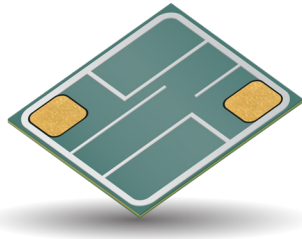


# Thin Film WBR (Wire Bond Resistor)



## Top Contact



### BENEFITS

- Top Contact/ Bottom Isolated
- Ultra High Stability
- High Reliability
- Extremely Tight Tolerance
- Unique Value Marking
- 250 mW Power Rating

### APPLICATIONS

- Medical Implantable
- Military / Defense
- Hybrid Designs
- Multi-Chip Module (MCM)
- Test & Measurement Instrumentation
- High-Rel Microelectronics
- RF / Microwave communications

Top Contact Precision wire bond-able resistors are ultra-stable with high reliability. Laser trimmed to tight tolerance. Customizable value and unique marking of that value. This device is built in 0202 chip outline and is ideal for but not limited to hybrid circuit applications.

These are designed specifically for applications that require stable thermo-compression, epoxy or ultra-sonic attachment

### HOW TO ORDER

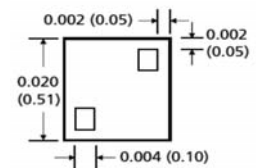
WBR	0202	S	C	AA	F	WG	W
Series Code	Case Size	Material	TCR (ppm/°C)	Resistance	Tolerance	Termination Code	Packaging
WBR = Wire Bond Resistor	0202 = 0202 0S0S = Special Request Please supply Design or contact factory	S = Silicon G = Glass C = Custom	A = ±25 B = ±50 C = ±100 (standard) D = ±150 S = Special Request supply design or contact factory	See tables on the following pages	F = 1% B = 0.1% D = 0.5% J = 5% S = Special Request supply design or contact factory	WG = Bondable Gold A = Aluminum	W = Waffle Pack

### MECHANICAL DIMENSIONS

Inches (mm)

Size	Length (L)	Width (W)	Bond Pad
0202	0.020 ± 0.003 (0.51 ± 0.076)	0.020 ± 0.003 (0.51 ± 0.076)	0.0038 ± 0.0038 (0.09 ± 0.09)

Other sizes available upon request



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### AVAILABLE TOLERANCES

Resistor	Units
1.1	AA Ohm
1.2	AB Ohm
1.3	AC Ohm
1.5	AD Ohm
1.6	AE Ohm
1.8	AF Ohm
2	AG Ohm
2.2	AH Ohm
2.4	AJ Ohm
2.6	AK Ohm
2.9	AM Ohm
3.2	AN Ohm
3.5	AP Ohm
3.8	AQ Ohm
4.2	AR Ohm
4.6	AS Ohm
5.1	AT Ohm
5.6	AU Ohm
6.2	AV Ohm
6.8	AW Ohm
7.5	AX Ohm
8.3	AY Ohm
9.1	AZ Ohm
10	BA Ohm
11	BB Ohm
12	BC Ohm
13	BD Ohm
15	BE Ohm
16	BF Ohm
18	BG Ohm
20	BH Ohm
22	BJ Ohm
24	BK Ohm
26	BM Ohm
29	BN Ohm
32	BP Ohm
35	BQ Ohm
38	BR Ohm
42	BS Ohm
46	BT Ohm
51	BU Ohm
56	BV Ohm
62	BW Ohm
68	BX Ohm
75	BY Ohm
83	BZ Ohm
91	CA Ohm
100	CB Ohm
102	CC Ohm
105	CD Ohm

Resistor	Units
107	CE Ohm
110	CF Ohm
113	CG Ohm
115	CH Ohm
118	CJ Ohm
121	CK Ohm
124	CM Ohm
127	CN Ohm
130	CP Ohm
133	CQ Ohm
137	CR Ohm
140	CS Ohm
143	CT Ohm
147	CU Ohm
150	CV Ohm
154	CW Ohm
158	CX Ohm
162	CY Ohm
165	CZ Ohm
169	DA Ohm
174	DB Ohm
178	DC Ohm
182	DD Ohm
187	DE Ohm
191	DF Ohm
196	DG Ohm
200	DH Ohm
205	DJ Ohm
210	DK Ohm
215	DM Ohm
221	DN Ohm
226	DP Ohm
232	DQ Ohm
237	DR Ohm
243	DS Ohm
249	DT Ohm
255	DU Ohm
261	DV Ohm
267	DW Ohm
274	DX Ohm
280	DY Ohm
287	DZ Ohm
294	EA Ohm
301	EB Ohm
309	EC Ohm
316	ED Ohm
324	EE Ohm
332	EF Ohm
340	EG Ohm
348	EH Ohm

Resistor	Units
357	EJ Ohm
365	EK Ohm
374	EM Ohm
383	EN Ohm
392	EP Ohm
402	EQ Ohm
412	ER Ohm
422	ES Ohm
432	ET Ohm
442	EU Ohm
453	EV Ohm
464	EW Ohm
475	EX Ohm
487	EY Ohm
499	EZ Ohm
511	FA Ohm
523	FB Ohm
536	FC Ohm
549	FD Ohm
562	FE Ohm
576	FF Ohm
590	FG Ohm
604	FH Ohm
619	FJ Ohm
634	FK Ohm
649	FM Ohm
665	FN Ohm
681	FP Ohm
698	FQ Ohm
715	FR Ohm
732	FS Ohm
750	FT Ohm
768	FV Ohm
787	FU Ohm
806	FW Ohm
825	FX Ohm
845	FY Ohm
866	FZ Ohm
887	GA Ohm
909	GB Ohm
931	GC Ohm
953	GD Ohm
976	GE Ohm
1000	GF Ohm
1.02	GG kOhm
1.05	GH kOhm
1.07	GJ kOhm
1.1	GK kOhm
1.13	GM kOhm
1.15	GN kOhm

Resistor	Units
1.18	GP kOhm
1.21	GQ kOhm
1.24	GR kOhm
1.27	GS kOhm
1.3	GT kOhm
1.33	GU kOhm
1.37	GV kOhm
1.4	GW kOhm
1.43	GX kOhm
1.47	GY kOhm
1.5	GZ kOhm
1.54	HA kOhm
1.58	HB kOhm
1.62	HC kOhm
1.65	HD kOhm
1.69	HE kOhm
1.74	HF kOhm
1.78	HG kOhm
1.82	HH kOhm
1.87	HJ kOhm
1.91	HK kOhm
1.96	HM kOhm
2	HN kOhm
2.05	HP kOhm
2.1	HQ kOhm
2.15	HR kOhm
2.21	HS kOhm
2.26	HT kOhm
2.32	HU kOhm
2.37	HV kOhm
2.43	HW kOhm
2.49	HX kOhm
2.55	HY kOhm
2.61	HZ kOhm
2.67	JA kOhm
2.74	JB kOhm
2.8	JC kOhm
2.87	JD kOhm
2.94	JE kOhm
3.01	JF kOhm
3.09	JG kOhm
3.16	JH kOhm
3.24	JJ kOhm
3.32	JK kOhm
3.4	JM kOhm
3.48	JN kOhm
3.57	JP kOhm
3.65	JQ kOhm
3.74	JR kOhm
3.83	JS kOhm

Resistor	Units
3.92	JT kOhm
4.02	JU kOhm
4.12	JV kOhm
4.22	JW kOhm
4.32	JX kOhm
4.42	JY kOhm
4.53	JZ kOhm
4.64	KA kOhm
4.75	KB kOhm
4.87	KC kOhm
4.99	KD kOhm
5.11	KE kOhm
5.23	KF kOhm
5.36	KG kOhm
5.49	KH kOhm
5.62	KJ kOhm
5.76	KK kOhm
5.9	KM kOhm
6.04	KN kOhm
6.19	KP kOhm
6.34	KQ kOhm
6.49	KR kOhm
6.65	KS kOhm
6.81	KT kOhm
6.98	KU kOhm
7.15	KV kOhm
7.32	KW kOhm
7.5	KX kOhm
7.68	KY kOhm
7.87	KZ kOhm
8.06	MA kOhm
8.25	MB kOhm
8.45	MC kOhm
8.66	MD kOhm
8.87	ME kOhm
9.09	MF kOhm
9.31	MG kOhm
9.53	MH kOhm
9.76	MJ kOhm
10	MK kOhm
10.2	MM kOhm
10.5	MN kOhm
10.7	MP kOhm
11	MQ kOhm
11.3	MR kOhm
11.5	MS kOhm
11.8	MT kOhm
12.1	MU kOhm
12.4	MV kOhm
12.7	MW kOhm

Resistor	Units
13	MX kOhm
13.3	MY kOhm
13.7	MZ kOhm
14	NA kOhm
14.3	NB kOhm
14.7	NC kOhm
15	ND kOhm
15.4	NE kOhm
15.8	NF kOhm
16.2	NG kOhm
16.5	NH kOhm
16.9	NJ kOhm
17.4	NK kOhm
17.8	NM kOhm
18.2	NN kOhm
18.7	NP kOhm
19.1	NQ kOhm
19.6	NR kOhm
20	NS kOhm
20.5	NT kOhm
21	NU kOhm
21.5	NV kOhm
22.1	NW kOhm
22.6	NX kOhm
23.2	NY kOhm
23.7	NZ kOhm
24.3	PA kOhm
24.9	PB kOhm
25.5	PC kOhm
26.1	PD kOhm
26.7	PE kOhm
27.4	PF kOhm
28	PG kOhm
28.7	PH kOhm
29.4	PJ kOhm
30.1	PK kOhm
30.9	PM kOhm
31.6	PN kOhm
32.4	PP kOhm
33.2	PQ kOhm
34	PR kOhm
34.8	PS kOhm
35.7	PT kOhm
36.5	PU kOhm
37.4	PV kOhm
38.3	PW kOhm
39.2	PX kOhm
40.2	PY kOhm
41.2	PZ kOhm
42.2	QA kOhm

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### AVAILABLE TOLERANCES

Resistor	Units
43.2	QB kOhm
44.2	QC kOhm
45.3	QD kOhm
46.4	QE kOhm
47.5	QF kOhm
48.7	QG kOhm
49.9	QH kOhm
51.1	QJ kOhm
52.3	QK kOhm
53.6	QL kOhm
54.9	QN kOhm
56.2	QO kOhm
57.6	QP kOhm
59	QR kOhm
60.4	QS kOhm
61.9	QT kOhm
63.4	QU kOhm
64.9	QV kOhm
66.5	QW kOhm
68.1	QX kOhm
69.8	QY kOhm
71.5	QZ kOhm
73.2	RA kOhm
75	RB kOhm
76.8	RC kOhm
78.7	RD kOhm
80.6	RE kOhm
82.5	RF kOhm
84.5	RG kOhm
86.6	RH kOhm
88.7	RJ kOhm
90.9	RK kOhm
93.1	RL kOhm
95.3	RM kOhm
97.6	RN kOhm
100	RP kOhm
102	RR kOhm
105	RS kOhm
107	RT kOhm
110	RU kOhm
113	RV kOhm
115	RW kOhm
118	RX kOhm
121	RY kOhm
124	RZ kOhm
127	SA kOhm
130	SB kOhm
133	SC kOhm
137	SD kOhm
140	SE kOhm

Resistor	Units
143	SF kOhm
147	SG kOhm
150	SH kOhm
154	SJ kOhm
158	SK kOhm
162	SM kOhm
165	SN kOhm
169	SP kOhm
174	SQ kOhm
178	SR kOhm
182	SS kOhm
187	ST kOhm
191	SU kOhm
196	SV kOhm
200	SW kOhm
205	SX kOhm
210	SY kOhm
215	SZ kOhm
221	TA kOhm
226	TB kOhm
232	TC kOhm
237	TD kOhm
243	TE kOhm
249	TF kOhm
255	TG kOhm
261	TH kOhm
267	TI kOhm
274	TJ kOhm
280	TK kOhm
287	TN kOhm
294	TP kOhm
301	TQ kOhm
309	TR kOhm
316	TS kOhm
324	TT kOhm
332	TU kOhm
340	TV kOhm
348	TW kOhm
357	TX kOhm
365	TY kOhm
374	TZ kOhm
383	UA kOhm
392	UB kOhm
402	UC kOhm
412	UD kOhm
422	UE kOhm
432	UF kOhm
442	UG kOhm
453	UH kOhm
464	UJ kOhm

Resistor	Units
475	UK kOhm
487	UM kOhm
499	UN kOhm
511	UP kOhm
523	UQ kOhm
536	UR kOhm
549	US kOhm
562	UT kOhm
576	UU kOhm
590	UV kOhm
604	UW kOhm
619	UX kOhm
634	UY kOhm
649	UZ kOhm
665	VA kOhm
681	VB kOhm
698	VC kOhm
715	VD kOhm
732	VE kOhm
750	VF kOhm
768	VG kOhm
787	VH kOhm
806	VJ kOhm
825	VK kOhm
845	VM kOhm
866	VN kOhm
887	VP kOhm
909	VQ kOhm
931	VR kOhm
953	VS kOhm
976	VT kOhm
1000	VU kOhm
1.02	VV Mohm
1.05	VW Mohm
1.07	VX Mohm
1.1	VY Mohm
1.13	VZ Mohm
1.15	WA Mohm
1.18	WB Mohm
1.21	WC Mohm
1.24	WD Mohm
1.27	WE Mohm
1.3	WF Mohm
1.33	WG Mohm
1.37	WH Mohm
1.4	WJ Mohm
1.43	WK Mohm
1.47	WM Mohm
1.5	WN Mohm
1.54	WP Mohm

Resistor	Units
1.58	WQ Mohm
1.62	WR Mohm
1.65	WS Mohm
1.69	WT Mohm
1.74	WU Mohm
1.78	WV Mohm
1.82	WW Mohm
1.87	WX Mohm
1.91	WY Mohm
1.96	WZ Mohm
2	XA Mohm
2.05	XB Mohm
2.1	XC Mohm
2.15	XD Mohm
2.21	XE Mohm
2.26	XF Mohm
2.32	XG Mohm
2.37	XH Mohm
2.43	XJ Mohm
2.49	XK Mohm
2.55	XM Mohm
2.61	XN Mohm
2.67	XP Mohm
2.74	XQ Mohm
2.8	XR Mohm
2.87	XS Mohm
2.94	XT Mohm
3.01	XU Mohm
3.09	XV Mohm
3.16	XW Mohm
3.24	XX Mohm
3.32	XY Mohm
3.4	XZ Mohm
3.48	YA Mohm
3.57	YB Mohm
3.65	YC Mohm
3.74	YD Mohm
3.83	YE Mohm
3.92	YF Mohm
4.02	YG Mohm
4.12	YH Mohm
4.22	YJ Mohm
4.32	YK Mohm
4.42	YM Mohm
4.53	YN Mohm
4.64	YP Mohm
4.75	YQ Mohm
4.87	YR Mohm
4.99	YS Mohm
5.11	YT Mohm

Resistor	Units
5.23	YU Mohm
5.36	YV Mohm
5.49	YW Mohm
5.62	YX Mohm
5.76	YY Mohm
5.9	YZ Mohm
6.04	ZA Mohm
6.19	ZB Mohm
6.34	ZC Mohm
6.49	ZD Mohm
6.65	ZE Mohm
6.81	ZF Mohm
6.98	ZG Mohm
7.15	ZH Mohm
7.32	ZJ Mohm
7.5	ZK Mohm
7.68	ZM Mohm
7.87	ZN Mohm
8.06	ZP Mohm
8.25	ZQ Mohm
8.45	ZR Mohm
8.66	ZS Mohm
8.87	ZT Mohm
9.09	ZU Mohm
9.31	ZV Mohm
9.53	ZW Mohm
9.76	ZX Mohm
10	ZY Mohm

# Thin Film WBR (Wire Bond Resistor)



## Top Contact

### GENERAL CHARACTERISTICS

Resistance Range	1.0 Ohm - 10.0 Mohm
Resistance Tolerance	± 1%, ± 0.1%, ± 0.5%, ± 2%
Termination Type	Gold, Aluminum
Backing	Bare (Lapped) Substrate, Gold
Operating Temperature	-55°C ± 125°C
Rated Voltage	125V DC Max
Insulation Resistance	10 <sup>6</sup> MOhm

Custom values up to 10meg Ohm available upon request

### RESISTOR MATERIALS

Film Type	Standard TCR	Available TCR
Silicon Chrome (SiCr)	± 150 ppm/°C	25, 50, 100, 250
Tantalum Nitride (TaN)	± 150 ppm/°C	25, 50, 100, 250 ppm/°C

Custom low TCR available upon request

### SUBSTRATE MATERIALS

Substrate	Available Thickness
Silicon (With SiO <sub>2</sub> )	0.010 ±0.002 (0.254 ± 0.05)

Inches (mm)

Additional substrate options available

### ENVIRONMENTAL TESTS

Test	Limits	Specification
Life Test/ Stability	±0.25% Max Δ R/R	MIL-STD-202 MTD 108, 1000hrs, 125°C,50mW
Thermal Shock	±0.25% Max Δ R/R	MIL-STD-202 MTD 107
High Temperature Exposure	±0.25% Max Δ R/R	100 Hrs @ 150°C
Moisture Resistance	±0.25% Max Δ R/R	MIL-STD-202 MTD 106
Wire Bond Test	4 Gram Min (1.25 Mil Wire)	MIL -PRF-55342
Short Time Overload	±0.25% Max Δ R/R	MIL -PRF-55342