

# Data Sheet

- ITEM : ESD FILTER

-PART NO : ICVE32188E150R101FR

## 1. Scope

- This specification applies to R-varistor for EMI & ESD devices.
- The specification can be modified by documentary agreement between design engineers and customers.

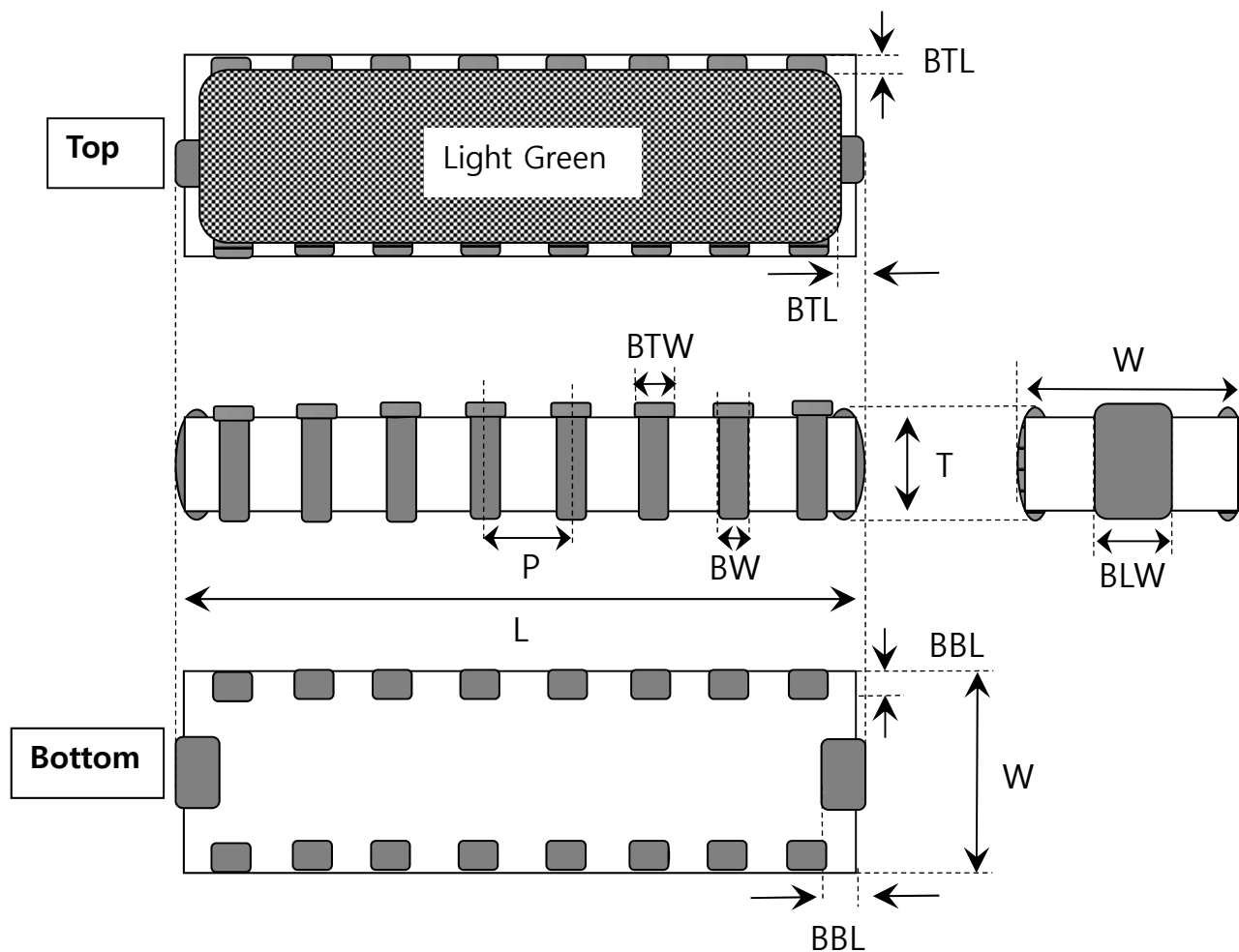
## 2. Features

- 4 EMI filter lines per device.
- Multilayer chip EMI suppression filter utilizing  $\pi$ -type circuit.
- Very thin (max. 0.55t) and low space consuming(3.25X1.25mm<sup>2</sup>) size.
- Steep attenuation characteristic plot, Highly effective noise suppression.
- Covers a wide range of frequencies.
- No asymmetrical degradation.
- Simpler fabricating process than diode-type filters.
- Soldering of plating type terminations guarantee high physical and electrical reliability.

## 3. Applications

- Where EMI filtering in ESD sensitive equipment is required.
- Mobile Phones
- Computers and Printers
- Communication Systems
- Internet Appliances
- PDAs
- Laptop Computers

### 4. Configuration and Dimensions



Unit : mm

| Symbol | Dimensions | Symbol | Dimensions |
|--------|------------|--------|------------|
| L      | 3.25±0.05  | BTL    | 0.08±0.04  |
| W      | 1.25±0.05  | BBL    | 0.10±0.05  |
| T      | 0.50±0.05  | BTW    | 0.22±0.05  |
| P      | 0.40±0.05  | BLW    | 0.30±0.05  |
| BW     | 0.20±0.05  |        |            |

## 5. Part Number Code

**ICVE 32 18 8E 150 R101 F R**

①      ②      ③      ④      ⑤      ⑥      ⑦      ⑧

### ① SERIES NAME

| CODE | PRODUCT NAME                   |
|------|--------------------------------|
| ICVE | EMI Filter Array chip Varistor |

### ② SIZE DESIGNATOR

| CODE | SIZE(mm)    |
|------|-------------|
| 32   | 3.25 × 1.25 |

### ③ WORKING VOLTAGE

| CODE | VOLTAGE(VDC) |
|------|--------------|
| 05   | 5.6          |
| 09   | 9            |
| 14   | 14           |
| 18   | 18           |

### ④ NUMBER OF ELEMENT

| CODE | NUMBER OF ELEMENT |
|------|-------------------|
| 8E   | 8 Element         |

### ⑤ C line CAPACITANCE

| CODE | CAPACITANCE@1MHz(pF) |
|------|----------------------|
| 050  | 5                    |
| 070  | 7.5                  |
| 150  | 15                   |
| 250  | 25                   |
| 300  | 30                   |
| 500  | 50                   |

### ⑥ RESISTANCE

| CODE | RESISTANCE(Ω) |
|------|---------------|
| R100 | 10            |
| R500 | 50            |
| R101 | 100           |
| R201 | 200           |
| R401 | 400           |

### ⑦ TERMINATION

| CODE | TYPE                   |
|------|------------------------|
| F    | Electroplate (Pb-free) |

### ⑧ PACKING TYPE

| CODE | TYPE             |
|------|------------------|
| R    | Tape & Reel pack |

## 6. Nominal Specifications

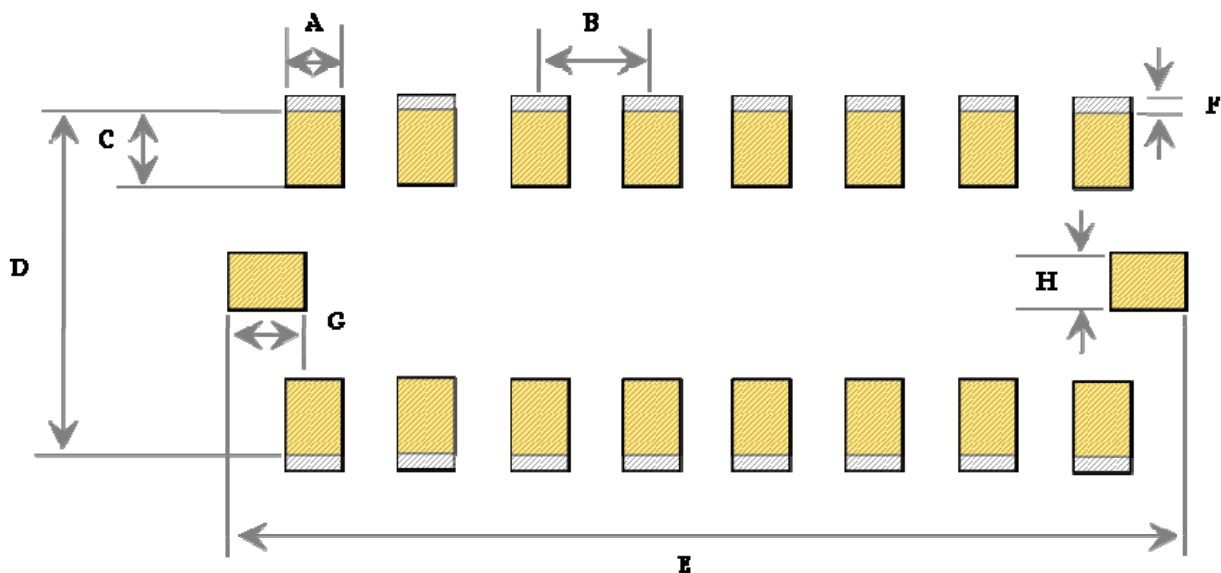
| Chip Size | ICT Part Number   | Leakage Current | Varistor Voltage | Clamping Voltage  | Peak Current | Resistance      | Capacitance    |
|-----------|-------------------|-----------------|------------------|-------------------|--------------|-----------------|----------------|
|           | symbol            | $I_L$           | $V_B$            | $V_C$             | $I_{peak}$   | R               | C line         |
|           | Units             | Amp (max.)      | volts            | volts (typ.)      | Amp (max.)   | Ohm (max.)      | pF (typ.)      |
|           | Test Condition    | 18V             | 1mA DC           | 8/20 $\mu$ s @ 1A | 8/20 $\mu$ s | 25°C            | 0.5Vrms @1MHz  |
| 3212      | ICVE32188E150R101 | <20 $\mu$ A     | 24-36            | 50                | 10           | 100( $\pm$ 30%) | 15( $\pm$ 30%) |

| ICT Part Number   | Frequency(MHz) | Attenuation(dB) | Cut-off Frequency(MHz) |
|-------------------|----------------|-----------------|------------------------|
| ICVE32188E150R101 | 900-2,000      | minimum         | Typical(-3dB)          |
|                   |                | -20             | 180                    |

### ■ TERMINOLOGY

- $I_L$  : Maximum steady state DC operating voltage the varistor can maintain and not exceed 20 $\mu$ A leakage current.
- $V_B$  : Voltage across the device measured at 1mA DC current
- $V_C$  : Maximum peak voltage across the varistor measured at a specified pulse and waveform  
Pulse Current : 1A , Waveform : 8/20 $\mu$ s
- $I_{peak}$  : Maximum peak current which may be applied with the specified waveform without device failure
- C : Device capacitance measured with zero volt bias 0.5Vrms and 1MHz

## 7. LAND PATTERN



Land pattern



Stencil

\* Via hole must not overlap the land pattern.

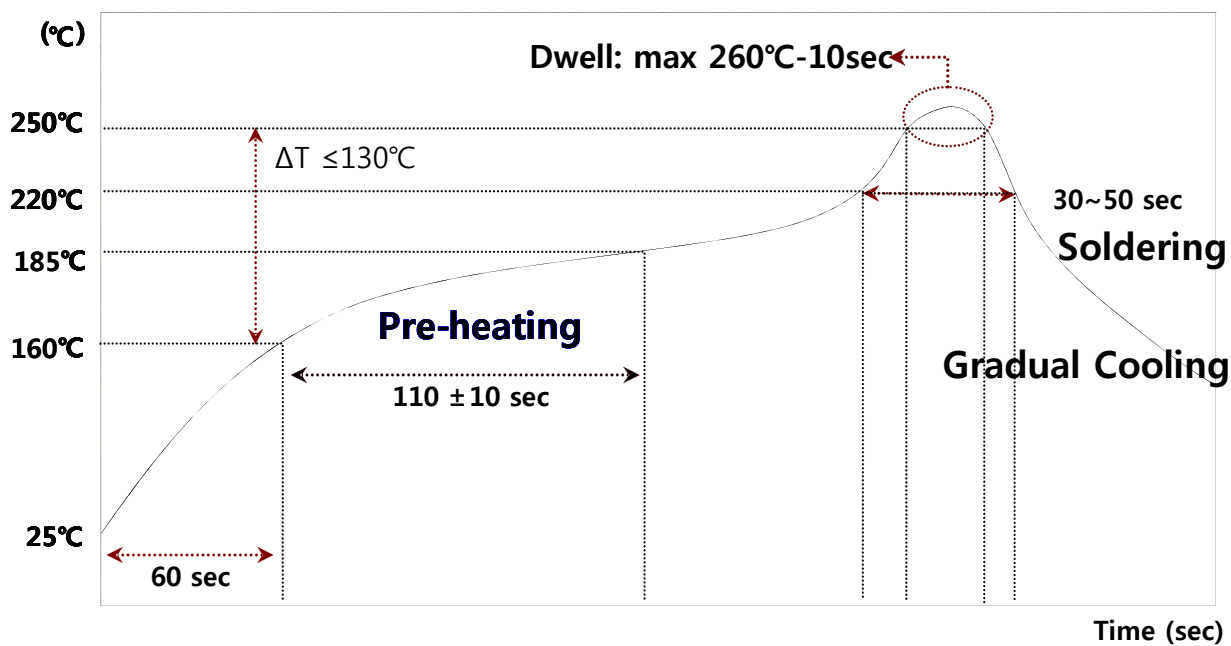
Unit : mm

| -    | A   | B   | C     | D    | E       | F    | G   | H   |
|------|-----|-----|-------|------|---------|------|-----|-----|
| Size | 0.2 | 0.4 | 0.375 | 1.55 | 3.9±0.1 | 0.15 | 0.5 | 0.3 |

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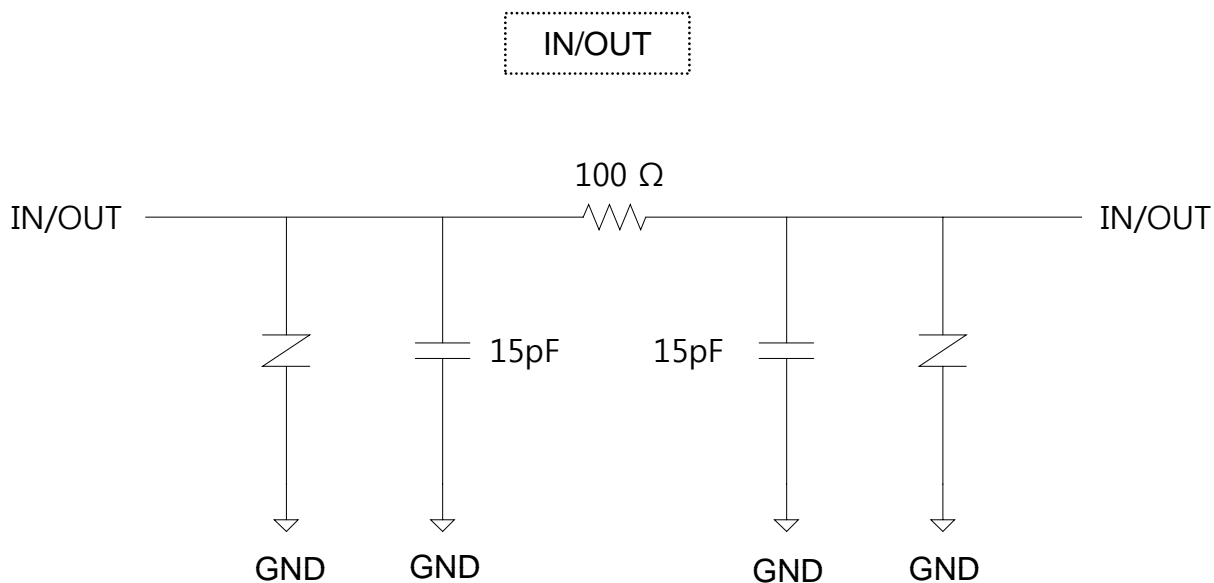
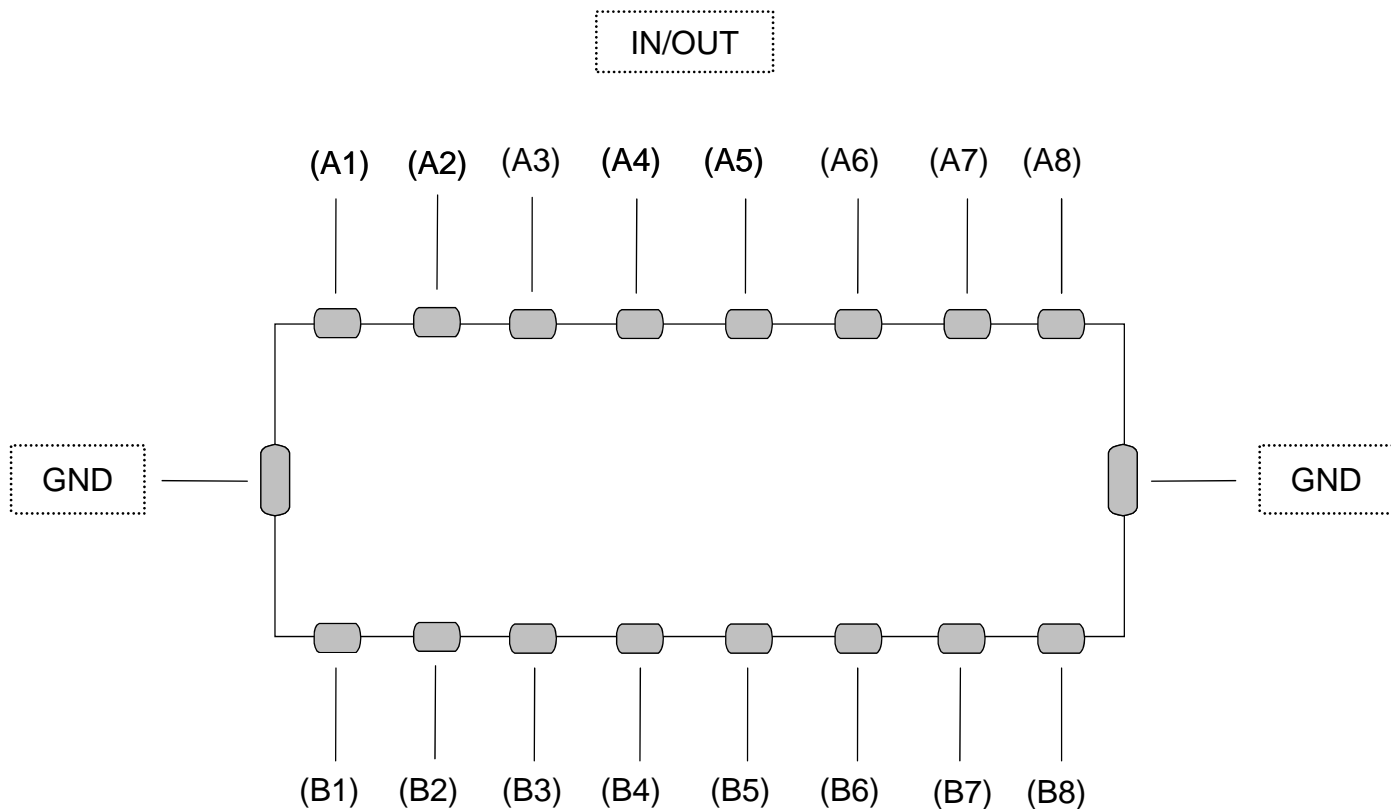
## 8. Reflow condition

### 1). Recommended soldering profile (Lead-free condition)



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## 9. ELECTRICAL SCHEMATIC



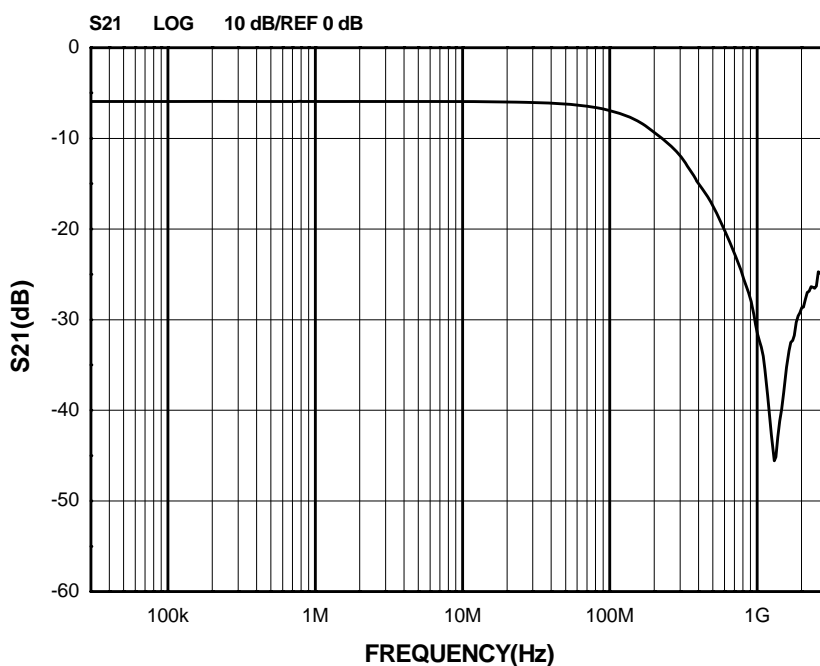


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## 11. Typical Characteristics

Filter Performance, S21(TA=25oC, DC Bias=0V, 50ohm Environment)

1) A1-B1, A2-B2, A3-B3, A4-B4, A5-B5, A6-B6, A7-B7, A8-B8



2) Cross talking(A1-B2, A2-B3, A3-B4, A4-B5, A5-B6, A6-B7, A7-B8)

