



Product Series Code	WSA	Brand	MOTTO
File Version	WSA-V2	Editor	Jack
Established Date	2000.05.23	Description	SMD Ferrite DR Core Inductor
Latest Edit Date	2010.11.26	Pages	Page : 1

Features & Application:

- * SMD Drum Choke for power line / signal line of various size
- * Low Profile even 3x3x1.4 mm and low cost
- * To help you go pass the CE/FCC standard.
- * Mobil Device / Handheld Device / LowProfile Device / Panel...

Part No Example:

WSA 53 - 470 K
1 2 3 4

1. MOTTO Series : WSA
2. Dimension Code: 5X5X3 mm
3. L Value Ex: 470=47uH
4. Tolerance: K=10%, M=20%

Custom Design Spec: @ 100KHz,0.25V			
P/N	Inductance	RDC (max)	IDC(max)
WSA54-220K			

Test Equipment :

- * HP4284A,HP42841A- L,IDC,Q,RDC
- * HP8753D NETWORK ANALYZER- SRF

Standard Atmospheric Conditions:

Ambient Temp:20+/-15°C

Relative Humidity:65+/-20%

If there may be any doubt on the result, measurement shall be made within the following limits:

Ambient Temp:25+/-5°C

Relative Humidity:75+/-10%

Operating & Storage Condition:

OPERATING TEMP:-40~+85°C

STORAGE TEMP:-40~+85°C

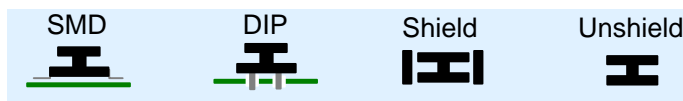
STORAGE LIFE TIME: 12 MONTH @25°C , RH 65%

Attention & Caution:

Please avoid following matters:

- * Splashing water or salt water
- * Toxic Gas (Hydrogen sulfide, Sulfurous acid, Chlorine, Ammonia)
- * Vibrations or shocks which exceed the specified condition
- * Dew condenses
- * Please be careful for the stress to this product by board flexure or something after the mounting.

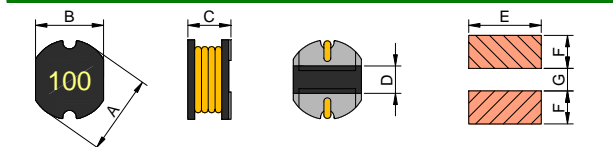
Product Structure



2005 RoHS Compliant - SGS Certified Result

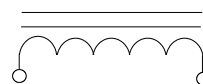
鉛 Pb	鎘 Cd	汞 Hg	六價鉻 Cr+6	溴化聯苯 PBB	溴化聯苯 醌PBDE
<1000ppm	ND	ND	ND	ND	ND

DIMENSION : [mm]

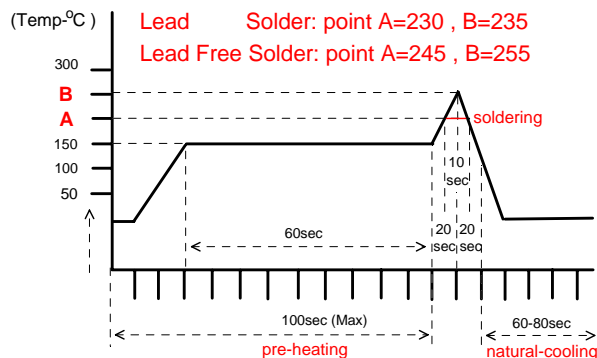


TYPE	A+/-0.3	B+/-0.3	C+/-0.3	D [ref.]	E [ref.]	F [ref.]	G [ref.]
WSA31L	3.50	3.00	1.40 [max.]	1.20	3.20	1.45	1.00
WSA31	3.50	3.00	1.60	1.20	3.20	1.45	1.00
WSA32	3.50	3.00	2.00	1.20	3.20	1.45	1.00
WSA43	4.50	4.00	3.20	1.20	4.20	1.95	1.00
WSA52	5.80	5.20	2.50	1.20	5.60	2.60	1.00
WSA53	5.80	5.20	3.50 [max.]	1.20	5.60	2.60	1.00
WSA54	5.80	5.20	4.50	1.30	5.60	2.55	1.10
WSA73	7.80	7.00	3.50	2.10	7.40	3.25	1.70
WSA75	7.80	7.00	5.00	2.10	7.40	3.25	1.70
WSA104	10.00+/-0.4	9.00	4.20	2.10	9.60	4.45	1.70
WSA105	10.00+/-0.4	9.00	5.50	2.50	9.60	4.25	2.10
WSA107	10.00+/-0.4	9.00	7.50 [max.]	2.10	9.60	4.45	1.70

Schematic:



Recommend Reflow Curve (TIME:Second)



Notice: Iron Soldering: 3 Seconds Max. @260°C





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L CODE	L (uH)	DCR (ohm) (max) / D.C. Current (Amp) (max)													
		WSA 31		WSA 31L		WSA 32		WSA 43		WSA 52		WSA 53		WSA 54	
R10	0.1					0.020	4.50								
R50	0.5					0.020	4.20								
R82	0.82									0.040	5.00				
1R0	1.0	0.048	1.60	0.060	1.40	0.035	3.34	0.033	3.80	0.050	4.20	0.030	4.50	0.020	5.00
1R2	1.2					0.044	3.10	0.035	3.60	0.060	4.00	0.030	4.20		
1R4	1.4					0.045	3.01								
1R5	1.5	0.100	1.55			0.045	3.01	0.039	3.20	0.060	3.70	0.030	4.10	0.025	5.00
1R8	1.8					0.054	2.68	0.042	2.91	0.070	3.50	0.030	3.70	0.025	5.00
2R2	2.2	0.078	1.47	0.110	1.05	0.059	2.35	0.047	2.60	0.080	3.20	0.030	3.50	0.017	4.50
2R7	2.7					0.077	2.01	0.052	2.43	0.100	2.70	0.040	3.20	0.030	3.50
3R3	3.3	0.126	1.34	0.150	0.80	0.098	1.83	0.058	2.15	0.120	2.40	0.050	2.80	0.034	3.00
3R9	3.9	0.140	1.24			0.117	1.64	0.076	1.98	0.140	2.00	0.060	2.60		
4R7	4.7	0.158	1.22	0.210	0.75	0.137	1.50	0.094	1.70	0.150	1.80	0.070	2.50	0.040	3.00
5R6	5.6	0.186	1.09	0.250	0.65	0.157	1.36	0.101	1.60	0.160	1.50	0.080	2.40		
6R8	6.8	0.213	0.96	0.300	0.56	0.196	1.22	0.117	1.41	0.170	1.40	0.090	2.20	0.080	2.50
8R2	8.2	0.238	0.84	0.380	0.50	0.230	1.09	0.132	1.26	0.200	1.30	0.100	2.00		
100	10	0.307	0.70	0.440	0.45	0.286	0.95	0.182	1.15	0.230	1.10	0.120	1.80	0.100	1.44
120	12	0.372	0.65	0.500	0.43	0.322	0.88	0.210	1.05	0.250	1.05	0.130	1.75	0.120	1.40
150	15	0.466	0.59	0.610	0.39	0.398	0.82	0.235	0.92	0.300	1.00	0.150	1.70	0.140	1.30
180	18	0.515	0.54	0.730	0.32	0.520	0.76	0.338	0.84	0.350	0.90	0.180	1.60	0.150	1.23
220	22	0.656	0.48	0.910	0.28	0.660	0.63	0.378	0.76	0.400	0.85	0.220	1.50	0.180	1.11
270	27	0.774	0.43	1.150	0.26	0.760	0.62	0.522	0.71	0.500	0.75	0.240	1.40	0.200	0.97
330	33	1.021	0.37	1.390	0.25	0.870	0.56	0.540	0.64	0.550	0.70	0.300	1.10	0.230	0.88
390	39	1.122	0.32	1.880	0.23	1.100	0.51	0.587	0.59	0.650	0.60	0.400	1.00	0.320	0.80
470	47	1.509	0.26	2.260	0.21	1.250	0.47	0.844	0.54	0.750	0.55	0.430	0.90	0.370	0.72
560	56	1.675	0.24	2.690	0.20	1.590	0.42	0.937	0.50	0.950	0.50	0.500	0.85	0.420	0.68
680	68	1.919	0.23	3.180	0.18	1.820	0.38	1.117	0.46	1.200	0.45	0.600	0.80	0.460	0.61
820	82	2.644	0.21	3.670	0.16	2.440	0.34	1.180	0.43	1.400	0.40	0.800	0.65	0.600	0.58
101	100	2.870	0.19	4.940	0.14	2.840	0.31	1.190	0.41	1.750	0.35	0.900	0.60	0.700	0.52
121	120	4.084	0.17	5.350	0.12	3.190	0.28	1.220	0.38	2.000	0.25	1.000	0.58	0.930	0.48
151	150	4.774	0.16			4.200	0.16	1.400	0.35	2.600	0.22	1.300	0.43	1.100	0.40
181	180	5.699	0.14			5.110	0.15	1.500	0.31	3.000	0.20	1.500	0.41	1.380	0.38
221	220	9.000	0.12			7.310	0.14	1.641	0.29	3.700	0.18	2.000	0.38	1.570	0.35
271	270					8.240	0.12	2.890	0.26	4.000	0.19	2.500	0.35		
331	330					10.190	0.10	3.760	0.20	4.200	0.20	3.200	0.28	2.200	0.30
391	390							5.500	0.17						
471	470							7.200	0.15						
531	530														
561	560													3.000	0.20
681	680														
821	820														
102	1000	34.000	0.06					11.500	0.08						
122	1200	35.000	0.057												
152	1500														
182	1800														
202	2000														
252	2500														
302	3000														
532	5300														
103	10000														
153	15000														

Measuring Freq. : 100KHz / Test Instrument: HP4284A
 L Value Tolerance: 1~8.2uH 20% ; 10uH~15000uH 10%,20%





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L CODE	L (uH)	DCR (ohm) (max) / D.C. Current (Amp) (max)									
		WSA 73		WSA 75		WSA 104		WSA 105		WSA 107	
R10	0.1										
1R0	1.0	0.018	7.00	0.013	7.50	0.012	8.70			0.008	9.50
1R2	1.2			0.015	7.20	0.014	8.00	0.009	8.63		
1R4	1.4					0.016	7.48				
1R5	1.5	0.020	6.00	0.016	6.50	0.016	7.48	0.012	8.00		
1R8	1.8			0.020	6.00	0.018	6.80			0.011	8.60
2R2	2.2	0.023	5.00	0.023	5.30	0.020	5.40	0.016	7.20	0.012	8.00
2R7	2.7					0.024	3.20				
3R3	3.3	0.025	4.00	0.028	4.50	0.028	2.85	0.018	6.50	0.016	6.80
3R9	3.9					0.030	2.80			0.017	6.35
4R7	4.7	0.039	3.50	0.045	4.00	0.038	2.75	0.020	5.50	0.019	5.45
5R6	5.6			0.048	3.60	0.040	2.70			0.024	4.30
6R8	6.8	0.040	2.80	0.058	3.20	0.042	2.65	0.040	4.50	0.035	3.52
8R2	8.2			0.070	2.80	0.048	2.60			0.045	3.51
100	10	0.080	1.44	0.070	2.30	0.050	2.38	0.060	2.60	0.060	3.50
120	12	0.090	1.39	0.080	2.00	0.060	2.13	0.070	1.94	0.070	3.40
150	15	0.100	1.24	0.090	1.80	0.070	1.87	0.070	1.72	0.080	3.10
180	18	0.110	1.12	0.100	1.60	0.080	0.73	0.080	1.58	0.090	3.00
220	22	0.130	1.07	0.110	1.50	0.090	1.60	0.080	1.42	0.100	2.60
270	27	0.150	0.94	0.120	1.30	0.100	1.44	0.100	1.32	0.110	2.40
330	33	0.170	0.85	0.130	1.20	0.120	1.26	0.110	1.16	0.120	2.30
390	39	0.220	0.74	0.160	1.10	0.150	1.20	0.120	1.10	0.140	2.10
470	47	0.250	0.68	0.180	1.10	0.170	1.10	0.140	1.00	0.170	1.95
560	56	0.280	0.64	0.240	0.94	0.200	1.01	0.190	0.93	0.190	1.85
680	68	0.330	0.59	0.280	0.85	0.220	0.91	0.210	0.85	0.220	1.65
820	82	0.410	0.54	0.370	0.78	0.250	0.85	0.280	0.79	0.250	1.50
101	100	0.480	0.51	0.430	0.72	0.340	0.74	0.340	0.72	0.350	1.40
121	120	0.540	0.49	0.470	0.66	0.400	0.69	0.370	0.63	0.400	1.30
151	150	0.750	0.40	0.640	0.58	0.540	0.61	0.510	0.55	0.470	1.20
181	180	1.020	0.36	0.710	0.51	0.620	0.56	0.570	0.50	0.630	1.00
221	220	1.200	0.31	0.960	0.49	0.720	0.53	0.780	0.47	0.730	0.95
271	270	1.310	0.29	1.110	0.42	0.950	0.45	0.870	0.41	0.970	0.90
331	330	1.500	0.28	1.260	0.40	1.100	0.42	1.200	0.37	1.150	0.80
391	390			1.770	0.36	1.240	0.38	1.340	0.35	1.300	0.75
471	470			1.960	0.34	1.530	0.35	1.500	0.33	1.480	0.65
531	530									1.700	0.62
561	560					1.900	0.32	1.900	0.33	1.900	0.60
681	680			2.480	0.30			2.250	0.28	2.250	0.50
821	820			3.400	0.30			2.550	0.24	2.550	0.48
102	1000			5.000	0.17					3.000	0.46
122	1200			5.000	0.17					3.500	0.35
152	1500			5.520	0.16						
182	1800			6.050	0.15						
202	2000			7.280	0.14						
252	2500			9.680	0.11						
302	3000			13.200	0.10						
532	5300			24.000	0.08						
103	10000							31.000	0.15		
153	15000									41.000	0.12

Measuring Freq. : 100KHz
 Test Instrument: HP4284A
 L Value Tolerance: 1~8.2uH 20% ; 10uH~15000uH 10%,20%





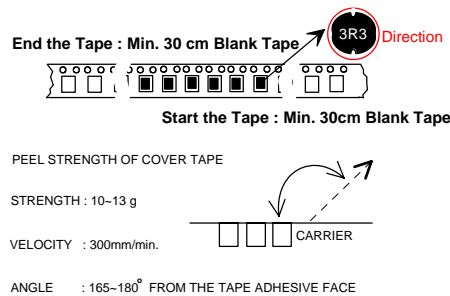
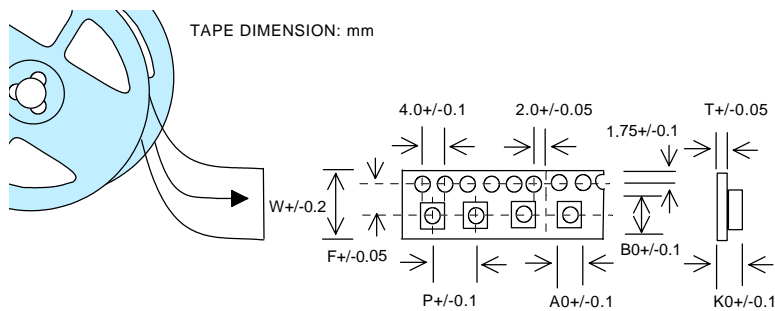
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NO	ITEM	TEST CONDITIONS	Sample Qty/pcs	Spec	Test Day Time	Modify Day	Result																
1	Dimension 本體相關呎吋	Actual Size ...	10	Meet Spec	2001/07/12 ~2001/07/12		ok																
2	Thermal Shock (Temperature Cycle) 溫度循環試驗	Temperature:-20 ° C/ +85 ° C kept stabilized for 30 minutes each Cycle: 100 Cycles(power off)	10	Elec. no variation Appearance no deformation	2001/07/12 ~ 2001/07/18		ok																
3	Humidity Resistance 耐濕試驗	Humidity: 90%~ 95% RH Temperature: 40± 2 ° C Test Time: 120± 2 Hours	10	Elec. no variation Appearance no deformation	2001/07/12 ~ 2001/02/18		ok																
4	High Temperature 耐熱試驗	Temperature: 85± 2 ° C Humidity: 20% Testing Time: 120± 2 Hours	10	Elec. no variation Appearance no deformation	2001/07/12 ~ 2001/07/18		ok																
5	Low Temperature 耐寒試驗	Temperature: -20 ± 2 ° C Time: 120± 2 Hours	10	Elec. no variation Appearance	2001/07/12 ~ 2001/07/18		ok																
6	Temperature and Humidity Cycle 溫/濕度循環試驗	<table border="1"> <thead> <tr> <th>Step</th> <th>Temp</th> <th>Humidity</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>25± 2 ° C</td> <td>95~100%RH</td> <td>3.0Hr</td> </tr> <tr> <td>2</td> <td>55± 2 ° C</td> <td>95~96%RH</td> <td>9.5Hr</td> </tr> <tr> <td>3</td> <td>25± 2 ° C</td> <td>95~100%RH</td> <td>9.5Hr</td> </tr> </tbody> </table>	Step	Temp	Humidity	Time	1	25± 2 ° C	95~100%RH	3.0Hr	2	55± 2 ° C	95~96%RH	9.5Hr	3	25± 2 ° C	95~100%RH	9.5Hr	10	Elec. no variation Appearance no deformation	2001/07/12 ~ 2001/07/19		ok
Step	Temp	Humidity	Time																				
1	25± 2 ° C	95~100%RH	3.0Hr																				
2	55± 2 ° C	95~96%RH	9.5Hr																				
3	25± 2 ° C	95~100%RH	9.5Hr																				
7	Vibration 振動性試驗	Frequency: 10Hz~55Hz Amplitude: 1.5mm Direction: X,Y,Z Time: 2 Hours each	10	Elec. no variation Appearance no deformation	2001/07/12 ~ 2001/07/16		ok																
8	Dipping Verification 吃錫性試驗	Temp Control Solder @ Temp 230± 5 ° C / 3 Sec 吃錫面積必須 > 75%	10	Elec. no variation Appearance no deformation	2001/07/12 ~ 2001/07/12		ok																
9	IR Reflow Soldering 焊錫性試驗	Go through real SMT IR-Reflow.... Solder Temp.: 220~250 ° C , Time: 50 Sec. 250 ° C , Time: 10 Sec. Cycles: x 3	10	Elec. no variation Appearance no deformation	2001/07/12 ~ 2001/07/12		ok																
10	Soldering Heat Resistance 耐熱 焊性試驗	Preheat: 120 ~ 150 ° C (6 sec) Solder:H63A(eutectic solder) Solder Temp.: 260 ± 5 ° C Flux: Rosin Dip time: 10± 1 seconds	10	Elec. no variation Appearance no deformation	2001/07/12 ~ 2001/07/12		ok																
11	Bending Strength 折斷力試驗		10	Elec. no variation Appearance no deformation	2001/07/12 ~ 2001/07/12		ok																
12	Flexure Strength 彎曲試驗		10	Elec. no variation Appearance no deformation	2001/07/12 ~ 2001/07/12		ok																
13	Terminal Strength 推/ 拉力試驗		10	After solder between copper plate and terminals of coil, push in two directions Of X,Y with 2.0kg must no crack	2001/07/12 ~ 2001/07/12		ok																
14	High-Voltage 高壓電擊試驗	100 V DC between core & winding	10	Elec. no variation Appearance no deformation	2001/07/12 ~ 2001/07/12		ok																
15	ORT:on going reliability test 負載電氣試驗	Elec loading & spec test... base on Spec for approval	10	Elec. no variation Appearance no deformation	2001/07/12 ~ 2001/07/12		ok																



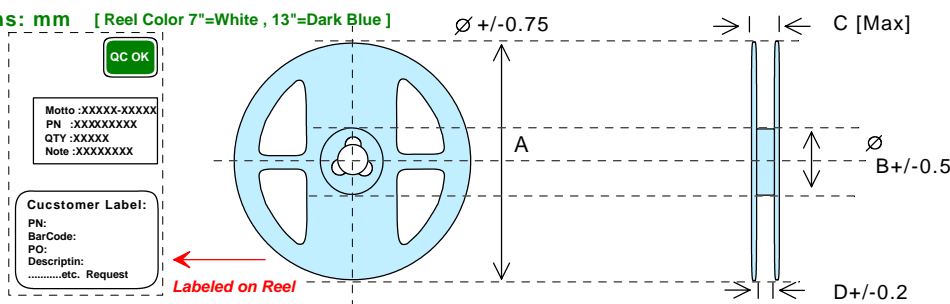


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SIZE/mm	W	P	A ₀	B ₀	K ₀	T	F
31L	12.00	8.00	3.20	3.80	1.60	0.25	5.50
31	12.00	8.00	3.20	3.80	1.80	0.25	5.50
32	12.00	8.00	3.53	3.94	2.40	0.25	5.50
43	12.00	8.00	4.40	5.05	3.60	0.30	5.80
52	16.00	8.00	5.50	6.10	2.80	0.30	5.80
53	16.00	8.00	5.50	6.10	2.80	0.30	5.80
54	12.00	8.00	5.50	6.10	5.00	0.30	5.80
73	16.00	12.00	7.20	8.00	3.80	0.30	7.70
75	16.00	12.00	7.20	8.10	5.50	0.40	7.70
104	24.00	16.00	9.40	10.40	4.50	0.40	11.20
105	24.00	16.00	9.50	10.40	5.80	0.40	11.20
107	24.00	16.00	9.50	10.40	8.90	0.40	11.20

Reel Dimensions: mm [Reel Color 7"=White, 13"=Dark Blue]



SIZE / mm	A	B	C	D	REEL SIZE	QTY/REEL
31L	330	21 +/- 0.8	18.4	12.4	13"	2,000
31	330	21 +/- 0.8	18.4	12.4	13"	2,000
32	330	21 +/- 0.8	16.5	12.4	13"	2,000
43	330	21 +/- 0.8	16.5	14	13"	1,500
52	330	21 +/- 0.8	18.4	14	13"	2,000
53	330	21 +/- 0.8	18.4	14	13"	2,000
54	330	21 +/- 0.8	18.4	14	13"	1,500
73	330	21 +/- 0.8	22.4	18	13"	1,500
75	330	21 +/- 0.8	22.4	18	13"	1,000
104	330	21 +/- 0.8	26.4	22	13"	1,000
105	330	21 +/- 0.8	26.4	22	13"	750
107	330	21 +/- 0.8	31.1	24.5	13"	500

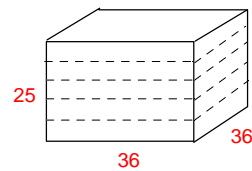
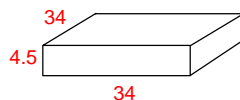
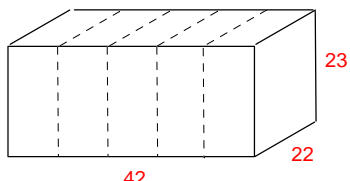
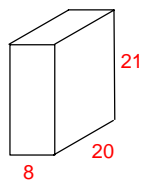
BOX Package: Unit: cm

31/32-4 Reel in

5 Inner Small Box in

104/105-1 Reel in
43/5X/7X-2 Reel in

5 Inner Small Box in



Inner Small Box

Outer Large Box

Inner Small Box

Outer Large Box

