



# SYNTON-TECH CORPORATION

## CARBON FILM MELF RESISTOR MECF TYPE

File No.:	MECF-02-Z
Version:	A
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### 1. SUBJECT

This specification applies on the carbon film melf resistors  
MECF type (SMD style) was made by **SYNTON-TECH** Corporation ◦

### 2. FEATURES

- SMD style carbon resistors.
- Free direction for mounting due to cylindrical design.
- High solder ability due to specially plated electrodes.
- Electrodes strength is higher than flat chip resistors.
- Lower current noise than thick film flat chip resistors.
- Suitable for reflow, flow and iron soldering.

APPROVED	CHECKED	DESIGNED	REMARK	DOCUMENT NO.
Carol	May	Chen		0201010488



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### 3. EXPLANATIONS OF ORDERING CODE

**DESCRIPTION : MECF 1/4W 5% 560Ω**

**SYNTON CODE : MECF 025S J 561 TR**

#### SERIES

CARBON  
FILM MELF  
RESISTOR  
  
(MECF TYPE)

#### POWER

012 : 1/8W  
025S : 1/4WS  
050S : 1/2WS  
050 : 1/2W  
100SS : 1WSS  
100S : 1WS  
200SS : 2WSS

025 S : 1/4W  
small Size

(Please see  
detail of  
Figure1)

#### TOLERANCE

J : ±5%

#### RESISTANCE

##### VALUE

E24 Series 5%  
3 Digits :  
2R2 : 2.2Ω  
101 : 100Ω  
103 : 10K  
105 : 1M

(Please see  
detail of  
Figure4)

#### PACKAGE

TR=Tape Reel

(Please see  
detail of  
Figure 5)



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### 4. ELECTRICAL CHARACTERISTICS

STYLE	MECF 012	MECF 025S	MECF 050S	MECF 050	MECF 100SS	MECF 100S	MECF 200SS
POWER	1/8W	1/4WS	1/2WS	1/2W	1WSS	1WS	2WSS
Maximum Working Voltage	150V	200V	300V	350V	350V	350V	350V
Maximum Overload Voltage	200V	400V	600V	700V	700V	700V	700V
Operating Temp. Range	-55°C ~ +155°C						
Temperature coefficient	0 ~ -1500ppm/°C						
Resistance Range	2.2Ω~ 1MΩ	1.0Ω~ 1MΩ	1.0Ω~ 10MΩ	1.0Ω~ 10MΩ	1.0Ω~ 10MΩ	1.0Ω~ 10MΩ	1.0Ω~ 10MΩ
0Ω	Max. allowable current	2A	2A	5A	5A	-	-
	Max. working voltage	150V	200V	250V	350V	-	-
	Max. overload voltage	300V	400V	500V	700V	-	-
	Resistance range	Under 5mΩ					

Figure 1



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### 5. DERATING CURVE

The rated power at the temperature in excess of 70°C shall be derated in accordance with figure2

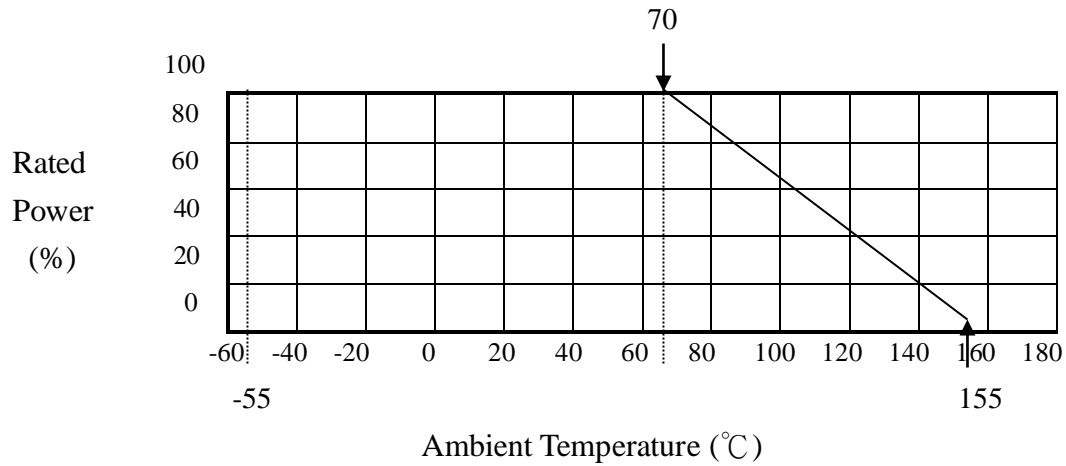
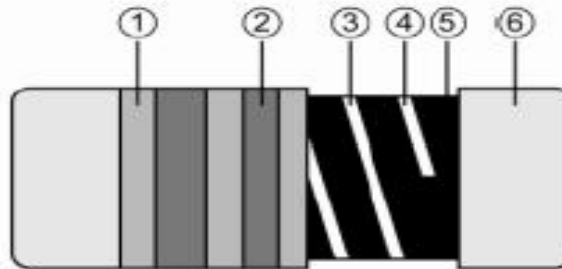


Figure2

### 6. CONSTRUCTION



ITEM		MATERIAL
1	Insulation Coating	Epoxy Insulation (Color: Tan)
2	Marking	Epoxy Resin
3	Cutting Line	-
4	Ceramic Core	Aluminum Material
5	Resistive Film	Carbon Film
6	Terminal	Terminal Material: Fe/Cu/Ni/Sn

Figure3

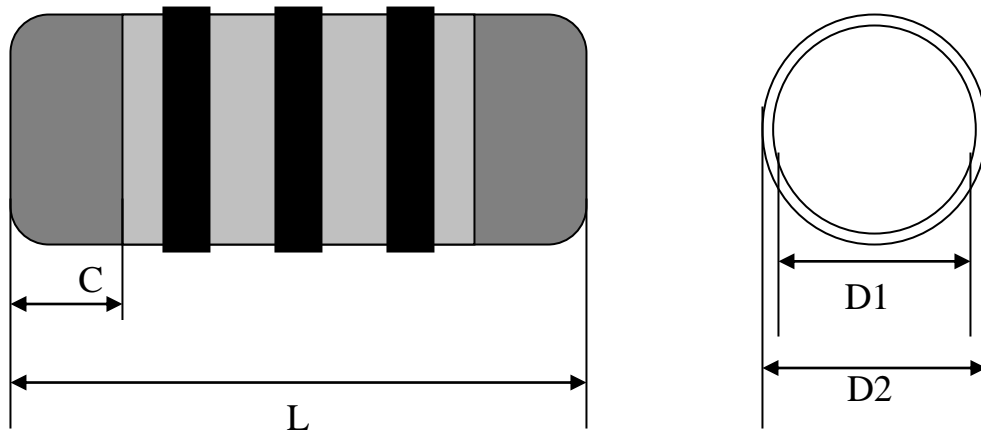


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### 7. DIMENSIONS



Unit:m/m

STYLE	POWER	L	C Min.	D1	D2 Max.
MECF-12	1/8W	3.5±0.2	0.50	1.40±0.15	1.55
MECF-25S	1/4WS	3.5±0.2	0.50	1.40±0.15	1.55
MECF-50S	1/2WS	5.9±0.2	1.00	2.20±0.20	2.40
MECF-100SS	1WSS	5.9±0.2	1.00	2.20±0.20	2.40
MECF-50	1/2W	8.5±0.2	1.50	3.20±0.20	3.40
MECF-100S	1WS	8.5±0.2	1.50	3.20±0.20	3.40
MECF-200SS	2WSS	8.5±0.2	1.50	3.20±0.20	3.40

Figure4



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### 8. ENVIRONMENTAL CHARACTERISTICS

No.	Test Item	Performance Requirements	Test Methods (JIS-C-5201-1)										
1	T.C.R	Within specified T.C.R	+25°C/-55°C and +25°C/+125°C										
2	Solderability	More than 95% of the total area of the electrode part shall be covered with new solder	Temperature of solder : 235±5°C Dipping time : 3±0.5 sec										
3	Resistance to solvent	Epoxy Insulation coating can not be peeled	There are 3 circles, each circle takes 1 min.										
4	Resistance to soldering heat	Based on the Iron cap loose standard, the change of the resistance value shall be within ±(1%+0.05Ω)	Temperature :260°C±5°C Dipping time :10±1 sec										
5	Short time overload	The change of the resistance value shall be within ± (0.5%+0.05Ω)	$V=\sqrt{R \times P \times 2.5}$ for 5 sec. V=Rated Voltage R=Resistance Value P=Power Rating <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Power Rating</td> <td>1/8W</td> <td>1/4W</td> <td>1/2W</td> <td>1/2W</td> </tr> <tr> <td>Voltage Max</td> <td>200V</td> <td>400V</td> <td>500V</td> <td>700V</td> </tr> </table>	Power Rating	1/8W	1/4W	1/2W	1/2W	Voltage Max	200V	400V	500V	700V
Power Rating	1/8W	1/4W	1/2W	1/2W									
Voltage Max	200V	400V	500V	700V									
6	Overload	Within specified tolerance	$V=\sqrt{R \times P \times 3}$ for 2.5 sec.										
7	Load life in humidity	The change of the resistance value shall be within ± (5%+0.05Ω)	40°C±2°C, 90%~95% RH, 1.5hr ON/0.5hr OFF cycle, total test 1,000hr.										
8	Load life test	The change of the resistance value shall be within ± (2%+0.05Ω)	Constant temperature chamber of 70°C±2°C, DC 1.5hr ON/ 0.5hr OFF cycle, applied continuously for 1,000±48hr.										



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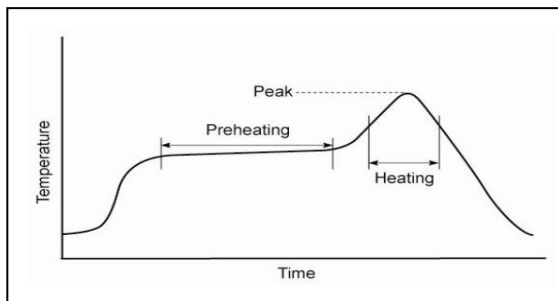
### 9. CAUTION

- (1) Storage and usage method
- (2) Humidity gives damage to cap solderability, therefore, please keep environment.  
Temperature : +5°C~+40°C  
Humidity : 55%~75% RH  
Storage limited : 12 months
- (3) Please follow the instruction to keep the material when it is unpacked.
- (4) When ambient temperature exceeds a rated ambient temperature, the resistance shall be applied on the derating curve by derating the load power.
- (5) Please avoid join many resistors in series or parallel when apply high voltage or high electric current.
- (6) Molding products by using resin might bring out resistance value change, Please keep away from Molding.
- (7) This products meet the RoHS Compliant.

### 10. SOLDERING

We recommend the following condition to keep products performance.

- (1) Conditions for reflow



<Reflow soldering (lead-free)>

Status	Temperature	Time
Preheating	180°C max	120 sec. max
Heating	220°C max	60 sec. max
Peak	260°C max	3 sec. max

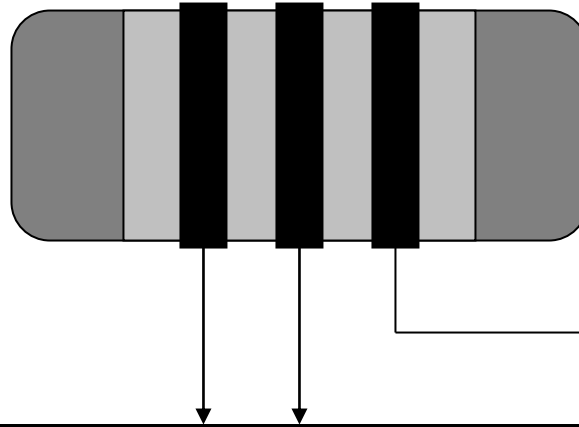
- (2) Flow soldering (lead-free)  
Temperature : 260°C Max  
Time : 10 sec. Max



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## 11. COLOR CODING



Color	1st, 2nd (Significant Figure)		3rd (Multiplier)
Black	0	0	$10^0$
Brown	1	1	$10^1$
Red	2	2	$10^2$
Orange	3	3	$10^3$
Yellow	4	4	$10^4$
Green	5	5	$10^5$
Blue	6	6	$10^6$
Violet	7	7	—
Gray	8	8	—
White	9	9	—
Gold	—	—	$10^{-1}$
Silver	—	—	$10^{-2}$

Note: 1. the tolerance 5% with 3 bands for E-24 series.

2. the single black color band denotes Zero ohm resistors.

Figure5



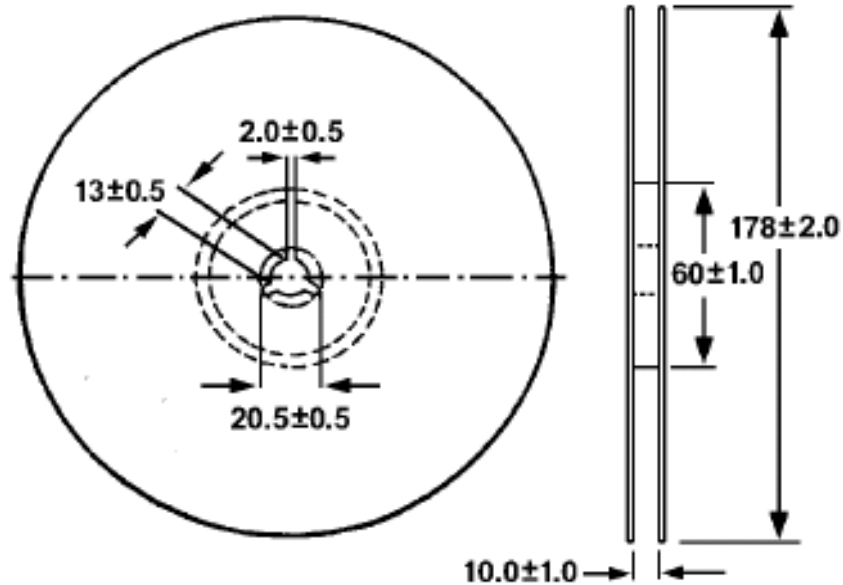


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## 12. REEL DIMENSIONS



### Paper Carrier

A (Max.)	REEL QUANTITY						
	1/8W	1/4WS	1/2WS	1WSS	1/2W	1WS	2WSS
$178 \pm 2.0$ mm	3,000PCS		2,000PCS		2,500PCS		

Figure6