







Resistors EMI Filters

Passive Components

Excellence in Electronics



www.rohm.com



■Ultra-low Ohmic Chip Resistors for Current Detection (i.e. PMR03 series)

Trimming-less structure improves current detection accuracy. Optimal for large current high-speed switching circuits.

Resistance range: $1m\Omega$ to $10m\Omega.$

■Fixed Thick Film Low Ohmic Chip Resistors: (i.e.UCR10)

This chip resistor for current detection features a thick film resistive element and comes in a lineup of low resistances ranging from $11m\Omega$ to 0.91Ω .

■High Power, Low Ohmic Wide Terminal Chip Resistors (i.e. LTR10 series)

Chip resistors for current detection.

Positioning the electrodes lengthwise improves junction reliability – especially with respect to temperature changes.

Resistance range: $47m\Omega$ to 9.1Ω .

■ Ultra-low Ohmic Wide Terminal Chip Resistors for Current Detection (i.e. PML50 series)

Available from as low as $0.5m\Omega$, the wide terminal configuration improves both junction reliability and heat dissipation.

■ Anti-surge Chip Resistors (i.e. ESR03 series)

The novel design prevents current concentration, dramatically improving anti-surge characteristics.

Ideal for sets and circuits requiring surge protection.

■High Voltage Resistance Chip Resistors (i.e. KTR03 series)

At least twice the maximum element voltage of conventional products. The high maximum element voltage makes it suitable for high-voltage circuits.

■High Power Wide Terminal Chip Resistors (i.e. LTR10 series)

The wide terminal structure dramatically improves junction reliability with respect to temperature changes, making it optimized for applications exposed to harsh conditions, such as automotive systems. Resistance range: 10Ω to $1M\Omega$.

■Sulfur-resistant Chip Resistors (i.e. TRR01 series)

These resistors feature a proprietary internal structure with a built-in barrier highly resistant sulfur-rich environments.

■Compact Chip Resistors (MCR004 series)

Optimized for a wide variety of applications, from consumer electronics to vehicle and industrial devices.

Currently the thinnest, most compact chip resistors in the ndustry.

■ Narrow Pitch Paper Tape Chip Resistors (i.e. MCR01 series)

Contains twice the number of resistors in the same reel size as conventional taping products, reducing the amount of packaging waste, storage space, and costs by half while increasing time between reel replacement.

■3-Terminal EMI Filters (MCF18 series)

The entire series comes in the compact 1608 size and supports large currents (4A max.).

Ideal for eliminating noise in power supply lines.

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Dimensions		17 to 18

Resistor Lineup Table

Part No.	Size (inch)	Circuit	Rated power	Tolerance	Resistance range	Operating temperature range	
Compact Thick	Film Chip Resistors < MCR	series>					
New MCR004	0402(01005)		0.031W	J(±5%)	10Ω to 3MΩ	-	
		-		F(±1%) J(±5%)	10Ω to 3MΩ 1Ω to 10MΩ	-55 to +125°C	
MCR006	0603(0201)		0.05W	F(±1%)	10Ω to 10MΩ	- 00 10 1 120 0	
WOTIOOO	0000(0201)		0.00**	D(±0.5%)	100Ω to 100kΩ	-	
		•		J(±5%)	1Ω to 10MΩ		
MCR01	1005(0402)] [] R	0.063W	F(±1%)	10Ω to 2.2MΩ		
		ļ		D(±0.5%)	10Ω to 1MΩ	-	
MODOO	1000(0000)		0.4144	J(±5%)	1Ω to 10MΩ	-55 to +155°C	
MCR03	1608(0603)		0.1W	F(±1%) D(±0.5%)	10Ω to 10MΩ 10Ω to 1MΩ	-55 to +155 0	
		-		J(±5%)	1Ω to 10MΩ	1	
MCR10	2012(0805)		0.125W	F(±1%)	10Ω to 2.2MΩ		
			0.1W	D(±0.5%)	10Ω to 1MΩ		
Thick Film Chip	Resistors <mcr series=""></mcr>	1					
MODIO	0010(1000)		0.25W	J(±5%)	1Ω to 10MΩ	55.1. 15500	
MCR18	3216(1206)		0.125W	F(±1%) D(±0.5%)	10Ω to 2.2MΩ 10Ω to 1MΩ	-55 to +155°C	
		·		J(±5%)	10Ω to 3.3MΩ		
MCR25	3225(1210)	 R	0.25W	F(±1%)	10Ω to 1MΩ	_	
MCR50	E00E(0010)	j [0.5W	J(±5%)	1Ω to 560kΩ	FF to .1059C	
IVICHSU	5025(2010)		0.500	F(±1%)	10Ω to 180kΩ	-55 to +125°C	
MCR100	6432(2512)		1W	J(±5%)	1Ω to 100kΩ		
	` '			F(±1%)	10Ω to 82kΩ		
	Chip Resistors for Current	t Detection <pmr seri<="" td=""><td></td><td>I/+E0/)</td><td>10mΩ</td><td></td></pmr>		I/+E0/)	10mΩ		
PMR03	1608(0603)	-	0.25W	J(±5%) J(±5%)		-	
PMR10	2012(0805)		0.5W	G(±2%)	2, 3, 4, 5, 6,		
	, ,			F(±1%)	7, 8, 9, 10mΩ		
DMD40	2010(1000)	-	Ŷ	0.7514/	J(±5%)	2, 3, 4, 5, 6,	
PMR18	3216(1206)		0.75W	F(±1%)	7, 8, 9, 10mΩ	-55 to +155°C	
PMR25	3225(1210)		1W	J(±5%)	1, 2, 3, 4, 5mΩ		
	0223(1210)			F(±1%)			
PMR50	5025(2010)		1W	J(±5%)	1, 2, 3, 4, 5, 6,	l	
		-		F(±1%) J(±5%)	7, 8, 9, 10mΩ 1, 2, 3, 4, 5, 6,		
PMR100	6432(2512)		2W	F(±1%)	7, 8, 9, 10mΩ		
Fixed Thick Filr	n Low Ohmic Chip Resistor	s <ucr series=""></ucr>					
☆ UCR01	1005(0402)		0.125W	J(±5%)	47mΩ to 910mΩ		
	1000(0.02)	1	0.12011	F(±1%)	171112 10 0 1011122	-	
☆ UCR03	1608(0603)	Ŷ	0.2W	J(±5%)	47mΩ to 910mΩ		
		- ≬R		F(±1%) J(±5%)	11mΩ to 100mΩ	-55 to +155°C	
UCR10	2012(0805)		0.33W	F(±1%)	20mΩ to 100mΩ	_	
	20/0//200	-	0.5144	J(±5%)		-	
	3216(1206)		0.5W	F(±1%)	11mΩ to 100mΩ		
High Power, Lo	w Ohmic Wide Terminal Chi	p Resistors for Curren	t Detection <ltr seri<="" td=""><td>ies></td><td>_</td><td></td></ltr>	ies>	_		
LTR10	2012(0805)		0.5W	J(±5%)	47mΩ to 9.1Ω		
	. (5555)	Ŷ		F(±1%)		-	
☆ LTR18	3216(1206)	Ů R	1W	J(±5%) F(±1%)	47mΩ to 9.1Ω	-55 to +155°C	
		-		J(±5%)		_	
☆ LTR50	5025(2010)		1.5W	F(±1%)	47mΩ to 9.1Ω		
Ultra-low Ohmic	c Wide Terminal Chip Resist	tors for current Detect	ion <pml series=""></pml>				
New PML50	5025(2010)	Î R	2W	J(±5%)	0.5, 1, 1.5, 2mΩ	-55 to +155°C	
New PML100	6432(2512)	ļ	3W	J(±5%)	0.5, 1, 1.5, 2mΩ		
Anti-surge Chip	Resistors <esr series=""></esr>			J(±5%)	10Ω to 10MΩ		
ESR03	1608(0603)	P	0.2W	F(±1%)	10Ω to 10MΩ	-	
Lonos	1008(0003)		0.200	D(±0.5%)	10Ω to 1MΩ	_	
				J(±5%)	1Ω to 10MΩ	-55 to +155°C	
ESR10	2012(0805)		0.25W	F(±1%)	1Ω to 10MΩ		
		- DR		D(±0.5%)	10Ω to 1MΩ		
		3216(1206) 0.33W		J(±5%)	1Ω to 10MΩ		
ESR18	3216(1206)		0.33W	F(±1%) D(±0.5%)	1Ω to 10MΩ 10Ω to 1MΩ	-	
				J(±5%)	1Ω to 10MΩ	-	
ESR25	3225(1210)		0.5W	F(±1%)	1Ω to 10MΩ	†	
LOI 123	0220(1210)		0.011	D(±0.5%)	10Ω to 1MΩ	1	
☆: Under develo	opment *Size :()inch	1		· · · · · ·	'	1	

Part No.	Size (inch)	Circuit	Rated power	Tolerance	Resistance range	Operating temperature range
KTR03	1608(0603)		0.1W	J(±5%) F(±1%)	10Ω to 10MΩ	
KTR10	2012(0805)	Ŷ	0.125W	J(±5%) F(±1%)	1Ω to 10MΩ	FF to .1FF90
KTR18	3216(1206)] R	0.25W	J(±5%) F(±1%)	1Ω to 10MΩ	55 to +155°C
KTR25	3225(1210)		0.33W	J(±5%) F(±1%)	1Ω to 10MΩ	
High Power Wide To	erminal Chip Resistors	<ltr series=""></ltr>		(=173)		
LTR10	2012(0805)		0.25W	J(±5%) F(±1%) D(±0.5%)	10Ω to 1MΩ	
LTR18	3216(1206)	Î] R	0.5W	J(±5%) F(±1%) D(±0.5%)	10Ω to 1MΩ	-55 to +155°C
LTR50	5025(2010)		1W	J(±5%) F(±1%) D(±0.5%)	10Ω to 130kΩ	
Sulfur Tolerance Ch	nip Resistors <trr se<="" td=""><td>ries></td><td></td><td></td><td></td><td></td></trr>	ries>				
TRR01	1005(0402)		0.063W	J(±5%)	1Ω to 10MΩ	
	1000(0.102)		0.00011	F(±1%)	10Ω to 2.2MΩ	
TRR03	1608(0603)	Ŷ	0.1W	J(±5%)	1Ω to 10MΩ	1
	` ′	 R		F(±1%)	10Ω to 10MΩ	-55 to +155°C
☆ TRR10	2012(0805)		0.125W	J(±5%)	1Ω to 10MΩ	-
				F(±1%)	10Ω to 2.2MΩ	-
☆ TRR18	3216(1206)		0.25W	J(±5%)	1Ω to 10MΩ	-
Compact Chin Book	stor Networks <mnr s<="" td=""><td>orion \</td><td></td><td>F(±1%)</td><td>10Ω to 2.2MΩ</td><td></td></mnr>	orion \		F(±1%)	10Ω to 2.2MΩ	
MNR02	100(0402)5 × 2	series /	0.063W	J(±5%)	10Ω to 1MΩ	
IVIIVITUZ	100(0402)3 x 2		0.003	J(±5%)	2.2Ω to 1MΩ	+
MNR12	1608(0603) × 2		0.063W	F(±1%)	10Ω to 1MΩ	+
MNR32	3216(1206) × 2		0.125W	J(±5%)	10Ω to 1MΩ	-55 to +125°C
MNR04	1005(0402) × 4		0.063W	J(±5%)	10Ω to 1MΩ	
		9 9 9		J(±5%)	2.2Ω to 1MΩ	
MNR14	1608(0603) × 4	R1 R2 R3 R4	0.063W	F(±1%)	10Ω to 1MΩ	1
MNR34	3216(1206) × 4		0.125W	J(±5%)	10Ω to 1MΩ	1
Compact 8-element	Chip Resistors Netwo	rks <mnr series=""></mnr>				
MNR15	1608(0603) × 5		0.031W	J(±5%)	56Ω to 100kΩ	
MNR35	3216(1206) × 5		0.063W	J(±5%)	56Ω to 100kΩ	-55 to +125°C
MNR18	1608(0603) × 8		0.063W	J(±5%)	10Ω to 1MΩ	
Chip Attenuators <	RCN series>					
				±0.3dB	1 to 5dB	1
		4 R1 3		±0.5dB	6 to 10dB	1
RCN02	1010(0404)	R2 R2	0.04W	±0.8dB	11 to 13dB	-55 to +125°C
				±1.5dB	14 to 16dB	4
		1 2		±2.0dB	17 to 19dB	-
Chin Trimmer Poter	 ntiometers <mvr serie<="" td=""><td></td><td></td><td>±2.5dB</td><td>20dB</td><td></td></mvr>			±2.5dB	20dB	
MVR22	2(+)		0.05W	N(±25%)	100Ω to 1MΩ	
MVR32	3(+)	O T1 T3	0.1W	N(±25%)	100Ω to 1MΩ	-55 to +125°C
MVR34	3(-)	T1 † T3	0.1W	N(±25%)	100Ω to 1MΩ	1
					<u> </u>	
Narrow Pitch Paper						
	rt No.	Size((inch)	Pitch(Taping)	Basic ordering unit
MCR01ZZPJ		1005((0402)	1r	nm	20,000 pcs.
MCR01ZZPF				<u> </u>		
MCR03MZPJ MCR03MZPF		1608((0603)	2r	nm	10,000 pcs.
MCR0	JOIVIZPF	1		1		<u> </u>
1608-sized EMI Filte	ers <mcf series=""></mcf>					
Part No.	Size(inch)	Circuit	Rated current	Capacitance tolerance	Capacitance(pF)	Operating temperature range
MCF18	1608(0603)		4A	M(±20%)	1.000 to 100.000	-55 to +125°C

☆: Under development *Size: () inch

1608(0603)

1608(0603)

MCF18

☆ MCF18
(High capacitance type)

4A

4A

M(±20%)

M(±20%)

1,000 to 100,000

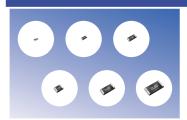
220,000 to 1,000,000

-55 to +125°C

-55 to + 85°C

Ultra-low Ohmic Chip Resistors for Current Detection

PMR series



Features

Small High performance

Summary

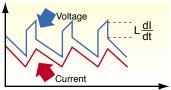
These ultra-low ohmic chip resistors utilize ROHM's original structural design for improved current detection precision. A full lineup is available in varying resistances ranging from $1m\Omega$ to $10m\Omega$.

Applications

For current detection in current circuit, motors, compact battery control, IC current control and overcurrent detection

ROHM Original Trimming-less Structure

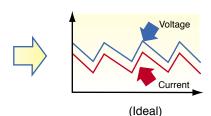
ROHM's low-inductance PMR series features fewer detection errors for greater precision results.



A large inductance makes it difficult to accurately detect current

Optimum for high-speed switching circuits!!

Stable operation, even in environments with extreme temperature fluctuations!



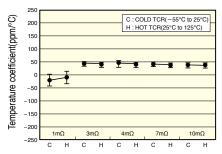
Features excellent heat dissipation!!

Stable resistance temperature characteristics!

Superior resistance-temperature **Characteristics**

The use of special alloys in the resistors ensures stable resistance-temperature characteristics.

■Temperature characteristics



Circuit example

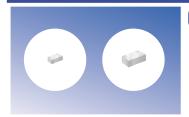
Detection of remaining battery capacity / CPU drive current control Overcurrent detection Engine starter Power window Air condition (fan) Headlight HID ECU Seat detection Power module Battery Detection of remaining Drive current control battery capacity for CPU and various ICs FET detection CPU IC

•						
Part No.	Size	Circuit	Rated power	Tolerance	Resistance range	Operating temperature range
PMR03	1608(0603)		0.25W	J(±5%)	10mΩ	
PMR10	2012(0805)] γ	0.5W	J(±5%) , G(±2%) , F(±1%)	2mΩ to 10mΩ	
PMR18	3216(1206)	l l R	0.75W	1/.50/)	21112 10 101112	FF00 to 145500
PMR25	3225(1210)]	1W	J(±5%)	$1m\Omega$ to $5m\Omega$	–55°C to +155°C
PMR50	5025(2010)		1W	F(±1%)	1mΩ to 10mΩ	
PMR100	6432(2512)		2W		111122 10 1011122	

^{☆ :} Under development

Fixed Thick Film Low Ohmic Chip Resistors

UCR series



Features

Summary

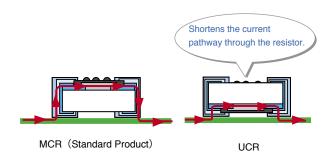
Applications

Small High performance Thick film resistive elements were used to create this lineup of ultra-low resistance products ranging from $10m\Omega$ to $100m\Omega.$ These chip resistors are ideal for current detection.

Lap top PC, Mobile phone, HDD, Portable audio, Power supply, Motor, etc

Reduced resistance changes

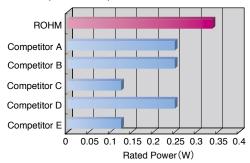
The rear-mount structure prevents changes in the resistance value during mounting.



Superior rated power

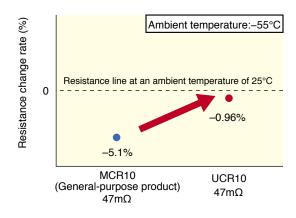
ROHM's unique structure provides improved heat radiation characteristics, resulting in the industry's only 1/3W rated short electrode resistor in the 2012 size.

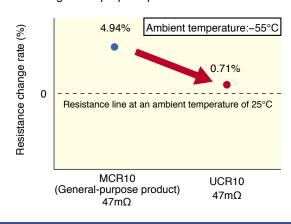
■Rated power comparison



Stable, low resistance guaranteed, regardless of the surrounding environment

■Comparison of the resistance rate change between the UCR series and general-purpose products





Part No.	No. Size Circuit Rated power		Tolerance	Resistance range	Operating temperature range	
	1005(0402) 1608(0603)	9	0.125W 0.2W	J (±5%) , F (±1%)	47m $Ω$ to 910 m $Ω$	
UCR10	2012(0805)	R	0.33W	J (±5%) F (±1%)	11m Ω to 100m Ω 20m Ω to 100m Ω	-55°C to +155°C
☆ UCR18	3216(1206)		0.5W	J (±5%) , F (±1%)	11m Ω to 100m Ω	

^{☆:} Under development *Size: () inch

High Power, Low Ohmic Wide Terminal Chip Resistors

LTR series



Features

Summary

Applications

High performance High reliability

ROHM's novel heat dissipation design ensures higher rated power. The broad lineup ranges from $47m\Omega$ to 9.1Ω .

Ideal for circuits requiring low ohmic resistors strong against temperature cycling.

Industry's highest rated power

Novel design improvements result in higher rated power and lower TCR.

■Rated Power

Size	Type	Rated power
5025	MCR50	0.5W
5025	LTR50	1.5W
0046	MCR18	0.25W
3216	LTR18	1.0W
	MCR10	0.125W
2012	LTR10	0.5W

■Temperature coefficient

Size	Туре	From $47m\Omega$ From $100m\Omega$ From 1		From 1Ω	
5025	MCR50	±500ppm/°C ±500ppm/°C			
0020	LTR50	±150ppm/°C			
3216	MCR18	±500ppm/°C ±500ppm/°C			
3210	LTR18		±150ppm/°C		
0010	MCR10	±500ppm/°C ±500ppm/°C			
2012	LTR10		±150ppm/°C		

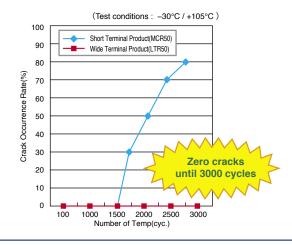
(Example)

MCR: $47m\Omega \pm 500ppm/^{\circ}C$

LTR : $47m\Omega \pm 150ppm/^{\circ}C$

Excellent temperature cycling resistance

The terminals are positioned lengthwise to shorten the distance between electrodes, dramatically improving junction reliability with respect to temperature changes.



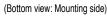
Rear-mount structure

The rear-mount structure minimizes resistance changes during mounting.

Rated power is also significantly improved.









(Side view)



Part No.	Size	Circuit	Rated power	Tolerance	Resistance range	Operating temperature range
LTR10	2012(0805)	0	0.5W			
☆ LTR18	3216(1206)		1W	J(±5%) F(±1%)	47mΩ to 9.1Ω	-55°C to +155°C
☆ LTR50	5025(2010)		1.5W			

^{☆:}Under development

Ultra-low Ohmic Wide Terminal Chip Resistance for Current Detection

PML series



Features

High performance High reliability

Summary

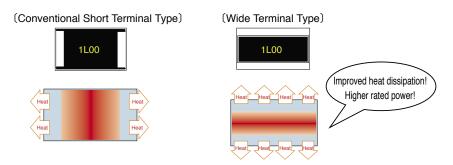
ROHM's ultra-low ohmic wide terminal chip resistors utilize a proprietary design for improved current detection accuracy. Available in a range of resistances, from $0.5\Omega m$ to $2m\Omega$.

Applications

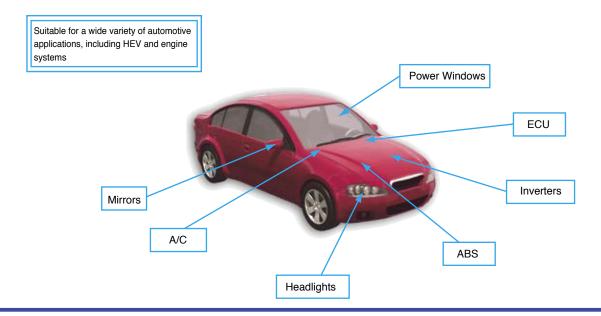
- Automotive (i.e. power steering, ECU)
- Current detection in large current motors

Wide terminal configuration improves reliability

- · Improved heat dissipation.
- · Higher rated power (3W guaranteed in the 6432 size)
- Wider contact area with the mounting plate provides a more reliable connection.
 Ideal for vehicle applications exposed to temperature cycling / fluctuations.



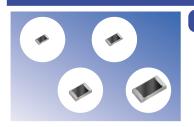
Application Examples



	Part No.	Size	Rated power	Resistance range (mΩ)	Tolerance	Temperature coefficient (ppm/°C)	Operating temperature range	
Λ	ew PML50	5025(2010)	2W (25°C) 1.5W (70°C)	0.5, 1, 1.5, 2	J(±5%)	±200	-55°C to +155°C	
٨	ew PML100	6432(2512)	3W (25°C) 2W (70°C)	0.0, 1, 1.0, 2	J(±3 /6)	1200	-55 0 10 +155 0	

Anti-surge Chip Resistors

ESR series



Features

Small Anti-surge

Summary

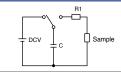
Significantly improved anti-surge characteristics have been achieved due utilization of original resistor construction and trimming processes.

Applications

Electronic devices requiring anti-surge and anti-pulse characteristics.

3kV* electrostatic discharge resistance

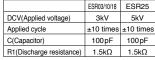
An electrostatic discharge resistance of 3kV has been achieved using novel construction and trimming processes, resulting in a greater degree of reliability.

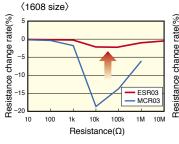


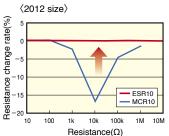
(*EIAJ4701-1 Human Body Model)

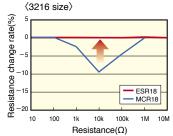


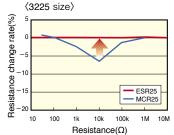
■Conventional chip resistors vs.Anti-surge chip resisters











Double the conventional rated power

Significantly improved voltage resistance characteristics have been achieved through utilization of original resistive element structure and trimming design.

Only ROHM guarantees 0.2W in the 1608 size.

Improving the rated power enables smaller resistors to be used, saving space.

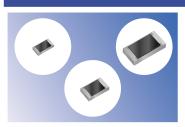
	ESR series	General-purpose MCR series
1608	0.20W	0.10W
2012	0.25W	0.125W
3216	0.33W	0.25W
3225	0.50W	0.25W
5025	_	0.5W

Downsizing

vp																				
Part No.	Size	Circuit	Rated power	Limiting Element voltage	Tolerance	Temperature coefficient	Resistance range	Operating temperature range												
					J(±5%)	±200ppm/°C	100 += 1010													
ESR03	1608(0603)		0.2W	50V	F(±1%)	±100ppm/°C	10Ω to 10MΩ													
					D(±0.5%)	±100ppm/°C	10Ω to $1M\Omega$													
					J(±5%)	±200ppm/°C	1Ω to 10MΩ													
ESR10	ESR10 2012(0805) Q	2(0805)	12(0805) _Q	ρ	0.25W	150V	F(±1%)	±100ppm/°C	122 (0 10)0122											
		 															D(±0.5%)	±100ppm/°C	10Ω to $1M\Omega$	-55°C to +155°C
			0.33W	0.33W	0.33W	0.33W		J(±5%)	±200ppm/°C	1Ω to 10MΩ	-55°C to +155°C									
ESR18	3216(1206)	6					0.33W	200V	F(±1%)	±100ppm/°C	177 (0 10)/177									
					D(±0.5%)	±100ppm/°C	10Ω to $1M\Omega$													
	ESR25 3225(1210) 0.5W			J(±5%)	±200ppm/°C	1Ω to 10MΩ	1													
ESR25		0.5W	200V	F(±1%)	±100ppm/°C	122 (0 10)0122														
					D(±0.5%)	±100ppm/°C	10Ω to 1MΩ													

High Voltage Resistance Chip Resistors

KTR series



Features

Small High performance

Summary

High voltage characteristics (more than double that of conventional products) have been achieved through the use of proprietary construction and trimming processes.

Applications

Camera flash circuits, inverter circuits, and more.

High voltage resistance

ROHM's unique resistance pattern and trimming design prevent concentration of the voltage load, resulting in more than twice the voltage resistance of our own general-purpose products (MCR series).

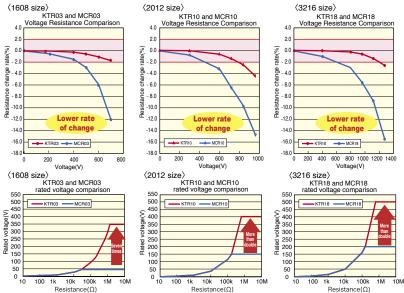
High voltage resistance circuits requiring multiple resistors can reduce the number of components using the KTR series. This makes them ideal for mobile products, which are becoming increasingly compact and thin.

*Limiting element voltage

The rated voltage is defined as the maximum voltage that can be applied continuously and is calculated using the following equation:

Rated voltage (V) = $\sqrt{\text{Rated power (W)} \times \text{Nominal resistance (Ω)}} = \sqrt{\frac{250}{150}}$ Note that the limiting element voltage of the element should not to be exceeded.

■ High voltage resistance chip resistors (KTR series) vs. Conventional Products (MCR series)

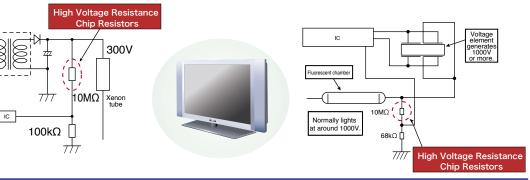


Circuit Examples

Camera flash circuit

300V 10MΩ Xenon tube 100kΩ

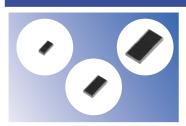
Inverter circuit for display backlights



Part No.	Size	Circuit	Rated power	Limiting Element voltage	Tolerance	Temperature coefficient	Resistance range	Operating temperature range
KTR03	1608(0603)		0.1W	350V	J(±5%)	±200ppm/°C	10Ω to 10MΩ	
KINUS	1606(0603)		0.100	350 V	F(±1%)	±100ppm/°C	1022 (0 10)0122	
KTR10	2012(0805) 3216(1206)	R	0.125W	400V	J(±5%)	±200ppm/°C		
KINIU			0.12500	400 V	F(±1%)	±100ppm/°C		-55°C to +155°C
I/TD40			0.05/4/	500)/	J(±5%)	±200ppm/°C	1Ω to 10MΩ	-55 C to +155 C
KTR18			0.25W	500V	F(±1%)	±100ppm/°C	122 (0 10)0122	
LATROS	0005(4040)		0.00144	2001/	J(±5%)	±200ppm/°C		
KTR25	3225(1210)		0.33W	600V	F(±1%)	±100ppm/°C		

High Power, Low Ohmic Wide Terminal Chip Resistors

LTR series



Features

Anti-surge High reliability

Summary

Making the long side of the resistor the electrode reduces the distance between the electrodes, improving temperature cycling strength.

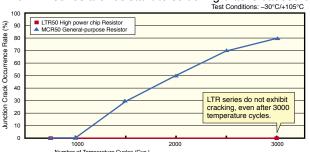
Applications

Automotive systems requiring high temperature cycling strength and surge resistance characteristics.

Superior connection reliability against thermal cycling

Outstanding junction reliability characteristics against heat cycling.

The LTR series are resistant to soldering cracks caused by thermal stress.



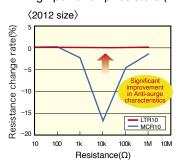
	LTR series	General-purpose MCR Series
Distance Between Electrodes	Short	Long
Effects of Expansion /Contraction of the Printed Circuit Board	Mechanical stress on junction area small	Mechanical stress on Junction area large
Junction Reliability	Very good	Good

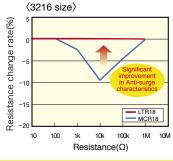
3kV* electrostatic discharge resistance

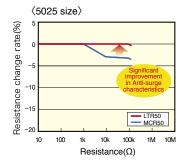
(*EIAJ4710-1 Human Body Model)

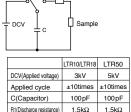
ROHM's unique resistive element structure and trimming design ensure greatly improved surge resistance characteristics Only ROHM guarantees an electrostatic discharge resistance of 3kV (long side electrode structure).

■ High power chip resistors (Wide terminal type) vs. General-purpose Chip Resistors (MCR series)









Significantly higher rated power

Improved rated power makes it possible to use smaller resistors.

	LTR series	MCR series
2012 (0805)	0.25	0.125
3216 (1206)	0.5	0.25
5025 (2012)	1	0.5
6432 (2512)	_	1

Part No.	Size	Circuit	Rated power	Tolerance	Resistance range	Operating temperature range
				J(±5%)		−55°C to +155°C
LTR10	2012(0805)		0.25W	F(±1%)		
				D(±0.5%)	10Ω to 1MΩ	
			0.5W	J(±5%)		
LTR18	3216(1206)			F(±1%)		
				D(±0.5%)		
			1W	J(±5%)		
LTR50	5025(2010)			F(±1%)	10Ω to 130kΩ	
				D(±0.5%)		

Sulfur-resistant Chip Resistors

TRR series



Features

High reliability

Summary

The special internal structure prevents sulfurated gases from entering, resulting in greater reliability and more stable operation in sulfur-rich environments compared to general-purpose products.

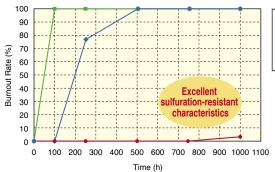
Applications

Circuits exposed to sulfur-rich environments, such as those in automotive systems.

Reliable in sulfurated environments

Until now, resistors were particularly susceptible to failure in sulfur-rich environments. In response to this, ROHM's offers the TRR series featuring an internal structure resistant to silver migration and the formation of silver sulfide, resulting in a greater level of reliability.

■Sulfuration Test Results

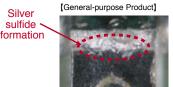


→ TRR03
(Sulfur-resistant Product)
→ MCR03
(ROHM's General-purpose Product)
- Competitor's
General-purpose Product

Test conditions:

Extremely sulfur-rich environment

Sealed inside a desiccator together with sulfur powder and maintained at a high temperature (110°C)



After 250 hours

[Sulfur-resistant Product]

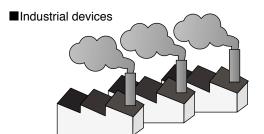


After 750 hours

Applications

■General automotive equipment





Part No.	Size	Circuit	Rated power	Tolerance	Resistance range	Operating temperature range
	1005(0400)			J(±5%)	0Ω , 1Ω to $10M\Omega$	
TRR01	TRR01 1005(0402)		0.063W	F(±1%)	10Ω to $2.2M\Omega$	
	, ()	1608(0603) R	0.1W	J(±5%)	0Ω , 1Ω to $10M\Omega$	1
TRR03 1608(1608(0603)			F(±1%)	10Ω to $10M\Omega$	FE°C to . 155°C
	0040(0005)			J(±5%)	0Ω , 1Ω to $10M\Omega$	-55°C to +155°C
☆ TRR10 2012(0805)	2012(0805)		0.125W	F(±1%)	10 Ω to 2.2M Ω	
☆ TRR18 3216	2016(1206)	3216(1206)	0.25W	J(±5%)	0Ω , 1Ω to $10M\Omega$	
	3210(1206)			F(±1%)	10Ω to 2.2MΩ	1

^{☆:} Under development *Size: () inch

0402-sized Ultra-compact Chip Resistors

MCR004 series



Features

Summary

Applications

Small

ROHM's 0402 sized ultra-compact chip resistors are the smallest in the world, contributing to increased space savings in mobile devices and module products. Modules Portable audio Mobile phones Digital cameras

Space-saving, lightweight

Surface area is reduced by 56% compared to the MCR006 (0603) and MCR004 (0402) package types, respectively, ensuring suitability with compact, cutting-edge applications.



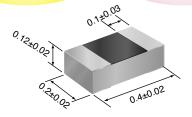
High dimensional precision

Ultra-compact Chip Resistors such as 0402 and 0603 package requires high accuracy process technology than conventional one in order to produce high dimensional accuracy.

Semiconductor processing technology utilized for high dimensional accuracy

Dimensions dimensional accuracy ! 0.02mm

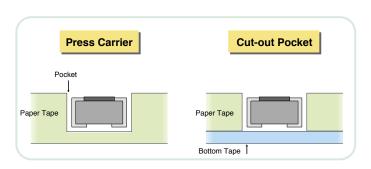
Terminal dimensional accuracy 0.03mm



"Press Carrier" tape reduces error

A "Press Carrier" tape is used in order to reduce failures during the mounting process.

- Press Carrier Features
- No adhesive substance on the bottom of the pocket (bottom tape not used).
- · Highly precise pocket position.



	Part No.	Size	Circuit	Rated power	Tolerance	Resistance range	Operating temperature range
New MCR004	0402(01005)) p	0.031W	J (±5%)	$0\Omega,10\Omega$ to $3M\Omega$	_55°C to +125°C	
		0.031	F (±1%)	10Ω to 3MΩ	-55°C to +125°C		

Narrow Pitch Paper Tape Products

MCR01ZZP / MCR03MZP series



Features

Summary

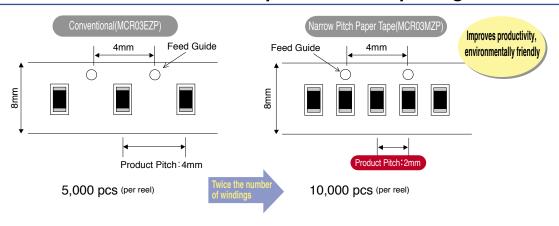
Applications

High precision

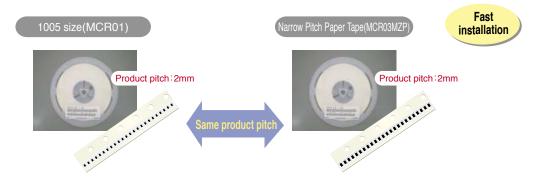
The pitch is half that of standard products, resulting in double the quantity per reel without changing the reel size $(\phi 180 \text{mm})$.

All products

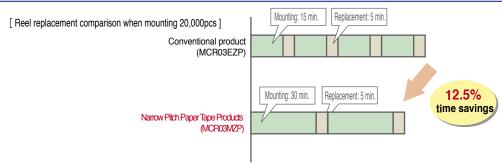
Double the time between reel replacement. Cut package waste in half.



No new equipment required, Easy to install



Improves productivity by halving the number of reel replacements



製品ラインアップ

Part No.	Size	Code	Pitch	Basic ordering unit	Tolerance
MCR01	1005(0402)	ZZP	1mm	20,000pcs	J(±5%)
MCR03	1608(0603)	MZP	2mm	10,000pcs	F(±1%)

1608-sized EMI Filters

MCF18 series



Features

Summary

Applications

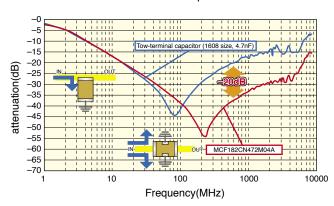
Small High performance Industry's smallest size (1608 size)
Entire series compatible with large currents (4A)

Digital TVs, DVDs, digital camcorders, mobile phones, copiers, and more.

High performance

The amount of attenuation in high frequency bands is vastly improved compared to two-terminal capacitors, resulting in greater noise removal efficiency. The number of parts required is reduced as well.

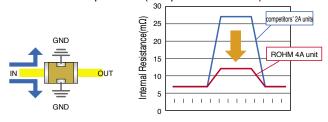
■ Attenuation Characteristics Comparison



■ Only ROHM offers 4A products in the 1608 size

The entire series is rated at 4A, making them ideal for high current circuits in or around the power supply.

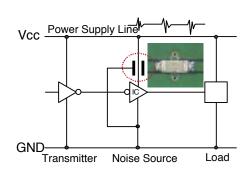
■ The internal resistance is lower than in standard products (competitors' 2A units)

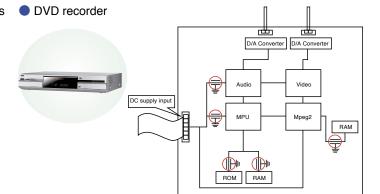


- 1. Decreased line side voltage
- 2. Reduced heat generation due to energization

Circuit example

■ Ideal for noise reduction on large current power lines





Part No.	Size	Code	Temperature characteristics	Capacitance tolerance	Capacitance(pF)	Rated current	Operating temperature range
New MCF18	1608(0603)	CN	±15%	M(±20%)	1,000pF to 0.1μF	4.0A	-55°C to +125°C
☆ MCF18 ((High capacitance type)	1608(0603)	CN	±15%	M(±20%)	0.22μF to 1μF	4.0A	-55°C to + 85°C

^{☆:} Under development *Size: () inch

MEMO

Dimensions

Unit: mm

	D: .	0 1					Unit: mm
0400	Dimensions	Series	L	W	t	а	b
0402 (01005)	a w	MCR004	0.4±0.02	0.2±0.02	0.13±0.02	0.1±0.03	0.1±0.03
	<u>□</u> T						
0603 (0201)	a w	MCR006	0.6±0.03	0.3±0.03	0.23±0.03	0.1±0.05	0.15±0.05
	<u>b</u> → t						
1005 (0402)	<u>a</u>	MCR01	1.0±0.05	0.5±0.05	0.35±0.05	0.2±0.1	- 0.25 ^{+0.05} -0.1
	t	TRR01				0.3±0.08	-0.1
1608	a - L - - L -	MCR03					
(0603)	a w w	KTR03	1.6±0.1	0.8±0.1	0.45±0.1	0.3±0.2	0.3±0.2
	<u></u>	ESR03	1.010.1				-
	t b t	TRR03				0.4±0.1	
	[PMR03]	PMR03	1.6±0.15	0.8±0.15	0.25±0.15		0.35±0.15
2012	 	MCR10				0.4±0.2]
(0803) &	(0805) a	KTR10 ESR10	2.0±0.1	1.25±0.1	0.55±0.1	0.3±0.2	0.4±0.2
	Ţt b t	TRR10				0.4 ^{+0.2} _{-0.1}	1
<u>b</u>		PMR10	2.0±0.15	1.2±0.15	0.42 to 0.28 ±0.15		0.6 to 0.2 ±0.15
3216		MCR18				0.5±0.25	
(1206) ^a	T T	KTR18			0.55±0.1		0.5±0.25
	103 w 2L00 w	ESR18	3.2±0.15	1.6±0.15		0.3±0.25	
	Ţt b Ţt	TRR18				0.65 ^{+0.25} _{-0.1}	
<u>b</u> ,		PMR18			0.42 to 0.28 ±0.15		0.9 to 0.4 ±0.15
3225 (1210) ^a		MCR25	0.0.45	2.5±0.15	0.55.0.45	0.5±0.25	25.25
	103 W 2L00 W	ESR25	3.2±0.15	2.6±0.1	- 0.55±0.15	0.3±0.25	0.5±0.25
	↓ t b ↓ t t [PMR25]	PMR25	3.2±0.2	2.5±0.2	0.52 to 0.32 ±0.15	0.5±0.2	1.2 to 0.5 ±0.2
5025 (2010) ^a	103 W 2L00 W	MCR50	5.0±0.15	2.5±0.15	0.55±0.15	0.6±0.25	0.6±0.25
	[PMR50]	PMR50	5.0±0.2	2.5±0.2	0.52 to 0.32 ±0.15	0.5±0.2	1.9 to 0.9 ±0.2
6432 (2512) ^a	103 W 2L00 W	MCR100	6.3±0.15	3.2±0.15	0.55±0.15	0.6±0.25	0.6±0.25
<u>b</u> ,	[PMR100]	PMR100	6.4±0.25	3.2±0.25	0.52 to 0.32 ±0.15	0.5±0.25	2.3 to 1.1 ±0.25

^{*}Size: () inch

0.55±0.1

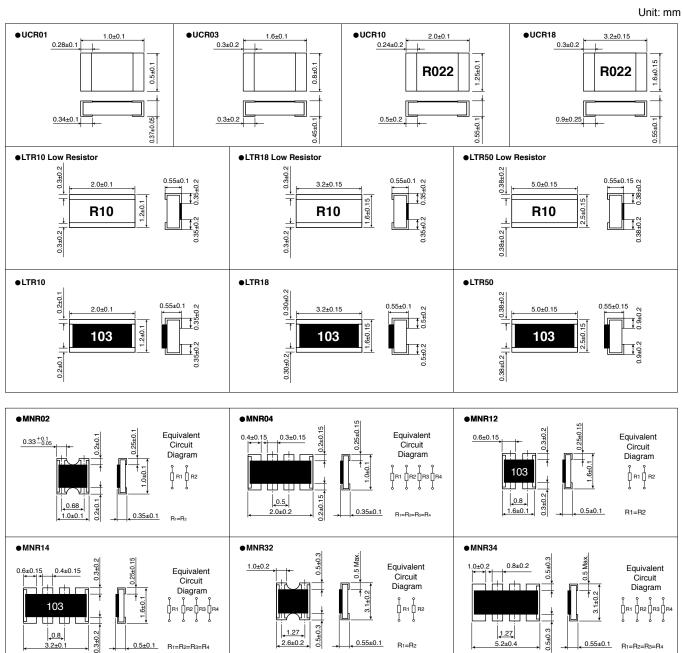
0.5±0.3

B1=B2=B3=B4

Equivalent

Circuit Diagram

10 6



2.6±0.2

3.8±0.1 (0.5)

- 선선선선선선선선 0.3±0.1 | (0.2) | 0.3±0.1 | 설 - - - - - -

●MNR18

0.55±0.1

R1=R2

Equivalent Circuit

Diagram

()Reference Value

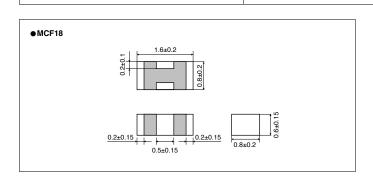
●MNR35

1.0±0.2 0.8±0.2

R103

1.27

6.4±0.4



0.5±0.1 R_{1=R₂=R₃=R₄}

Equivalent

Circuit

Diagram

●MNR15

3.2±0.1

0.32±0.15

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Examples of application circuits, circuit constants and any other information contained herein illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

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