



碳素膜晶圓電阻  
Resistance: 1R0 ~ 10MΩ

MELF - MCF Series  
Carbon Film MELF Resistor

FEATURES

- ◆ SMD enabled structure
- ◆ Excellent Solderability Termination
- ◆ Tolerance precision:  $\pm 5\%$ .
- ◆ Advanced Metal Film technology.
- ◆ Lead (Pb)-free and **RoHS** compliant .
- ◆ Pure Sn termination on Ni barrier layer.
- ◆ Conformal Multi-layer Coating Humidity
- ◆ Force fitted steel caps, tin plated on nickel barrier.
- ◆ Tolerance  $\pm 5\%$  is 3-band coded,  $\pm 1\%$  and under is 4-band codes
- ◆ Compatible with lead (Pb)-free and lead containing soldering processes.

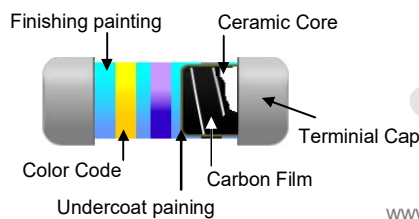
Figure



APPLICATIONS

The MCF Series Carbon Film Resistors are manufactured by coating a homogeneous film of pure carbon on high grade ceramic rods. After a helical groove has been cut in the resistive layer, tinned connecting leads of electrolytic copper are welded to the end-caps. The resistors are coated with layers of khaki color lacquer.

STRUCTURE DIAGRAM



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ORDERING INFORMATION

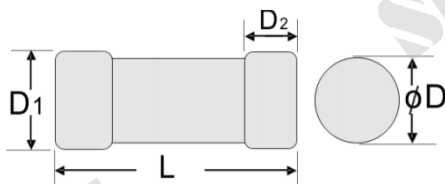
Example: V-MCF07101JTR (1/4W 100R Tol.  $\pm 5\%$  Tape Reel)

Type 型號	Size 型號	Power 功率	Resistance E24	Tolerance 誤差值	Package 包裝	Quantity	
						Bulk/Plistic	Tape Reel
W-MCF04	0204	1/8W	1R = 1R0	G= $\pm 2\%$ J= $\pm 5\%$ K= $\pm 10\%$	TR = T/Reel B = Bulk		3000 pcs
V-MCF04	0204	1/4WS	10R=100				3000 pcs
V-MCF07	0207	1/4W	100R=101	2000 pcs			
U-MCF07	0207	1/2WS	100R=102	2000 pcs			
S-MCF07	0207	1WS	10K = 103	2000 pcs			
S-MCF09	0309	1W	100K=104	2000 pcs	2500 pcs		
Q-MCF11	0411	2WS	1M=105	1000 pcs	2000 pcs		
N-MCF15	0515	3WS	10M=106	500 pcs	1500 pcs		

DIMENSION

Unit: mm

Type	Size	Power	L	$\Phi D$	$D_1$	$D_2$
W-MMF04	0204	1/8W	3.5 $\pm$ 0.2	1.45 $\pm$ 0.1	1.6 $\pm$ 0.2	0.70 $\pm$ 0.2
V-MMF04	0204	1/4WS	3.5 $\pm$ 0.2	1.45 $\pm$ 0.1	1.6 $\pm$ 0.2	0.70 $\pm$ 0.2
V-MMF07	0207	1/4W	5.7 $\pm$ 0.2	2.2 $\pm$ 0.1	2.4 $\pm$ 0.3	0.80 $\pm$ 0.2
U-MMF07	0207	1/2WS	5.7 $\pm$ 0.2	2.2 $\pm$ 0.1	2.4 $\pm$ 0.3	0.80 $\pm$ 0.2
S-MMF07	0207	1WS	5.7 $\pm$ 0.2	2.2 $\pm$ 0.1	2.4 $\pm$ 0.3	0.80 $\pm$ 0.2
S-MMF09	0309	1W	8.5 $\pm$ 0.3	3.0 $\pm$ 0.3	3.3 $\pm$ 0.3	1.70 $\pm$ 0.2
Q-MMF11	0411	2WS	10.5 $\pm$ 0.3	4.0 $\pm$ 0.3	4.3 $\pm$ 0.2	2.30 $\pm$ 0.2
N-MMF15	0515	3WS	14.5 $\pm$ 0.3	4.5 $\pm$ 0.3	4.8 $\pm$ 0.2	2.30 $\pm$ 0.2



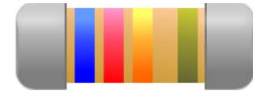
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Resistance: 1R0 ~ 10MΩ

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Carbon Film MELF Resistor

RATED SPECIFICATION

Type	Size	Rating Power	Maximun Voltage		Resistance (E24)Range (Ω)	
			Working	Overload	±2%	±5%
W-MCF04	0204	1/8W	200V	400V	2.2R~1M	2.2R~1M
V-MCF04	0204	1/4WS	250V	500V	2.2R~1M	2.2R~1M
V-MCF07	0207	1/4W	250V	500V	1R0~2M2	1R0~2M2
U-MCF07	0207	1/2WS	300V	600V	1R0~2M2	1R0~2M2
S-MCF07	0207	1WS	400V	600V	1R0~2M2	1R0~2M2
S-MCF09	0309	1WS	500V	1KV	1R0~10M	1R0~10M
Q-MCF11	0411	2WS	500V	1KV	1R0~10M	1R0~10M
N-MCF15	0515	3WS	500V	1KV	1R0~10M	1R0~10M



Coating: Beige Color  
Marking: Color Bands  
E24 series: See page 4.

Rated continuous Working Voltage (RCWV) =  $\sqrt{POWER \cdot RATING \cdot RESISTANCE \cdot VALUE}$

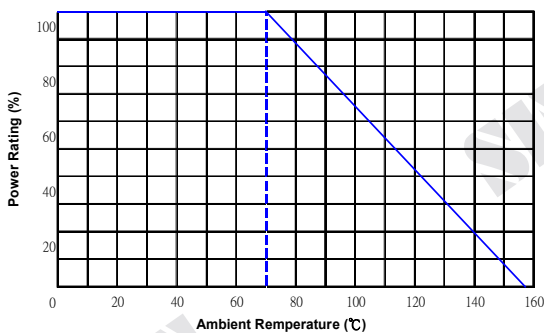
CHARACTERISTICS

Items	Characteristics							
Temperature Coefficient  Test Method: JIS-C5202 5.2	0204	10R~47K Ω	+350~ -450	ppm/ °C	0207	1R~100K Ω	+350~ -450	ppm/ °C
	0204	51K~220K Ω	+0 ~ -700	ppm/ °C	0207	110K~330K Ω	+0 ~ -700	ppm/ °C
	0204	240K~270K Ω	+0 ~ -1000	ppm/ °C	0207	360K~1M Ω	+0 ~ -1000	ppm/ °C
	0204	510K~1M Ω	+0 ~ -1300	ppm/ °C	0207	1.1M~2M2 Ω	+0 ~ -1300	ppm/ °C
Items	Test Method			Characteristics				
Short Time Overload	Rating voltage * 2.5 or Max.overload voltage for 5 sec Whichever less			±(0.5%+0.05Ω)				
Pulse Overload	Rating voltage * 3 or Max.overload voltage for 10,000 cycle (1 sec [ON], 25 sec [OFF] ) Whichever Less			±(0.5%+0.05Ω)				
Temperature Cycling	-55°C (30min.) / +85°C (30min.) for 5 cycle			±(0.5%+0.05Ω)				
Load Life Humidity	40°C±2°C, 90%~95% RH. 1000h, 1.5h [ON] 0.5h [OFF] cycle.			±(1%+0.05Ω)				
Load Life	70°C±2°C, 1000h, 1.5h [ON] 0.5h [OFF] cycle.			±(1%+0.05Ω)				
Resistance to Soldering Heat	260°C±5°C, 5sec±1sec.			±(0.5%+0.05Ω)				
Solderability	235°C±5°C, 2sec±0.5sec.			90% Coverage / Min.				
Bending test	Holding point width 90mm, Bending 5mm 1 time			±1%				
High Temp. exposure	155°C±5°C, 2 hours			±2%				
Non-Combustibility	The resistor shall withstand overload test in accordance with article UL-94, V-0 without producing a fire hazard.							
Operating Temperature Range:		-55°C ~ +155°C						

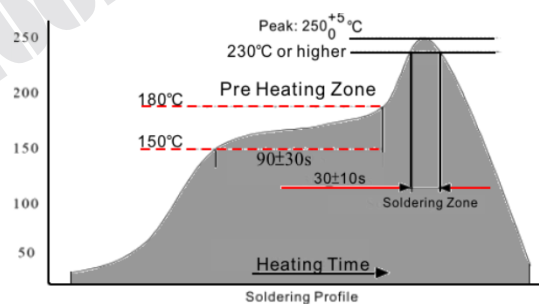
Rated power is maximum power which can continuously loaded at specified ambient temerrmined 70°C, however when the ambient temerture exveeds 70°C, rated power should be determined from the derating curve of below.

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POWER DERATING CURVE



IR Reflow



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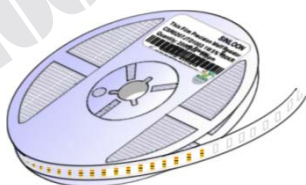
MELF - MCF Series

Carbon Film MELF Resistor

□ **PACKAGE SPECIFICATION**

Part Number Type	Size	Rated Power	Quantity (ea)			<b>SINLOON®</b>	
			Tape Reel	Inner Box	Carton		
W-MCF04	0204	1/8W	178mm	3000 pcs	30K Pcs	180K Pcs	
V-MCF04	0204	1/4WS	178mm	3000 pcs	30K Pcs	180K Pcs	
V-MCF07	0207	1/4W	178mm	2000 pcs	20K Pcs	120K Pcs	
U-MCF07	0207	1/2WS	178mm	2000 pcs	20K Pcs	120K Pcs	
S-MCF07	0207	1WS	178mm	2000 pcs	20K Pcs	120K Pcs	
S-MCF09	0309	1WS	330mm	2500 pcs	5K Pcs	25K Pcs	
Q-MCF11	0411	2WS	330mm	2000 pcs	4K Pcs	20K Pcs	
N-MCF15	0515	3WS	330mm	1500 pcs	3K Pcs	15K Pcs	

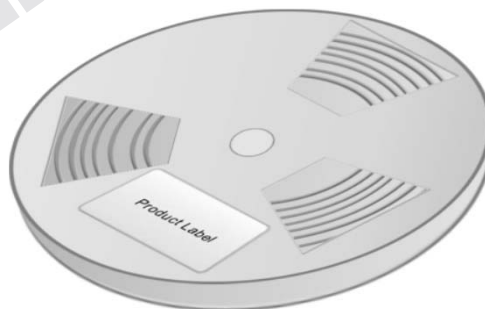
Φ178mm Tape Reel



Inner Box



Φ330mm Tape Reel



Figure



Carton Package



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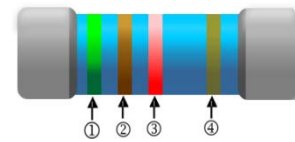
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Standard Resistor Color Code E24 Series ( 4 band code)

Color	1st digit	2nd digit	3rd Multiplier	4 Tolerance
Black	0	0	$\times 10^0$	
Brown	1	1	$\times 10^1$	$\pm 1\%$ (F)
Red	2	2	$\times 10^2$	$\pm 2\%$ (G)
Orange	3	3	$\times 10^3$	
Yellow	4	4	$\times 10^4$	
Green	5	5	$\times 10^5$	$\pm 0.5\%$ (D)
Blue	6	6	$\times 10^6$	$\pm 0.25\%$ (C)
Violet	7	7	$\times 10^7$	$\pm 0.1\%$ (B)
Gray	8	8	$\times 10^8$	$\pm 0.05\%$ (A)
White	9	9	$\times 10^9$	
Gold			$\times 0.1$	$\pm 5\%$ (J)
Silver			$\times 0.01$	$\pm 10\%$ (K)
None				$\pm 20\%$ (M)

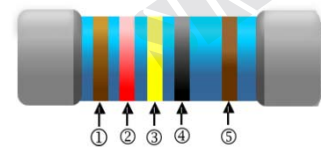
Example : Value : 5.1K Ω ±5%



Standard Resistor Color Code E96 Series ( 5 band code)

Color	1st digit	2nd digit	3rd digit	4 Multiplier	5 Tolerance
Black	0	0	0	$\times 10^0$	
Brown	1	1	1	$\times 10^1$	$\pm 1\%$ (F)
Red	2	2	2	$\times 10^2$	$\pm 2\%$ (G)
Orange	3	3	3	$\times 10^3$	
Yellow	4	4	4	$\times 10^4$	
Green	5	5	5	$\times 10^5$	$\pm 0.5\%$ (D)
Blue	6	6	6	$\times 10^6$	$\pm 0.25\%$ (C)
Violet	7	7	7	$\times 10^7$	$\pm 0.1\%$ (B)
Gray	8	8	8	$\times 10^8$	$\pm 0.05\%$ (A)
White	9	9	9	$\times 10^9$	
Gold				$\times 0.1$	$\pm 5\%$ (J)
Silver				$\times 0.01$	$\pm 10\%$ (K)
None					$\pm 20\%$ (M)

Example : Value : 12.4Ω ±1%



STANDARD RESISTANCE VALUE IN A DECADE  
For Resistance According to IEC Publication 63

E24	E96				Example :
10	100	178	316	562	
11	102	182	324	576	
12	105	187	332	590	
13	107	191	340	604	
15	110	196	348	619	
16	113	200	357	634	
18	115	205	365	649	
20	118	210	374	665	
22	121	215	383	681	
24	124	221	392	698	
27	127	226	402	715	
30	130	232	412	732	
33	133	237	422	750	
36	137	243	432	768	
39	140	249	442	787	
43	143	255	453	806	
47	147	261	464	825	
51	150	267	475	845	
56	154	274	487	866	
62	158	280	499	887	
68	162	287	511	909	
75	165	294	523	931	
82	169	301	536	953	
91	174	309	549	976	

E96 (±1%)		E24 (±5%)	
Resistance (Ω) Code		Resistance (Ω) Code	
m5=R0005Ω	1K = 1001	m5=R0005Ω	1K=102
5m=R005Ω	10K = 1002	5m=R005Ω	10K = 103
50m=R05Ω	100K=1003	50m=R05Ω	100K=104
100m=R1Ω	1M=1-004	100m=R1Ω	1M=105
1000m=1Ω	10M=1005	1000m=1Ω	10M=106
1R = 1R00	100M=1006	1R = 1R0	100M=107
10R=10R0	1G = 1007	10R=100	1G=108
100R=100R	10G = 1008	100R=101	10G=109

ORDERING RESISTANCE CODE

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※Mayloon characteristic parameters of electronic product specification changes or updates without notice to improve.