

# MAX ECHO 鈺鎧科技股份有限公司規格標準書

## COMPONENT SPECIFICATION

版次：第1.0版

MAX ECHO

Name	Wirewound Common Mode Filter EOWS4532	COMPONENT SPECIFICATION		1/9
		SPEC#	EOWS453226M102	

### 1. SCOPE

This specification applies to the EOWS4532 series SMD Wirewound Common Mode Filter.

### 2. STANDARD ATMOSPHERIC CONDITIONS

Unless otherwise specified the standard range of atmospheric conditions for making measurements and tests is as follows:

Ambient temperature :  $20 \pm 15^{\circ}\text{C}$

Relative humidity :  $65 \pm 20\%$

If there may be any doubt on the results, measurements shall be made within the following limits :

Ambient temperature :  $25 \pm 5^{\circ}\text{C}$

Relative humidity :  $75 \pm 10\%$

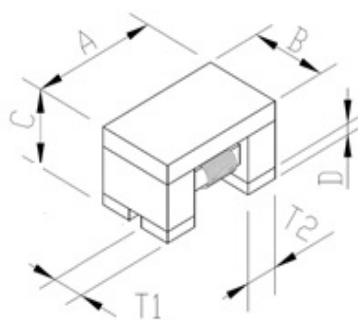
### 3. RATINGS

PART NO.	IMPEDANCE ( $\Omega$ )	DC RESISTANCE	RATED CURRENT	RATED VOLTAGE	INSULATION RESISTANCE	Withstanding TEST VOLTAGE
	AT100 MHz / 500mV	( $\Omega$ ) MAX	(mA) MAX	(V)	(M $\Omega$ ) MIN	(V)(DC) MAX
EOWS453226M102	$1000 \pm 25\%$	0.2	1200	50	10	125

### 4. DIMENSION

OPERATING TEMP. RANGE :  $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$

STORAGE TEMP. RANGE :  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$



unit:

mm

(inch)

TYPE	A	B	C
EOWS4532	$4.5 \pm 0.2$ (0.177 $\pm$ 0.008)	$3.2 \pm 0.2$ (0.126 $\pm$ 0.008)	$2.6 \pm 0.2$ (0.102 $\pm$ 0.008)

unit:

mm

(inch)

TYPE	D	T1	T2
EOWS4532	$0.5 \pm 0.1$ (0.02 $\pm$ 0.004)	$0.85 \pm 0.2$ (0.033 $\pm$ 0.008)	$0.6 \pm 0.2$ (0.024 $\pm$ 0.008)

### 5. The place of origin :

Taichung, Taiwan

PLANNED BY	CHECKED BY	APPROVED BY	鈺鎧文件中心 發行章
Sam	LUN	Jeffery	

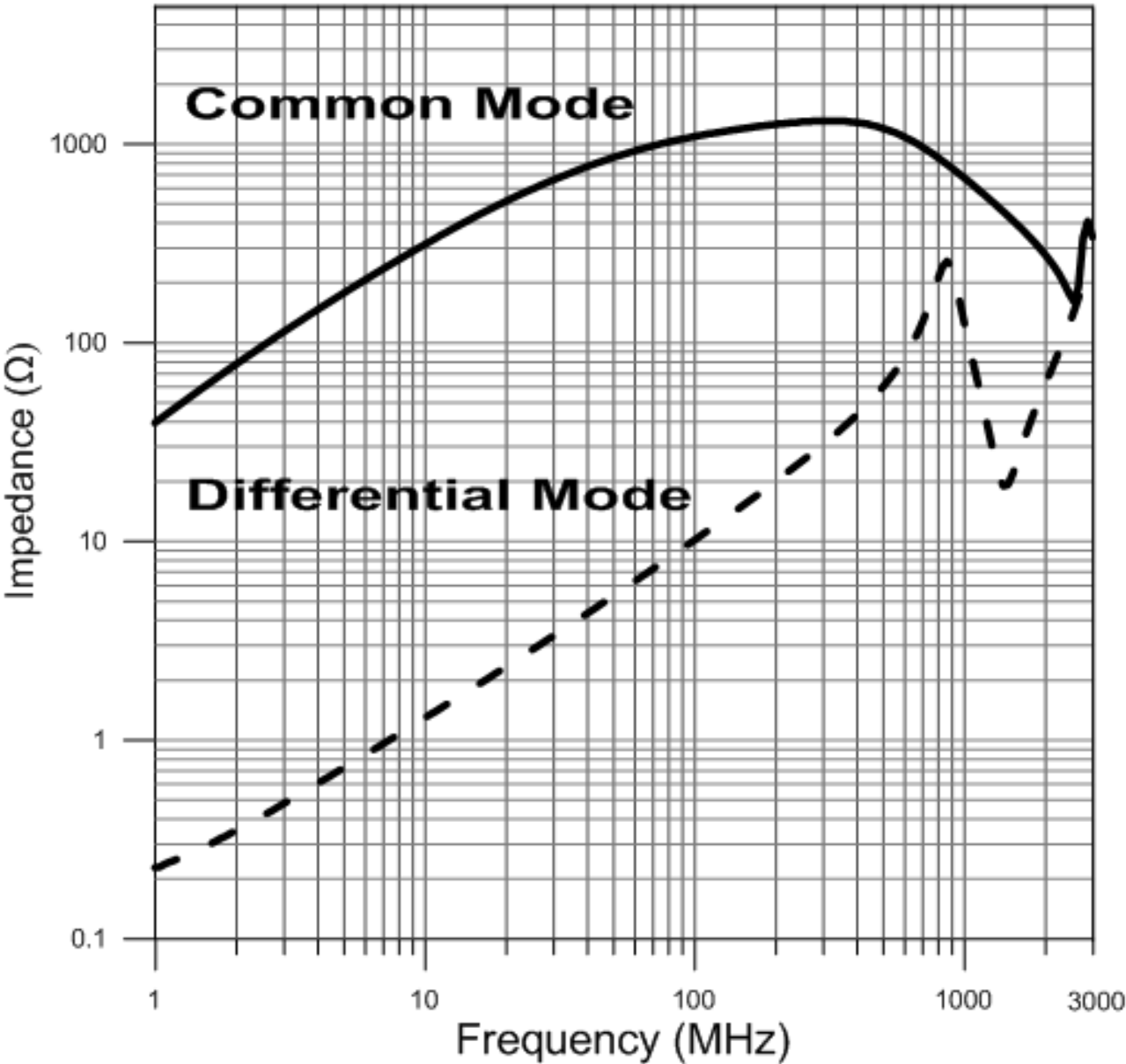
MAX ECHO 鈺鎧科技股份有限公司規格標準書

COMPONENT SPECIFICATION

版次：第1版

MAX ECHO

Name	Wirewound Common Mode Filter	COMPONENT SPECIFICATION		2 / 8
	EOWS4532	SPEC#	EOWS453226M102	



# MAX ECHO 鈺鎧科技股份有限公司規格標準書

## COMPONENT SPECIFICATION

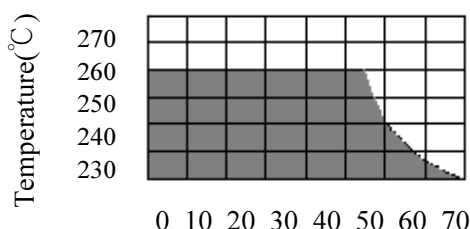
版次：第1.0版

MAX ECHO

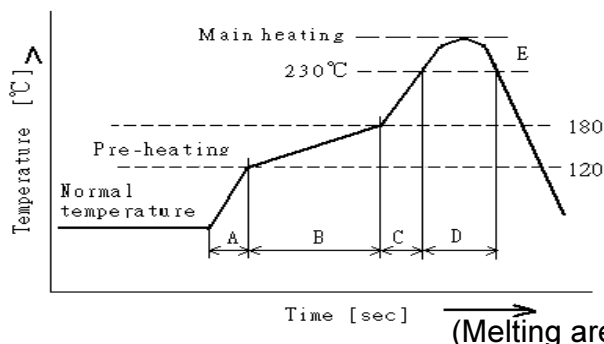
Name	Wirewound Common Mode Filter EOWS4532	COMPONENT SPECIFICATION		3/9
		SPEC#	EOWS453226M102	

### Reflow soldering conditions

- Pre-heating should be in such a way that the temperature difference between solder and ceramic surface is limited to 150°C max. Also cooling into solvent after soldering should be in such a way that the temperature difference is limited to 100°C max. Insufficient pre-heating may cause cracks on the ceramic, resulting in the deterioration of product quality.
- Products should be soldered within the following allowable range indicated by the slanted line. The excessive soldering conditions may cause the corrosion of the electrode, when soldering is repeated, allowable time is the accumulated time.



Temperature Profile



A	Slope of temp. rise	1 to 5	°C/sec
B	Heat time	50 to 150	sec
	Heat temperature	120 to 180	°C
C	Slope of temp. rise	1 to 5	°C/sec
D	Time over 230°C	90~120	sec
E	Peak temperature	255~260	°C
	Peak hold time	10 max.	sec
No. of mounting		3	times

### Reworking with soldering iron

Preheating	150°C, 1 minute
Tip temperature	280°C max.
Soldering time	3 seconds max.
Soldering iron output	30w max.
End of soldering iron	f 3mm max.

Reworking should be limited to only one time.

Note : Do not directly touch the products with the tip of the soldering iron in order to prevent the crack on the ferrite material due to the thermal shock.

### Solder Volume

Solder shall be used not to be exceed the upper limits as shown below.



When solder volume is increased, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance.

# MAX ECHO 鈺鎧科技股份有限公司規格標準書

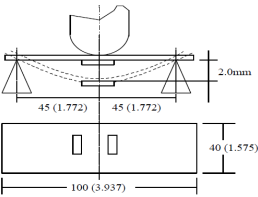
## COMPONENT SPECIFICATION

版次：第1.0版

MAX ECHO

Name	<b>Wirewound Common Mode Filter</b> EOWS4532	COMPONENT SPECIFICATION		4/9
		SPEC#	EOWS453226M102	

### Mechanical Characteristics

ITEM	CONDITION	SPECIFICATION
Flexure Strength		Change In Appearance Without distinct damage  Change In Common Mode Impedance: Within $\pm 20\%$
Drop Test	Components shall be dropped three times on a concrete or steel board at height of 1m naturally at any directions.	Insulation Resistance: 10M $\Omega$ min  Withstanding Voltage: No damaged
Vibration (Random)	1.Frequency and Amplitude:10-2000-10Hz 2.Direction:X,Y,Z. 3.Test duration:5g's for 20 minutes , 12 cycles each of 3 orientations.	
Resistance to Soldering Heat	Preheat components at 80 to 120°C for 1 minute. Dip components into flux and then into a melted solder bath at $260 \pm 5^\circ\text{C}$ for $5 \pm 1$ seconds. Then components are to be tested after 4-48 hours at room temperature.	
Solderability	Dip pads in flux and then in a solder bath at $240 \pm 5^\circ\text{C}$ for 5 seconds.	
Component Adhesion (Push Test)	Components shall be reflow solder onto a P.C. Board ( $240 \pm 5^\circ\text{C}$ for 20 seconds). Then a dynamometer force gauge shall be applied to any side of the component.	Components must withstand a minimum force of 0.5 Kg without any failure of the termination to component attachment.

### Electrical Characteristics

ITEM	CONDITION	SPECIFICATION
Common Mode Impedance ( $Z_c$ ) and Tolerance	Measuring Equipment : E4991 or equivalent. Measuring Frequency : $100 \pm 1\text{MHz}$ Measuring Temperature : $25 \pm 5^\circ\text{C}$ (Refer to Measurement Diagram )	Within $\pm 25\%$
Insulation Resistance	Measuring Voltage : Rated Voltage Measuring Time : 1 minute max. (Refer to Measurement Diagram )	10 megaohms minimum
Withstanding Voltage	Test Voltage :Withstanding Voltage Time : 1 to 5 seconds. Charge current : 1mA max. (Refer to Measurement Diagram )	No damage occurs when the test voltage is applied.
Rated Current	Test Current : Rated Current (Refer to Measurement Diagram )	Temperature Rise : $\leq 15^\circ\text{C}$
DC Resistance (RDC)	Measured with current of 100mA max. In case of doubt, measured by four terminal method. (Refer to Measurement Diagram )	Within Specified Tolerance.

**MAX ECHO 鈺鎧科技股份有限公司規格標準書**  
**COMPONENT SPECIFICATION**

版次：第1.0版

MAX ECHO

Name	Wirewound Common Mode Filter	COMPONENT SPECIFICATION		5 / 9
	EOWS4532	SPEC#	EOWS453226M102	
Endurance Characteristics				
ITEM	CONDITION		SPECIFICATION	
Cold Temperature Storage	Components shall be stored at temperature of -40 ± 2°C for 1000 (+48 hours -0 hour). Then components shall be subjected to standard atmospheric conditions for 4-48 hours. After that, measurement shall be made.		Change In Appearance Without distinct damage	
High Temperature Storage	Components shall be stored at temperature +85 ± 2°C for 1000 (+48 hours -0 hour). Then components shall be subjected to standard atmospheric conditions for 4-48 hours. After that, measurement shall be made.		Common Mode Impedance: Within ± 20%	
Moisture Resistance	Components shall be stored in the chamber at 40°C at 90-95% R. H. for 1000 (+48 hours -0 hour). Then components are to be tested after 4-48 hours at room temperature.		Insulation Resistance: 10MΩ min	
Temperature Cycle	Each cycle shall consist of 30 minutes at -40°C followed by 30 minutes at +85°C with a 10-15 minutes maximum transition time between temperature extremes. Test duration is 100 cycles, then components are to be tested after 4-48 hours at room temperature.		Withstanding Voltage: No damaged	
High Temperature with Loaded ( Rated Current )	Components shall be stored at temperature of +85 ± 2°C for 1000 (+48 hours -0 hour). with rated current applied. Then components shall be subjected to standard atmospheric conditions for 4-48 hour. After that, measurement shall be made.			

表格編號：034承認書 A

# MAX ECHO 鈺鎧科技股份有限公司規格標準書

## COMPONENT SPECIFICATION

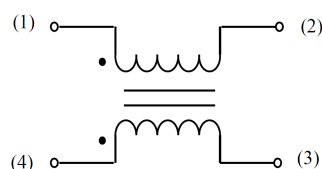
版次：第1.0版

MAX ECHO

Name	<b>Wirewound Common Mode Filter</b> <b>EOWS4532</b>	COMPONENT SPECIFICATION		6/9
		SPEC#	EOWS453226M102	

### Measurement Diagram

EQUIVALENT CIRCUIT



No polarity

Terminal to be Tested

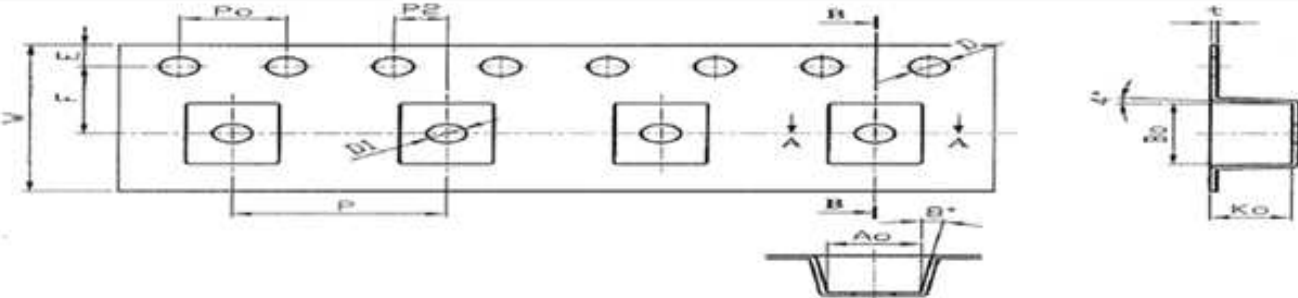
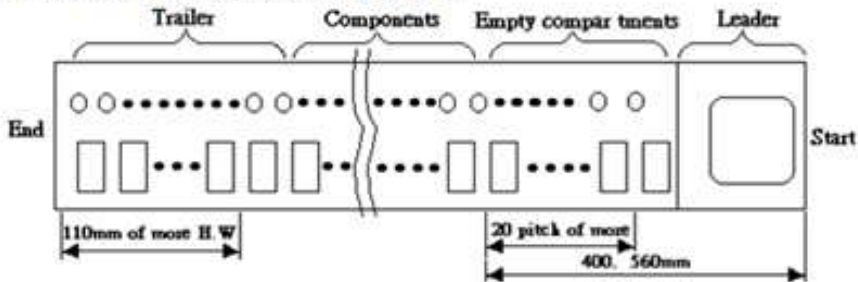

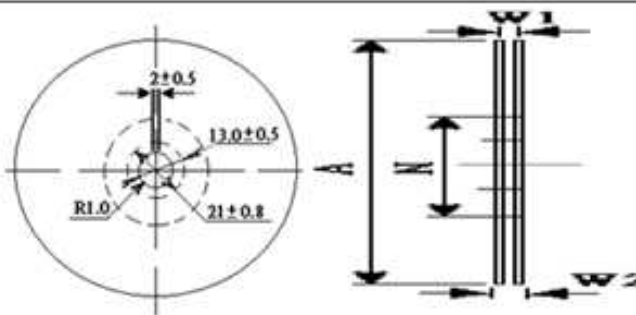
When measuring and supplying the voltage, the following terminal is applied.

No.	Item	Terminal to be Tested
1	Common Mode Impedance ( Measurement Terminal )	Terminal  Terminal
2	Withstanding Voltage ( Measurement Terminal )	Terminal  Terminal
3	DC Resistance ( Measurement Terminal )	Terminal  Terminal
4	Rated Current	
5	Insulation Resistance	Terminal  Terminal

MAX ECHO 鈺鎧科技股份有限公司規格標準書  
COMPONENT SPECIFICATION

版次：第1.0版

MAX ECHO

Name	Wirewound Common Mode Filter EOWS4532	COMPONENT SPECIFICATION		7/9																										
		SPEC#	EOWS453226M102																											
<p>PAPER CARRIER TAPE PACKAGING</p> <div></div> <table><tr><th>Ao</th><th>Bo</th><th>Ko</th><th>t</th><th>W</th><th>P</th><th>E</th><th>F</th><th>P2</th><th>D</th><th>D1</th><th>Po</th><th>10Po</th></tr><tr><td>3.60 ±0.10</td><td>4.90 ±0.10</td><td>3.00 ±0.10</td><td>0.26 ±0.05</td><td>12.00 ±0.10</td><td>8.00 ±0.10</td><td>1.75 ±0.10</td><td>5.50 ±0.05</td><td>2.00 ±0.05</td><td>1.50 +0.1 / -0.00</td><td>1.50 ±0.10</td><td>4.00 ±0.10</td><td>40.00 ±0.20</td></tr></table>					Ao	Bo	Ko	t	W	P	E	F	P2	D	D1	Po	10Po	3.60 ±0.10	4.90 ±0.10	3.00 ±0.10	0.26 ±0.05	12.00 ±0.10	8.00 ±0.10	1.75 ±0.10	5.50 ±0.05	2.00 ±0.05	1.50 +0.1 / -0.00	1.50 ±0.10	4.00 ±0.10	40.00 ±0.20
Ao	Bo	Ko	t	W	P	E	F	P2	D	D1	Po	10Po																		
3.60 ±0.10	4.90 ±0.10	3.00 ±0.10	0.26 ±0.05	12.00 ±0.10	8.00 ±0.10	1.75 ±0.10	5.50 ±0.05	2.00 ±0.05	1.50 +0.1 / -0.00	1.50 ±0.10	4.00 ±0.10	40.00 ±0.20																		
<p>10-2 LEADER AND TRAILER TAPE</p> <div></div>																														
<p>10-3 DIRECTION THE DIRECTION SHALL BE SEEN FROM THE TOP OF COVER TAPE</p> <div></div>																														
<p>10-4 REELS</p> <div><table><tr><th colspan="2">UNIT:mm</th></tr><tr><td>A</td><td>178 ±2.0</td></tr><tr><td>N</td><td>50 MIN</td></tr><tr><td>W1</td><td>10 ±1.5</td></tr><tr><td>W2</td><td>20 MAX</td></tr></table></div> <p>PACKING QTY. 500 PCS REEL</p>					UNIT:mm		A	178 ±2.0	N	50 MIN	W1	10 ±1.5	W2	20 MAX																
UNIT:mm																														
A	178 ±2.0																													
N	50 MIN																													
W1	10 ±1.5																													
W2	20 MAX																													

**MAX ECHO 鈺鎧科技股份有限公司規格標準書**  
**COMPONENT SPECIFICATION**

版次：第1.0版

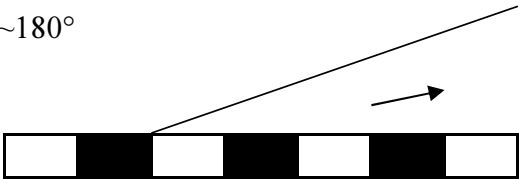
MAX ECHO

Name	<b>Wirewound Common Mode Filter</b>  EOWS4532	COMPONENT SPECIFICATION		8 / 9
		SPEC#	EOWS453226M102	

PEELING STRENGTH OF COVER TAPE

Cover tape (10g~100g)

165°~180°



Test condition

1. peel angle : 165°~180° vs carrier tape
2. peel speed : 300mm/min

**Packaging**

- 1.) Tape & Reel packaging in component specification 6/8
- 2) Reel and a bag of desiccant shall be packed in Nylon or plastic bag
- 3) Maximum of 5 reels shall be packaged in a inner box
- 4) Maximum of 10 inner box shall be packaged in a outer box

**Reel Label**

Producing the goods label needs to indicate (1 ) Pb Free (2) RoHS Compliant



# MAX ECHO 鈺鎧科技股份有限公司規格標準書

## COMPONENT SPECIFICATION

版次：第1.0版

MAX ECHO

Name	<b>Wirewound Common Mode Filter</b>  EOWS4532	COMPONENT SPECIFICATION		9/9
		SPEC#	EOWS453226M102	

### Storage

1. The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to high humidity. Packages must be stored at 40°C or less and 70% RH or less.
2. The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to dust or harmful gas (hydrogen chloride, sulfurous acid gas or hydrogen sulfide).
3. Packaging material may be deformed if packages are stored where they are exposed to heat or direct sun — light.
4. Minimum packages, such as polyvinyl heat — seal packages shall not be opened until just before they are used.  
If opened, use the reels as soon as possible.
5. Solderability specified in component specification 3/8 shall be for 12 months from the date of delivery on condition that they are stored at the environment specified clause 1. & 2.  
For those parts which passed more than 12 months shall be checked solderability before it is used.

### Quality System

- ISO/IATF16949
- IECQ QC 080000

Metric (EIA)	A mm (inches)	B mm (inches)	C mm (inches)	D mm (inches)	E mm (inches)
4532 (1812)	3.5 (0.137)	1.2 (0.047)	2.10 (0.082)	0.70 (0.027)	0.70 (0.027)

