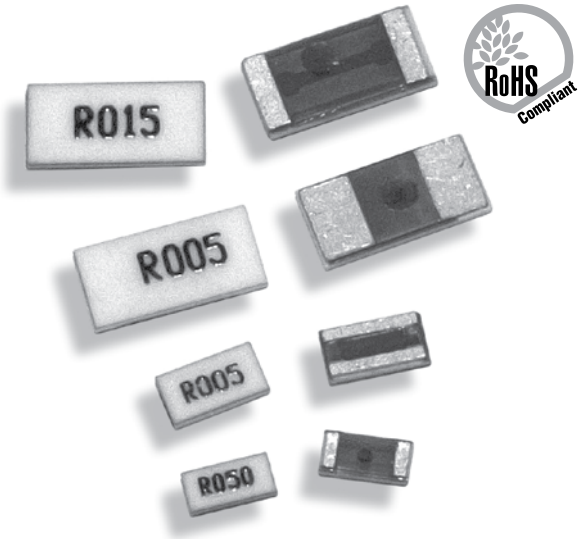
MCS Series

Metal Element Current Sense
Resistive Metal Alloy mOhm Technology, SMD



FEATURES

- NiCu or MnCu resistive alloy; material TCR ±10ppm/°K
- Marking epoxy UL-94-V0 conformal
- 96% alumina substrate thermo dissipation protective layer
- Cu Terminal Electrode with Pb Free termination (60% Sn, 40% Ni)
- Flame-retardant epoxy protective coat (UL-94-V0)
- Ultra low resistance value (0.005Ω ~ 0.050Ω)
- Precision resistance alloy (NiCr20AlSi, or CuMnNi); material selected for low TCR (<50ppm/°C)
- Low inductance, low thermo EMF (<50μV/°C)

APPLICATIONS

- Industrial electronics, power electronics: power supply, DC/DC converter, AC/DC converter, motor controller, automotive electronics
- Battery charger, PC, PDA, 3C products, Telecommunications, instruments, white goods

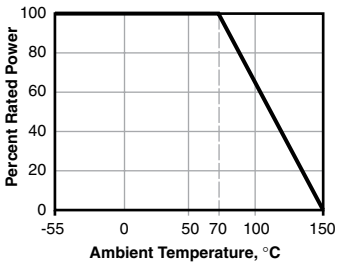
SERIES SPECIFICATIONS

Series	Power Rating (@70°C)	Resistance (mΩ)	Tolerance	TCR (ppm/°C)
MCS1320	0.75W	3-9 10-200	±1% (F)	±100 ±50
MCS1632	1W	3-9 10-400	±1% (F)	±100 ±50
MCS3264	2W	2-9 10-400	±1% (F)	±100 ±50

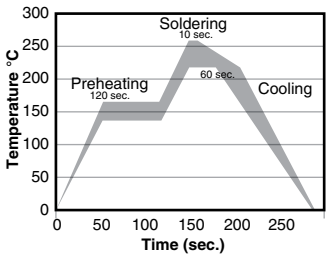
CHARACTERISTICS

Resistance Range	0.005Ω - 0.05Ω
Color	white (top) / green (bottom)
Power	0.75, 1 and 2 watts at 70°C
Standard resistance values (mΩ)	5, 10, 15, 20, 25, 30, 35, 50
TCR	>10mΩ: ±100ppm/°C ≤10mΩ: ±50ppm/°C
Tolerance	1%, 3%, 5%
Rated voltage	$(PxR)^{1/2}$

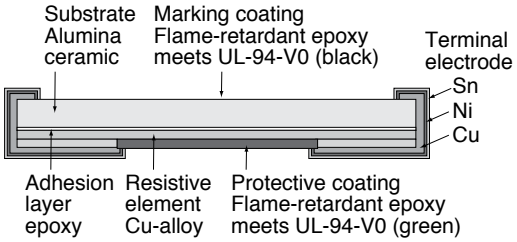
Derating



Recommended Solder Profile



Preheating: 145°C ±15°, max. 120 sec.
Soldering: min. 220°C, max. 60 sec.
Max. Temp.: 260°C ±5°, 10 sec.



MCS Series

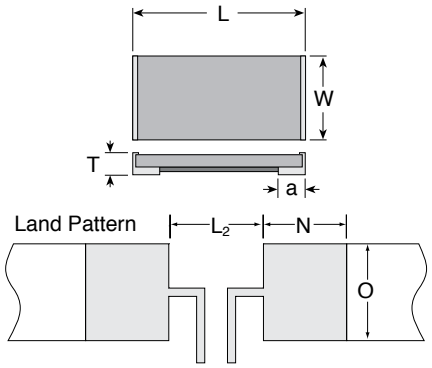
Metal Element Current Sense
Resistive Metal Alloy mOhm Technology, SMD

PERFORMANCE CHARACTERISTICS

Test	Condition	Maximum ΔR
Short Time Overload	JIS C 5201 4.13; Overload voltage 2.5x rated voltage for 5 sec.	±(0.5% +0.0005Ω)
High Temp. Exposure	JIS C 5202 7.11; Test chamber 155 ±3°C for 1000 +48/-0 hours	±(0.5% +0.0005Ω)
Storage	Two years under airtight conditions 10°C~40°C and relative humidity ≤75%; 30 days at 10°C~60°C and relative humidity ≤95%.	
Low Temp. Storage	JIS C 5202 7.1; Test chamber -55 ±3°C for 96 ±4 hours	±(0.5% +0.0005Ω)
Endurance under Damp and Load	JIS C 5202 7.9; Temp. 60 ±2°C, relative humidity 90-95%, rated DC voltage applied 90 min. on, 30 min. off for 1000 +48/-0 hours	±(0.5% +0.0005Ω)
Thermal Shock	JIS C 5202 7.4; -55 ±3°C for 30 min. to room temp for 2-3 min. to +150 ±2°C for 30 min. to room temp for 2-3 min., 100 cycles	±(0.5% +0.0005Ω)
Load Life	JIS C 5202 7.10; Temp. 70 ±2°C, rated DC voltage applied 90 min. on, 30 min. off for 1000 +48/-0 hours	±(1% +0.0005Ω)
Solderability	JIS C 5202 6.5; Solder temp. 235 ±5°C, 2 ±0.5 sec. immersion	New solder min. 90% of terminal
Resistance to Solder Heat	JIS C 5202 6.4; Solder temp. 260 ±5°C, 10 ±1 sec. immersion	±(0.5% +0.0005Ω)
Mechanical Shock	JIS C 5202 6.2; Load 10N (1.02kgf) for 10 ±1 sec., middle of specimen pressurized	±(0.5% +0.0005Ω)
Insulation Resistance	JIS C 5202 5.6; DC 100 ±15V for 1 min.	>102MΩ

DIMENSIONS

(in./mm)



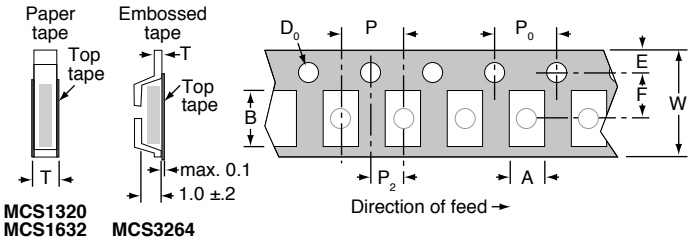
Type	L	W	a	T	L2	O	N	Solder Thickness (µm)
MCS1320	0.083/2.10±.2	0.053/1.35±.2	0.026/0.65±.2	0.020/0.5±.2	0.80mm	1.44mm	1.40mm	105
MCS1632	0.130/3.30±.2	0.067/1.70±.2	0.027/0.68±.3	0.026/0.65±.2	1.20mm	1.84mm	1.80mm	105
MCS3264	0.252/6.40±.3	0.126/3.20±.3	0.041/1.05±.3	0.026/0.65±.2	3.10mm	3.57mm	3.10mm	105

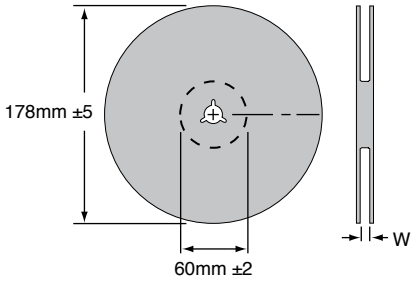
MCS Series

Metal Element Current Sense
Resistive Metal Alloy mOhm Technology, SMD

PACKAGING

(mm)





Tape

Type	W	P0	P	P2	A0	B0	D0	F	E	T
MCS1320	8.00±.30	4.00±.10	4.00±.10	2.00±.10	1.68±.20	2.38±.20	1.50±.10	3.50±.10	1.75±.10	0.87±.20
MCS1632	8.00±.30	4.00±.10	4.00±.10	2.00±.10	2.05±.20	3.65±.20	1.50±.10	3.50±.10	1.75±.10	0.87±.10
MCS3264	12.00±.30	4.00±.10	4.00±.10	2.00±.10	3.40±.20	6.75±.20	1.50±.10	5.50±.10	1.75±.10	0.25±.10

Reel

Type	W ±1	Qty./reel	Weight (g)
MCS1320	9.0	5,000	150 ±30
MCS1632	9.0	5,000	160 ±40
MCS3264	13	4,000	270 ±50

ORDERING INFORMATION

RoHS Compliant

M C S 1 6 3 2 R 0 0 5 F E R

Series	Case Size	Ohms	Tolerance	Taping Code
Metal Alloy Current Sense	1320 = 0.75w 1632 = 1w 3264 = 2w	R005 = 0.005‰	F = 1%	1320 = 5,000 pc/reel 1632 = 5,000 pc/reel 3264 = 4,000 pc/reel

Part Number	Power Rating	Ohm Value	Qty./ Reel
MCS1320R005FER	0.75W	0.005Ω	5000
MCS1320R010FER	0.75W	0.010Ω	5000
MCS1320R015FER	0.75W	0.015Ω	5000
MCS1320R020FER	0.75W	0.020Ω	5000
MCS1320R025FER	0.75W	0.025Ω	5000
MCS1320R030FER	0.75W	0.030Ω	5000
MCS1320R050FER	0.75W	0.050Ω	5000
MCS1632R010FER	1W	0.01Ω	5000
MCS1632R015FER	1W	0.015Ω	5000
MCS1632R020FER	1W	0.02Ω	5000
MCS1632R025FER	1W	0.025Ω	5000
MCS1632R050FER	1W	0.05Ω	5000
MCS3264R005FER	2W	0.005Ω	4000
MCS3264R010FER	2W	0.01Ω	4000
MCS3264R015FER	2W	0.015Ω	4000
MCS3264R020FER	2W	0.02Ω	4000
MCS3264R025FER	2W	0.025Ω	4000
MCS3264R050FER	2W	0.05Ω	4000

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Ohmite:

MCS1632R015FER MCS3264R020FER MCS1632R050FER MCS1632R025FER MCS3264R050FER MCS3264R010FER MCS3264R005FER MCS3264R025FER MCS3264R015FER MCS1632R010FER MCS1632R020FER MCS1632R030FER MCS3264R030FER MCS1632R005FER MCS1320R030FER MCS1320R015FER MCS1320R025FER MCS1320R010FER MCS1320R050FER MCS1320R020FER MCS1320R005FER