VISHAY INTERTECHNOLOGY, INC.

METAL FILM RESISTORS

- CCF
- CMF
- CMF Fusible
- CPF
- DBU
- FP
- FP...P
- FRJ
- GSR
- HVR
- MBx/SMA
- MPR
- MRS
- NFR
- PR
- PR-L
- PSF
- PTF
- SFR
- UXx

RESISTIVE PRODUCTS

SELECTOR GUIDE

www.vishay.com

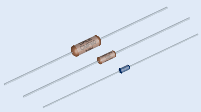
METAL FILM RESISTORS

Key Features

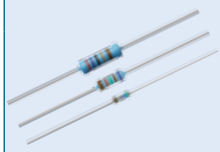
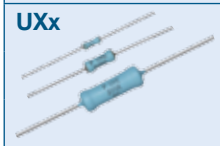
- A wide range of power ratings (0.05 W to 10 W)
- A wide resistance range (0.1 Ω to 50 MΩ)
- Low-high-temperature performance (– 65 °C to + 230 °C)
- Tight tolerance (down to ± 0.01 %)
- Low temperature coefficient (down to ± 2 ppm/°C)
- Very low noise: – 40 dB

For available Military products (MIL-PRF-39017, MIL-PRF-55182, MIL-PRF-22684, and MIL-R-10509), consult Military Film Leaded Selector Guide http://www.vishay.com/doc?49135.

Through-Hole Metal Film Resistors

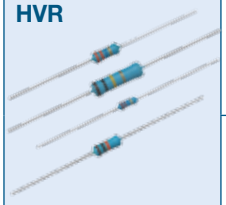
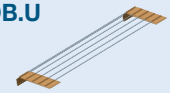
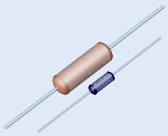
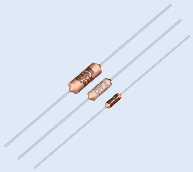
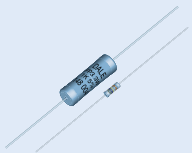
Product	Model	Wattage Ratings	Resistance Range	TCR ppm/°C	Tolerance	Application
CCF 	CCF07	0.25 / 0.50	10 Ω to 1 MΩ 1.1 MΩ to 2 MΩ	± 100 ± 250	± 2 %, ± 5 % ± 5 %	• Telephones • Base stations • Transmitters • TV/Cable • Video • Amplifiers • Modems • Copy machines • Computer monitors • Avionics • Automotive • Heat pumps • Dishwashers
	CCF50	0.33	10 Ω to 1 MΩ	± 100	± 1 %, ± 5 %	
	CCF55	0.25 / 0.50	10 Ω to 3.01 MΩ	± 100	± 1 %	
	CCF60	0.50 / 0.75 / 1.0	10 Ω to 1 MΩ	± 100	± 1 %	
	CCF02	2.0	4.99 Ω to 1 MΩ	± 100	± 1 %, ± 5 %	
CMF 	CMF50	0.05 / 0.1 / 0.125 / 0.25	10 Ω to 22 MΩ 10 Ω to 2.5 MΩ 10 Ω to 2.5 MΩ 10 Ω to 2.5 MΩ	± 150, ± 200 ± 100 ± 50 ± 25	± 1 % to ± 5 % ± 1 % to ± 5 % ± 0.1 % to ± 5 % ± 0.1 % to ± 1 %	
	CMF55	0.1 / 0.125 / 0.25 / 0.5	0.1 Ω to 50 MΩ 0.5 Ω to 50 MΩ 0.5 Ω to 50 MΩ 1 Ω to 22 MΩ 10 Ω to 5 MΩ 10 Ω to 2.5 MΩ 10 Ω to 2.5 MΩ	± 200 ± 200 ± 150 ± 100 ± 50 ± 50 ± 25	± 2 %, ± 5 % ± 1 % ± 1 % to ± 5 % ± 1 % to ± 5 % ± 1 % to ± 5 % ± 0.1 % to ± 0.5 % ± 0.1 % to ± 1 %	
	CMF07	0.25	1 Ω to 5 MΩ 5 Ω to 5 MΩ	± 150, ± 200 ± 100	± 2 %, ± 5 % ± 2 %, ± 5 %	
	CMF60	0.125 / 0.25 / 0.5 / 0.75 / 1.0	0.1 Ω to 10 MΩ 0.5 Ω to 10 MΩ 0.5 Ω to 10 MΩ 1 Ω to 10 MΩ 10 Ω to 10 MΩ 10 Ω to 2.5 MΩ 10 Ω to 2.5 MΩ	± 200 ± 200 ± 150 ± 100 ± 50 ± 50 ± 25	± 2 %, ± 5 % ± 1 % ± 1 % to ± 5 % ± 1 % to ± 5 % ± 1 % to ± 5 % ± 0.1 % to ± 0.5 % ± 0.1 % to ± 1 %	
	CMF20	0.5 / 0.75 / 1.0	1 Ω to 10 MΩ 5 Ω to 10 MΩ	± 150, ± 200 ± 100	± 2 %, ± 5 % ± 2 %, ± 5 %	
	CMF65	0.25 / 0.5 / 0.75 / 1.0	0.1 Ω to 22 MΩ 0.5 Ω to 22 MΩ 0.5 Ω to 22 MΩ 1 Ω to 15 MΩ 10 Ω to 10 MΩ 10 Ω to 2.5 MΩ 10 Ω to 2.5 MΩ	± 200 ± 200 ± 150 ± 100 ± 50 ± 50 ± 25	± 2 %, ± 5 % ± 1 % ± 1 % to ± 5 % ± 1 % to ± 5 % ± 1 % to ± 5 % ± 0.1 % to ± 0.5 % ± 0.1 % to ± 1 %	
	CMF70	0.25 / 0.5 / 0.75 / 1.0	1 Ω to 22 MΩ 1 Ω to 15 MΩ 10 Ω to 10 MΩ 10 Ω to 2.5 MΩ 10 Ω to 2.5 MΩ	± 150, ± 200 ± 100 ± 50 ± 50 ± 25	± 1 % to ± 5 % ± 1 % to ± 5 % ± 1 % to ± 5 % ± 0.1 % to ± 0.5 % ± 0.1 % to ± 1 %	
CMF Fusible 	CMF55..39	0.25	4 Ω to 10 KΩ	± 100	± 1 %	• Special purpose fusible applications
	CMF60..64	0.50	4 Ω to 23 KΩ			

Through-Hole Metal Film Resistors

Product	Model	Wattage Ratings	Resistance Range	TCR ppm/°C	Tolerance	Application
GSR 	GSR55	0.10 / 0.125	10 Ω to 2.5 MΩ	± 15, ± 25, ± 50	± 0.05 % to ± 1 %	• Harsh environments • Space • Avionics
	GSR57	0.125 / 0.25	10 Ω to 1.0 MΩ			
	GSR60	0.125 / 0.25	10 Ω to 3.0 MΩ			
	GSR65	0.25 / 0.50	10 Ω to 10.0 MΩ			
	GSR70	0.50 / 0.75	10 Ω to 10.0 MΩ			
	GSR75	1.0 / 2.0	10 Ω to 5.0 MΩ			
MBx/SMA 	MBA/SMA 0204	0.25 / 0.4 0.07 / 0.25	0.22 Ω to 10 MΩ 0.22 Ω to 332 KΩ	± 50, ± 25 ± 25, ± 15	± 5 %, ± 1 %, ± 0.5 % ± 0.25 %, ± 0.1 %	• Industrial • Telecommunications • Medical equipment • Test and measurement equipment
	MBB/SMA 0207	0.4 / 0.6 0.11 / 0.4	0.22 Ω to 22 MΩ 10 Ω to 1 MΩ	± 50, ± 25 ± 25, ± 15		
	MBE/SMA 0414	0.65 / 1.0 0.17 / 0.65	0.22 Ω to 22 MΩ 22 Ω to 1.5 MΩ	± 50, ± 25 ± 25, ± 15		
UXx 	UXA 0204	0.1	22 Ω to 221 KΩ	± 10, ± 5, ± 2	± 0.25 %, ± 0.1 % ± 0.05 %, ± 0.01 %	• Precision test and measuring system • Design of calibration reference standards
	UXB 0207	0.25	10 Ω to 1 MΩ	± 10, ± 5, ± 2		
	UXE 0414	0.5	22 Ω to 511 KΩ	± 10, ± 5	± 0.1 %, ± 0.05 %	
MPR24 	MPR24	0.125	4.99 Ω to 1 MΩ	± 25, ± 15 ± 10, ± 5	± 0.05 %, ± 0.02 %, ± 0.01 %	• Test and measurement equipment • Telecommunications
		0.25			± 0.5 %, ± 0.25 %, ± 0.1 %	
MRS 	MRS16	0.4	4.99 Ω to 1 MΩ	± 50	± 1 %	• All general purpose applications
	MRS25	0.6	1 Ω to 10 MΩ			
MBx/SMA VG06 	MBA/SMA 0204 VG06	0.4	1 Ω to 5.11 MΩ	± 50, ± 15	± 1 %, ± 0.1 %	• Military • Avionics • Space
	MBB/SMA 0207 VG06	0.6	1 Ω to 10 MΩ	± 50, ± 15	± 1 %, ± 0.1 %	
	MBE/SMA 0414 VG06	1	1 Ω to 21.5 MΩ	± 50, ± 15	± 1 %, ± 0.1 %	
MBA/SMA HF 	MBA/SMA 0204 HF	0.25, 0.4	1.5 Ω to 470 Ω	± 50	± 2 %, ± 1 %	• Telecommunications • Industrial electronics
FRJ 	FRJ50	N/A	0.010 Ω max	N/A	N/A	• Jumper
NFR01/02/03 	NRF01	1	0.47 Ω to 1 KΩ	± 200	± 5 %	• Audio • Video
	NFR02	2				
	NFR03	3				
PRL 	PR02L	2	2 KΩ to 70 KΩ	± 250	± 5 %	• Lamp ignition
	PR2.5L	2.5				
	PR2.5LS	2.5				

METAL FILM RESISTORS

Through-Hole Metal Film Resistors

Product	Model	Wattage Ratings			Resistance Range	TCR ppm/°C	Tolerance	Application
HVR 	HVR25	0.25			100 KΩ to 10 MΩ 100 KΩ to 10 MΩ	± 200	± 5 % ± 1 %	• Power supplies • White goods, TV, electronic ballasts
	HVR37	0.5			100 KΩ to 10 MΩ 100 KΩ to 10 MΩ	± 200	± 5 % ± 1 %	
DB.U 	DB1U	N/A			0.006 Ω max	N/A	N/A	• Jumper
	DB2U/DB4U				0.0045 Ω max 0.0025 Ω max			
PTF 	PTF51	0.05			15 Ω to 100 KΩ	± 5, ± 10, ± 15	± 0.02 % to ± 1 %	• Precision test equipment • Instrumentation
	PTF56	0.125			15 Ω to 500 KΩ		± 0.01 % to ± 1 %	
	PTF65	0.25			15 Ω to 1 MΩ		± 0.05 % to ± 1 %	
CPF 	CPF1	1.0			0.1 Ω to 150 kΩ 0.5 Ω to 150 kΩ 0.5 Ω to 150 kΩ 1 Ω to 150 kΩ 5 Ω to 150 kΩ 5 Ω to 150 kΩ	± 200 ± 200 ± 150 ± 100 ± 50 ± 25	± 2 %, ± 5 % ± 1 % ± 1 % to ± 5 % ± 0.5 % to ± 5 % ± 0.1 % to ± 5 % ± 0.1 % to ± 1 %	• Small size, high power • Automotive • Industrial controls
	CPF2	2.0			0.1 Ω to 150 kΩ 0.5 Ω to 150 kΩ 0.5 Ω to 150 kΩ 1 Ω to 150 kΩ 5 Ω to 150 kΩ 5 Ω to 150 kΩ	± 200 ± 200 ± 150 ± 100 ± 50 ± 25	± 2 %, ± 5 % ± 1 % ± 1 % to ± 5 % ± 0.5 % to ± 5 % ± 0.1 % to ± 5 % ± 0.1 % to ± 1 %	
	CPF3	3.0			0.1 Ω to 150 kΩ 1 Ω to 150 kΩ 1 Ω to 150 kΩ 1 Ω to 150 kΩ 8 Ω to 150 kΩ 8 Ω to 150 kΩ	± 200 ± 200 ± 150 ± 100 ± 50 ± 25	± 2 %, ± 5 % ± 1 % ± 1 % to ± 5 % ± 0.5 % to ± 5 % ± 0.1 % to ± 5 % ± 0.1 % to ± 1 %	
		25 °C	40 °C	70 °C				
FP 	FP01/2 (FP1/2)	–	–	0.5	10 Ω to 1 MΩ	± 150	± 1 % to ± 10 %	• Telecommunications • Power supplies • Instrumentation
	FP0001 (FP1)	–	–	1	10 Ω to 1 MΩ			
	FP0032 (FP32)	–	–	1	10 Ω to 1 MΩ			
	FP0002 (FP2)	3.5	3	2	9 Ω to 1.5 MΩ			
	FP0042 (FP42)	–	–	2	10 Ω to 1.5 MΩ			
	FP0003 (FP3)	4	4	3	9 Ω to 1 MΩ			
	FP0004 (FP4)	5.5	5	4	6 Ω to 1 MΩ			
	FP0005 (FP5)	6.5	6	5	7 Ω to 1 MΩ			
	FP0007 (FP7)	7.5	–	7	8 Ω to 1 MΩ			
	FP0010 (FP10)	–	10	–	8 Ω to 1 MΩ			
	FP0067 (FP67)	5	–	–	5 Ω to 19 KΩ			
	FP0069 (FP69)	3	–	2	2.6 Ω to 1.5 MΩ			

Through-Hole Metal Film Resistors

Product	Model	Wattage Ratings	Resistance Range	TCR ppm/°C	Tolerance	Application
FP...P 	FP1/2P (FP1/2P)	0.5	10 Ω to 1 MΩ	± 150	± 1 %, ± 2 %, ± 5 %	• Telecommunications • Pulse applications
	FP001P (FP1P)	1.0	10 Ω to 1 MΩ			
	FP002P (FP2P)	2.0	9 Ω to 1.5 MΩ			
	FP003P (FP3P)	3.0	9 Ω to 1 MΩ			
	FP069P (FP69P)	2.0	2.6 Ω to 1 MΩ			
SFR 	SFR16S	0.5	1 Ω to 3 MΩ 4.99 Ω to 3 MΩ	± 100, ± 250	± 5 % ± 1 %	• All general purpose applications
	SFR25	0.4	0.22 Ω to 10 MΩ 1 Ω to 10 MΩ		± 5 % ± 1 %	
	SFR25H	0.5	0.22 Ω to 10 MΩ 1 Ω to 10 MΩ		± 5 % ± 1 %	
PR01/02/03 	PR01	0.6	0.22 Ω to 1 Ω	± 250	± 5 %, ± 1 %	• All general purpose power applications
		1.0	1 Ω to 1 MΩ			
	PR02	1.2	0.33 Ω to 1 Ω			
		2	1 Ω to 1 MΩ			
	PR03	1.6	0.68 Ω to 1 Ω			
		3	1 Ω to 1 MΩ			
NFR25/ 25H 	NFR25	0.33	0.22 Ω to 15 KΩ	Refer to datasheet	± 5 %	• Audio • Video
	NFR25H	0.5				

Surface-Mount Metal Film Resistor

Product	Model	Wattage Ratings	Resistance Range	TCR ppm/°C	Tolerance	Application
PSF 	PSF2012	0.125	15 Ω to 100 kΩ	± 5, ± 10, ± 15, ± 25	± 0.01 % to ± 1 %	• Precision test equipment • Instrumentation
	PSF4527	0.25	15 Ω to 500 kΩ	± 5, ± 10, ± 15, ± 25	± 0.01 % to ± 1 %	

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