voltage 95 V
2. Max. continuous operating DC voltage 95V
3. Max. continuous DC voltage pair-pair (PoE) 95V
4. Nominal current 3A (4 pair of lines), 1.6A (2 pair of lines)
5. Nominal discharge current line-line 15A (8/20 μ s)
6. Nominal discharge current line-FG 100A (10/1000 μ s,300times with 3mins interval)
7. Total nominal discharge current line-FG 20KA (8/20 μ s,10times with 3mins interval)
8. Voltage protection level line- FG for In DC Breakdown Voltage: 120V ~ 180V (@rising voltage 100V/s)
9. Voltage protection level line- line for In DC Breakdown Voltage: 13V ~ 550V (@rising voltage 100V/s)
10. Voltage protection level line-FG for In Surge Breakdown Voltage: 120V ~ 550V (@rising voltage 1000V/uS)
11. Voltage protection level line-line for POE In Maximum Breakdown Voltage : 6V ~ 13V @IPP = 1~10A(8/20uS)
12. Capacitance line-line \leq 0.3 PF (SP3312T)



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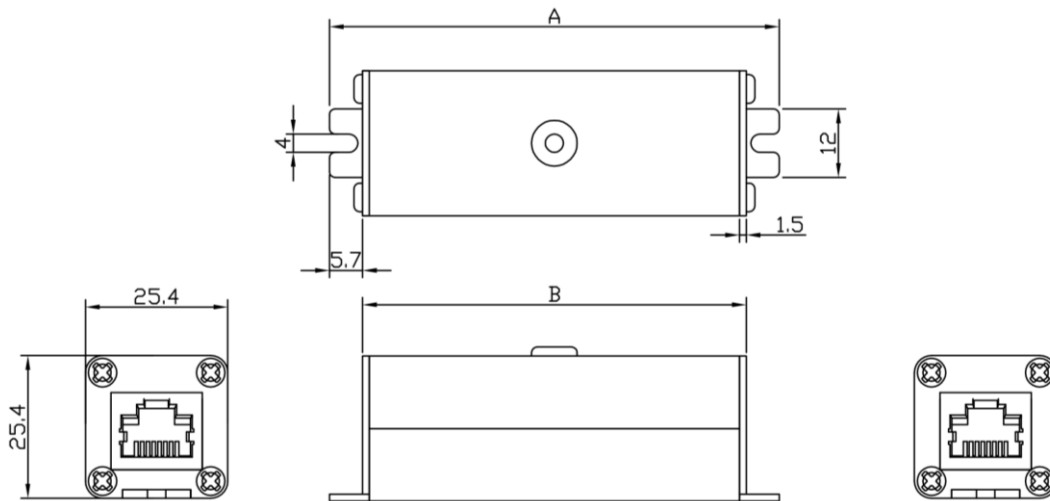
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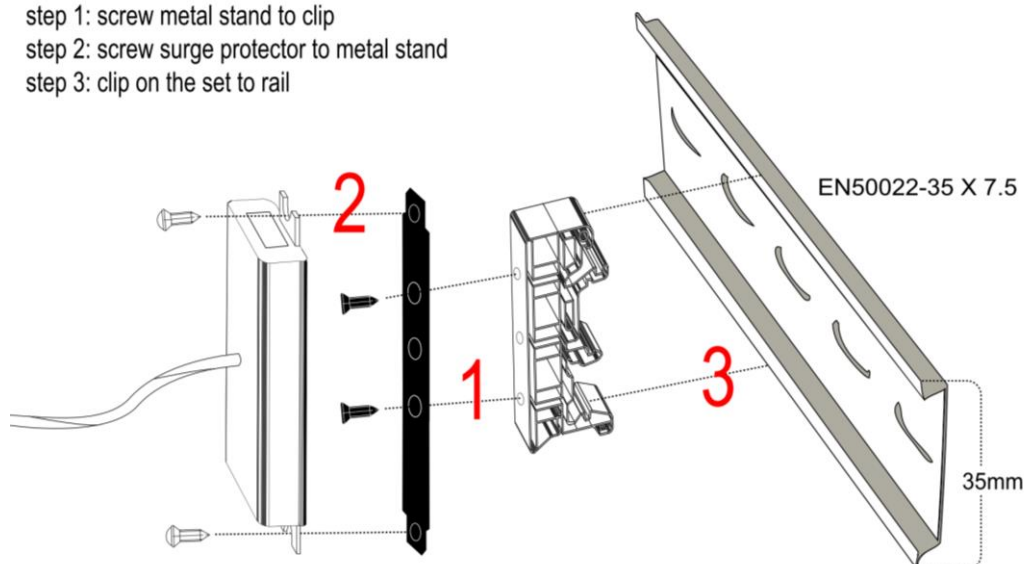
13. Capacitance line-FG ≤ 1.5 PF (N3R151C-L)
14. Operating temperature range -40°C to $+85^{\circ}\text{C}$
15. Connection (input / output) RJ45 socket
16. Pinning 1 / 2, 3 / 6, 4 / 5, 7 / 8
17. Data Rate : 1G/2G/5G/10G bps
18. Ground Lug Wire : 14AWG 350mm \pm 5mm
19. Weight : 0.13g
20. Dimensions : 151*25.4*25.4(include bracket)



A=151 \pm 1mm, B=145 \pm 1mm

Option: DIN rail mounting kit

- step 1: screw metal stand to clip
- step 2: screw surge protector to metal stand
- step 3: clip on the set to rail





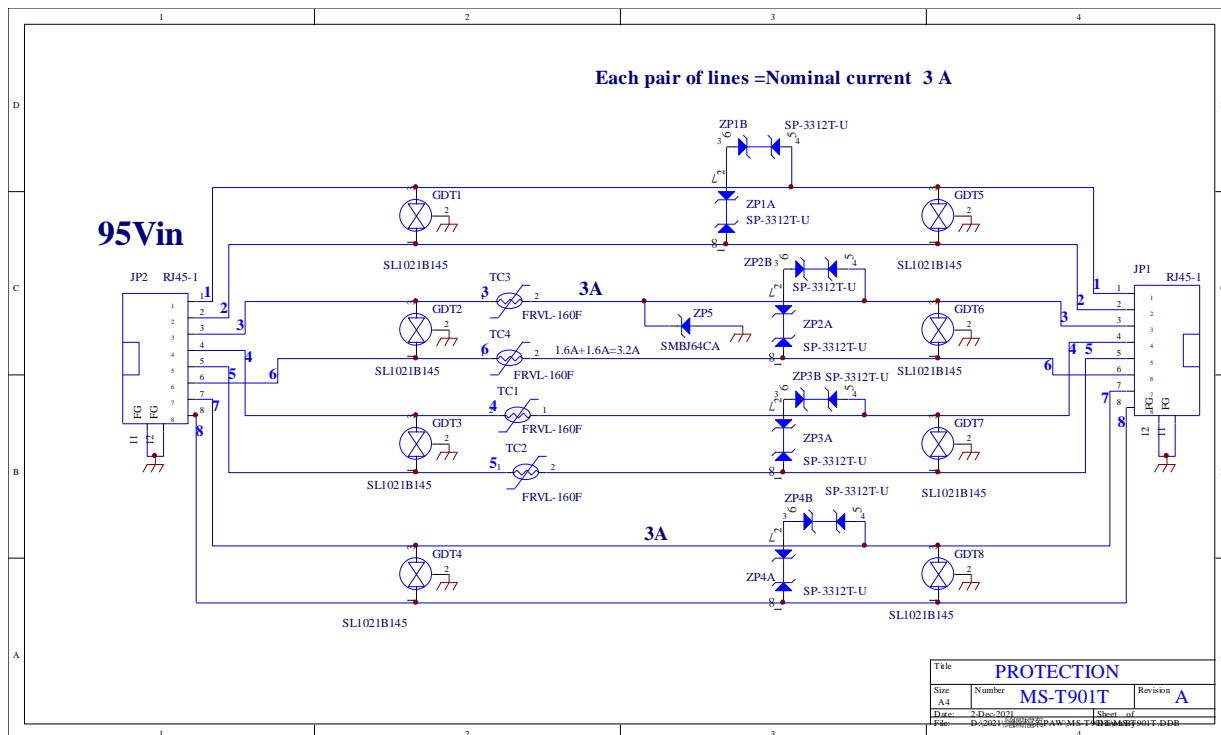
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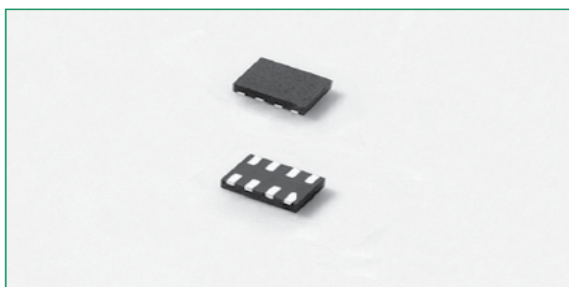
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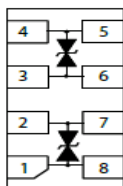


ZP1,2,3,4 = SP3312T

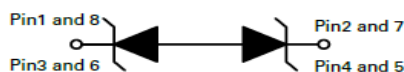
SP3312T Series 3.3V 15A Diode Array



Pinout



Functional Block Diagram



Description

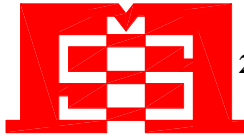
The SP3312T integrates 4 channels (2 differential pair) of low capacitance diodes to protect sensitive I/O pins against lightning induced surge events and ESD. This robust device can safely absorb up to 15A per IEC 61000-4-5 2nd Edition ($t_r=8/20\mu s$) without performance degradation and a minimum $\pm 30kV$ ESD per IEC 61000-4-2 international standard. The low loading capacitance makes the SP3312T ideal for protecting high-speed signal pins.

Features

- ESD, IEC 61000-4-2, $\pm 30kV$ contact, $\pm 30kV$ air
- EFT, IEC 61000-4-4, 40A ($t_r=5/50ns$)
- Lightning, IEC 61000-4-5 2nd Edition, 15A ($t_r=8/20\mu s$)
- Low capacitance of 1.3pF (TYP) per I/O
- Low leakage current of 0.01 μA (TYP) at 3.3V
- Low variation in capacitance vs. bias voltage: 0.3pF Typical ($V_R=0$ to 2.5V)
- AEC-Q101 qualified
- Moisture Sensitivity Level (MSL-1)

Applications

- 10/100/1000 Ethernet
- Integrated magnetics/ RJ45 connectors
- LAN/WAN Equipment
- Security Cameras
- Industrial Controls
- Notebook & Desktop Computers



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TC1,2,3,4 = FRVL-160F-120F

FRVL Series



RoHS Compliant & Lead Free



Application:

Line Voltage Power Supply, Transformer and Appliances Product

Features:

Solid state, Radial leaded product ideal for up to $120V_{AC}/V_{DC}$

Maximum Operation Current: 0.10A~3.75A

Maximum Voltage: $120V_{AC}/V_{DC}$

Maximum Interrupt Voltage: $135V_{AC}/V_{DC}$

Temperature Range: $-40^{\circ}C$ to $85^{\circ}C$

Agency Recognition: UL :File No. E211981

*C-UL:File No. E211981

TÜV :File No. R50122733

Electrical Characteristics (23°C)

Part Number	Hold Current	Trip Current	Max. Time to Trip	Max. Current	Max. Oper. Voltage	Max. Int. Voltage	Typical Power	Resistance Tolerance	
	I_H, A	I_T, A	at $5 \times I_H, s$	I_{MAX}, A	$V_{MAX}, V_{AC/DC}$	$V_{LMAX}, V_{AC/DC}$		R_{MIN}	$R1_{MAX}$
							Pd, W	Ohms	Ohms
FRVL010-120F	0.10	0.20	10.0	2.0	120	135	0.84	3.00	7.50
FRVL017-120F	0.17	0.34	10.0	2.0	120	135	0.84	2.00	7.00
FRVL020-120F	0.20	0.40	9.0	2.0	120	135	1.08	1.83	4.40
FRVL025-120F	0.25	0.50	7.5	3.0	120	135	1.08	1.25	3.00
FRVL030-120F	0.30	0.60	8.5	3.0	120	135	1.44	0.88	2.10
FRVL040-120F	0.40	0.80	6.5	3.0	120	135	1.44	0.55	1.29
FRVL050-120F	0.50	1.00	6.0	3.0	120	135	1.56	0.50	1.17
FRVL065-120F	0.65	1.30	5.7	5.0	120	135	1.68	0.31	0.72
FRVL070-120F	0.75	1.50	6.3	5.0	120	135	1.80	0.25	0.60
FRVL075-120F	0.75	1.50	15.0	7.5	120	135	2.64	0.25	0.69
FRVL090-120F	0.90	1.80	7.2	5.0	120	135	1.80	0.20	0.47
FRVL100-120F	1.00	2.00	15.0	10.0	120	135	2.64	0.18	0.47
FRVL110-120F	1.10	2.20	8.2	8.0	120	135	2.28	0.15	0.38
FRVL125-120F	1.25	2.50	20.0	12.5	120	135	2.88	0.11	0.33
FRVL130-120F	1.35	2.70	9.6	10.0	120	135	2.64	0.12	0.30
FRVL135-120F	1.35	2.70	20.0	13.5	120	135	3.12	0.11	0.30
FRVL160-120F	1.60	3.20	11.4	12.0	120	135	3.12	0.09	0.22



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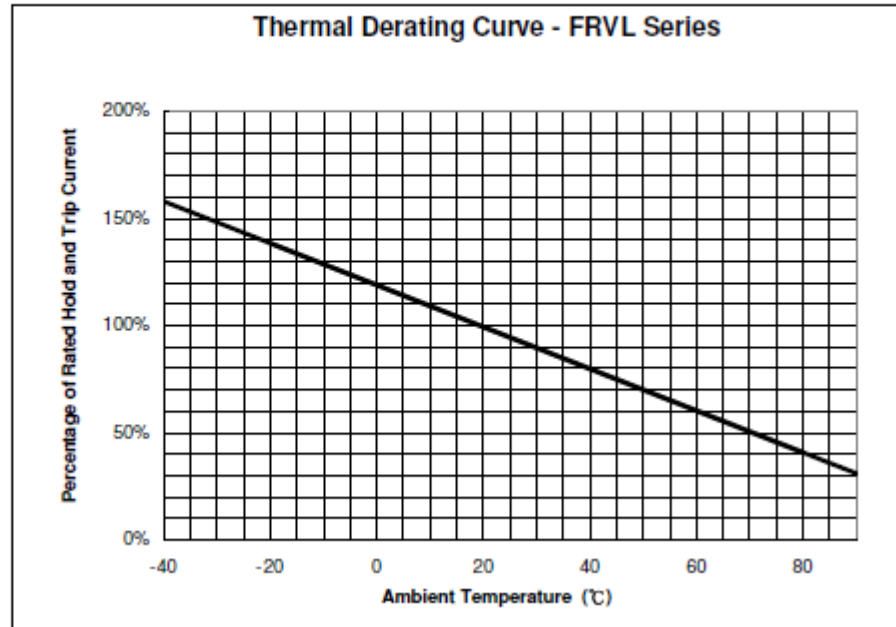
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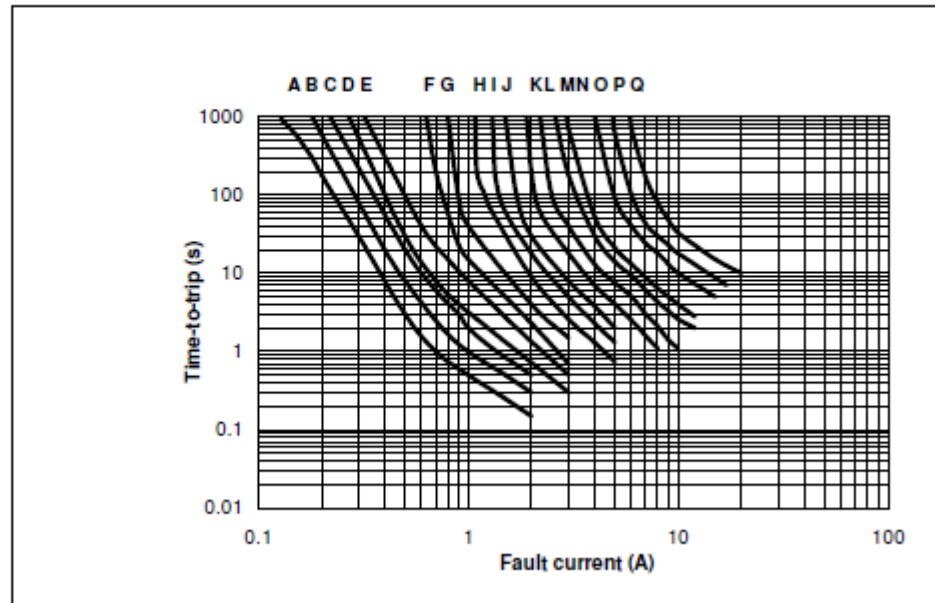
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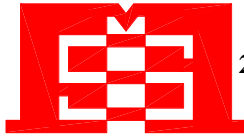
Thermal Derating Curve



Typical Time-To-Trip at 23°C

- A=FRVL010-120F
- B=FRVL017-120F
- C=FRVL020-120F
- D=FRVL025-120F
- E=FRVL030-120F
- F=FRVL040-120F
- G=FRVL050-120F
- H=FRVL065-120F
- I=FRVL070-120F
- J=FRVL090-120F
- K=FRVL110-120F
- L=FRVL130-120F
- M=FRVL160-120F
- N=FRVL185-120F
- O=FRVL250-120F
- P=FRVL300-120F
- Q=FRVL375-120F





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GDT1,2,3,4,5,6,7,8 = N3R151C-L




ITEM : GAS DISCHARGE TUBE

N3R151C-L

(3-Electrode Gas Discharge Tubes)

Features

- ◆ RoHS compliant
- ◆  UL 497B Certificate E353225
- ◆ Low capacitance
- ◆ Low insertion loss
- ◆ Excellent response performance to fast rising transients

Applications

- ◆ SPD module
- ◆ Base station and antenna
- ◆ RF systems

Specifications

DC Breakdown Voltage @100V/S At delivery AQL 0.65 level II, DIN ISO 2859 2)	150 ±20	V %
Impulse Spark-over Voltage @1kV/ μS	≤850	V
Nominal impulse discharge current @8/20 μS, 5 times each polarity	20	kA
Insulation resistance @DC 100V	≥1	GΩ
Capacitance @1MHz	≤1.5	pF
Arc voltage @1A	~10	V
Operation temperature	-40~+90	°C
Storage temperature	-40~+90	°C
Marking	3R150	