

PRODUCT INFORMATION

Resistors

Thermal Transfer Devices

RF Terminations

Attenuators

Power Splitters & Couplers

RF & Microwave Dividers



International Manufacturing Services, Inc.
www.ims-resistors.com

International Manufacturing Services, Inc. (IMS) is the Primary Source for Innovative Passive Components

We meet and exceed customer expectations with our quality, value, service and industry leading material management.

HISTORY

Since 1974, IMS has been a global leader offering thick and thin film electronic components including: resistors, thermal management devices, attenuators, RF terminations, splitters, couplers, and dividers.

INNOVATION

Our most innovative products are created as a result of close partnering and professional consultation with our customers, culminating in high quality custom solutions with short design lead times.

DELIVERY

We maintain a substantial inventory of standard components for same day shipment.

QUALITY

IMS, an AS9100D, ISO-9001:2015 registered company, maintains superior and comprehensive quality control assuring that our products conform to the highest standards. We offer additional testing services, including 100% Value/Visual and Thermal Shock.

SERVICE

Our dedicated and knowledgeable staff is always here to assist with creating the optimal solution for your application. In addition, IMS maintains a global network of representatives and distributors who can meet with you face to face to help with problem solving.

FLEXIBILITY

With design, development, manufacturing, sales and management personnel under one roof, IMS is positioned to respond quickly and effectively.

GENERAL INFO

Products by Industry.....	2
Quick Selection Guide.....	3

THERMAL DEVICES

A ϵ N Ceramic Thermal Transfer Devices ThermaBridge™ & ThermaPlane™.....	4-5
--	-----

RESISTORS

Power Chip

High Power A ϵ N Resistors N-Series.....	6
Extended Power Wraparound Resistors Super RCX Series.....	7

Advanced Chip

Resistors Optimized for RF & Microwave RCX Partial Wrap Series.....	8
High Voltage Surface Mount Chip Resistors HVI Series.....	8

Single-Sided Thick Film

Single-Sided Resistors IMS Single-Sided.....	9
High Power Single-Sided Resistors IMS Power Series.....	10

ATTENUATORS

Thin Film Nickel Barrier Attenuators A-Series.....	17
High Power A ϵ N Thick Film Attenuators V-Series.....	18
Thick Film Attenuators IAX Series.....	18
Standard Size T-Pad Attenuators IMA Series.....	19
Temperature Variable Attenuators AV-0805 Series.....	19

Custom Solutions.....	24
Engineering Kits.....	24

Wraparound Thick Film

Full Wrap & Single Wrap to Ground Resistors RCX Series.....	11
Thick Film Nickel Barrier Solderable Resistors RXI Series.....	12
High Ohmic Value Wraparound Resistors HCX Series.....	13

Wraparound Thin Film

Current Sense Thin Film Nickel Barrier Resistors LCI Series.....	14
Precision Thin Film Nickel Barrier Resistors TPI Series.....	15

Wraparound Metal Foil

Thin Film Current Sense Resistors MLI Series.....	16
--	----

SPLITTERS & COUPLERS

Wideband Resistive Splitters IPS Series.....	20
Thin Film Splitters IPT Series.....	21
Wideband Resistive Couplers IMK Series.....	22

DIVIDERS

IMD Series.....	23
-----------------	----

Products by Industry

MEDICAL

Medical applications demand precision, quality, non-ferroresonant, and often micro and high voltage products to deliver the next generation devices.

- Non-Magnetic for MRI applications
- Small Package Sizes available 0201 and 01005
- Ultra Leach Resistant (ULR) metallization
- RoHS compliant options for all products

TPI SERIES

Thin Film Nickel Barrier Resistors

A SERIES

Thin Film Attenuators

RCI SERIES

Thick Film Nickel Barrier Resistors

HVI SERIES

High Voltage Resistors

RCX SERIES

Resistors for RF, Microwave and Low PIM

N-SERIES

High Power A_N Resistors

AEROSPACE

IMS offers all products suitable for aerospace applications, but can also be customized for common requirements such as:

- Satellite Communications
- Commercial Space Applications
- 100% Value Testing

N-SERIES

High Power A_N Resistors

ThermaBridge™

Thermal Management Device

AV-0805

Temperature Variable Attenuator

IAX SERIES

Thick Film Attenuators

COMMUNICATIONS

IMS offers all products suitable for communication applications. Supporting the earthbound, airborne, underwater systems that make up the telecommunications infrastructure, base stations, transmission towers, satellites, submarine communications, line cards and mesh networks.

N-SERIES

High Power A_N Resistors

A SERIES

Thin Film Attenuators

RCX SERIES

Resistors for RF, Microwave and Low PIM

IPS & IPT SERIES

Broadband Resistive Splitters

DEFENSE

IMS offers all products suitable for military and aerospace applications, but can also be customized for common requirements such as:

- 100% Value Testing
- Sn62 Leaded Solder Pre-Tin Option
- Application Support for Thermal Management Devices Available

N-SERIES

High Power A_N Resistors

ThermaBridge™

Thermal Management Device

RCX PW SERIES

Resistors for RF & Microwave and Low PIM

IPS & IPT SERIES

Broadband Resistive Splitters

IAX SERIES

Thick Film Attenuators

INSTRUMENTATION

IMS offers a full complement of resistor and attenuator solutions for applications where data integrity and signal fidelity are integral in the design. IMS resistors can be offered from under 1 ohm to over 1 Trillion Ohms. The “High Megaohm” products are common to be seen in applications for metering devices.

N-SERIES

High Power A_N Resistors

ThermaBridge™

Thermal Management Device

IPS & IPT SERIES

Broadband Resistive Splitters

RCX SERIES

Resistors for RF, Microwave and Low PIM

RCI

Thick Film Nickel Barrier Resistors

A SERIES

Thin Film Attenuators

QUICK SELECTION GUIDE

		1W	2W	5W	10W	100W	350W	Page	
Best Options for High Power Applications	N Series							6	
	IMS Power (SS)							10	
	Super RCX (WA)							7	
	RXI Series (WA)							12	
Best Options for High Voltage Applications		1kV	1.5kV	2kV	2.5kV				
	HVX Series (WA)								8
Best Options for Applications Needing High Ohmic Value		20MΩ	100MΩ	500MΩ	1GΩ	500GΩ	1TΩ		
	HCX Series (WA)							13	
	RCX Series (WA)							11	
	IMS SS (SS)							9	
	RCI Series (WA)							12	
Best Options for Applications Needing Low Value		.9Ω	.5Ω	.1Ω	.07Ω	.05Ω	.01Ω	.003Ω	
	LCI Series (WA)								14
	TPI Series (WA)								15
	IMS Power (SS)								10
	RCI Series (WA)								12
	IMS SS (SS)								9

ATTACHMENT GUIDE

(Additional Terminal Materials Available)

Attachment Method	Material Code
Tin Solder	3, 8*, C, D, P, H*, R, Q
Gold Eutectic Solder	1, 4, 7
Epoxy	1, 3, 4, 7, 8*
Gold Wirebond	1, 4, 7
Aluminum Wirebond	4

Material Code	Terminal Material
1	Au
3, 8*	PtAg
C, H*	Sn62 over PtAg
P, R*	Sn96 over PtAg
4	PtAu
D	Sn62 over PtAu
7**	Input pad - Au over PtAu
	Backplane - PtAu
Q	Sn96 over PtAu

*Ultra Leach Resistant PtAg (ULR)

**Available on A₂N substrate products only.

Look for these buttons to help quickly identify key product attributes!



ULR

HI-OHM

HI PWR

RoHS

Sn62

NON-MAG

LOW TCR

BONDABLE

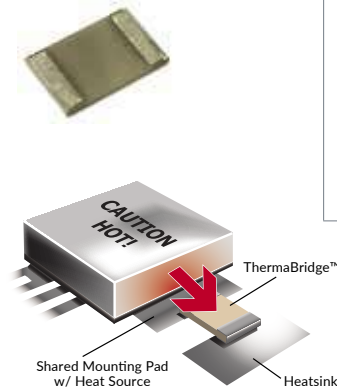
KIT



AlN Ceramic Thermal Transfer Devices ThermaBridge™

The **ThermaBridge™** provides the user with a simple, cost effective way to manage thermal issues at the board level. ThermaBridge™ moves heat from one area to another through an electrically isolated, thermally conductive ceramic chip device with metallized terminals.

- Electrically Isolated Thermal Conductor
- Thermal Design Tool
- Passive Thermal Control
- Extends Component Life
- Dramatic Temperature Reduction
- Epoxy or Solder Mountable



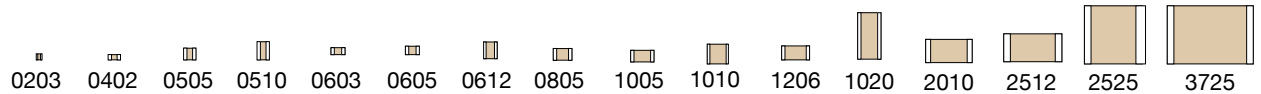
SAMPLE PN: B G 3 - 0805WA (0805 size, 0.025" Thickness ThermaBridge™, PtAg Terminals)

PN Prefix	Thickness	Term Metals	Sizes			Configuration
B	C = 0.010" ¹	✓ 3- PtAg	0203	0612	2010	WA= Wraparound
	D = 0.015"	✓ 8- ULR PtAg	0402	0805	2512	
	G = 0.025"	C- PtAg with Sn62 Solder	0505	1005	2525	*DS= Double sided without wrap
	T = 0.040" ²	H- ULR PtAg with Sn62 Solder	0510	1206	3725	
	¹ Available in sizes 0203, 0402	✓ P- PtAg w/ Sn96 Solder	0603	1010		
	² Available in sizes 1010 and larger	✓ R- ULR PtAg with Sn96 RoHS Solder	0605	1020		
Standard Sizes (Custom Sizes Available)						
*DS only available in termination material 8, H & R						



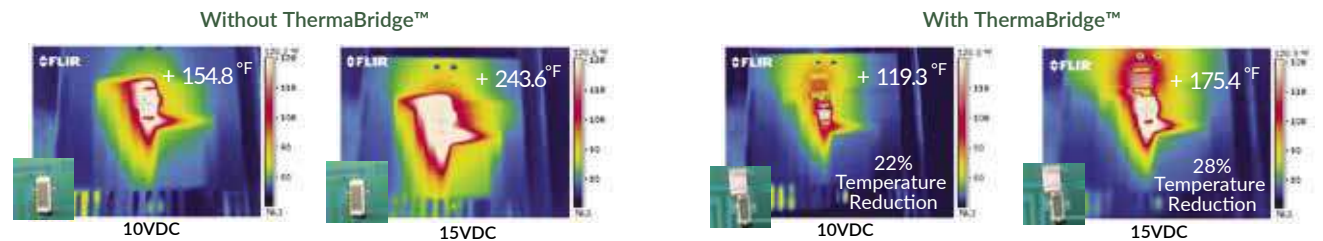
Applications include:

- RF Amplifiers
- Heat Sensing
- Conduction Cooled Computers
- Power Supplies & Converters
- JTRS, MIDS-J, GMR
- Temperature Controlled Oscillators
- Extracting Heat from Power FETS, LEDs, Pin & Laser Diodes
- Lighting Ballasts
- Protecting Neighboring Components
- Conduction Cooled Handheld Devices
- P25 Radios, Basestations & Repeaters
- Electrically Isolated Thermal Coupling
- Transformers



Thermal Image Heat Transfer Demonstration

Below is an actual test of the ThermaBridge™ showing a heat generating component mounted on an FR4 board. The images on the right show the temperature of the component being thermally aided by the ThermaBridge™ connected to a heat sink.



A/N Ceramic Thermal Transfer Devices ThermaPlane™

The **ThermaPlane™** uses the same concept as the ThermaBridge™ and consists of a high thermal conductivity ceramic with metallization on the top and bottom of the device.

- Electrically Isolated Thermal Conductor
- Thermal Design Tool
- Passive Thermal Control
- Extends Component Life
- Dramatic Temperature Reduction
- Epoxy or Solder Mountable

Applications include:

- RF Amplifiers
- Heat Sensing
- Transceivers
- Extracting Heat From Processors & Pin Diodes
- Transformers
- Power Supplies & Converters

SAMPLE PN: P D 3 - 2010 OS (2010 size, 0.025" Thickness ThermaPlane™, PtAg One Side)

Prefix	Thickness	Metals	Sizes		Configuration
P	D = 0.015" ¹ G = 0.025" T = 0.040" ² ¹ . Available in sizes 2512 and smaller. ² . Available in 2010 and larger.	<input checked="" type="checkbox"/> 3- PtAg <input checked="" type="checkbox"/> 7- Au over PtAu <input checked="" type="checkbox"/> 8- ULR PtAg <input checked="" type="checkbox"/> C- PtAg with Sn62 Solder <input checked="" type="checkbox"/> H- ULR PtAg with Sn62 Solder <input checked="" type="checkbox"/> R- ULR PtAg with Sn96 RoHS Solder	0505	2010	OS = One Sided DS = Double Sided
			0805	2512	
			1005	2525	* Custom Sizes Available
			1206	3725	



OS
One sided



DS
Double sided



ULR

HI PWR

RoHS

Sn62

NON-MAG

High Power A/N Resistors N-Series

The **N-Series** resistors on A/N suit applications which require high power dissipation in a small size. The N-Series allows users to tailor the device to their specific power requirements with the choice of four thicknesses.

- Applications up to 35GHz[†]
- High Power Dissipation[‡]
- Sn62 Solder Available
- Non-Magnetic

Applications Include:

- Amplifier Circuits
- Power Converters
- Test & Measurement
- Handheld Devices



SAMPLE PN: **N D C - 1206 DE 1300 J** (1206 size, 0.015" Thickness 130Ω, 5%, PtAg w/ Sn62 Solder Dual Extended Terminals)

PN Prefix	Thickness	Term Metals	Sizes*	Trim	Terminal Styles	Value Range ⁰	Tolerances
N	C = 0.010" ¹ D = 0.015" G = 0.025" ² T = 0.040" ¹ Available with sizes 0402, 0505, 0603, 0805, 0510, 1005, 1206 ² Not available with sizes 0402, 0603	3-PtAg ✓ 7-Au over PtAu¹ ✓ 8-ULR PtAg ✓ C-PtAg with Sn62 Solder P-PtAg with Sn96 Solder ✓ H-ULR PtAg with Sn62 Solder R-ULR PtAg with Sn96 Solder ✓	0402	S = Scrub Cut Leave blank for normal Scrub cut is inherent for SZG & EZW		10Ω to 2KΩ	G = 2% J = 5%
			0505				
			0510				
			0603				
			0805				
			1005				
			1020				
			1206				
			1225				
			2010				
			2512				
			2525				
			3725				

CS, EW, DE available in sizes 0805 and higher | PW available in sizes 0805 and lower
 SZG available in sizes 1005 and higher | EZW available in sizes 1206 and higher
 ZG same as SG with tapered high frequency resistor style and edge trim for large case size
 Reverse aspect ratios available for most sizes

Power Ratings by Size and Thickness ‡

Thickness		0.010" (C)			0.015" (D)			0.025" (G)			0.040" (T)		
Baseplate Temp		50C	75C	100C	50C	75C	100C	50C	75C	100C	50C	75C	100C
Size	0402	13W	11W	7.1W	8.8W	7.3W	4.7W	N/A	N/A	N/A	N/A	N/A	N/A
	0505	45W	37W	24W	30W	25W	16W	10W	16W	10W	N/A	N/A	N/A
	0603	24W	20W	13W	16W	13W	8.7W	N/A	N/A	N/A	N/A	N/A	N/A
	0805	75W	55W	37W	50W	37W	25W	30W	25W	16W	N/A	N/A	N/A
	1005	90W	70W	45W	60W	48W	30W	40W	30W	20W	N/A	N/A	N/A
	1206	150W	125W	80W	105W	85W	55W	70W	55W	35W	N/A	N/A	N/A
	2010	N/A	N/A	N/A	150W	120W	75W	90W	75W	48W	60W	48W	30W
	2512	N/A	N/A	N/A	200W	150W	100W	120W	100W	60W	70W	60W	38W
2525	N/A	N/A	N/A	400W	300W	200W	240W	190W	120W	150W	120W	75W	
3725	N/A	N/A	N/A	640W	500W	340W	380W	310W	200W	250W	200W	125W	

Assumed resistor max temp 150°C. Thermal Management is crucial for the operation of these devices. Please visit our website for more information.

† Performance based on mounting in matched continuous 50Ω system with proper application of RF principles.

◊ First 3 digits of value code are significant value. The 4th is the number of zeros following. An 'R' indicates a decimal when resistance is under 100Ω. For value under 10Ω contact IMS.

‡ Proper thermal management required



Extended Power
Wraparound Resistors

Super RCX Series

- Extra Power Density in the Same Footprint
- Not Limited to EIA Standard Values
- Sn62 Solder Available
- Non-Magnetic



SAMPLE PN: **RC3** - **0805S** - **11R4** **J** (Extended Power 0805 Size, 11.4Ω, 5%, PtAg terminals)

Attachment/ Term Metal	Size	Rated Power [†]	Max RCW Voltage	Value Range [∅]	Tolerance Ranges
✓ RC3 -PtAg Wraparound	0402S*	160mW	50VDC	10Ω to 1MΩ	F = 1% 10Ω to 1MΩ* G = 2% 10Ω to 1MΩ J = 5% 10Ω to 1MΩ K = 10% 10Ω to 1MΩ * 0402S not available in 1% tolerance.
✓ RC8-ULR PtAg Wraparound	0603S	200mW	50VDC	10Ω to 1MΩ	
RC -PtAg Wraparound with Sn62 Solder	0805S	350mW	150VDC	10Ω to 1MΩ	
RC -PtAg Wraparound with Sn62 Solder	1206S	500mW	200VDC	10Ω to 1MΩ	
✓ RC -PtAg Wraparound with Sn96 Solder	2010S	1W	200VDC	10Ω to 1MΩ	
✓ RC -PtAg Wraparound with Sn96 Solder	2512S	2W	200VDC	10Ω to 1MΩ	
✓ RC -ULR PtAg Wraparound with Sn96 Solder					

[†] Free air rated at 70°C

[∅] First 3 digits of value code are significant value. The 4th is the number of zeros following. An 'R' indicates a decimal when resistance is under 100Ω.



ULR

RoHS

Sn62

NON-MAG

Resistors Optimized
for RF & Microwave

RCX Partial Wrap Series

- Improved Frequency Response
- Characterized to 40GHz †
- Sn62 Solder Available
- Non-Magnetic
- Improved Performance to 40GHz (0302 Size)

This design allows visual inspection of the terminal joint connection when mounted face down.

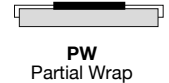


SAMPLE PN: RCC - 0402PW - 50R0 J (0402 Size, 50Ω, 5%, PtAg w/ Solder Partial Wrap Terminals)

PN Prefix	Size	Frequency†	Rated Power**	Value Range◇	Tolerances
✓ RC3 -PtAg Partial Wrap	0302PW	To 40GHz	63mW	10Ω to 10KΩ	F = 1% G = 2% J = 5%
✓ RC8 -ULR PtAg Partial Wrap	0402PW	To 36GHz	80mW		
RC -PtAg Partial Wrap with Sn62 Solder	0502PW	To 26.5GHz	100mW		
✓ RCP -PtAg Partial Wrap with Sn96 Solder	0603PW	To 15GHz	100mW		
✓ RC4 -*PtAu Partial Wrap	0805PW	To 8GHz	175mW		
RCD -*PtAu Partial Wrap with Sn62 Solder					
RCH -ULR PtAg Partial Wrap with Sn62 Solder					
✓ RCQ -*PtAu with Sn96 Solder					
✓ RCR -ULR PtAg Partial Wrap with Sn96 Solder					

* Applies to 0302 only.
◇ Other Values Available. Contact factory.
† Based on smallest size & mounting in matched continuous 50Ω system with proper application of RF principles.
** Rated at 70°C free air temperature.

Modelithics data available



High Voltage Surface Mount
Chip Resistors

HVI Series

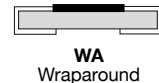
- High Rated Continuous Working Voltage
- High Stability Thick Film Resistor Element
- 96% Al₂O₃ Substrate Material Provides Excellent Solder Leach Resistance
- Trimmed to EIA Standard Values
- Tolerances to ± 1%
- Passivated Resistor Element
- Available in Cut Tape or on Tape and Reel Packaging



- Applications Include:**
- Power Supplies
 - Power Converters
 - Defibrillators
 - Pacemakers
 - Power Metering Devices

SAMPLE PN: HVI - 2010 - 4005 J (2010 Size, 40 MegΩ, 5%)

Attachment/ Term Metal	Size	Rated Power†	Max RCW Voltage ¹	Max Overload Voltage ¹	Value Range F = 1% Tolerance	Value Range J = 5% Tolerance	Value Range K = 10% Tolerance
✓ HVI <small>Nickel barrier layer with 100% matte finish</small>	0402	62.5mW	100V	200V	39K to 10MΩ	39K to 100MΩ	N/A
	0603	100mW	200V	400V	56K to 10MΩ	56K to 100MΩ	N/A
	0805	125mW	400V	800V	100K to 10MΩ	100K to 100MΩ	N/A
	1206	250mW	500V	1kV	100K to 10MΩ	100K to 100MΩ	N/A
	2010	500mW	2kV	3kV	51K to 20MΩ	51K to 100MΩ	N/A
	2512	1W	3kV	4kV	30K to 20MΩ	30K to 100MΩ	N/A



¹ Operating Voltage = √(P*R) or Max RCW Voltage, whichever is lower.
† Free air rated at 70°C.
◇ First 3 digits of value code are significant value. The 4th is the number of zeros following. An 'R' indicates a decimal when resistance is under 100Ω.
* Not all values are available in all tolerances. See datasheet on the website.



Single-Sided Resistors

IMS Single Sided

- Gold Terminals Provide Excellent Wire Bondability
- Ultra High Resistance Available
- PtAg or PtAg with Sn62 Solder Available
- Non-Magnetic PtAg Great for Epoxy Attachment

Larger bond pads and optional metallized backplane are available.

This series is ideal for hybrids and microstrip circuits.



SS
Single Sided



SB
Single Sided
W/ Backplane

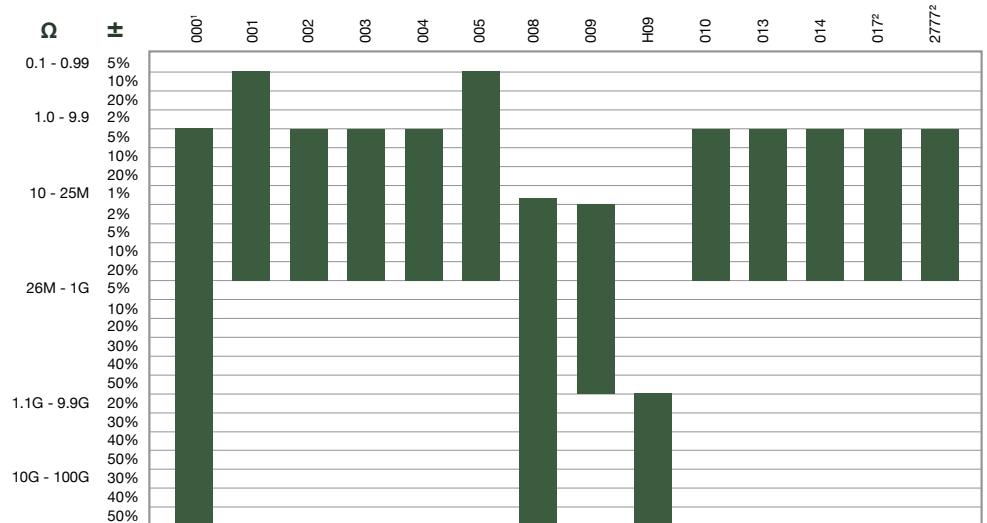
1. Available with Au (-1) terminals only.
 2. Available in 10% and higher tolerances only
- *1%, 2% not available over 1Mohm.

† Free air rated at 70°C.

◊ First 3 digits of value code are significant value. The 4th is the number of zeros following.
An 'R' indicates a decimal when resistance is under 100Ω. For 1 Teraohm use code 1.0T (if available).

SAMPLE PN: IMS017 - 1 - 1201 F (0.025" x 0.030" Size, 1.2KΩ, 1%, Au Terminals)

PN Prefix	Size (inches)	Rated Power†	Max RCW Voltage	Term Metal	Value Range◊	Tolerance Ranges*
IMS017 ¹	0.025 x 0.030	30mW	40VDC	-1 ✓ Au Single-sided	1Ω to 25MΩ	F = 1% 1Ω to 25MΩ G = 2% 1Ω to 25MΩ J = 5% 1Ω to 200MΩ K = 10% 1Ω to 1GΩ ² M = 20% 1Ω to 100GΩ ² N = 30% 1.2GΩ to 1TΩ ² P = 40% 1Ω to 100GΩ R = 50% 1.2GΩ to 1TΩ
IMS000	0.045 x 0.030	125mW	60VDC		1Ω to 1TΩ	
IMS001	0.050 x 0.050	125mW	60VDC	-3 ✓ PtAg Single-sided	0.1Ω to 25MΩ	
IMS014 ¹	0.035 x 0.035	125mW	50VDC		1Ω to 25MΩ	
IMS002	0.075 x 0.050	175mW	100VDC	-C PtAg Single-sided with Sn62 Solder	1Ω to 25MΩ	
IMS009	0.080 x 0.050	175mW	150VDC		10Ω to 1GΩ	
IMSH09 ²	0.080 x 0.050	175mW	150VDC	-P ✓ PtAg Single-sided with Sn96 Solder	1.2GΩ to 1TΩ	
IMS008	0.100 x 0.025	100mW	175VDC		10Ω to 1TΩ	
IMS003	0.100 x 0.050	250mW	160VDC	1Ω to 25MΩ		
IMS010	0.125 x 0.050	250mW	230VDC	1Ω to 25MΩ		
IMS004	0.150 x 0.050	350mW	350VDC	1Ω to 25MΩ		
IMS005	0.100 x 0.100	500mW	160VDC	0.1Ω to 25MΩ		
IMS013 ¹	0.045 x 0.030	125mW	60VDC	1Ω to 25MΩ		
IMS2777 ¹	0.030 x 0.020	30mW	40VDC	1Ω to 25MΩ		



Jumpers are available in all sizes.

1. Larger bond pads available for auto wirebonding.

2. Highest Value for 1% or 2% Tolerance is 1MΩ.



HI-OHM

RoHS

Sn62

NON-MAG

BONDABLE

High Power Single-Sided
Alumina Resistors

IMS Power Series

- High Power Dissipation
- Sn62 Solder Available
- Non-Magnetic

Optional metallized backplane is available on all sizes.

**For Higher Power Options
See Page 6**

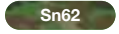


SAMPLE PN: IMS204 - C - 12R0 J (0.440" x 0.180" Size, 12Ω, 5%, PtAg w/ Sn62 Solder Terminals)

PN Prefix	Length		Width		Rated Power†	Max RCW Voltage	Term Metal	Value Range◇	Tolerance Ranges
IMS024	0.240	+0.008	0.120	+0.008	1W	350VDC	-1 ✓ Au Single-sided	1Ω to 20MΩ	F = 1% 1Ω to 20MΩ G = 2% 1Ω to 20MΩ J = 5% 1Ω to 20MΩ K = 10% 0.05Ω to 20MΩ *IMS026 available in 10% tolerance only.
		-0.002		-0.002					
IMS026*	0.120	+0.008	0.240	+0.012	1W	1VDC	-3 ✓ PtAg Single-sided	0.05Ω to 1Ω	
		-0.002		-0.008					
IMS202	0.360	+0.008	0.140	+0.008	2W	800VDC	-C PtAg Single-sided with Sn62 Solder	1Ω to 20MΩ	
		-0.002		-0.002					
IMS204	0.440	+0.008	0.180	+0.008	4W	1100VDC	-P ✓ PtAg Single-sided with Sn96 Solder	1Ω to 20MΩ	
		-0.002		-0.002					
IMS206	0.520	+0.008	0.215	+0.008	6W	1400VDC		1Ω to 20MΩ	
		-0.002		-0.002					
IMS208	0.560	+0.008	0.240	+0.008	8W	1500VDC		1Ω to 20MΩ	
		-0.002		-0.002					
IMS210	0.620	+0.008	0.270	+0.008	10W	1800VDC		1Ω to 20MΩ	
		-0.002		-0.002					

† Free air rated at 70°C.

◇ First 3 digits of value code are significant value. The 4th is the number of zeros following.
An 'R' indicates a decimal when resistance is under 100Ω. For 1Teraohm use code 1.0T (if available).



Full Wrap & Single Wrap to Ground Resistors RCX Series

- Values from 1Ω to 1TΩ
- Not Limited to EIA Standard Values
- Sn62 Solder Available
- Non-Magnetic



1. PtAu on wrap terminal (GND side), Au over PtAu on input terminal for 0302 and 0402 only
2. RCX-0302 available in 5% and 10% tolerances.
3. RCX-0402 through RCX-2512 available in 1%, 2%, 5% and 10% tolerances.
4. Values over 200MΩ available in 10%, 15%, 20%, 30%, 35%, 40%, and 50% tolerances.

* SG available in RCX-0302 and RCX-0402 only.

Substitute **SG** in place of dash after size to indicate Single Wrap to Ground terminal style.

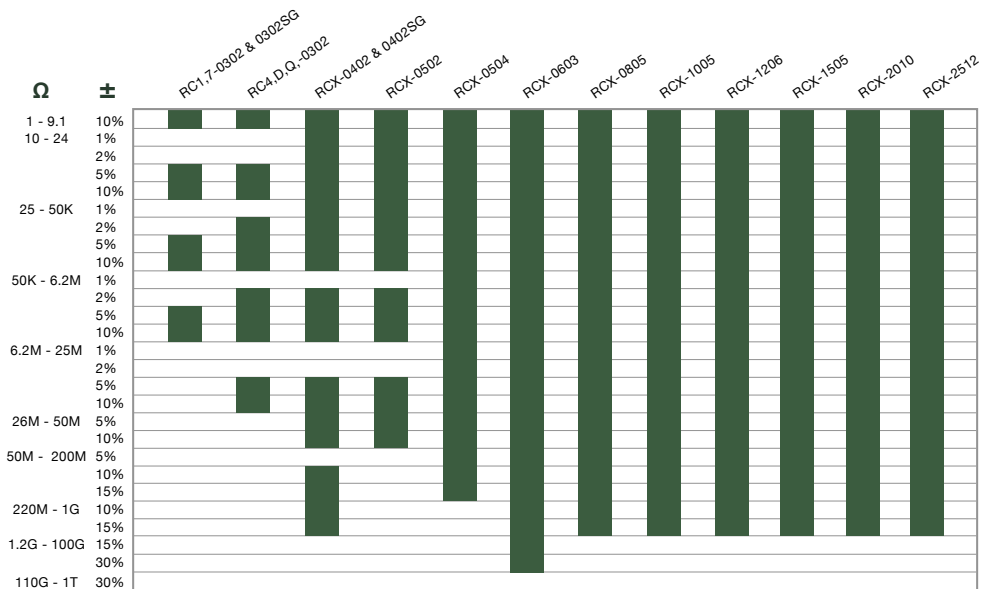
† Free air rated at 70°C

∅ First 3 digits of value code are significant value. The 4th is the number of zeros following.
An 'R' indicates a decimal when resistance is under 100Ω.

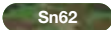
SAMPLE PN: **RCC** - **0805** - **2003** **J** (0805 Size, 200KΩ, 5%, PtAg w/ Sn62 Solder Terminals)

Attachment/ Term Metal	Size	Rated Power†	Max RCW Voltage	Value Range ^{∅4}	Tolerance Ranges
✓ RC1 -Au Wraparound	0302 ²	63mW	50VDC	1Ω to 25MΩ	F = 1% 10Ω to 25MΩ G = 2% 5Ω to 25MΩ J = 5% 1Ω to 200MΩ K = 10% 1Ω to 1GΩ L = 15% 1Ω to 50GΩ M = 20% 1Ω to 100GΩ N = 30% 1Ω to 100GΩ P = 40% 1Ω to 100GΩ
✓ RC3 -PtAg Wraparound	0402 ³	80mW	50VDC	1Ω to 1TΩ	
✓ RC4 -*PtAu Single Wrap	0502	100mW	50VDC	1Ω to 50MΩ	
✓ RC7 -Au over PtAu ¹	0504	125mW	50VDC	1Ω to 200MΩ	
✓ RC8 -ULR PtAg Wraparound	0603	100mW	50VDC	1Ω to 1TΩ	
RCC -PtAg Wraparound with Sn62 Solder	0805	175mW	150VDC	1Ω to 1GΩ	
RCD -*PtAu Single Wrap with Sn62 Solder	1005	250mW	160VDC	1Ω to 1GΩ	
RCH -ULR PtAg Wraparound with Sn62 Solder	1206	250mW	200VDC	1Ω to 1GΩ	
✓ RCP -PtAg Wraparound with Sn96 Solder	1505	250mW	200VDC	1Ω to 1GΩ	
✓ RCQ -PtAu w/ Sn96 Solder	2010	500mW	200VDC	1Ω to 1GΩ	
✓ RCR -ULR PtAg Wraparound with Sn96 Solder	2512 ³	1W	200VDC	1Ω to 1GΩ	

Not all values and tolerances available in all sizes.



Consult factory for additional values, sizes and tolerances.



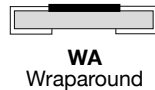
Thick Film Nickel Barrier
Solderable Resistors
RXI Series

- Large Inventory Available for Same-day Shipping
- Partial Reel Quantities Available
- Low Minimum Order Quantities
- 100% Matte Tin Finish over Nickel Barrier Terminals



SAMPLE PN: **RCI** - **0402** - **49R9 F** (0402 Size, 49.9Ω, 1%, Nickel Barrier Terminals)

PN Prefix	Size	Rated Power†	Max RCW Voltage	Value Range∅	Tolerances
✓ RCI- Nickel Barrier Layer with 100% Matte Tin Finish	01005	30mW	15VDC	E96 Values - 10Ω to 1MΩ	F = 1%
				E24 Values - 1Ω to 10MΩ	J = 5%
	0201	50mW	25VDC	E96 Values - 10Ω to 1MΩ	F = 1%
				E24 Values - 1Ω to 10MΩ	J = 5%
	0402	63mW	50VDC	E96 Values - 1Ω to 10MΩ	F = 1%
				E24 Values - 1Ω to 10MΩ	J = 5%
	0603	100mW	50VDC	E96 Values - 1Ω to 10MΩ	F = 1%
				E24 Values - 1Ω to 22MΩ	J = 5%
	0805(S)	175mW (350mW)	150VDC	E96 Values - 1Ω to 10MΩ	F = 1%
				E24 Values - 1Ω to 22MΩ	J = 5%
	0805*	125mW	150VDC	E96 Values - 1Ω to 10MΩ	F = 1%
				E24 Values - 1Ω to 22MΩ	J = 5%
1206(S)	250mW (500mW)	200VDC	E96 Values - 1Ω to 10MΩ	F = 1%	
			E24 Values - 1Ω to 22MΩ	J = 5%	
1206*	250mW	200VDC	E96 Values - 1Ω to 10MΩ	F = 1%	
			E24 Values - 1Ω to 22MΩ	J = 5%	
2010(S)*	750mW (1W)	200VDC	E96 Values - 1Ω to 1MΩ	F = 1%	
			E24 Values - 1Ω to 1MΩ	J = 5%	
2512(S)*	1W (2W)	200VDC	E96 Values - 1Ω to 1MΩ	F = 1%	
			E24 Values - 1Ω to 1MΩ	J = 5%	
✓ RLI- Low Value Nickel Barrier Layer with 100% Matte Tin Finish	0805	125mW	150VDC	E24 Values - 0.1Ω to 1Ω	G = 2%
				E24 Values - 0.1Ω to 1Ω	J = 5%
	1206	250mW	200VDC	E24 Values - 0.1Ω to 1Ω	G = 2%
	1210	500mW	200VDC	E24 Values - .068Ω to 1Ω	J = 5%



† Free air rated at 70°C

∅ First 3 digits of value code are significant value. The 4th is the number of zeros following
An 'R' indicates a decimal when resistance is under 100Ω.

* User trimmable versions, non-EIA values and tolerances available, contact factory

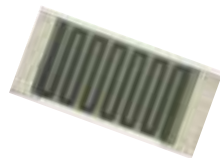


High Value Wraparound Resistors HCX Series

- Ultra High Resistance
- Not Limited to EIA Standard Values
- Sn62 Solder Available
- Non-Magnetic

Applications Include:

- Sensors
- Current Flow Management
- Test & Measurement
- Piezoelectrics



SAMPLE PN: HCC - 2010 - 3009 N (2010 Size, 300GΩ, 30%, PtAg w/ Sn62 Solder Terminals)

Attachment/ Term Metal	Size ¹	Rated Power [†]	Max RCW Voltage	Value Range [‡]	Tolerance Ranges
✓ HC3- PtAg Wraparound	0805	175mW	150VDC	1.2GΩ to 1TΩ	L = 15% 1.2G to 1TΩ M = 20% 1.2G to 1TΩ N = 30% 1.2G to 1TΩ P = 40% 1.2G to 1TΩ R = 50% 1.2G to 1TΩ
	1206	250mW	200VDC	1.2GΩ to 1TΩ	
HCC- PtAg Wraparound with Sn62 Solder	2010	500mW	200VDC	1.2GΩ to 1TΩ	
✓ HCP- PtAg Wraparound with Sn96 Solder					
✓ HCR- ULR PtAg Wraparound with Sn96 Solder					

¹ Smaller sizes available. Please contact factory.

[†] Free air rated at 70°C

[‡] First 3 digits of value code are significant value. The 4th is the number of zeros following.
For 1Teraohm use code 1.0T. (if available).



HI-OHM

RoHS

Sn62

NON-MAG

Current Sensing Thin Film
Nickel Barrier Resistors

LCI Series


- Ultra Low Resistance
- 100% Matte Tin Finish over Nickel Barrier Terminals
- Values from 0.003Ω

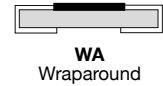
Applications Include:

- Stepping Motors
- Switching Power Supplies
- Voltage Regulation
- DC-DC Converters
- Battery Monitors



SAMPLE PN: LCI - 1225 - R047 J (1225 size, 0.047Ω, 5% with Nickel Barrier)

PN Prefix	Size	Length	Width	Height (max)	Thickness (max)	Rated Power†	mΩ∅	TCR	Max RCW Voltage	Tolerances
LCI-  Nickel Barrier Layer with 100% Matte Tin Finish	0402	0.039±.002	0.020±.002	0.017	0.008±.004	63mW	50-100 102-500 510-1000	±400 ±300 ±200	= √PR	F = 1% G = 2% J = 5%
	0603	0.063±.004	0.031±.004	0.022	0.012±.008	100mW	20-50 50-100 102-500 510-1000	±600 ±400 ±300 ±200		
	0805	0.079±.006	0.049±.006	0.026	0.016±.010	125mW	20-50 51-100 102-500 510-1000	±600 ±400 ±300 ±200		
	1206	0.120±.006	0.061±.006	0.026	0.016±.010	250mW	10-20 21-50 51-91 100-1000	±600 ±400 ±300 ±200		
	2010	0.197±.008	0.096±.006	0.030	0.020±.010	750mW	10-20 21-50 51-91 100-1000	±600 ±400 ±300 ±200		
	2512	0.250±.008	0.124±.006	0.028	0.022±.010	1W	10-20 21-50 51-91 100-100	±600 ±400 ±300 ±200		
	1225	0.122±.006	0.248±.006	0.041	0.022±.010	3W	3-5 6-20 21-30 33-1000	±300 ±200 ±150 ±100		



† Free air rated at 70°C.

∅ First 3 digits of value code are significant value. The 4th is the number of zeros following.
An 'R' indicates a decimal when resistance is under 100Ω.



RoHS

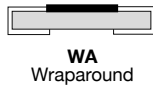
LOW TCR

Precision Thin Film
Nickel Barrier Resistors

TPI Series

- Low TCRs and Tight Tolerances
- Large Inventory for Same Day Shipping
- Partial Reel Quantities Available
- 100% Matte Tin Finish over Nickel Barrier Terminals
- Low Minimum Order Quantities

Tighter Tolerances to
0.01% Available.
Please contact factory.



SAMPLE PN: TPI - 0402 - 49R9 B (0402 Size, 49.9Ω, 0.1% with Nickel Barrier)

PN Prefix	Size	Length	Width	Height (max)	Rated Power†	Max RCW Voltage	Value Range∅	Tolerances
TPI- Nickel Barrier Layer with 100% Matte Tin Finish	0402	0.039 ±.002	0.020±.002	0.016	63mW	25VDC	E96 Values - 10Ω to 205KΩ	B = 0.1% D = 0.5%
	0603	0.063±.008	0.031±.008	0.022	63mW	50VDC	E96 Values - 4.7Ω to 1MΩ	B = 0.1%
							E96 Values - 2Ω to 1MΩ	D = 0.5%
	0805	0.079±.008	0.049±.008	0.026	100mW	100VDC	E96 Values - 4.7Ω to 2MΩ	B = 0.1%
							E96 Values - 1Ω to 2MΩ	D = 0.5%
	1206	0.124±.010	0.063±.008	0.026	125mW	150VDC	E96 Values - 4.7Ω to 2.5MΩ	B = 0.1%
							E96 Values - 1Ω to 2.5MΩ	D = 0.5%
	1210	0.124±.006	0.100±.006	0.026	250mW	150VDC	E96 Values - 4.7Ω to 2.5MΩ	B = 0.1%
E96 Values - 1Ω to 2.5MΩ							D = 0.5%	
2010	0.200±.006	0.100±.006	0.026	250mW	150VDC	E96 Values - 4.7Ω to 3MΩ	B = 0.1%	
						E96 Values - 1Ω to 3MΩ	D = 0.5%	
2512	0.250±.006	0.122±.006	0.026	500mW	150VDC	E96 Values - 4.7Ω to 3MΩ	B = 0.1%	
						E96 Values - 1Ω to 3MΩ	D = 0.5%	

* Available as special order only
Add "N" after size for 10PPM
Add "V" after size for 5PPM
(i.e. TPI-0805V-49R9B for 5PPM)

† Free air rated at 70°C.

∅ First 3 digits of value code are significant value. The 4th is the number of zeros following.
An 'R' indicates a decimal when resistance is under 100Ω.

TCR

Part	25 ppm/°C	10 ppm/°C3	5 ppm/°C3
TPI-0402	10Ω to 205KΩ	49.9Ω to 12KΩ	49.9Ω to 3KΩ
TPI-0603	2Ω to 1MΩ	4.7Ω to 332KΩ	24.9Ω to 15KΩ
TPI-0805	1Ω to 2MΩ	4.7Ω to 500KΩ	24.9Ω to 30KΩ
TPI-1206	1Ω to 2.5KΩ	4.7Ω to 1MΩ	24.9Ω to 50KΩ
TPI-1210	1Ω to 2.5KΩ	4.7Ω to 1MΩ	24.9Ω to 100KΩ
TPI-2010	1Ω to 3MΩ	4.7Ω to 1MΩ	24.9Ω to 100KΩ
TPI-2512	1Ω to 3MΩ	4.7Ω to 1MΩ	24.9Ω to 100KΩ

Available as special order. Add 'N' after size for 10 ppm. Add 'V' after size for 5 ppm.



RoHS

LOW TCR

KIT

Metal Foil Current Sensing Surface Mount Chip Resistors MLI Series

- High Stability Metal Foil Technology
- Single Sided or Full Wraparound Terminals
- 100% Tin over Nickel Barrier for Solder Attachment
- Resistance Values from 0.001Ω to 0.500Ω
- Tolerances to ± 1%
- TCR to ± 50 PPM/°C
- Available in Cut Tape or on Tape and Reel Packaging



SAMPLE PN: **MLI - 1835WA - R005 E** (1835 Size, wraparound, 5 milliohms, 1%)

PN Prefix	Size	Length ± 0.008"	Width ± 0.008"	Thickness (max)	Terminal Width	Rated Power†	Value Range◇	Tolerance	Attachment Method	Terminal Metallization
MLI Nickel Barrier Layer with 100% Matte Tin Finish	1835SS	.180"	.350"	0.028"	2 mΩ up 0.028" 1 mΩ 0.063"	5W	.001Ω .002Ω .003Ω - up	±5% ±2% ±1%	Solder	NiCr/Ni/Sn
	1835WA	.180"	.350"	0.028"	2 mΩ up 0.028" 1 mΩ 0.063"	4W	.001Ω .002Ω .003Ω - up	±5% ±2% ±1%	Solder	NiCr/Ni/Sn
	2043SS	.200"	.430"	0.028"	2 mΩ up 0.031" 1 mΩ 0.063"	6W	.001Ω .002Ω .003Ω - up	±5% ±2% ±1%	Solder	NiCr/Ni/Sn
	2043WA	.200"	.430"	0.028"	2 mΩ up 0.031" 1 mΩ 0.063"	5W	.001Ω .002Ω .003Ω - up	±5% ±2% ±1%	Solder	NiCr/Ni/Sn

† Free air rated at 70°C.

Highest resistor value is 500 mΩ (R500).

◇ First 3 digits of value code are significant value. The 4th is the number of zeros following.

An 'R' indicates a decimal when resistance is under 100Ω.

For example: 0.005Ω is noted as R005, 0.05Ω is noted as R050.



SS
Single Sided



WA
Wraparound

Item	Specification
Operating Temperature:	-55°C to +150°C
TCR:	1 mΩ ± 200 ppm/°C 2 mΩ ± 100 ppm/°C 3 mΩ up ± 50 ppm/°C
Resistance Range	1 mΩ - 9 mΩ (1 mΩ steps) 10 mΩ - 500 mΩ (E-6 values)
Substrate Material	99.6% Alumina



RoHS

LOW TCR

Thin Film Nickel Barrier Attenuators A-Series

- Characterized to 50GHz †
- 100% Matte Tin Finish over Nickel Barrier Terminals
- 50 Ohm Nominal Impedance
- Sample Kits Available
- Low Minimum Order Quantities
- Available in Cut Tape or on Tape and Reel Packaging



◊ Other Values Available. Contact factory.
 † Based on smallest size & mounting in matched continuous 50Ω system with proper application of RF principles.
 * Max RCW Voltage Based on $\sqrt{P \cdot R}$.
 ** Rated at 70°C free air temperature.

SAMPLE PN: **A - 0805 - C - 03DB** (0805 Size, 50Ω, 3dB, Nickel Barrier Terminals)

	PN Prefix/Size	Length	Width	Height (max)	Terminal (mins)	Value Range◊	Rated Power**
✓	A-0402WA-C	0.039 ±.002	0.020 ±.002	0.015"	0.011 ±.002	00 to 10dB	32mW
✓	IMS2652-C	0.039 ±.002	0.020 ±.002	0.015"	0.011 ±.002		32mW
✓	IMS2647 (0402 face down)	0.039 ±.002	0.020 ±.002	0.015"	0.011 ±.002		32mW
✓	A-0603-C	0.063 ±.004	0.032 ±.004	0.020"	0.020 ±.006		63mW
✓	IMS2533 (0603 face down)	0.063 ±.004	0.032 ±.004	0.020"	0.020 ±.006		63mW
✓	A-0805-C	0.079 ±.008	0.049 ±.008	0.020"	0.020 ±.008		100mW
✓	IMS1141 (0805 face down)	0.079 ±.008	0.049 ±.008	0.020"	0.020 ±.0082	100mW	
✓	A-1206-C	0.126 ±.008	0.063 ±.008	0.020"	0.039 ±.010	00 to 10dB, 16dB	125mW
✓	A-1612	0.165 ±.008	0.118 ±.008	0.038"	0.035 ±.020	00 to 10dB, 16dB	250mW

Input Power

	A-0402WA IMS2647 IMS2652	A-0603 IMS2533	A-0805 IMS1141	A-1206	A-1612
1dB	155mW	300mW	485mW	607mW	1.2W
2dB	87mW	171mW	271mW	339mW	678mW
3dB	64mW	126mW	200mW	251mW	501mW
4dB	53mW	105mW	166mW	208mW	415mW
5dB	47mW	92mW	146mW	183mW	365mW
6dB	43mW	85mW	134mW	168mW	336mW
7dB	40mW	79mW	125mW	156mW	313mW
8dB	38mW	75mW	119mW	148mW	297mW
9dB	37mW	72mW	114mW	143mW	286mW
10dB	36mW	70mW	111mW	139mW	278mW

Modelithics data available



RoHS

KIT

High Power AlN Thick Film Attenuators V-Series

- High Power Dissipation†
- Aluminum Nitride Substrate
- Sn62 Solder
- Attenuation to 30dB
- Half dB Increments
- 50 Ohm Nominal Impedance



SAMPLE PN: V G 3 - 3725 SG - 05D0 (3725 Size, 22dB, PtAg Terminals)

PN	Thickness	Term Metal	Size	5db, T = 50°C	3db, T = 100°C	Term Style	Value Range	Attenuation Accuracy		
V	D = 0.015" G = 0.025"	3- ✓ PtAg	D-2010	56W	37W	WA Wraparound 	00dB to 30dB	'0' indicates whole dB increments.	0 - 3dB	±0.2dB
			D-2512	125W	81W				3.5 - 13dB	±0.3dB
		D-3725	423W	276W	SG Single Wrap to Ground 	'5' indicates 0.5dB increments up to 16.5dB.			13.5 - 30dB	±0.5dB
		G-2010	34W	22W						
		G-2512	75W	49W						
		G-3725	254W	165W						

Other sizes, power ratings and values can be supplied.
 † Based on smallest size & mounting in matched continuous 50Ω system with proper application of RF principles.
 For pulsed power applications, a scan trim should be specified. Please contact factory for more information.

Modelithics data available

RoHS COMPLIANT

ULR

HI PWR

RoHS

Sn62

NON-MAG

BONDABLE

Thick Film Attenuators IAX Series

- Attenuation to 70dB
- Half dB Increments
- 50 Ohm Nominal Impedance



SAMPLE PN: IAC - 2512 WA - 06D5 (2512 Size, 6.5dB, PtAg w/ Sn 62 Terminals)

PN Prefix/Term Metal	Size	Rated Power	Term Style	Value Range	Attenuation Accuracy			
✓ IA1-*Au	0706	300mW	WA Wraparound 	00dB to 70dB	'0' indicates whole dB increments.	0 - 3.5dB	±0.2dB	
✓ IA3 - PtAg	0805	400mW				SG Single Wrap to Ground 	'5' indicates 0.5dB increments up to 16.5dB.	4 - 13dB
✓ IA8 - ULR PtAg	1206	1W	SS* Single Sided 					13.5 - 70dB
IAC- PtAg with Sn62 Solder	2010	3W			PW Partial Wrap 			
IAH- ULR PtAg with Sn62 Solder	2512	5W						
✓ IAP- PtAg with Sn96 Solder	3725	15W						

*Single Sided & Au terminals available in 0706 size only.

Modelithics data available

RoHS COMPLIANT

ULR

RoHS

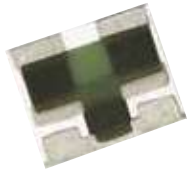
Sn62

NON-MAG

BONDABLE

Standard Size T-Pad Attenuators IMA Series

- 0.122" x 0.145" Size
- Characterized to 12.4GHz[†]
- Sn62 Solder Available
- Attenuation to 40dB
- Half dB Increments



SAMPLE PN: IMA2373 - 12 D0 (0.122" x 0.145" Size, 12dB, PtAg Terminals)

PN Prefix	Term Style	Term Metal	Rated Power [‡]	Increment	Accuracy	Value Range [◊]
IMA2314	Wraparound	PtAg w/ Sn62	2W	1 - 3.5dB	+/-0.2dB	dB Increment D0 denotes whole value D5 denotes whole value + 0.5dB, available up to 16.5 dB
IMA2370	Single-Sided w/ Backplane	PtAg w/ Sn62	2W	4 - 19dB	+/-0.3dB	
IMA2371	Single Wrap to Ground	PtAg w/ Sn62	2W	20 - 30dB	+/-0.5dB	
✓ IMA2373	Wraparound	PtAg	2W	31-40dB	+/-1.0dB	
✓ IMA2381	Single-Sided	PtAg	2W			
✓ IMA2609	Wraparound	PtAg w/ Sn96	2W			
✓ IMA2686	Wraparound	ULR PtAg	2W			

[†] Based on smallest size & mounting in matched continuous 50Ω system with proper application of RF principles.
[‡] Rated at 70°C free air temperature. Rated at 100°C baseplate temperature. Proper thermal management required.



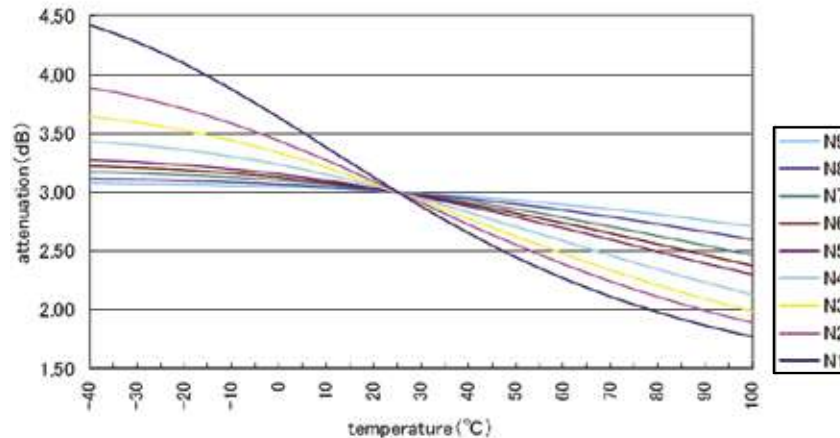
Temperature Variable Attenuators AV-0805

- NiCr Thin Film
- DC to 5GHz
- Impedance - 50Ω
- Power Rating - 63 mW
- Temperature Curves from N1 to N9
- Operating Temperature: -40°C to +100°C
- Available in Cut Tape or on Tape and Reel Packaging



SAMPLE PN: AV - 0805 C - 03 N6 (0805 Size, nickel barrier, tin, wraparound, 3 dB N6)

PN Prefix	Size	Impedance	Attenuation	Temperature Curve
✓ AV	0805	C = 50Ω	1 to 10 dB	N1 to N9

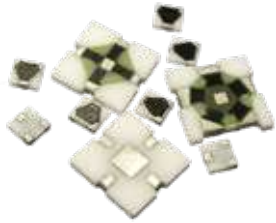


Temp vs Attenuation N1-N9 curves are also available for 1dB - 10dB values



Wideband Resistive Splitters IPS Series

- Characterized to 20GHz†
- Two, Three or Four Way Split
- Alternative to Softboard Solutions
- Many Term Material and Presence of Backplane (BP) Available



SAMPLE PN: **IPS2345 - C** (2 Way, 1W, 50Ω Impedance, PtAg Terminals)

PN Prefix	Split	Size	Term Style	Term Material	Frequency†	Rated Power‡	Impedance	
✓ IPS2290	2 Way	0.098" x 0.098"	Single-Sided	PtAg/PtAg BP	To 20GHz	1W	C=50Ω or D=75Ω	
✓ IPS2331	2 Way	0.098" x 0.098"	Single-Sided	Au/Au BP	To 20GHz	1W	C=50Ω or D=75Ω	
✓ IPS2346	2 Way	0.098" x 0.098"	Wraparound	PtAg	To 20GHz	1W	C=50Ω or D=75Ω	
✓ IPS2480	3 Way	0.240" x 0.240"	Single-Sided	Au/Au BP	To 7GHz	3W	C=50Ω or D=75Ω	
✓ IPS2481	3 Way	0.240" x 0.240"	Single-Sided	PtAg/PtAg BP	To 7GHz	3W	C=50Ω or D=75Ω	
✓ IPS2521	3 Way	0.240" x 0.240"	Wraparound	PtAg/PtAg BP	To 7GHz	3W	C=50Ω or D=75Ω	
✓ IPS2522	4 Way	0.295" x 0.287"	Wraparound	PtAg/PtAg BP	To 7GHz	3W	C = 50Ω	
	IPS2528	2 Way	0.098" x 0.098"	Wraparound	PtAg w/Sn62	To 20GHz	1W	C=50Ω or D=75Ω
✓ IIPS2640	2 Way	0.098" x 0.098"	Wraparound	PtAg w/Sn96	To 20GHz	1W	C=50Ω or D=75Ω	
	IPS2645	2 Way	0.098" x 0.098"	Single-Sided	PtAg w/Sn62	To 20GH	1W	C=50Ω or D=75Ω
✓ IPS2649	2 Way	0.098" x 0.098"	Wraparound	ULR PtAg w/Sn96	To 20GHz	1W	C=50Ω or D=75Ω	
✓ IPS2656	2 Way	0.098" x 0.098"	Wraparound	ULR PtAg	To 20GHz	1W	C=50Ω or D=75Ω	
✓ IPS2668	2 Way	0.098" x 0.098"	Single-Sided	PtAg/marked BP	To 20GHz	1W	C=50Ω or D=75Ω	
	IPS2669	2 Way	0.098" x 0.098"	Partial Wrap	ULR PtAg w/ Sn62	To 20GHz	1W	C=50Ω or D=75Ω

† Based on mounting in a matched continuous 50Ω system with proper RF techniques.

‡ Rated at 70°C free air temperature. Rated at 100°C baseplate temperature.
Proper thermal management required.



RoHS

Sn62

NON-MAG

BONDABLE

Thin Film Splitters IPT Series

SAMPLE PN: IPT - 0402WA C - U (0402 Size, 50Ω impedance, taped face down)

PN Prefix	Size	Max Power	Rated Power	Impedance	Packaging
IPT	0402WA	200mW	100mW	C = 50Ω	U - T/R face down
	0603WA	200mW	100mW	C = 50Ω	Blank - T/R U - T/R face down
	0805WA	250mW	125mW	C = 50Ω	Blank - T/R U - T/R face down
	1206WA	500mW	250mW	C = 50Ω	Blank - T/R U - T/R face down

- 96% Alumina Substrate
- NiCr Resistive Element
- Broadband to 30 GHz (face down mounting)
- 100% Matte Tin Terminals
- Sizes from 0402 to 1206

- Three Resistor “Y” Configuration
- Wraparound Terminals
- Available in Cut Tape or on Tape and Reel Packaging



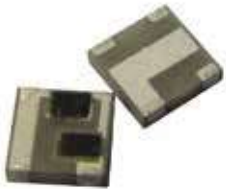
Wideband Resistive Couplers

IMK Series

- 0.120" x 0.120" Size
- Characterized to 15GHz†

Applications Include:

- RF Amplifiers
- Signal Analyzers
- Transmitters



SAMPLE PN: IMK2549 - 18dB (0.12" x 0.12" Size, 18dB coupler, PtAg Terminals)

	PN Prefix	Direction	Term Style	Term Material	Impedance	Frequency	Rated Power†	Value Range
✓	IMK2549	Right	Wraparound	PtAg	C = 50Ω	To 15GHz	1W Dissipated	06 to 30dB
✓	IMK2550	Left	Wraparound	PtAg	C = 50Ω	To 15GHz	1W Dissipated	06 to 30dB
✓	IMK2574	Right	Wraparound	Au (Inputs) PtAu (GND)	C = 50Ω	To 15GHz	1W Dissipated	06 to 30dB
✓	IMK2575	Left	Wraparound	Au (Inputs) PtAu (GND)	C = 50Ω	To 15GHz	1W Dissipated	06 to 30dB
	IMK2637	Right	Wraparound	PtAg w/Sn62	C = 50Ω	To 15GHz	1W Dissipated	06 to 30dB
	IMK2638	Left	Wraparound	PtAg w/Sn62	C = 50Ω	To 15GHz	1W Dissipated	06 to 30dB
✓	IMK2650	Left	Wraparound	PtAg w/Sn96	C = 50Ω	To 15GHz	1W Dissipated	06 to 30dB
✓	IMK2658	Left	Wraparound	ULR PtAg	C = 50Ω	To 15GHz	1W Dissipated	06 to 30dB
✓	IMK2659	Left	Wraparound	ULR PtAg w/Sn96	C = 50Ω	To 15GHz	1W Dissipated	06 to 30dB

† Rated at 100°C Baseplate temperature.



ULR

RoHS

Sn62

NON-MAG

BONDABLE

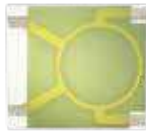
Power Dividers IMD Series

The **IMD Series** power dividers represent an advancement in board level signal processing technology. With alumina construction and highly conductive proprietary film, these devices exhibit low insertion loss, precision performance and repeatability not found in commodity type or LTCC devices.

- 2 to 20GHz Precise Devices Available
- Simple Thick Film Construction
- High Performance Repeatability



WILKINSON



RAT RACE



QUADRATURE

SAMPLE PN: IMD2417 (10GHz Center Frequency SMT Rat Race Divider)

Examples of off-the-shelf IMD Series Dividers

PN	Construction	Center Freq.	Bandwidth	VSWR	Typ. Insertion Loss	Input Power	Size (inches)	Term Style
✓ IMD2435	Wilkinson	6GHz	20%	1.3:1	<0.5dB	20W	0.355 x 0.184	SMT
✓ IMD2365	Wilkinson	6GHz	20%	1.3:1	<0.5dB	20W	0.274 x 0.184	Microstrip
✓ IMD2613	Wilkinson	7GHz	20%	1.3:1	<0.5dB	20W	0.355 x 0.184	Wraparound w/ backplane
✓ IMD2660	Wilkinson	7GHz	20%	1.3:1	<0.5dB	20W	0.355 x 0.184	Single-Sided w/ backplane
✓ IMD2417	Rat Race	9-11GHz	10%	1.3:1	<0.5dB	20W	0.322 x 0.356	SMT
✓ IMD2402	Quadrature	4GHz	10%	1.25:1	<0.4dB	20W	0.481 x 0.441	SMT
✓ IMD2403	Quadrature	4.5GHz	10%	1.25:1	<0.4dB	20W	0.481 x 0.441	SMT

A_N Versions Also Available

Term Style	Microstrip or Wraparound		
Construction	Quadrature - 90° Outputs	Wilkinson - 0° Outputs	Rat Race - 180° Outputs
Typ. Ins. Loss	0.5dB	0.5dB	0.7dB
Design	1/4 Wave	1/4 Wave	3/4 Wave



HI PWR

RoHS

NON-MAG

CUSTOM SOLUTIONS

Since 1974, IMS has been building unique products based on customer supplied drawings to solve design challenges. Here are examples of custom designs and product variations.

- Design Assistance Available
- Rapid & Low Cost Prototyping
- Minimal NRE Cost
- Low Minimum Order Quantities
- Quick Turn Around

Heater Chips

Custom Resistors

Resistor Networks

Custom Attenuators

Jumpers

Dual-Sided Devices

Oversized Terminations

Ultra High Ohmic Values

Ultra Low Ohmic Values

Multi-Function Devices

Stand Alone Bonding Pads

Special Laser Trims

Custom Pad Sizes

High Isolation Splitters

ENGINEERING KITS

IMS offers engineering kits for many popular thick and thin film surface mount products at a reasonable cost. Below are standard engineering kits. Also available are custom kits of nearly any IMS product.

- Convenient source of components when you need them
- Available in 25, 50 or 100 pieces per value

RCI Series Resistor Kits

- RCI-0402 5%
- RCI-0603 1% & 5%
- RCI-0805 1% & 5%
- RCI-1206 1% & 5%
- RCI-2010 1% & 5%
- RCI-2512 1% & 5%

RCX Series PW Resistor Kits

- RCX-0302PW 5%
- RCX-0402PW 5%
- RCX-0502PW 5%
- RCX-0603PW 5%
- RCX-0805PW 5%

TPI Series Kits

- TPI-0603 0.5%
- TPI-0805 0.5%

A-Series Attenuator Kits

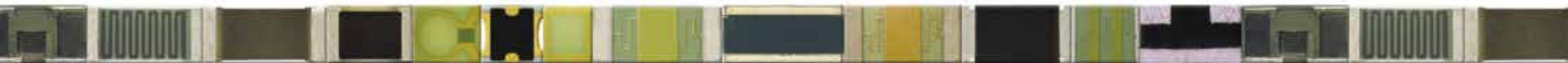
- A-0402WA-C/IMS2647
- A-0603-C
- A-0805-C
- A-1206-C

AS9100D CERTIFIED

International Manufacturing Services, Inc. (IMS) has achieved quality certification to AS9100D. The AS9100D certification is an internationally recognized quality management standard for aerospace, aviation and defense industries, managed by the International Aerospace Quality Group (IAQG). It encompasses the ISO 9001:2015 standards with additional requirements specific to the aerospace industry and is endorsed worldwide by all major aerospace OEMs and suppliers.

The AS9100D certification exhibits IMS's continued commitment to ensuring the highest level of operations and production standards, and enables the company to continue to exceed customer expectations.





International Manufacturing Services, Inc.
50 Schoolhouse Lane
Portsmouth, RI 02871

P: 401.683.9700

F: 401.683.5571

www.ims-resistors.com