

# Data Sheet

- ITEM : ESD FILTER  
-PART NO : ICVE21054E250R500FR

## 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.

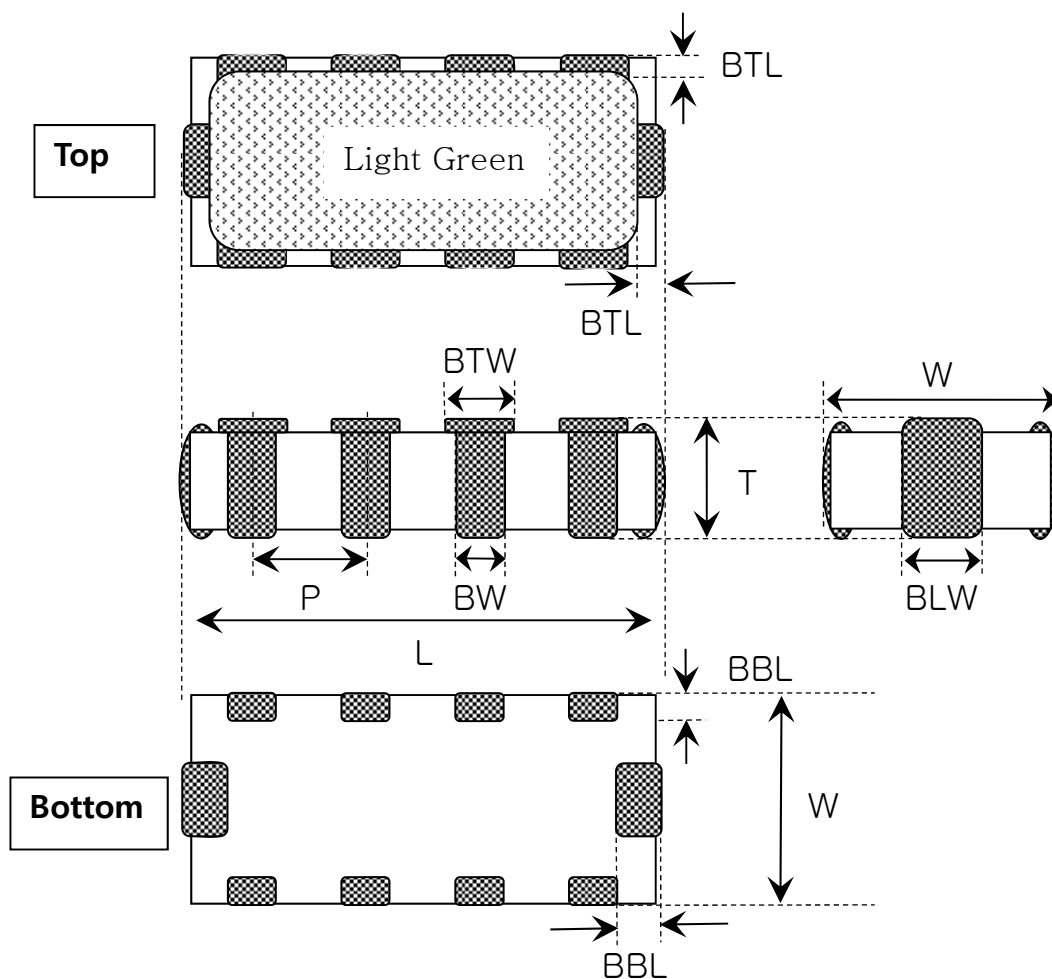
## 2. Features

- 4 EMI filter lines per device.
- Multilayer chip EMI suppression filter utilizing  $\pi$ -type circuit.
- Very thin (max. 0.55t) and low space consuming(2.03X1.27mm<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	2.03±0.10	BTL	0.15±0.05
W	1.27±0.10	BBL	0.20±0.05
T	0.55max	BTW	0.32±0.05
P	0.51±0.05	BLW	0.40±0.10
BW	0.30±0.10		

## 5. Part Number Code

**ICVE 21 05 4E 250 R500 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)
21	2.03 × 1.27

### ③ WORKING VOLTAGE

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

### ④ NUMBER OF ELEMENT

CODE	NUMBER OF ELEMENT
4E	4 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	Reel pack

购买零件85 Reel pack-德方电子  
 免费服务热线: 400-655-8700  
 深圳总部电话: 0755-28187877  
 网址: [www.denovocn.com](http://www.denovocn.com)

## 6. Nominal Specifications

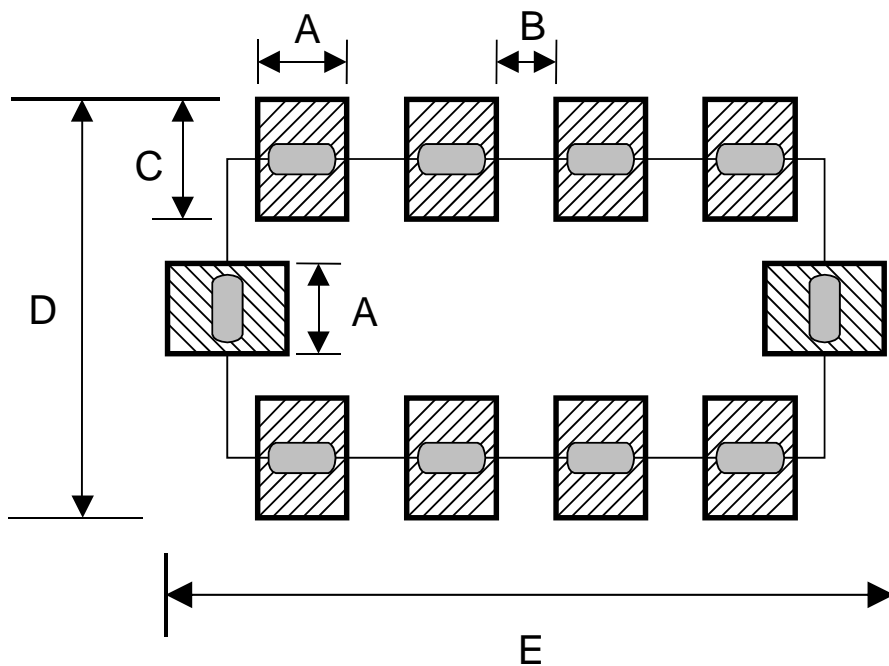
Chip Size	ICT Part Number	Leakage Current	Varistor Voltage	Clamping Voltage	Peak Current	Resistance	Capacitance
	symbol	$I_L$	$V_B$	$V_C$	$I_{peak}$	R	C line
	Units	Amp (max.)	volts	volts (typ.)	Amp (max.)	Ohm (max.)	pF (typ.)
	Test Condition	5.6V	1mA DC	8/20 $\mu$ s @ 1A	8/20 $\mu$ s	25°C	0.5Vrms @1MHz
2012	ICVE21054E250R500	<20 $\mu$ A	15-25	35	15	50( $\pm$ 30%)	25( $\pm$ 20%)

ICT Part Number	Frequency(MHz)	Attenuation(dB)	Cut-off Frequency(MHz)
ICVE21054E250R500	800-2,000	minimum	Typical(-3dB)
		-20	110

### ■ 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



Unit : mm

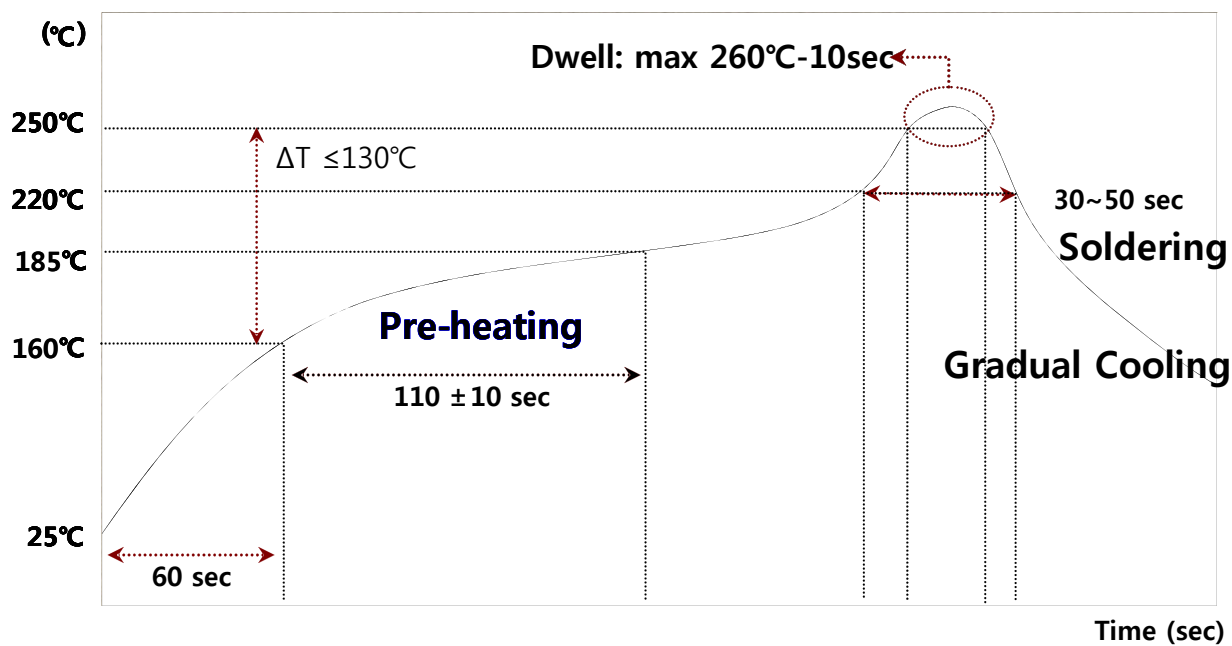
Size	A	B	C	D	E
2012	0.3	0.20-0.21	0.4	1.6	2.43±0.2

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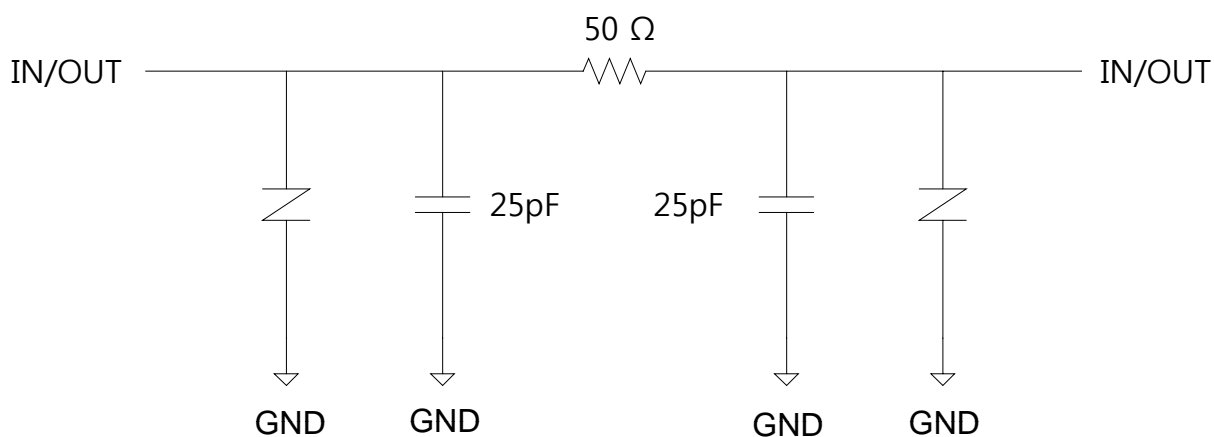
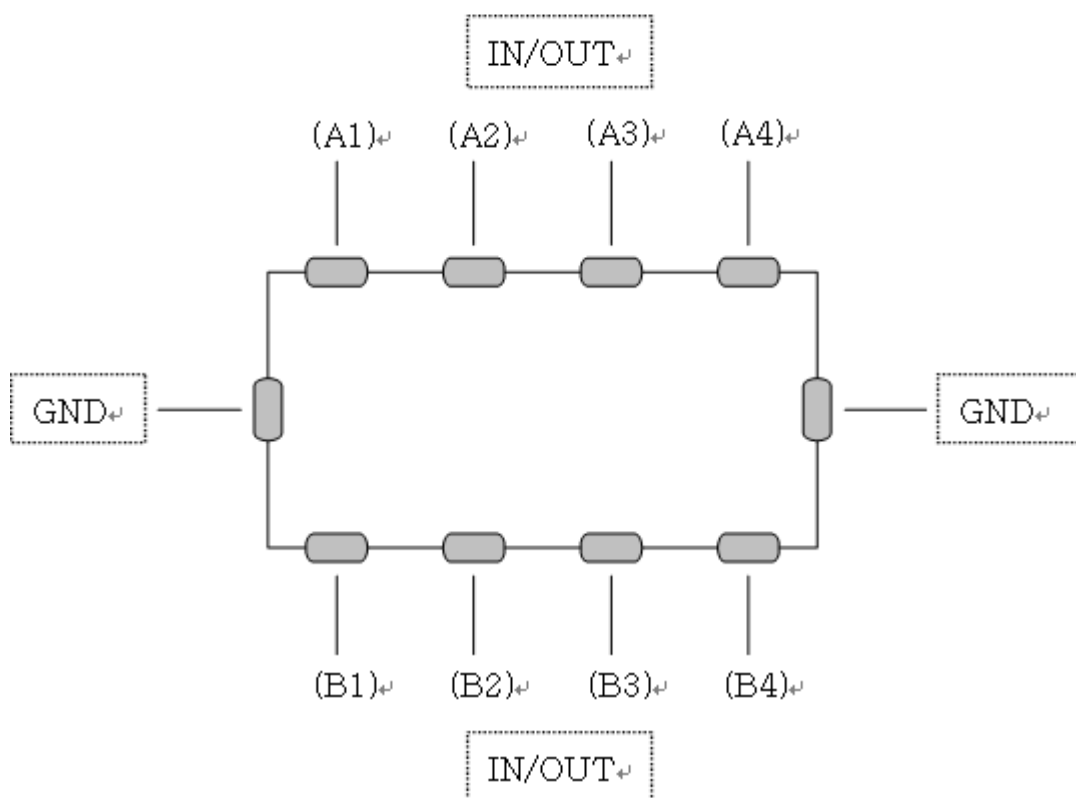
## 8. Reflow condition

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



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## 9. ELECTRICAL SCHEMATIC



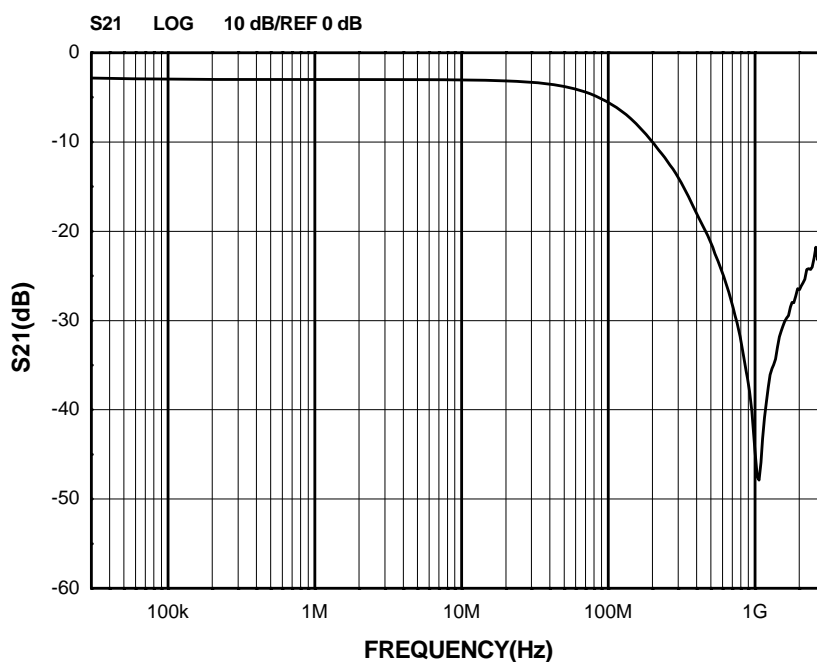
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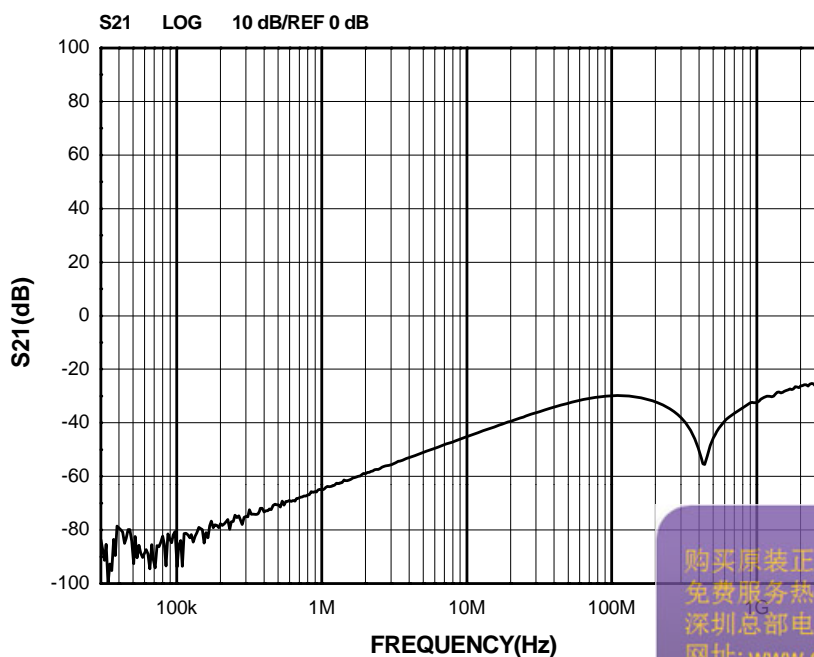
## 11. Typical Characteristics

Filter Performance( $T_A=25^\circ\text{C}$ , DC Bias=0V, 50ohm Environment)

1) A1-B1, A2-B2, A3-B3, A4-B4



2) Cross talking(A1-B2, A2-B3, A3-B4)



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