

PSA

佳邦科技股份有限公司

INPAQ TECHNOLOGY CO., LTD.

WE CONNECT & WE PROTECT WE ARE ONE

**INTEGRATED  
COMPONENTS  
SOLUTION**



# Hello We are INPAQ



## Customization

- Mobile Phone
- Wearable
- Note Book Solution (PCB/ FPCB, Hinge , Slot , NFC)
- Tablet Solution
- Metal Ring , Window Less
- Automotive (Shark Fin, TCU Box)
- Surge Protection (Industrial electronics, Electronic home appliances )



## Range Wide Process

- Multilayer, Thick film, Thin film
- Molding Package
- LDS, in-house Chemical
  - Electrical Plating, Stamping
  - Die casting, Automation



## Technology

- mmWave, 24/77GHz Radar
- 5G, sub-6GHz, FR2
- Cm-level GNSS, L1L2L5L6 chip, UWB Chip, NFC/WPC combo, WPC 15W (Tx/Rx), Slot Antenna, Array
- SMD Varistor / MLVS HV
- Ultra-Low Cap. ESD Component



**1998**  
Year Established

**IPO**  
TW #6284

**2140<sup>↑</sup>**  
Global INPAQ People

**5**  
Factories

**24**  
Chambers

**100<sup>↑</sup>**  
Intellectual Properties

**100<sup>↑</sup>**  
Global Brand Customers



**RF Antenna**

**Passive Component**

## Global Support

24H Responsiveness  
Worldwide Distributions



# INPAQ Integrated Components Solution

We are INPAQ — delivering globally competitive, premium RF Antenna and Electronic Component solutions with comprehensive ODM, OBM, and OEM services.

Backed by independent R&D, in-house manufacturing, and patented technologies, we partner with over 100 leading global brands, providing essential connection & protection solutions for everyday life.



- + **Quality** ISO 9001 | QC 080000 | IATF 16949
- + **Automotive** IATF 16949
- + **Environment** QC 080000 | ISO 14001
- + **Social Responsibility** ISO 45001

**HF**  
Halogen Free

**Pb**  
lead-free

**RoHS**

- Inductor**
- Over Voltage Protection**
- EMI Suppression Filter**
- Applicaton Guide**

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# INPAQ Integrated Components Solution

## Inductor

INPAQ's **Inductors** own multiple process technique, such as Metal molding, Multilayer, and Wire-wound types. Besides multiple processes, INPAQ also has optimally design ability to realize the small size and high performance inductors.

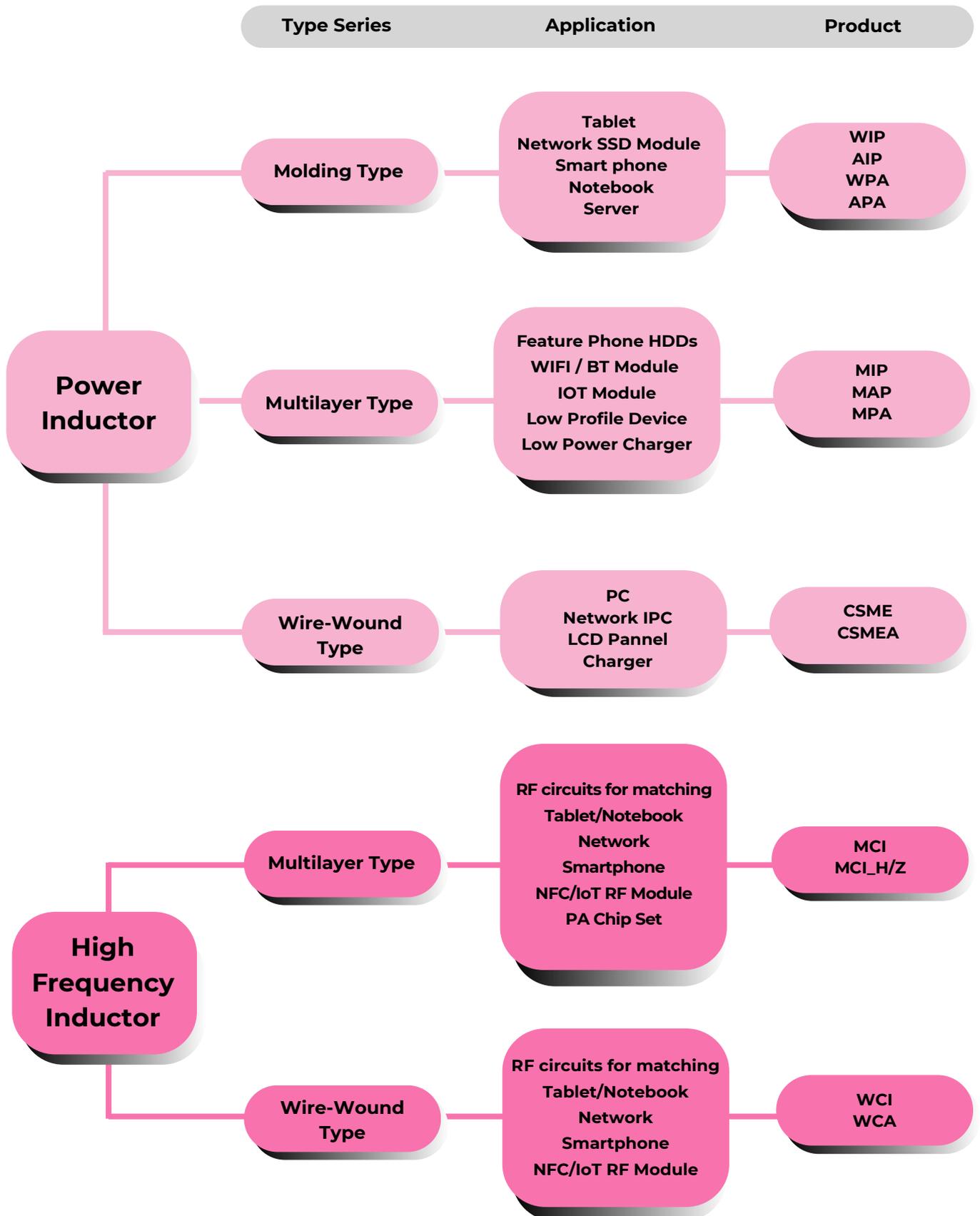
INPAQ offers a broad lineup of chip inductors, applications ranging from consumer use to automotive applications that require high reliability, such as high-frequency circuits, power supply circuits, in-vehicle PoC, short-range wireless communication, etc.

 **Automotive grade (AEC-Q200)**

Structure		Series	Description
Molding	Metal	<b>WIP</b> <b>WPA</b>  <b>AIP</b> <b>APA</b> 	This product can be used for a wide range of <b>high current power circuits</b> from smart phones to industrial electronics and automotive device applications. It is composed by <b>metal alloy materials</b> and manufacture by molding process.
		<b>MAP</b>	This product is monolithic construction performs high reliability and ensures a closed magnetic flux in a component avoids magnetic leakage and interference. It's allow for <b>higher mounting density and low DC resistance</b> .
Multilayer	Metal Alloy	<b>MAP</b>	This product is monolithic construction performs high reliability and ensures a closed magnetic flux in a component avoids magnetic leakage and interference. It's allow for <b>higher mounting density and low DC resistance</b> .
	Ferrite	<b>MIP</b> <b>MPA</b> 	This product is characterized by <b>small size and low profile</b> , such as the 2016/2012/1608 and the <b>height can below to 0.5mm</b> . It can be used for lower power circuits, such as wearable devices, IoT Module and automotive device applications. It is composed by ferrite materials and manufacture by multilayer printing process.
	Ceramic	<b>MCI</b> <b>MCI_H/Z</b> 	Particular ceramic material and coil structure provid high frequeny application <b>range up to 10GHz</b> .
Wire-wound	Ferrite Assembly	<b>CSME</b> <b>CSMEA</b> 	This product is characterized by its wide range of inductance. It is widely be used in <b>DC-DC power supply</b> circuits.
	Ceramic Assembly	<b>WCI</b> <b>WCA</b> 	This product is wire wound type ceramic inductor. And our product provide <b>high Q value</b> . So INPAQ chip inductor can be <b>SRF(self resonant frequency)</b> industry. This can often eliminate the need for variable components in tuned circuits and oscillators.

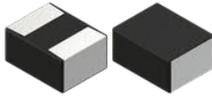
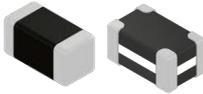
# Inductor

## Inductor Series



# Inductor

## Process & Package

Process	Package	Feature
Metal Molding	<b>Mini Molding</b> 	<ul style="list-style-type: none"> <li>SMD Miniature Type</li> <li>1412~3225 mm Size</li> <li>Apply for Smartphone, Modules, Memory, PC/NB, Netcom</li> <li>Compliance AEC-Q200 </li> </ul>
	<b>Big Molding</b> 	<ul style="list-style-type: none"> <li>SMD Type</li> <li>High Saturation</li> <li>Lower DCR</li> <li>3030~1717 mm Size</li> <li>Apply for Motherboard, VGA, Server, Memory, NB, Netcom</li> <li>Compliance AEC-Q200 </li> </ul>
Multilayer	<b>Ferrite</b> Chip Bead Power Inductor Common Mode Choke 	<ul style="list-style-type: none"> <li>SMD Miniature Type</li> <li>Better Solder Ability</li> <li>Low Profile</li> <li>Compliance AEC-Q200 </li> </ul>
	<b>LTCC Ceramic</b> Chip Inductor 	<ul style="list-style-type: none"> <li>0603~ 1608 mm Size</li> <li>High Q Value, High SRF</li> <li>Tight Tolerance</li> <li>Compliance AEC-Q200 </li> </ul>
Wire-Wound	<b>Chip Inductor</b> 	<ul style="list-style-type: none"> <li>High Q Value, High SRF</li> <li>Small Chip Suitable for Surface Mounting</li> </ul>
	<b>Air Coil</b> 	<ul style="list-style-type: none"> <li>High Q</li> <li>Customized Winding</li> </ul>
	<b>RF Balun</b> 	<ul style="list-style-type: none"> <li>Low Insertion Loss</li> <li>SMD Type</li> </ul>
	<b>Shielding, Unshielding Choke</b> 	<ul style="list-style-type: none"> <li>SMD Type</li> <li>Dip Type</li> <li>Customized</li> </ul>

# SMD Power Inductor

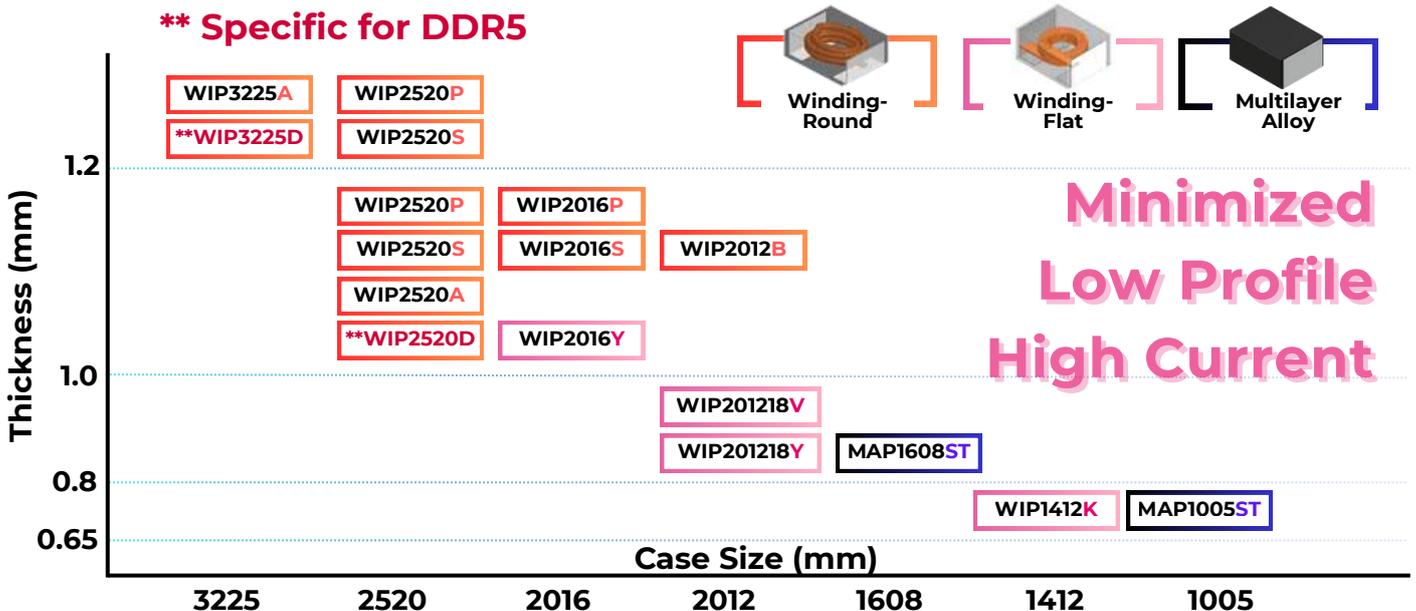
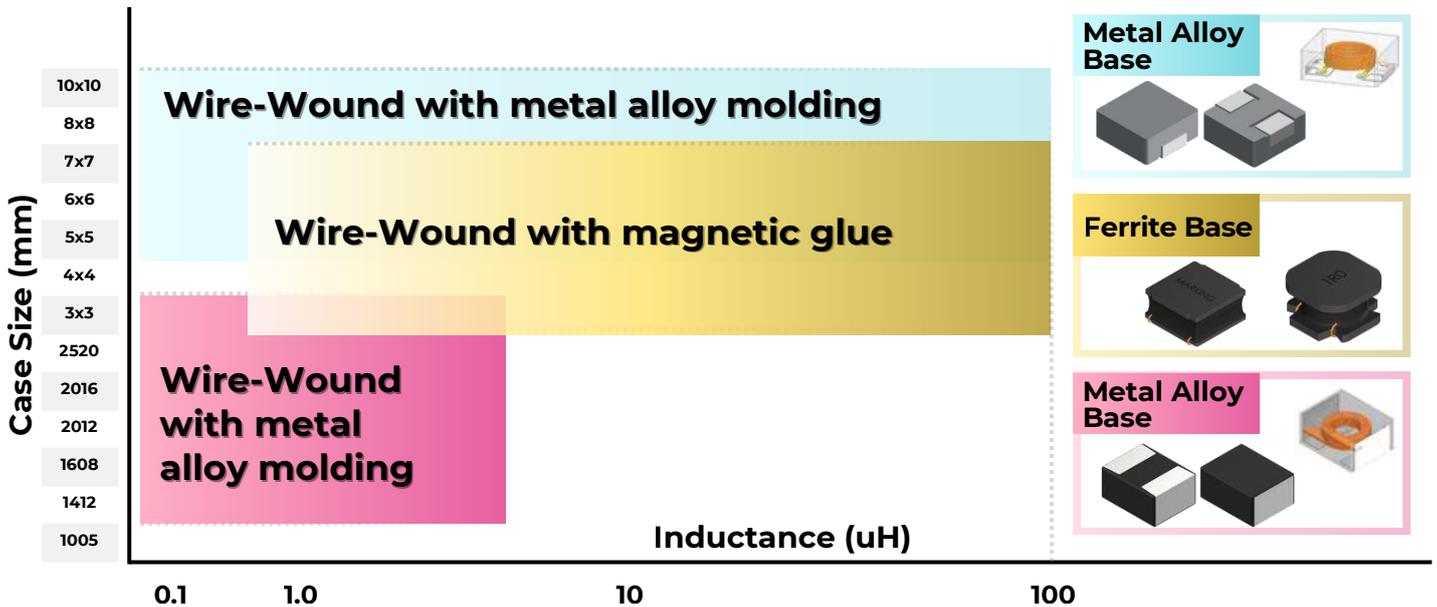
## Product Line Up

 Automotive grade (AEC-Q200)

Category	Appearance	Size Code (inch/mm)	T Size Max (mm)	Inductance							Inductance Range (uH)	AEC-Q200	Series
				uH									
				0.1	1.0	6.8	10	33	50	150			
Thickness Type		0605/1412	0.65								0.1~0.47		WIP-K/V
		0605/1412	0.8								0.1~0.47		
		0805/2012	0.8								0.1~0.47		
General L Type		0805/2012	1.0								0.1~2.2		WIP-P/S/Y/A
		0806/2016	1.0								0.1~4.7		
		0806/2016	1.2								0.1~2.2		
		1008/2520	1.0								0.1~4.7		
		1008/2520	1.2								0.1~4.7		
		1210/3225	1.2								0.1~6.8		
Auto Grade		0806/2016	1.0								0.1~4.7		WPA-S
		0806/2016	1.2								0.1~2.2		
		1008/2520	1.0								0.1~4.7		
		1008/2520	1.2								0.1~4.7		
		1210/3225	1.2								0.1~6.8		
General Molded Type		1616/4040	2.0								0.1~10		AIP-MB
		2020/5050	1.5/1.8/2.0/3.0								0.1~33		
		2525/6060	1.5/1.8/2.4/3.0/4.0/5.0								0.1~47		
		3030/7070	5.0								0.22~22		
		4040/100100	3.0/4.0/5.0								0.1~100		
		5050/130130	4.0/5.0/6.0/6.5								0.1~150		
		6767/170170	7.0								0.1~150		
High Performance Molded Type		*1616/4040	2.0								0.22~4.7		AIP-GX
		2020/5050	3.0								0.22~22		
		2525/6060	3.0								0.22~22		
High performance Auto Grade		2020/5050	3.0								0.22~22		APA-AP
		2525/6060	3.0								0.22~22		
		2525/6060	5.4								1.0~4.7		
		3030/7070	5.4								1.0~100		
		4040/100100	4.0/5.4								1.0~100		

# SMD Power Inductor

## Competitive Product Series



### Innovation Process

- Magnetic Paste & Slurry
- Excellent Product Efficiency



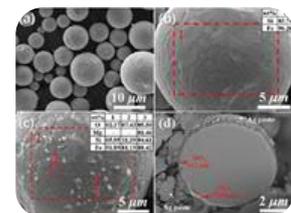
### Color (by insulating paste)

- Mysterious Black
- Body Protection



### Body Material

- High Density , Low loss
- Iron base, Alloy compound



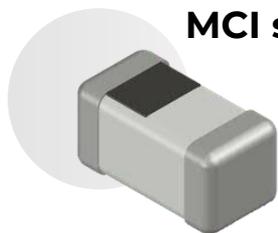
### L Type Electrode

- Avoid to contact with case

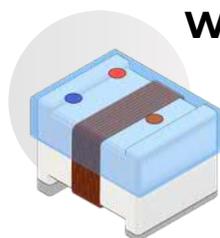
# RF Inductor

## Product Line Up

### Multilayer MCI series



### Wire-wound WCI series



 Automotive grade (AEC-Q200)

Category	Series	Feature	Size Code (inch/mm)	Inductance Range (H)						Rated Current (A)				
				0.1n	1.0n	10n	100n	1.0u	10u	10m	50m	100m	200m	1.0
Multilayer	MCI0603TG	Standard Q	0201/0603	0.3n	-	39n								120mA - 850mA
	MCI0603TM	High Q	0201/0603	0.6n	-	75n								100mA - 850mA
	MCI1005HQ	Standard Q	0402/1005	0.3n	-	150n								140mA - 1.0mA
	MCI1608HQ	Standard Q	0603/1608		1.0n	-	470n							150mA - 1.0mA
	MCI0603MZ 	High Q	0201/0603		0.6n	-	18n							200mA - 850mA
	MCI1005HZ/HH 	Standard Q	0402/1005		0.3n	-	100n							200mA - 1.0A
	MCI1608HH 	Standard Q	0603/1608			1.0n	-	120n						300mA - 1.0A
Wire-Wound	WCI1005CP	Standard Q	0402/1005		1.0n	-	160n							30mA - 1.36A
	WCI1608CP	Standard Q	0603/1608		1.6n	-	470n							80mA - 700mA
	WCI1608HQ	High Q	0603/1608		1.8n	-	390n							170mA - 2.1A
	WCI2012CP	Standard Q	0805/2012		2.2n	-	1.0u							170mA - 600mA
	WCI2520HQ	High Q	0805/2012		2.5n	-	51n							1.0A - 1.6A
	WCI2520CP	Standard Q	1008/2520				10n	-	15u					120mA - 1.0A
	WCI2520HQ	High Q	1008/2520			3.0n	-	33n						900mA - 1.6A
	WCI3225CP	Standard Q	1210/3225			4.7n	-	3.3u						150mA - 600mA
	WCI4532CP	Standard Q	1812/4532				82n	-	4.7u					300mA - 1.5A
	WCA1005CP 	Standard Q	0402/1005		1.0n	-	120n							50mA - 1.36A
	WCA1608CP 	Standard Q	0603/1608		1.6n	-	470n							80mA - 700mA
	WCA2012CP 	Standard Q	0805/2012		2.2n	-	1.5u							170mA - 600mA
	WCA2520CP 	Standard Q	1008/2520				10n	-	15u					120mA - 1.0mA
	WCA3225CP 	Standard Q	1210/3225			4.7n	-	3.3u						150mA - 600mA
	WCA4532CP 	Standard Q	1812/4532				82n	-	1.2u					480mA - 1.5A

# INPAQ Integrated Components Solution

## Over Voltage Protection

INPAQ's **ESD Suppressor** product line offers a wide range of devices to suit the most of applications in the market with ESD level up to **15KV** and parasitic capacitances as low as **0.05pF**.

 Automotive grade (AEC-Q200)

Structure	Series	Description
ESD Suppressor	<b>Thick Film</b> EGA EGA AM  CGA CES TVU	Dielectric discharge: Use the ESD Guard layer to form a jump path
	<b>Thin Film</b> TFE TFE AM  TLE TUE	Air discharge: Use an air chamber (Air gap) to form a jump path

INPAQ's **Multilayer Varistor** special coating technology provides good reliability and solderability.

Lead free plating termination provided good solderability characteristic.

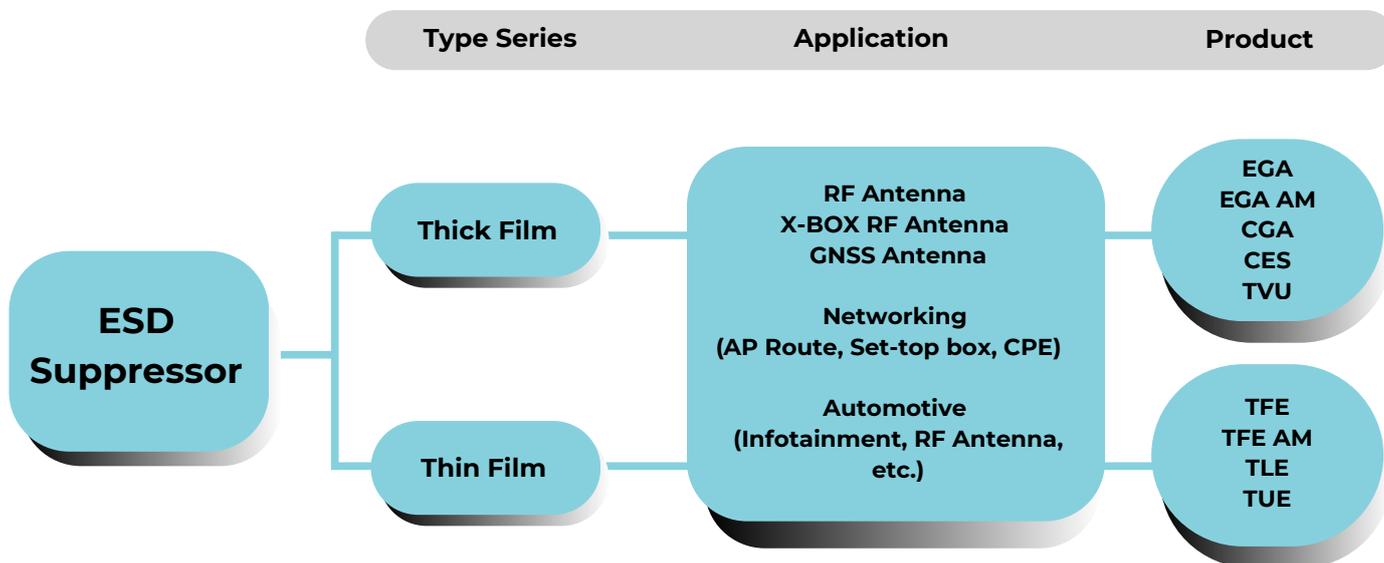
Insulator over coat keeps excellent low and stable leakage current.

 Automotive grade (AEC-Q200)

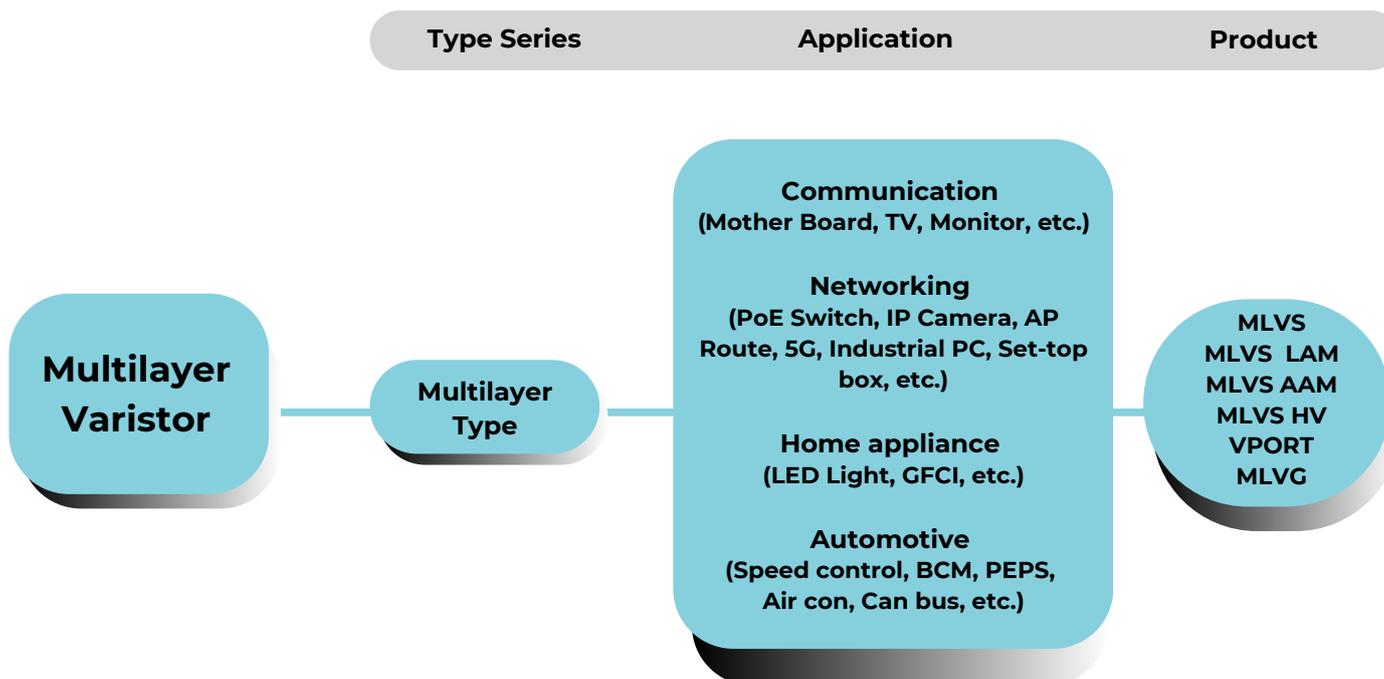
Structure	Series	Description
Multilayer Varistor	MLVS MLVS LAM  MLVS AAM  MLVS HV	The varistor body structure consists of a matrix of conductive ZNO grains separated by grain boundaries providing P-N junction semiconductor characteristics.
	VPORT	
	MLVG	

# Over Voltage Protection

## ESD Suppressor



## Multilayer Varistor



# Over Voltage Protection

## Process & Package

Product	Process	Series	Feature
ESD Suppressor	Thick Film	EGA	<ul style="list-style-type: none"> <li>EIA 0201~0603 , Array 1206</li> <li>Low capacitance (0.2 pF typical)</li> </ul>
		EGA AM	<ul style="list-style-type: none"> <li>EIA 0402/0603</li> <li>Low capacitance (0.2 pF typical)</li> <li>Automotive grade (AEC-Q200) </li> </ul>
		CGA	<ul style="list-style-type: none"> <li>EIA 0201~0603</li> <li>Low capacitance (0.2 pF typical)</li> </ul>
		CES	<ul style="list-style-type: none"> <li>EIA 0201/0402</li> <li>Ultra low capacitance (0.1 pF typical)</li> </ul>
		TVU	<ul style="list-style-type: none"> <li>EIA Array 2510</li> <li>Low capacitance (0.2 pF typical)</li> </ul>
	Thin Film	TFE	<ul style="list-style-type: none"> <li>EIA 0201/0402</li> <li>Ultra low capacitance (0.05 pF typical)</li> </ul>
		TFE AM	<ul style="list-style-type: none"> <li>EIA 0201/0402</li> <li>Ultra low capacitance (0.05 pF typical)</li> <li>Automotive grade (AEC-Q200) </li> </ul>
		TLE	<ul style="list-style-type: none"> <li>EIA 0201/0402</li> <li>Ultra low capacitance (0.05 pF typical)</li> </ul>
		TUE	<ul style="list-style-type: none"> <li>EIA 0201/0402</li> <li>Ultra low trigger voltage</li> <li>Ultra low capacitance (0.07 pF typical)</li> </ul>

# Over Voltage Protection

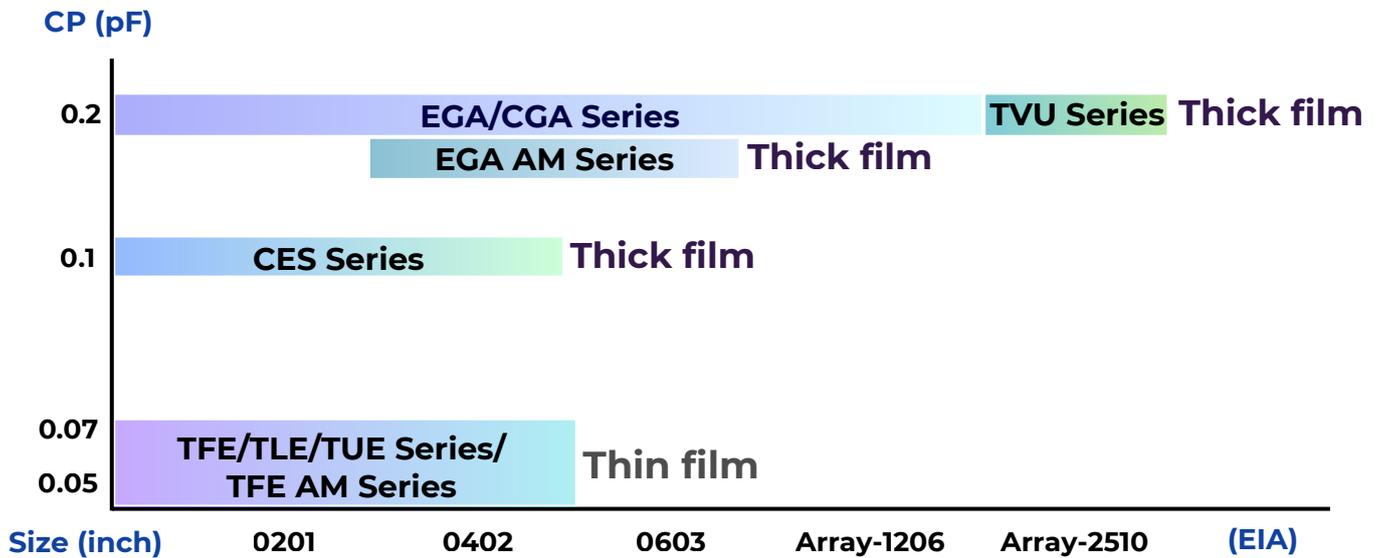
## Process & Package

Product	Process	Series	Feature
Multilayer Varistor	Multilayer	MLVS	<ul style="list-style-type: none"> <li>EIA 0201~2220</li> <li>General surge / High Surge</li> <li>Lead free plating termination provided good solderability characteristic</li> </ul>
		MLVS LAM MLVS AAM	<ul style="list-style-type: none"> <li>EIA 0402~2220</li> <li>Lead free plating termination provided good solderability characteristic</li> <li>Automotive grade (AEC-Q200) </li> </ul>
		MLVS HV	<ul style="list-style-type: none"> <li>EIA 0604/0806</li> <li>High working voltage</li> <li>Lead free plating termination provided good solderability characteristic</li> <li>Meet UL/cUL Certification</li> </ul>
		VPORT	<ul style="list-style-type: none"> <li>EIA 0402/0603</li> <li>Working voltage 5V / 12V</li> <li>Lead free plating termination provided good solderability characteristic</li> </ul>
		MLVG	<ul style="list-style-type: none"> <li>EIA 0402/0603</li> <li>Low capacitance (0.5 pF typical)</li> <li>Lead free plating termination provided good solderability characteristic</li> </ul>

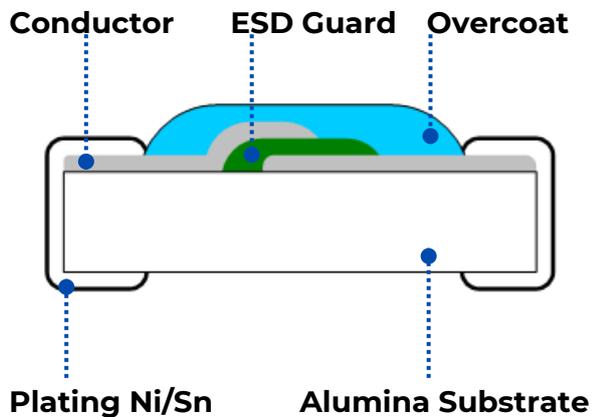
# Over Voltage Protection

## Competitive Product Series

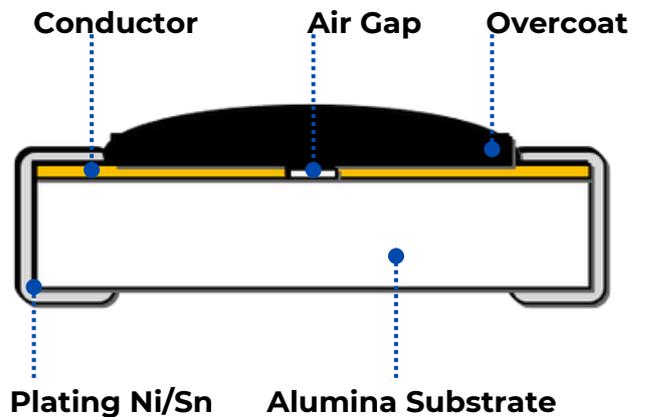
### ESD Suppressor



### Thick Film Structure



### Thin Film Structure

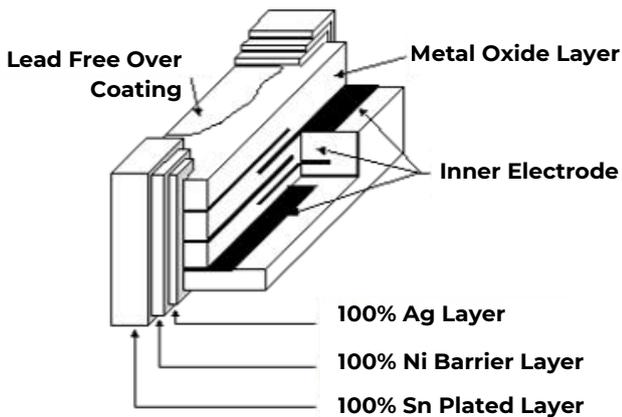
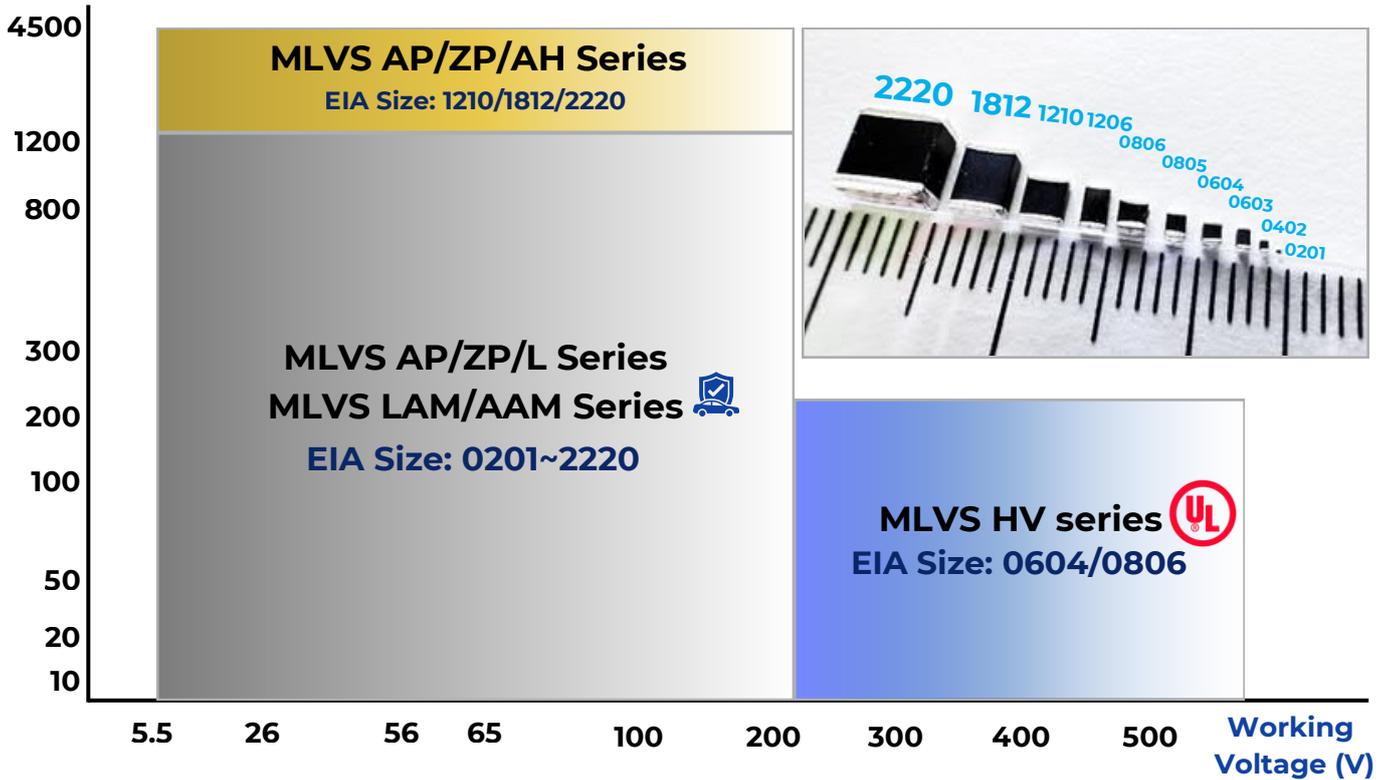


# Over Voltage Protection

## Competitive Product Series

### Multilayer Varistor

Surge (A)  Automotive grade (AEC-Q200)



#### Lead Free Over Coating



- Special coating technology (patent)
- Provides good reliability and solderability

# Over Voltage Protection

## ESD Suppressor - Product Line Up



EGA CGA CES  
TFE TLE TUE  
EGA AM  
TFE AM



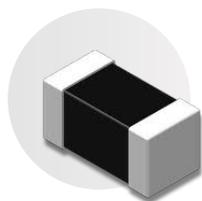
TVU

 Automotive grade (AEC-Q200)

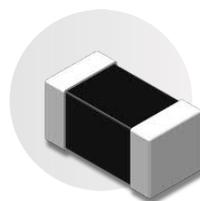
Series	Structure	Size (inch)					Rated Voltage (V)							Capacitance (pF)			AEC-Q200
		0201	0402	0603	Array-1206	Array-2510	5	6	7	12	15	24	30	0.05	0.10	0.20	
EGA	Thick Film	Available					Available			Available		Available				Available	
CGA		Available					Available		Available			Available				Available	
CES		Available					Available		Available			Available		Available			
TVU						Available				Available						Available	
EGA AM			Available				Available			Available		Available				Available	
TFE	Thin Film	Available					Available		Available								
TLE		Available					Available		Available								
TUE		Available					Available						Available				
TFE AM		Available					Available			Available			Available				

# Over Voltage Protection

## Multilayer Varistor - Product Line Up



MLVS MLVG  
VPORT



MLVS LAM  
MLVS AAM  
MLVS HV

 Automotive grade (AEC-Q200)

Series	Size (inch)										AEC-Q200
	0201	0402	0603	0604	0805	0806	1206	1210	1812	2220	
MLVS	Available										
MLVS LAM MLVS AAM	Available										
MLVS HV				Available		Available					
VPORT		Available									
MLVG		Available									

Series	Working Voltage (V)																														
	5.5	7	9	11	12	14	17	18	20	22	24	26	29	30	31	36	38	42	45	48	56	60	63	65	85	100	200	225	320	385	
MLVS	Available																														
MLVS LAM MLVS AAM	Available																														
MLVS HV																															Available
VPORT	Available				Available																										
MLVG	Available		Available				Available			Available											Available										

Series	Peak Current (A)																	
	5	10	20	30	50	100	160	200	300	400	450	500	800	1200	4000	4500	5000	
MLVS	Available		Available			Available		Available										
MLVS LAM MLVS AAM	Available		Available			Available		Available										
MLVS HV		Available			Available													
VPORT																		
MLVG																		

# INPAQ Integrated Components Solution

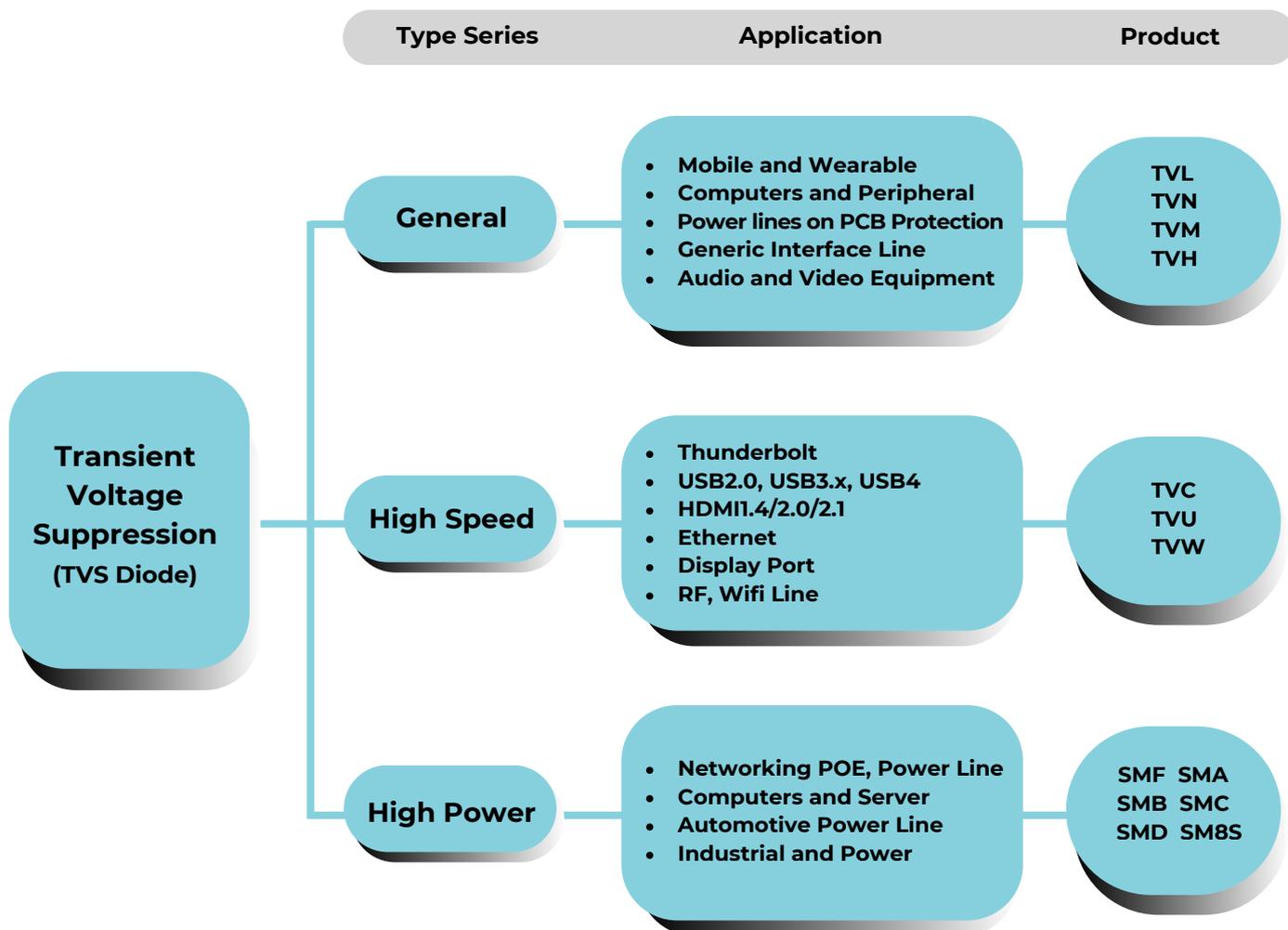
## Over Voltage Protection

INPAQ's **Transient Voltage Suppression Diode (TVS)** focused on provide **ESD** and **EOS protection**. We provide a wide range of products focused on three application areas.

Product	Type	Series	Description
Transient Voltage Suppression Diode(TVS)	General	TVL/TVN/TVM/TVH	TVS diode products are designed to protect power/control line or low speed interfaces on electronic equipment against ESD (Electrostatic Discharge) <b>IEC 61000-4-2 and EOS (Electrical Over Stress 8/20μs) IEC 61000-4-5.</b>
	High Speed	TVC/TVU/TVW	TVS diode products are designed to protect high speed interfaces on electronic equipment against ESD (Electrostatic Discharge) <b>IEC 61000-4-2. Featuring super/ultra-low capacitance.</b>
	High Power	SMF/SMA/SMB/SMC /SMD/SM8S	High Power TVS Diode products are designed to protect electronic circuits against <b>EOS (Electrical Over Stress 10/1000μs)</b> , such as from lightning and inductive load switching.

# Over Voltage Protection

## Transient Voltage Suppression Diode (TVS Diode)

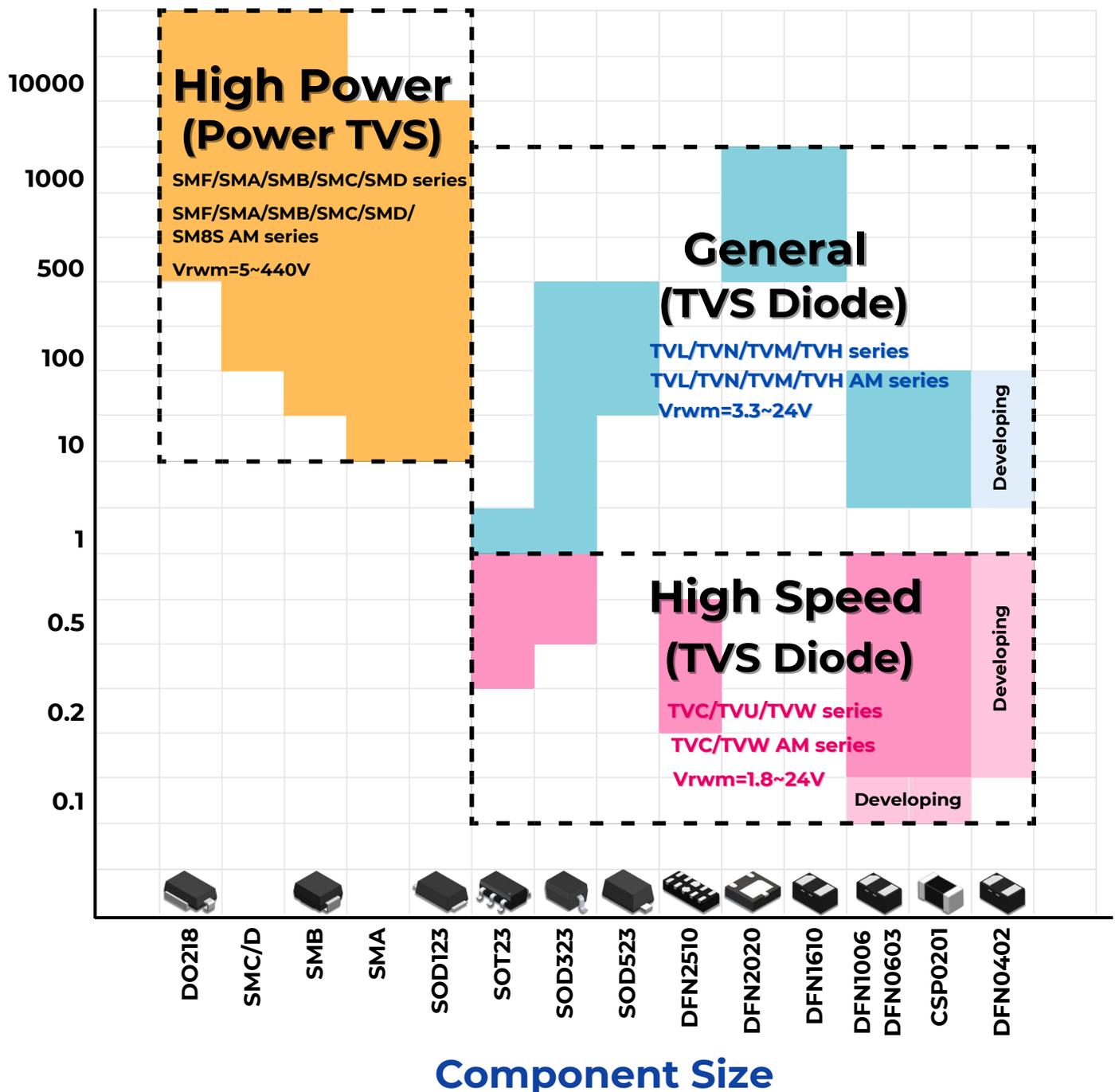


# Over Voltage Protection

## Competitive Product Series

### Transient Voltage Suppression Diode (TVS Diode)

#### Capacitance (pF)

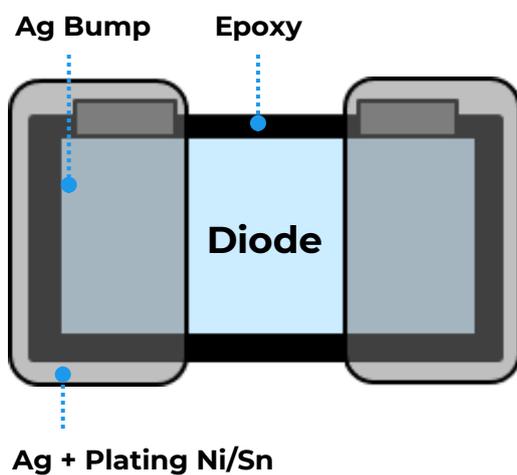


# Over Voltage Protection

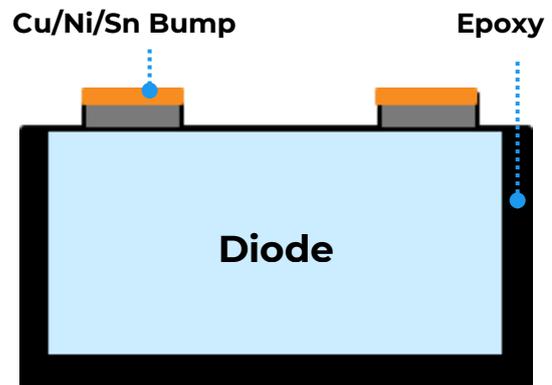
## Competitive Product Series

### Transient Voltage Suppression Diode (TVS Diode)

#### End-Cap Type



#### DFN Type



### Chip Scale Package (CSP)

- Wafer design ability
- In-house assembly
- Stable process
- Excellent solderability
- High production capacity
- 0201 package size

# Over Voltage Protection

## TVS Diode - Product Line Up

### TVS Diode

 Automotive grade (AEC-Q101)

Appearance	Size Code (mm)	Voltage										AEC-Q101
		(V)										
		1.0	1.5	3.3	4.5	5	7	15	20	25	30	
	CSP0201 (inch)											
	DFN0603											
	DFN0603											
	DFN1006											
	DFN1006											
	DFN1610											
	DFN2020											
	DFN2510											
	DFN2510											
	SOD523											
	SOD523											
	SOD323											
	SOD323											
	SOT23											
	SOT23											
	SOT143											
	SOT523											

# Over Voltage Protection

## TVS Diode - Product Line Up

### Power TVS

 Automotive grade (AEC-Q101)

Appearance	Size Code	Voltage							Peak Power (W)	Series	AEC-Q101
		(V)									
		5	50	100	200	300	400	440			
	SOD123								200	SMFJ-T	
									200	SMFJ-P	
									200	SMFJ-AM	
									400	SM4FJ-T	
									400	SM4FJ-P	
									400	SM4FJ-AM	
	SMA								400	SMAL-T	
									400	SMAL-P	
									400	SMAJ-AM	
									600	SMA6L-T	
	SMB								600	SMBL-T	
									600	SMBJ-P	
									600	SMBJ-AM	
									1000	1.0SMBL-T	
									1500	1.0SMBJ-P	
	SMC								1500	SMCL-T	
									1500	SMCL-P	
									1500	SMCJ-AM	
									3000	SMDL-T	
									3000	SMDJ-P	
									3000	SMDJ-AM	
									5000	5.0SMDL-T	
									5000	5.0SMDJ-P	
	DO218								5000	5.0SMDJ-AM	
									6600	SM8S-AM	

# INPAQ Integrated Components Solution

## EMI Suppression Filter

Electronic devices generate electromagnetic interferences, which can affect the proper functioning of electronic devices and systems.

The coming EMI/RFI noise interference issues encountered in several applications, **INPAQ** provides whole range of **Common-Mode Choke** series.

 Automotive grade (AEC-Q200)

Structure		Series	Description
Common Mode Choke	Multilayer	MCM	Powerful components with composite co-fired materials to solve EMI problem for high speed differential signal transmission line as USB, LVDS, HDMI, MIPI and Ethernet without distortion to high speed signal transmission.
		MCM_W 	
		MCA	Powerful components with composite co-fired materials to solve EMI problem for high speed differential signal transmission line as USB and Ethernet without distortion to high speed signal transmission.
	Wire-Wound	HCM	Ultra High Speed Chip Common Mode Choke, HCM series adopts internally unique multilayer ceramic/ferrite co-firing technologies and higher cut-off frequency design for miniaturized size of EMI filter product development. for higher speed I/O of tablet PC/NB & MB.
		SCM	Powerful components with high common mode impedance at high frequency perform outstanding noise suppression, also realize miniature size and low profile.
		SCA 	

# INPAQ Integrated Components Solution

## EMI Suppression Filter

Electronic devices generate electromagnetic interferences, which can affect the proper functioning of electronic devices and systems.

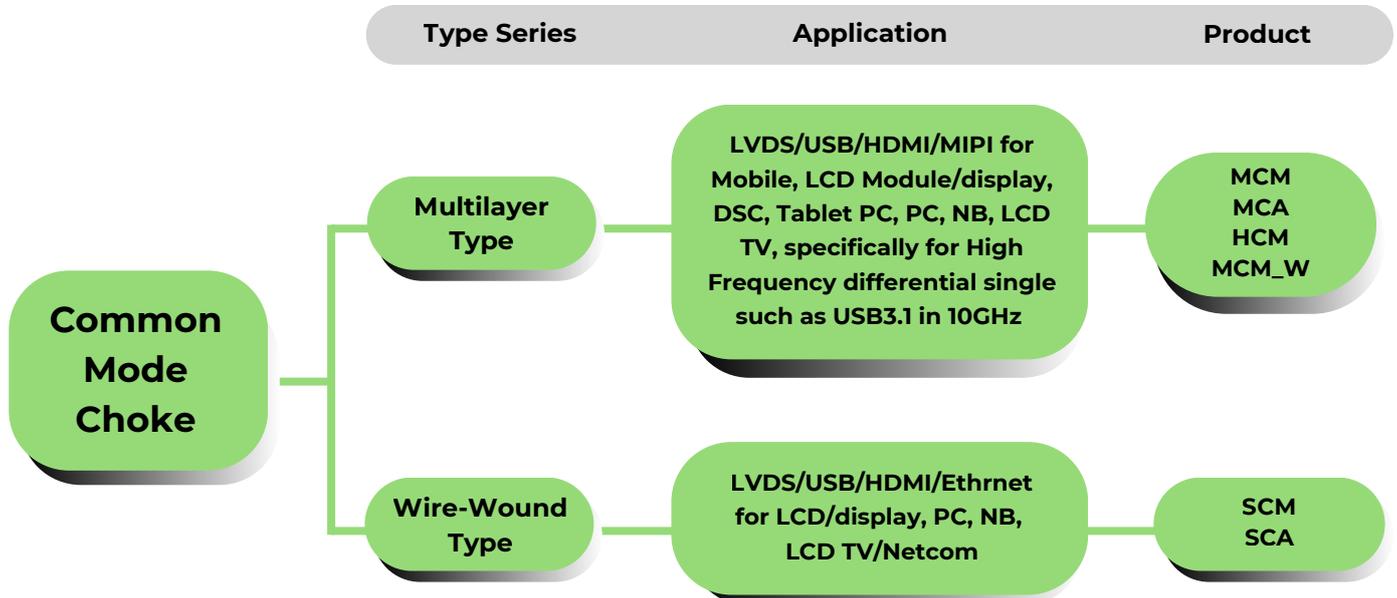
The coming EMI/RFI noise interference issues encountered in several applications, **INPAQ** provides whole range of **Multilayer Chip Bead** series.

 **Automotive grade (AEC-Q200)**

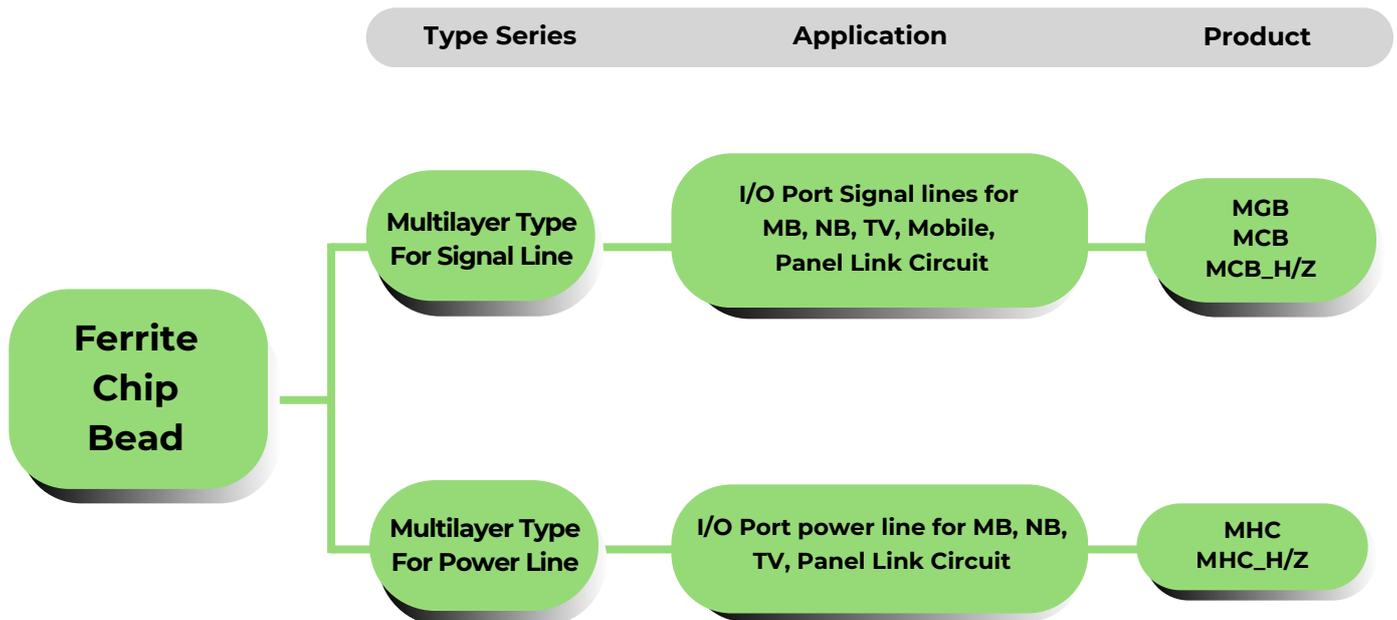
Structure	Series	Description	
Ferrite Bead	Multilayer	<b>MCB</b>	Filtering between analog and digital circuitry, clock generation circuitry, I/O interconnects, isolation between RF noisy circuits and logic devices susceptible to functional degradation, power supply filtering to prevent conducted RF energy from corrupting the power generation circuitry, high frequency EMI prevention of computer, printers, VCRs, TVs and portable telephones.
		<b>MCB_H/Z</b> 	
		<b>MHC</b>	Combination of high frequency noise suppression with capability of handling high current The current rating up to 8 Amps with low DCR
		<b>MHC_H/Z</b> 	
		<b>MGB</b>	Effectively filtering capability over a wide range of frequency (Several MHz to GHz). RF and wireless communication, information technology equipment which includes computer, laptop, telecommunications, radar detectors, automotive electronics, cellular phones, pagers, audio equipment, PDAs, keyless remote system and Navigator systems.

# EMI Suppression Filter

## Common Mode Choke



## Ferrite Chip Bead



# EMI Suppression Filter

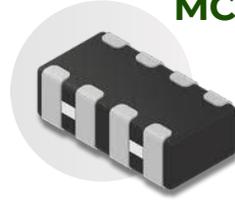
## Common Mode Choke - Product Line Up



**MCM**  
**MCM-W**



**HCM**



**MCA**



**SCM**  
**SCA**

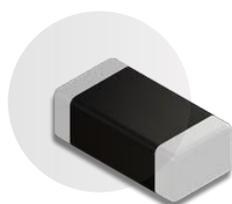


Automotive grade (AEC-Q200)

Category	Series	Feature	Size (mm)	Size (inch)	Impedance Range ( $\Omega$ ) @100MHz	Rated Current (A)	AEC-Q200
Multialyer	MCM	High Speed Type	1012	0405	67~120	300mA	
			2012	0805	67~220	300mA~400mA	
			3216	1206	90~120	500mA	
	MCM-W	High Speed Type	1012	0405	67~120	300mA	
			2012	0805	67~220	300mA~400mA	
	HCM	Ultra High Speed Type	0806	03025	12~28	130mA~160mA	
			1012	0405	15~90	100mA	
			2012	0805	50~120	100mA~200mA	
	MCA	High Speed Array Type	2012	0805	90~120	300mA~400mA	
			3216	1206	90~180	300mA~400mA	
Wire-Wound	SCM	High Speed Type	2012	0805	67~750	220mA~400mA	
	SCA	High Speed Type	2012	0805	67~750	220mA~400mA	

# EMI Suppression Filter

## Ferrite Chip Bead - Product Line Up



MCB-S  
MCB-S/B  
MCB-P  
MCB-H



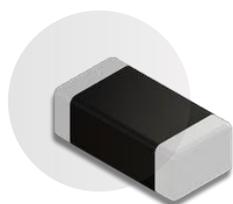
MCB\_H/Z  
MCB-H\_H/Z

 Automotive grade (AEC-Q200)

Series	Feature	Size (mm)	Size (inch)	Impedance Range ( $\Omega$ ) @100MHz	Rated Current (mA)	AEC-Q200
MCB-S	Signal Line Type (GHz band)	1005	0402	600~1800	200mA~300mA	
MCB-S/B	Signal Line Type (Standard)	1005	0402	10~1800	150mA~800mA	
		1608	0603	10~2500	200mA~800mA	
		2012	0805	30~3000	300mA~800mA	
		3216	1206	50~2000	200mA~800mA	
		3225	1210	60~90	800mA	
		4516	1806	80	800mA	
MCB-P	Signal Line Type (Low DCR)	1005	0402	10~70	780mA~1800mA	
MCB-H	Signal Line Type (High Speed)	1005	0402	22~120	300mA	
		1608	0603	20~1000	200mA~500mA	
		2012	0805	120~600	200mA	
MCB_H/Z	Signal Line Type (Standard)	1005	0402	70~1800	200mA~600mA	
		1608	0603	120~2500	150mA~800mA	
		2012	0805	120~2000	200mA~800mA	
		3216	1206	1500~200	500mA~700mA	
MCB-H_H/Z	Signal Line Type (High Speed)	1005	0402	75~220	300mA	
		1608	0603	20~1000	200mA~800mA	
		2012	0805	2200	200mA	

# EMI Suppression Filter

## Ferrite Chip Bead - Product Line Up



MHC-S  
MHC-P



MHC\_H/Z  
MHC-P\_H/Z

 Automotive grade (AEC-Q200)

Series	Feature	Size (mm)	Size (inch)	Impedance Range ( $\Omega$ ) @100MHz	Rated Current (mA)	AEC-Q200
MHC-S	Power Line Type (Standard)	1005	0402	10~120	1500mA~3000mA	
		1608	0603	10~1000	800mA~4000mA	
		2012	0805	22~1500	1000mA~6000mA	
		3216	1206	30~1200	1000mA~6000mA	
		3225	1210	60~1000	1500mA~2000mA	
		4516	1806	60~850	1500mA~6000mA	
MHC-P	Power Line Type (Ultra Low DCR)	1005	0402	33~600	900mA~3000mA	
		1608	0603	22~1000	1000mA~8000mA	
MHC_H/Z	Power Line Type (Standard)	1005	0402	10~120	1000mA~2500mA	
		1608	0603	30~1000	800mA~3000mA	
		2012	0805	30~1500	1000mA~4000mA	
		3216	1206	50~600	1500mA~3500mA	
		3225	1210	1000	2000mA	
		4516	1806	60~1000	1500mA~6000mA	
MHC-P_H/Z	Power Line Type (Ultra Low DCR)	1608	0603	26~600	1300mA~6000mA	

# Application Guide

# Mobile Phone



## Wireless Connectivity

**RF Inductor**  
 Multilayer Ceramic RF Inductor  
 MCI Series



**Over Voltage Protection**  
 ESD Suppressor  
 EGA/TFE/TUE Series



## PMIC

## Power Charge

**SMD Power Inductor**  
 Mini Molding Power Inductor  
 WIP Series



## Camera

## SD Card

## USB

## Display

**EMI Suppression Filter**  
 Multilayer Chip Bead  
 MCB/MHC/MGB Series



**EMI Suppression Filter**  
 Multilayer Common Mode Choke  
 MCM/HCM Series



**Over Voltage Protection**  
 ESD TVS  
 TVC/TVW/TVL Series



## RF Front End

**RF Inductor**  
 Multilayer Ceramic RF Inductor  
 MCI Series



**Over Voltage Protection**  
 ESD Suppressor  
 EGA/TFE/TUE Series



## Application Processor

## Speaker

## Microphone

**EMI Suppression Filter**  
 Multilayer Chip Bead  
 MCB/MHC/MGB Series



**EMI Suppression Filter**  
 Multilayer Common Mode Choke  
 MCM/HCM Series



**Over Voltage Protection**  
 ESD TVS  
 TVL/TVN Series



# Application Guide

# Wearable



## Camera

## USB

## Display

**EMI Suppression Filter**  
Multilayer Chip Bead  
MCB/MHC/MGB Series



**EMI Suppression Filter**  
Multilayer Common Mode Choke  
MCM/HCM Series



**Over Voltage Protection**  
ESD TVS  
TVC/TVW/TVL Series



## RF Front End

**RF Inductor**  
Multilayer Ceramic RF Inductor  
MCI Series



**Over Voltage Protection**  
ESD Suppressor  
EGA/TFE/TUE Series



## Wireless Connectivity

**RF Inductor**  
Multilayer Ceramic RF Inductor  
MCI Series



**Over Voltage Protection**  
ESD Suppressor  
EGA/TFE/TUE Series



## PMIC

## Power Charge

**SMD Power Inductor**  
Mini Molding Power Inductor  
WIP Series



## Application Processor

## Speaker

## Microphone

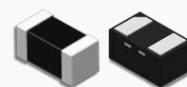
**EMI Suppression Filter**  
Multilayer Chip Bead  
MCB/MHC/MGB Series



**EMI Suppression Filter**  
Multilayer Common Mode Choke  
MCM/HCM Series



**Over Voltage Protection**  
ESD TVS  
TVL/TVN Series



# Application Guide

# Networking

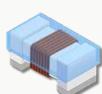


## RF Front End

**RF Inductor**  
Multilayer Ceramic RF Inductor  
MCI Series



**RF Inductor**  
Wire-wound Ceramic RF Inductor  
WCI Series



**Over Voltage Protection**  
ESD Suppressor  
EGA/TFE/TUE Series



## Main Board

## HDMI

## USB

## LAN

**EMI Suppression Filter**  
Multilayer Chip Bead  
MCB/MHC Series



**EMI Suppression Filter**  
Multilayer Common Mode Choke  
MCM/HCM Series



**Over Voltage Protection**  
ESD TVS (array)  
TVU/TVW Series



**Over Voltage Protection**  
ESD TVS  
TVC/TVW Series

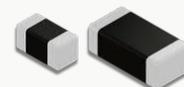


**Over Voltage Protection**  
Multilayer Varistor  
MLVS/VPORT Series



## PoE

**EMI Suppression Filter**  
Multilayer Chip Bead  
MCB/MHC Series



**EMI Suppression Filter**  
Multilayer Common Mode Choke  
MCM/HCM Series



**Over Voltage Protection**  
ESD TVS  
TVC/TVU/TVW Series



**Over Voltage Protection**  
Power TVS  
SMA/SMB/SMC/SMD Series



**Over Voltage Protection**  
Multilayer Varistor  
MLVS/VPORT Series



## DC-DC power

**SMD Power Inductor**  
Mini Molding Power Inductor  
WIP Series



**SMD Power Inductor**  
Molding Power Inductor  
AIP Series



## DC-In Power

**Over Voltage Protection**  
Power TVS  
SMA/SMB/SMC/SMD Series



# Application Guide

# TV/Monitor



## I/F Tuner

### Wireless Connectivity

#### RF Inductor

Multilayer Ceramic RF Inductor  
MCI Series



#### RF Inductor

Wire-Wound Ceramic RF Inductor  
WCI Series



#### RF Inductor

Air Coil RF Inductor  
LSI/LSP/LSQ Series



#### Over Voltage Protection

ESD Suppressor  
EGA/TFE/TUE Series



## DC-DC Power

#### SMD Power Inductor

Mini Molding Power Inductor  
WIP Series



#### SMD Power Inductor

Molding Power Inductor  
AIP Series



#### SMD Power Inductor

Wire-Wound with Resin Power Inductor  
CSME Series



## DC-In Power

#### Over Voltage Protection

Power TVS  
SMA/SMB/SMC/SMD Series



## Main Board

## HDMI

## USB

## LAN

#### EMI Suppression Filter

Multilayer Chip Bead  
MCB/MHC Series



#### EMI Suppression Filter

Multilayer Common Mode Choke  
MCM/HCM Series



#### Over Voltage Protection

ESD TVS  
TVC/TUV/TVW Series



#### Over Voltage Protection

Multilayer Varistor  
MLVS/VPORT Series



## Class-D Amp

#### SMD Power Inductor

Molding Power Inductor  
AIP Series



#### EMI Suppression Filter

Multilayer Chip Bead  
MCB/MHC Series



# Application Guide

## NB/PC/Server



ThunderBolt

Main Board

Audio

Display

USB

HDMI

**EMI Suppression Filter**  
Multilayer Chip Bead  
MCB/MHC/MGB Series



**EMI Suppression Filter**  
Multilayer Common Mode choke  
MCM/HCM Series



**Over Voltage Protection**  
ESD TVS (array)  
TUV/TVW Series



**Over Voltage Protection**  
ESD TVS  
TVC/TVW Series



**SMD Power Inductor**  
Mini Molding Power Inductor  
WIP Series



**SMD Power Inductor**  
Molding Power Inductor  
AIP Series

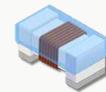


### Wireless Connectivity

**RF Inductor**  
Multilayer Ceramic RF Inductor  
MCI Series



**RF Inductor**  
Wire-Wound Ceramic RF Inductor  
WCI Series



**Over Voltage Protection**  
ESD Suppressor  
EGA/TFE/TUE Series



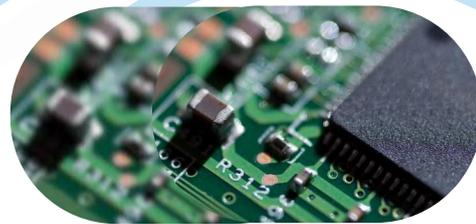
### DC-In Power

**Over Voltage Protection**  
Power TVS  
SMA/SMB/SMC/SMD Series



# Application Guide

## Module



### RF Front End

**RF Inductor**  
Multilayer Ceramic RF Inductor  
MCI Series



**RF Inductor**  
Wire-Wound Ceramic RF Inductor  
WCI Series



**Over Voltage Protection**  
ESD Suppressor  
EGA/TFE/TUE Series



### DC-DC Power

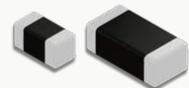
**SMD Power Inductor**  
Mini Molding Power Inductor  
WIP Series



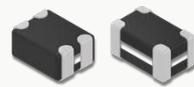
### Main Board

### I/O Line

**EMI Suppression Filter**  
Multilayer chip bead  
MCB/MHC/MGB Series



**EMI Suppression Filter**  
Multilayer Common Mode Choke  
MCM/HCM Series



**Over Voltage Protection**  
ESD TVS  
TVL/TVN Series



# Application Guide Automotive



## Power In

### Over Voltage Protection

Power TVS

SMA/SMB/SMC/SMD/SM8S AM Series



## Main Board

## CAN BUS

## USB

## LAN

### EMI Suppression Filter

Multilayer Chip Bead

MCB/MHC\_H/Z Series



### Over Voltage Protection

ESD TVS

TVL/TVN/TVW AM Series



### Over Voltage Protection

Multilayer Varistor

MLVS LAM/AAM Series



## DC-DC Power

### SMD Power Inductor

Mini Molding Power Inductor

WPA Series



### SMD Power Inductor

Molding Power Inductor

APA Series



### SMD Power Inductor

Wire-Wound with Resin Power

Inductor

CSMEA Series



# Application Guide Shark Fin

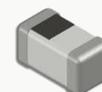


## RF Front End

### RF Inductor

Multilayer Ceramic RF Inductor

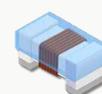
MCI\_H/Z Series



### RF Inductor

Wire-Wound Ceramic RF Inductor

WCA Series

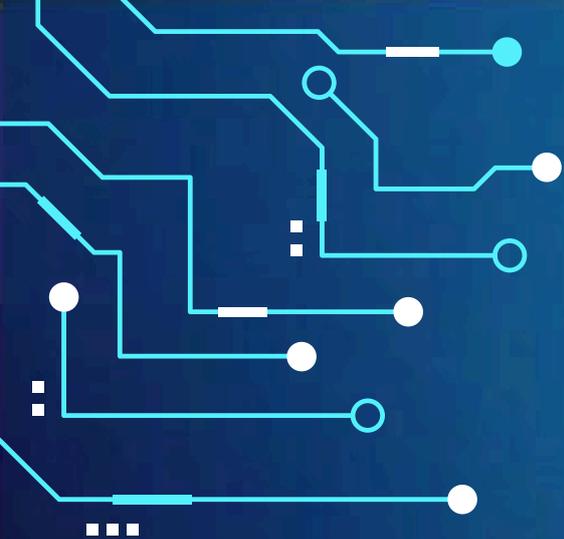


### Over Voltage Protection

ESD Suppressor

EGA/TFE AM Series





**PSA**

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