VISHAY Electro Films

Thin Film Back-Contact Resistors

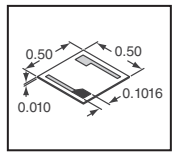
The Back Contact Resistor (BCR) series single-value chip is one of the smallest chips available. The BCR requires only one wire bond thus saving hybrid space. **Features:** • Wire bondable • Small size 0.020 inches square • Oxidized silicon substrate for good power dissipation • Resistor material: Tantalum nitride, self-passivating • Moisture resistant

Description	Power Rating (Watts)	Value Range (Ω)	Digi-Key Part No.‡	Price Each 10	Price Each 50	Vishay Part No.
BCR2020, 1% BCRFM	0.25	10 ~ 10K	BCR(Value)FM-ND	5.78	5.05	BCRxxxxxFMAHWT

‡ For complete part number, substitute value from Resistance Value Chart for (Value)

Resistance Values BCR2020, 1%, BCRFM

10	47	10K



Thin Film Center-Contact Resistors

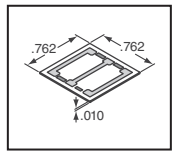
The CTR offers the designer flexibility in use as either a single value resistor as two resistors with a center tap feature. **Features:** • Wire bondable • Tight ratio tolerances to: 0.05% • Chip size: 0.030 inches square • Oxidation silicon substrate for good power dissipation • Resistor material: Tantalum nitride, self-passivating • Moisture resistant

Description	Power Rating (Watts)	Value Range (Ω)	Digi-Key Part No.‡	Price Each 10	Price Each 50	Vishay Part No.
CTR3030, 1%, CTRFK	0.25	1.0K ~ 27K	CTR-(Value)FK-ND	4.09	3.39	CTRxxxxxFFKGANHWT

‡ For complete part number, substitute value from Resistance Value Chart for (Value)

Resistance Values CTR3030, 1%, CTRFK

1.0K	10K	20K	27K



Thin Film Top-Contact Resistors

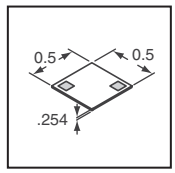
The SFM Series single-value resistor chips offer a small size, wide ohmic value range and excellent power capacity. The SFMs tantalum nitride resistor material offers excellent resistance to high moisture environments. **Features:** • Wire bondable • Small size: 0.020 inches square • Oxidized silicon substrate for good power dissipation • Self-passivating • Moisture resistant

Description	Power Rating (Watts)	Value Range (Ω)	Digi-Key Part No.‡	Price Each 10	Price Each 50	Vishay Part No.
SFM2020, 1%, SFMFK	0.25	10 ~ 10K	SFM(Value)FK-ND	3.55	2.94	SFMxxxxxFKANHWT
SFM2020, 1%, SFMFM	0.25	1M	SFM1.0MFM-ND	3.55	2.94	SFM10003FMANHWT

‡ For complete part number, substitute value from Resistance Value Chart for (Value)

Resistance Values SFM2020, 1%, SFMFK

10	1.0K	10K



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VISHAY Dale WSL Power Metal Strip® SMT Resistors

Features: • Ideal for all types of current sensing, voltage division and pulse applications including switching and linear power supplies, instruments and power amplifiers • All welded construction • Solid metal iron-chrome (nickel chrome on WSL3921 and WSL5931) or manganese-copper alloy resistive element with low TCR (<20 ppm/°C) • Very low inductance 0.5nH ~ 5nH • Excellent frequency response to 50MHz • Low thermal EMF (<3μV/°C

Specifications: • Operating Temperature Range: -65°C ~ 170°C • Thermal Shock: -55°C ~ 150°C, 1000 cycles, 15 minutes at each extreme • Load Life: 1000 hours at 70°C, 1.5 hours "ON", 0.5 hours "OFF" • Short Time Overload: 5X Rated Power for 5 Seconds

Series	Value Range	Dimensions – mm L	W	H	T
WSL0603	All Listed Values	1.52	0.76	.330	.381
WSL0805	All Listed Values	2.03	1.27	.330	.381
WSL1206	All Listed Values	3.20	1.60	.635	.508
WSL2010	.001Ω ~ .006Ω	5.08	2.54	.635	1.47
	.007Ω ~ .50Ω	5.08	2.54	.635	.508
WSL2512	.001Ω ~ .004Ω	6.35	3.18	.635	2.21
	.005Ω ~ .006Ω	6.35	3.18	.635	1.19
	.007Ω ~ .50Ω	6.35	3.18	.635	.762
WSL2816	All Listed Values	7.1	4.20	.635	1.57
WSL3921	All Listed Values	10.01	5.20	.5	2.00
WSL5931	All Listed Values	15.01	7.75	.5	4.00

Fig. 1

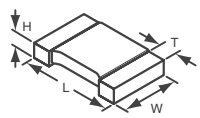
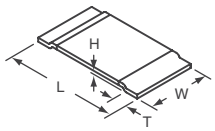


Fig. 2



Series	Temperature Coefficient ppm/°C
WSL0603	±75
WSL0805	±75
WSL1206	.002Ω/ ±275 .003Ω ~ .004Ω/ ±150 .005Ω ~ .006Ω/ ±110 .007Ω ~ .2Ω/ ±75
WSL2010	.001Ω ~ .002Ω/ ±275 .003Ω ~ .004Ω/ ±150 .005Ω ~ .006Ω/ ±1105X .007Ω ~ .50Ω/ ±75
WSL2512	.001Ω ~ .002Ω/ ±275 .003Ω ~ .004Ω/ ±150 .005Ω ~ .006Ω/ ±110 .007Ω ~ .5Ω/ ±75
WSL2816	±75
WSL3921	.0003Ω ~ .0005Ω/ ±175 .001Ω ~ .004Ω/ ±75
WSL5931	.0002Ω/ ±225 .003Ω ~ .0005Ω/ ±175 .001Ω ~ .003Ω/ ±75

Resistance Values WSL0603, 1%, WSLJ

.01	.02	.033
.015	.022	.05
.016	.025	.051
.018	.03	.1

Resistance Values WSL0805, 1%, WSLA

.01	.03	.08
.015	.033	.10
.02	.04	.15
.025	.05	.20

Resistance Values WSL1206, 1%, WSLC

.002	.006	.01	.03	.06	.10
.003	.007	.015	.033	.07	.15
.004	.008	.02	.04	.08	.20
.005	.009	.025	.05	.09	

Resistance Values WSL2010, 1%, WSLE

.001	.006	.015	.04	.09	.25
.002	.007	.02	.05	.10	.30
.003	.008	.025	.06	.11	.33
.004	.009	.03	.07	.15	.40
.005	.01	.033	.08	.20	.50

Resistance Values WSL2512, 1%, WSLG

.001	.006	.015	.04	.09	.25
.002	.007	.02	.05	.10	.30
.003	.008	.025	.06	.15	.33
.004	.009	.03	.07	.151	.40
.005	.01	.033	.08	.20	.50

Resistance Values WSL2816, 1%, WSLK

.01	.018	.025	.04	.06	.068	.08
.012	.019	.03	.047	.062	.07	.082
.015	.02	.033	.05	.065	.075	.1

Resistance Values WSL3921, 1%, WSLM

.0003	.002
.0005	.003
.001	.004

Resistance Values WSL5931, 1%, WSLN

.0002	.001
.0003	.002
.0005	.003

Fig.	Description	Power Rating (W)	Value Range (Ω)	Digi-Key Part No.‡	Cut Tape Pricing 1	Cut Tape Pricing 10	Cut Tape Pricing 50	Digi-Key Part No.‡	Tape and Reel Qty.	Tape and Reel Pricing
1	WSL0603, 1%, WSLJ	.1	.01 ~ .051	WSLJ-(Value)CT-ND	.71	6.01	26.51	WSLJ-(Value)TR-ND	5,000	221.76/M
		.1	.1	WSLJ-(Value)CT-ND	.57	4.83	21.31	WSLJ-(Value)TR-ND	5,000	177.41/M
	WSL0805, 1%, WSLA	.125	.01 ~ .05	WSLA-(Value)CT-ND	.71	6.01	26.51	WSLA-(Value)TR-ND	5,000	221.76/M
		125	.08 ~ .20	WSLA-(Value)CT-ND	.57	4.83	21.31	WSLA-(Value)TR-ND	5,000	177.41/M
	WSL1206, 1%, WSLC	.25	.002 ~ .009	WSLC-(Value)CT-ND	1.09	9.25	40.80	WSLC-(Value)TR-ND	4,000	343.73/M
		.25	.01 ~ .06	WSLC-(Value)CT-ND	.78	6.60	29.11	WSLC-(Value)TR-ND	4,000	243.94/M
		.25	.07 ~ .20	WSLC-(Value)CT-ND	.64	5.42	23.91	WSLC-(Value)TR-ND	4,000	199.59/M
	WSL2010, 1%, WSLE	.5	.001 ~ .004	WSLE-(Value)CT-ND	1.33	11.31	49.90	WSLE-(Value)TR-ND	4,000	421.35/M
		.5	.005 ~ .009	WSLE-(Value)CT-ND	1.26	10.72	47.30	WSLE-(Value)TR-ND	4,000	399.17/M
		.5	.01 ~ .06	WSLE-(Value)CT-ND	.88	7.48	33.01	WSLE-(Value)TR-ND	4,000	277.20/M
		.5	.07 ~ .50	WSLE-(Value)CT-ND	.74	6.31	27.81	WSLE-(Value)TR-ND	4,000	232.85/M
	WSL2512, 1%, WSLG	1.0†	.001 ~ .004	WSLG-(Value)CT-ND	1.37	11.61	51.20	WSLG-(Value)TR-ND	2,000	432.43/M
		1.0†	.005 ~ .009	WSLG-(Value)CT-ND	1.30	11.02	48.60	WSLG-(Value)TR-ND	2,000	410.26/M
		1.0†	.01 ~ .06	WSLG-(Value)CT-ND	.88	7.48	33.01	WSLG-(Value)TR-ND	2,000	277.20/M
		1.0†	.07 ~ .50	WSLG-(Value)CT-ND	.78	6.60	29.11	WSLG-(Value)TR-ND	2,000	243.94/M
	WSL2816, 1%, WSLK	2	.01 ~ .068	WSLK-(Value)CT-ND	1.15	9.75	43.01	WSLK-(Value)TR-ND	5,000	362.44/M
		2	.07 ~ .1	WSLK-(Value)CT-ND	1.01	8.60	37.94	WSLK-(Value)TR-ND	5,000	319.48/M
2	WSL3921, 1%, WSLM	3.0	.0003 ~ .004	WSLM-(Value)CT-ND	1.92	16.32	71.99	WSLM-(Value)TR-ND	3,000	609.84/M
	WSL5931, 1%, WSLN	5.0	.0002 ~ .003	WSLN-(Value)CT-ND	2.27	19.27	84.98	WSLN-(Value)TR-ND	1,500	720.72/M

‡ For complete part number, substitute value from Resistance Value Chart for (Value) † For values above .1Ω, derate linearly to 80% rated power at .5Ω.