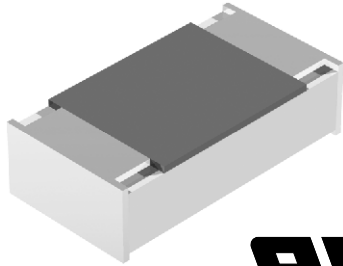


## Thin Film Flat Chip Fuses



### FEATURES

- Advanced thin film technology
- Very quick acting fuse characteristics
- Outstanding stability of fusing characteristics
- Standard metric SMD sizes
- Green product, supports lead (Pb)-free soldering

### APPLICATIONS

- Information technology
- Industrial electronics
- Automotive electronics
- Telecommunication
- Medical equipment
- Audio/video electronics

MFU Thin Film Flat Chip Fuses are the perfect choice for the most fields of modern electronics. The highly controlled manufacturing thin film process guarantees an outstanding stability of fusing characteristics. Typical applications include information technology, telecommunication, medical equipment, industrial, audio/video, and automotive electronics.

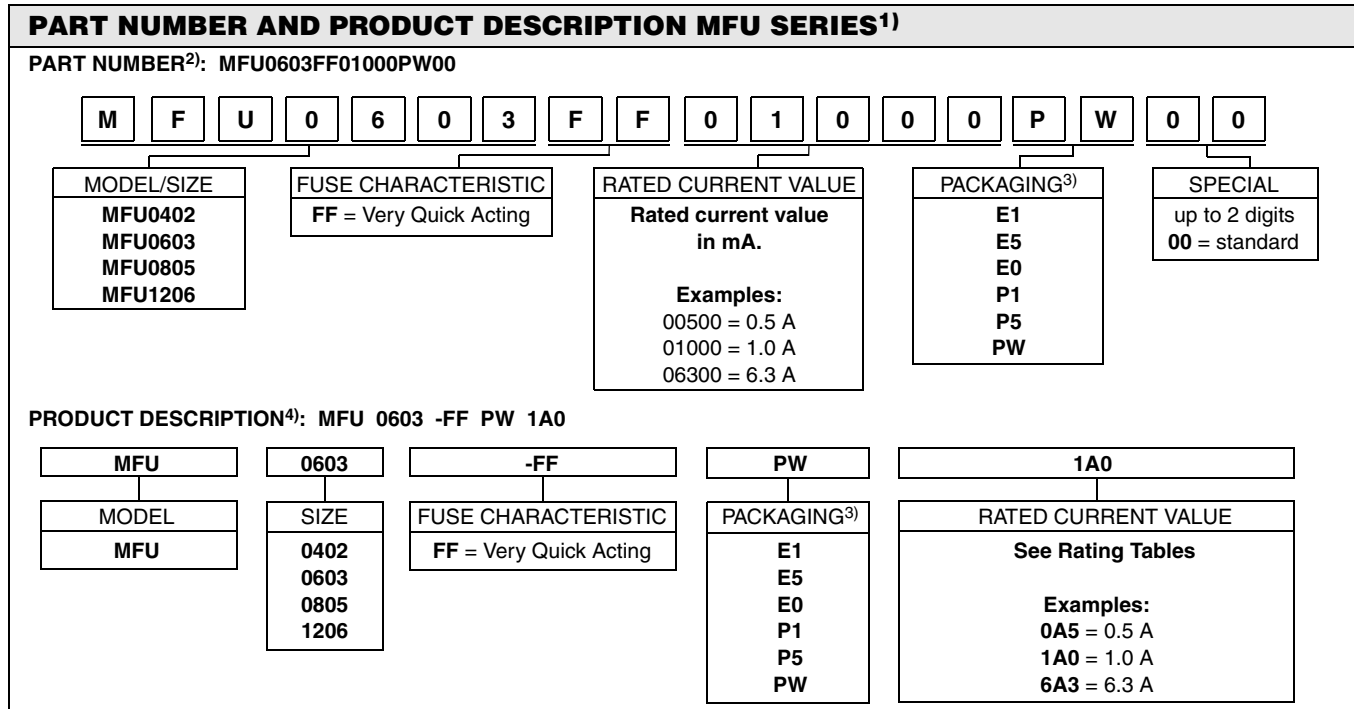
METRIC SIZE				
<b>INCH:</b>	0402	0603	0805	1206
<b>METRIC:</b>	RR 1005M	RR 1608M	RR 2012M	RR 3216M

TECHNICAL SPECIFICATION					
DESCRIPTION		MFU 0402	MFU 0603	MFU 0805	MFU 1206
Metric size		RR 1005M	RR 1608M	RR 2012M	RR 3216M
Rated Current range $I_R$		0.5 A to 2.0 A	0.5 A to 5.0 A	0.5 A to 5.0 A	0.5 A to 6.3 A
Rated voltage, $U_{max}$ DC		32 V	32 V	32 V	63 V
Breaking Capacity, $I_{max}$ at $U_{max}$ DC		50 A at 32 V	50 A at 32 V	50 A at 32 V	50 A at 63 V
Voltage drop at $1 \times I_R$		115 mV to 420 mV	85 mV to 361 mV	98 mV to 374 mV	116 mV to 433 mV
Cold resistance at $0.1 \times I_R$		44 mΩ to 640 mΩ	13 mΩ to 550 mΩ	15 mΩ to 570 mΩ	14 mΩ to 660 mΩ
Climatic category (LCT/UCT/days)		55/125/56	55/125/56	55/125/56	55/125/56
Permissible continuous current rating at $\vartheta_{amb.} = 23 \text{ }^\circ\text{C}$		$0.7 \times I_R$	$0.7 \times I_R$	$0.7 \times I_R$	$0.7 \times I_R$
Approval	UL recognition file	E253806	E253806	E253806	E253806
	IEC 60127-4	n/a	Refer to Table: MFU 0603 RATING		Refer to Table: MFU 1206 RATING

# MFU Series - Thin Film Fuse

Vishay Beyschlag

Thin Film Flat Chip Fuses

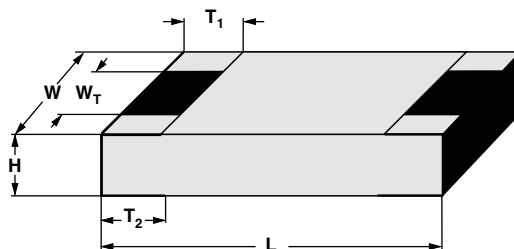


**Notes**

1. Products can be ordered using either the PART NUMBER or the PRODUCT DESCRIPTION.
2. The PART NUMBER is shown to facilitate the introduction of a unified part numbering system.
3. Please refer to table PACKAGING.
4. We recommend that the PRODUCT DESCRIPTION is used to minimize the possibility of errors in order handling.

<b>PACKAGING</b>			
MODEL	REEL		
	DIAMETER	PIECES/REEL	CODE
<b>MFU0402</b>	180 mm/7"	1000	E1
	180 mm/7"	5000	E5
	180 mm/7"	10 000	E0
<b>MFU0603</b>	180 mm/7"	1000	P1
	180 mm/7"	5000	P5
	330 mm/13"	20 000	PW
<b>MFU0805</b>	180 mm/7"	1000	P1
	180 mm/7"	5000	P5
	330 mm/13"	20 000	PW
<b>MFU1206</b>	180 mm/7"	1000	P1
	180 mm/7"	5000	P5
	330 mm/13"	20 000	PW

### DIMENSIONS



DIMENSIONS - Chip Fuse types, mass and relevant physical dimensions							
TYPE	H (mm)	L (mm)	W (mm)	W <sub>T</sub> (mm)	T <sub>1</sub> (mm)	T <sub>2</sub> (mm)	MASS (mg)
MFU 0402	0.32 ± 0.05	1.0 ± 0.05	0.5 ± 0.05	> 75 % of W	0.2 + 0.1/- 0.15	0.2 ± 0.1	0.65
MFU 0603	0.45 + 0.1/- 0.05	1.55 ± 0.05	0.85 ± 0.1	> 75 % of W	0.3 + 0.15/- 0.2	0.3 + 0.15/- 0.2	1.9
MFU 0805	0.45 + 0.1/- 0.05	2.0 ± 0.1	1.25 ± 0.15	> 75 % of W	0.4 + 0.1/- 0.2	0.4 + 0.1/- 0.2	4.7
MFU 1206	0.55 ± 0.1	3.2 + 0.1/- 0.2	1.6 ± 0.15	> 75 % of W	0.5 ± 0.25	0.5 ± 0.25	9.5

MFU 0402 RATING - very quick acting (FF)										
SIZE	FUSE CHAR.	RATED CURRENT <sup>1)</sup>	RATED VOLTAGE	PRE-ARCING <sup>2)</sup> I <sup>2</sup> t at 10 x I <sub>R</sub>	VOLT. DROP <sup>2)</sup> at 1 x I <sub>R</sub>	COLD RESIS. <sup>2)</sup> at 0.1 x I <sub>R</sub>	BREAKING CAPACITY DC	MARK.	APPROVAL	ORDERING CODE <sup>3)4)</sup>
0402	FF	500 mA <sup>5)</sup>	32 V	0.0009 A <sup>2</sup> s	420 mV	640 mΩ	50 A at 32 V	-	UL	MFU 0402-FF E0 0A5
		630 mA <sup>5)</sup>	32 V	0.0014 A <sup>2</sup> s	331 mV	400 mΩ	50 A at 32 V	-	UL	MFU 0402-FF E0 0A63
		750 mA <sup>5)</sup>	32 V	0.0020 A <sup>2</sup> s	275 mV	280 mΩ	50 A at 32 V	-	UL	MFU 0402-FF E0 0A75
		800 mA	32 V	0.0023 A <sup>2</sup> s	231 mV	220 mΩ	50 A at 32 V	-	UL	MFU 0402-FF E0 0A8
		1.0 A	32 V	0.0028 A <sup>2</sup> s	184 mV	140 mΩ	50 A at 32 V	-	UL	MFU 0402-FF E0 1A0
		1.25 A	32 V	0.0039 A <sup>2</sup> s	159 mV	97 mΩ	50 A at 32 V	-	UL	MFU 0402-FF E0 1A25
		1.5 A	32 V	0.0059 A <sup>2</sup> s	146 mV	74 mΩ	50 A at 32 V	-	UL	MFU 0402-FF E0 1A5
		1.6 A	32 V	0.0065 A <sup>2</sup> s	136 mV	65 mΩ	50 A at 32 V	-	UL	MFU 0402-FF E0 1A6
		1.75 A	32 V	0.0077 A <sup>2</sup> s	124 mV	54 mΩ	50 A at 32 V	-	UL	MFU 0402-FF E0 1A75
		2.0 A	32 V	0.0101 A <sup>2</sup> s	115 mV	44 mΩ	50 A at 32 V	-	UL	MFU 0402-FF E0 2A0

#### Notes

- Other values of rated current are available on request
- Typical values
- For packages with 1000 pieces, please use for packaging E1 instead of E0
- For packages with 5000 pieces, please use for packaging E5 instead of E0
- Available on request

# MFU Series - Thin Film Fuse

Vishay Beyschlag

Thin Film Flat Chip Fuses



MFU 0603 RATING - very quick acting (FF)										
SIZE	FUSE CHAR.	RATED CURRENT <sup>1)</sup>	RATED VOLTAGE	PRE-ARCING <sup>2)</sup> $I^2t$ at $10 \times I_R$	VOLT. DROP <sup>2)</sup> at $1 \times I_R$	COLD RESIS. <sup>2)</sup> at $0.1 \times I_R$	BREAKING CAPACITY DC	MARK.	APPROVAL	ORDERING CODE <sup>3)4)</sup>
0603	FF	500 mA	32 V	0.0009 A <sup>2</sup> s	361 mV	550 mΩ	50 A at 32 V	F	UL/IEC	MFU 0603-FF PW 0A5
		630 mA	32 V	0.0014 A <sup>2</sup> s	331 mV	400 mΩ	50 A at 32 V	CT	UL	MFU 0603-FF PW 0A63
		750 mA	32 V	0.0020 A <sup>2</sup> s	258 mV	262 mΩ	50 A at 32 V	G	UL	MFU 0603-FF PW 0A75
		800 mA	32 V	0.0023 A <sup>2</sup> s	249 mV	237 mΩ	50 A at 32 V	CV	UL	MFU 0603-FF PW 0A8
		1.0 A	32 V	0.0028 A <sup>2</sup> s	223 mV	170 mΩ	50 A at 32 V	H	UL/IEC	MFU 0603-FF PW 1A0
		1.25 A	32 V	0.0039 A <sup>2</sup> s	180 mV	110 mΩ	50 A at 32 V	J	UL	MFU 0603-FF PW 1A25
		1.5 A	32 V	0.0059 A <sup>2</sup> s	155 mV	79 mΩ	50 A at 32 V	K	UL	MFU 0603-FF PW 1A5
		1.6 A	32 V	0.0065 A <sup>2</sup> s	159 mV	76 mΩ	50 A at 32 V	EF	UL/IEC	MFU 0603-FF PW 1A6
		1.75 A	32 V	0.0077 A <sup>2</sup> s	138 mV	60 mΩ	50 A at 32 V	L	UL	MFU 0603-FF PW 1A75
		2.0 A	32 V	0.0101 A <sup>2</sup> s	150 mV	57 mΩ	50 A at 32 V	N	UL/IEC	MFU 0603-FF PW 2A0
		2.5 A	32 V	0.0157 A <sup>2</sup> s	121 mV	37 mΩ	50 A at 32 V	O	UL	MFU 0603-FF PW 2A5
		3.0 A	32 V	0.0227 A <sup>2</sup> s	126 mV	32 mΩ	50 A at 32 V	P	UL	MFU 0603-FF PW 3A0
		3.15 A	32 V	0.0250 A <sup>2</sup> s	120 mV	29 mΩ	50 A at 32 V	EL	UL/IEC	MFU 0603-FF PW 3A15
		3.5 A	32 V	0.0308 A <sup>2</sup> s	106 mV	23 mΩ	50 A at 32 V	R	UL	MFU 0603-FF PW 3A5
		4.0 A	32 V	0.0403 A <sup>2</sup> s	100 mV	19 mΩ	50 A at 32 V	S	UL	MFU 0603-FF PW 4A0
5.0 A	32 V	0.2275 A <sup>2</sup> s	85 mV	13 mΩ	50 A at 32 V	T	UL	MFU 0603-FF PW 5A0		

**Notes**

1. Other values of rated current are available on request
2. Typical values
3. For packages with 1000 pieces, please use for packaging P1 instead of PW
4. For packages with 5000 pieces, please use for packaging P5 instead of PW

MFU 0805 RATING - very quick acting (FF)										
SIZE	FUSE CHAR.	RATED CURRENT <sup>1)</sup>	RATED VOLTAGE	PRE-ARCING <sup>2)</sup> $I^2t$ at $10 \times I_R$	VOLT. DROP <sup>2)</sup> at $1 \times I_R$	COLD RESIS. <sup>2)</sup> at $0.1 \times I_R$	BREAKING CAPACITY DC	MARK.	APPROVAL	ORDERING CODE <sup>3)4)</sup>
0805	FF	500 mA	32 V	0.0009 A <sup>2</sup> s	374 mV	570 mΩ	50 A at 32 V	F	UL	MFU 0805-FF PW 0A5
		630 mA	32 V	0.0014 A <sup>2</sup> s	347 mV	420 mΩ	50 A at 32 V	CT	UL	MFU 0805-FF PW 0A63
		750 mA	32 V	0.0021 A <sup>2</sup> s	280 mV	285 mΩ	50 A at 32 V	G	UL	MFU 0805-FF PW 0A75
		800 mA	32 V	0.0023 A <sup>2</sup> s	262 mV	250 mΩ	50 A at 32 V	CV	UL	MFU 0805-FF PW 0A8
		1.0 A	32 V	0.0028 A <sup>2</sup> s	243 mV	185 mΩ	50 A at 32 V	H	UL	MFU 0805-FF PW 1A0
		1.25 A	32 V	0.0040 A <sup>2</sup> s	205 mV	125 mΩ	50 A at 32 V	J	UL	MFU 0805-FF PW 1A25
		1.5 A	32 V	0.0059 A <sup>2</sup> s	171 mV	87 mΩ	50 A at 32 V	K	UL	MFU 0805-FF PW 1A5
		1.6 A	32 V	0.0065 A <sup>2</sup> s	164 mV	78 mΩ	50 A at 32 V	EF	UL	MFU 0805-FF PW 1A6
		1.75 A	32 V	0.0077 A <sup>2</sup> s	161 mV	70 mΩ	50 A at 32 V	L	UL	MFU 0805-FF PW 1A75
		2.0 A	32 V	0.0101 A <sup>2</sup> s	176 mV	67 mΩ	50 A at 32 V	N	UL	MFU 0805-FF PW 2A0
		2.5 A	32 V	0.0157 A <sup>2</sup> s	131 mV	40 mΩ	50 A at 32 V	O	UL	MFU 0805-FF PW 2A5
		3.0 A	32 V	0.0227 A <sup>2</sup> s	134 mV	34 mΩ	50 A at 32 V	P	UL	MFU 0805-FF PW 3A0
		3.15 A	32 V	0.0250 A <sup>2</sup> s	128 mV	31 mΩ	50 A at 32 V	EL	UL	MFU 0805-FF PW 3A15
		3.5 A	32 V	0.0308 A <sup>2</sup> s	119 mV	26 mΩ	50 A at 32 V	R	UL	MFU 0805-FF PW 3A5
		4.0 A	32 V	0.0403 A <sup>2</sup> s	105 mV	20 mΩ	50 A at 32 V	S	UL	MFU 0805-FF PW 4A0
5.0 A	32 V	0.2275 A <sup>2</sup> s	98 mV	15 mΩ	50 A at 32 V	T	UL	MFU 0805-FF PW 5A0		

**Notes**

1. Other values of rated current are available on request
2. Typical values
3. For packages with 1000 pieces, please use for packaging P1 instead of PW
4. For packages with 5000 pieces, please use for packaging P5 instead of PW

MFU 1206 RATING - very quick acting (FF)										
SIZE	FUSE CHAR.	RATED CURRENT <sup>1)</sup>	RATED VOLTAGE	PRE-ARCING <sup>2)</sup> $I^2t$ at $10 \times I_R$	VOLT. DROP <sup>2)</sup> at $1 \times I_R$	COLD RESIS. <sup>2)</sup> at $0.1 \times I_R$	BREAKING CAPACITY DC	MARK.	APPROVAL	ORDERING CODE <sup>3)4)</sup>
1206	FF	500 mA	63 V	0.0009 A <sup>2</sup> s	433 mV	660 mΩ	50 A at 63 V	F	UL/IEC	MFU 1206-FF PW 0A5
		630 mA	63 V	0.0014 A <sup>2</sup> s	372 mV	450 mΩ	50 A at 63 V	CT	UL	MFU 1206-FF PW 0A63
		750 mA	63 V	0.0022 A <sup>2</sup> s	325 mV	330 mΩ	50 A at 63 V	G	UL	MFU 1206-FF PW 0A75
		800 mA	63 V	0.0023 A <sup>2</sup> s	273 mV	260 mΩ	50 A at 63 V	CV	UL	MFU 1206-FF PW 0A8
		1.0 A	63 V	0.0028 A <sup>2</sup> s	262 mV	200 mΩ	50 A at 63 V	H	UL/IEC	MFU 1206-FF PW 1A0
		1.25 A	63 V	0.0041 A <sup>2</sup> s	230 mV	140 mΩ	50 A at 63 V	J	UL	MFU 1206-FF PW 1A25
		1.5 A	63 V	0.0059 A <sup>2</sup> s	207 mV	105 mΩ	50 A at 63 V	K	UL	MFU 1206-FF PW 1A5
		1.6 A	63 V	0.0066 A <sup>2</sup> s	168 mV	80 mΩ	50 A at 63 V	EF	UL/IEC	MFU 1206-FF PW 1A6
		1.75 A	63 V	0.0077 A <sup>2</sup> s	174 mV	76 mΩ	50 A at 63 V	L	UL	MFU 1206-FF PW 1A75
		2.0 A	63 V	0.0102 A <sup>2</sup> s	181 mV	69 mΩ	50 A at 63 V	N	UL/IEC	MFU 1206-FF PW 2A0
		2.5 A	63 V	0.0159 A <sup>2</sup> s	161 mV	49 mΩ	50 A at 63 V	O	UL	MFU 1206-FF PW 2A5
		3.0 A	63 V	0.0229 A <sup>2</sup> s	173 mV	44 mΩ	50 A at 63 V	P	UL	MFU 1206-FF PW 3A0
		3.15 A	63 V	0.0251 A <sup>2</sup> s	153 mV	37 mΩ	50 A at 63 V	EL	UL/IEC	MFU 1206-FF PW 3A15
		3.5 A	63 V	0.0310 A <sup>2</sup> s	161 mV	35 mΩ	50 A at 63 V	R	UL	MFU 1206-FF PW 3A5
		4.0 A	63 V	0.0404 A <sup>2</sup> s	147 mV	28 mΩ	50 A at 63 V	S	UL	MFU 1206-FF PW 4A0
5.0 A	63 V	0.2275 A <sup>2</sup> s	131 mV	20 mΩ	50 A at 63 V	T	UL	MFU 1206-FF PW 5A0		
6.3 A	63 V	0.5160 A <sup>2</sup> s	116 mV	14 mΩ	50 A at 63 V	ET	UL	MFU 1206-FF PW 6A3		

### Notes

1. Other values of rated current are available on request
2. Typical values
3. For packages with 1000 pieces, please use for packaging P1 instead of PW
4. For packages with 5000 pieces, please use for packaging P5 instead of PW

### DESCRIPTION

Production is strictly controlled and follows an extensive set of instructions established for reproducibility. A homogeneous film of metal alloy is deposited on a high grade ceramic body. The fuse elements are covered by a protective coating designed for electrical, mechanical and climatic protection. The terminations receive a final pure tin on nickel plating.

The result of the determined production is verified by an extensive testing procedure performed on 100 % of the individual fuses. Only accepted products are laid directly into the paper tape in accordance with **IEC 60286-3**.

### APPROVALS

The fuses are tested in accordance with **IEC 60127-4** and **UL 248-14** which refers to **UL 248-1**, **IEC 60127-1** and **IEC 60068** series. VDE-approval of conformity is indicated by the **UMF** Logo on the package label. Recognition by Underwriter Laboratories Inc. is indicated by the **UL** logo on the package label.



**Pb-free Identification  
on the Package Label**

### ASSEMBLY

The fuses are suitable for processing on automatic SMD assembly systems. They are suitable for automatic soldering using wave, reflow or vapour phase. The encapsulation is resistant to all cleaning solvents commonly used in the electronics industry, including alcohols, esters and aqueous solutions. The fuses are RoHS compliant, the pure tin plating provides compatibility with lead (Pb)-free and lead-containing soldering processes. The immunity of the plating against tin whisker growth has been proven under extensive testing. All products comply with the **CECIC-EECA-EICTA** list of legal restrictions on hazardous substances.

This includes full compliance with the following directives:

- 2000/53/EC End of Vehicle life Directive (ELV)
- 2000/53/EC Annex II to End of Vehicle Life Directive (ELV II)
- 2002/95/EC Restriction of the use of Hazardous Substances Directive (RoHS)
- 2002/96/EC Waste Electrical and Electronic Equipment Directive (WEEE)

Solderability is specified for 2 years after production or requalification. The permitted storage time is 20 years.