●Chip Common Mode Choke Coil

Circuit Type?

DC Power Line


DLW5AH p177
2014(5036)/0.2A/Imp.4000Ω


DLW5AT p179
2014(5036)/1-6A/Imp.50-2700Ω


DLW5BS p177
2020(5050)/0.5-5A/Imp.190-3000Ω


DLW5BT p179
2020(5050)/1.5-6A/Imp.100-1400Ω

High Current Type Automotive Available


PLT10HH p202
12.9mmx6.6mm
/6-18A/Imp.45-1000Ω

High Speed Differential Signal Line

High Speed Signal Line
(USB/LVDS/IEEE1394/mipi etc.)

DLM11S p185
0504(1210)/Imp.45-90Ω

DLP0QSN p186
025020(0605)/Imp.60Ω

DLP0NSC/SN p187
03025(0806)/Imp.28-120Ω


DLP11SN p189
0504(1210)/Imp.67-330Ω


DLP11RN p189
0504(1210)/Imp.45Ω


DLW21H p199
0805(2012)/Imp.67-180Ω


DLW21S_S/X p197
0805(2012)/Imp.67-500Ω


DLP31S p192
1206(3216)/Imp.120-550Ω


DLW31S p200
1206(3216)/Imp.90-2200Ω

Automotive Available


DLW43S p201
1812(4532)

Array Type

DLP1ND p193
05025(1506)/Imp.35-90Ω


DLP2ADN p194
0804(2010)/Imp.67-280Ω


DLP31D p196
1206(3216)/Imp.90-440Ω

Ultra High Speed Signal Line
(HDMI/DVI/Display Port etc.)

DLP0QSA p186
025020(0605)/Imp.7-35Ω

DLP0NSA p187
03025(0806)/Imp.7-15Ω

DLP11SA p189
0504(1210)/Imp.35-90Ω


DLP11RB p189
0504(1210)/Imp.15-40Ω


DLP11TB p189
0504(1210)/Imp.80Ω


DLW21S_HQ p197
0805(2012)/Imp.67-120Ω

Array Type


DLP2ADA p194
0804(2010)/Imp.35-90Ω

Audio Line

DLM11G p184
0504(1210)/Imp.600Ω


DLW5AT p179
2014(5036)/1-6A/Imp.50-2700Ω


DLW5BT p179
2020(5050)/1.5-6A/Imp.100-1400Ω

Guide of Digits in this Chart:

●for BLM03P

0201(0603)/0.75-0.9A/Imp.22-33Ω

- 0201(0603): Size (inch) / Size (mm)
- 0.75-0.9A: Rated Current
- Imp.22-33Ω: Impedance

●for BNX022/023

10-15A/Range1MHz-2GHz

- 10-15A: Rated Current
- Range1MHz-2GHz: Effective Frequency Range

●for NFR21GD

0805(2012)/22-100Ω/Cap.10-100pF

- 0805(2012): Size (inch) / Size (mm)
- 22-100Ω: Resistance
- Cap.10-100pF: Capacitance

●for NFA18S

0603(1608)/Cut off 50-480MHz

- 0603(1608): Size (inch) / Size (mm)
- Cut off 50-480MHz: Cut-off Frequency

●for DLW5BS

2020(5050)/0.5-5A/Imp.190-3000Ω

- 2020(5050): Size (inch) / Size (mm)
- 0.5-5A: Rated Current
- Imp.190-3000Ω: Impedance

DL□

Common Mode Choke Coils

		Series	Size Code in inch (in mm)	Common Mode Impedance (Ω) at 100MHz (100 / 500 / 1000)	Effective Frequency Range (100kHz 1MHz 10MHz 100MHz 1GHz 10GHz)
Signal Lines Type	For Audio Lines	DLM11G p184	0504 (1210)	600	
	For Ultra High Speed Signal Lines	DLM11S p185	0504 (1210)	45 90	
		DLP0QSN p186	025020 (0605)	60	
		DLP0QSA p186	025020 (0605)	15 7 35	
		DLP0NSC p187	03025 (0806)	28	
		DLP0NSN p187	03025 (0806)	35 90 67 120	
		DLP0NSA p187	03025 (0806)	15 7	
		DLP11SN p189	0504 (1210)	67 240 90 120 160 200 280 330	
		DLP11SA p189	0504 (1210)	35 90 67	
		DLP11RN p190	0504 (1210)	45	
		DLP11RB p190	0504 (1210)	15 40	
		DLP11TB p191	0504 (1210)	80	
		DLP31S p192	1206 (3216)	120 220 550	
		DLP1NDN p193 (2 circuits array)	05025 (1506)	35 90 67	
		DLP2ADA p194 (2 circuits array)	0804 (2010)	35 90 67	
		DLP2ADN p194 (2 circuits array)	0804 (2010)	90 240 67 120 160 200 280	
		DLP31DN p196 (2 circuits array)	1206 (3216)	90 130 200 320 440	
		DLW21S p197	0805 (2012)	90 490 67 120 180 260 370 500	
		DLW21H p199	0805 (2012)	90 67 120 180	
		DLW31SN p200	1206 (3216)	90 160 260 600 1000 2200	
		DLW43SH p201	1812 (4532)		
Universal Type [Power Lines / Signal Lines]		DLW5AH/DLW5BS* p177	2014 (5036) / 2020 (5050)	500 800 1500 4000 190 350 600 1000 3000	
		DLW5AT*/DLW5BT* p179	2014 (5036) / 2020 (5050)	50 110 230 330 500 1000 1400 100 150 250 400 850 1100 2700	

PL□

Large Current Common Mode Choke Coil for Automotive Available

	Series	Size Code in inch (in mm)	Common Mode Impedance (Ω) at 10MHz (100 / 500 / 1000)	Effective Frequency Range (100kHz 1MHz 10MHz 100MHz 1GHz 10GHz)
Large Current Type for Automotive Available	PLT10HH* p202	–	45 400 900 100 500 1000	

BNX

Block EMIFIL®

		Series	Height (mm)	Rated Voltage (Vdc)	Rated Current (A)	Effective Frequency Range (10kHz 100kHz 1MHz 10MHz 100MHz 1GHz 10GHz)
Power Lines Type	SMD Type	BNX022* p221	3.1	50	10	
		BNX023* p221	3.1	100	15	
		BNX024* p221	3.5	50	15	
		BNX025* p221	3.5	25	15	
	Lead Type	BNX002 p223	13 max.	50	10	
		BNX003 p223	13 max.	150	10	
		BNX005 p223	13.5 max.	50	15	
		BNX012* p224	8.5 max.	50	15	
		BNX016* p224	8.5 max.	25	15	

* The derating of rated current is required for some items according to the operating temperature on each product page.

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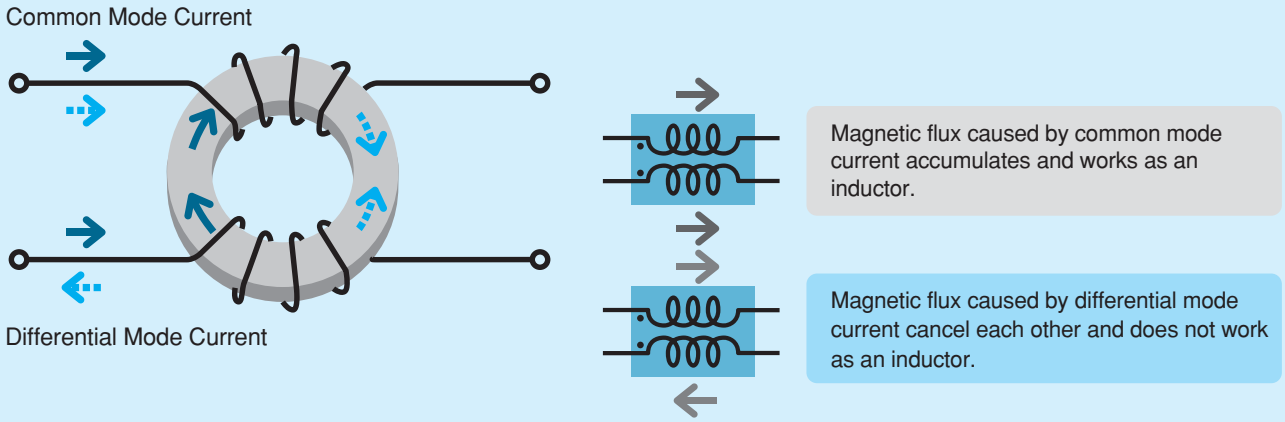
DL□ Series Introduction



Category	Features, Classification	Structure	Part Number	Comments
High cut-off frequency High Coupling (For high speed differential signal lines)	Ultra high cut-off frequency for high speed differential signal lines	Film type	DLP0QSA DLP0NSA DLP11SA DLP11RB DLP11TB DLP2ADA	· Low profile, small size, suitable for mobile equipment. · Tight terminal pitch enables high density layout. · Ultra high cut-off frequency and its matching to line impedance enables good transmission of high speed signal.
		Wound type	DLW21SN_HQ2 DLW21HN_HQ2	· Ultra high self-resonance frequency enables high cut-off frequency. · Its matching to line impedance enables good transmission of high speed signal.
	High cut-off frequency for high speed differential signal lines	Multilayer type	DLM11SN	· Enables noise suppression for differential signal line without distortion in high-speed signal transmission.
		Film type	DLP0QSN DLP0NS DLP11SN DLP11RN DLP2AD	· Low profile, small size, suitable for mobile equipment. · Tight terminal pitch enables high density layout. · High cut-off frequency enables good transmission of high speed signal.
		Wound type	DLW21SN_SQ2 DLW31S DLW21HN_SQ2	· Ultra high self-resonance frequency enables high cut-off frequency. · DLW21H is designed as low profile.
	For general differential signal lines	Film type	DLP31S DLP31D	· Low profile,small size, suitable for mobile equipment. · Tight terminal pitch enables high density layout.
Large current High coupling (For power lines)		Wound type	DLW5AH DLW5BS DLW5AT DLW5BT	· Large current (6A max.), suitable for input connector from an AC adaptor. · DLW5AT/DLW5BT is designed as low profile.
Relative high differential mode impedance Low coupling (For audio lines)		Multilayer type	DLM11G	· Modified differential mode impedance is higher than other common mode choke coils; this feature makes it possible to suppress both common mode and differential mode noise. · Ideal to keep low distortion audio signal.
Large current Automotive Available (For power lines)	Available up to 18A	Winding type Cased structure	PLT10HH	· Large current, high reliability, suitable for motors in automobiles.

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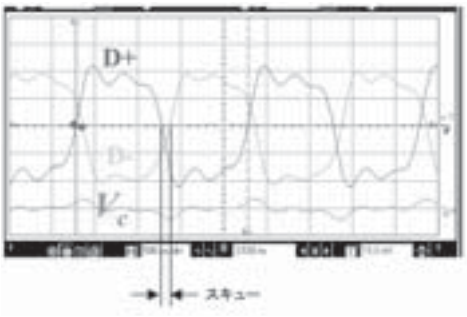
Skew Improvement Effect of Common Mode Choke Coil

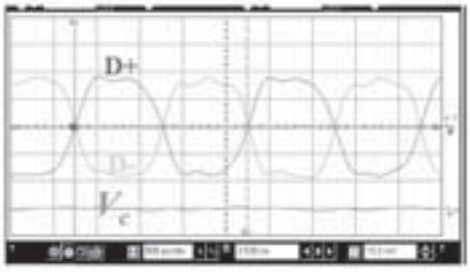
Example of Skew Improvement by Common Mode Choke Coil
(Tested using pulse generator waveform)

Waveform is equivalent to 1000Mbps signal

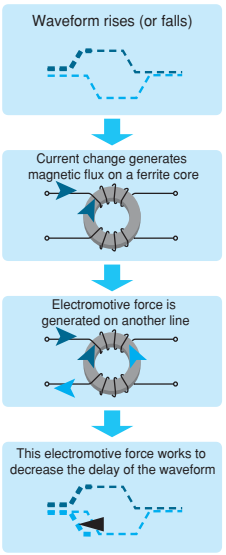
Waveform with intentionally made skew (skew: 100ps)



Skew is improved by common mode choke coil

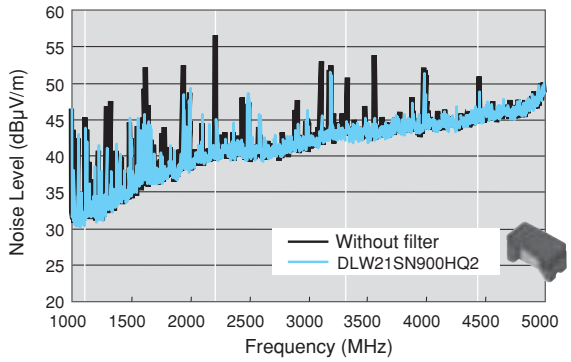


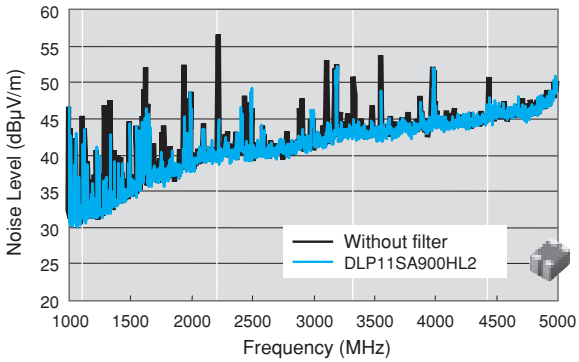
Mechanism of Skew Improvement



Noise Suppression of Common Mode Choke Coil in HDMI Line

Device under test / Transmitter : game machine
/ Receiver : projector
/ Cable : HDMI categoly 2 3m cable
Test resolution / 1080p Deep color 12bit (Data 1.11GHz) DVD play mode

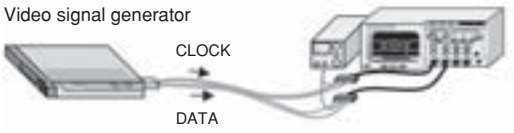


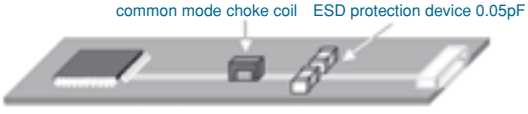


Test Example of HDMI1.3 Waveform Transmission

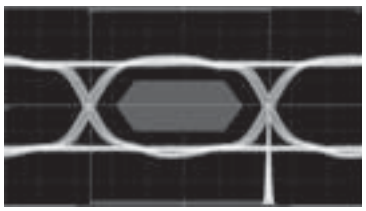
~Using ESD protection device
LXES15AAA1-100 (0.05pF)~

Signal frequency : 1.11GHz (Deep color 12bit)

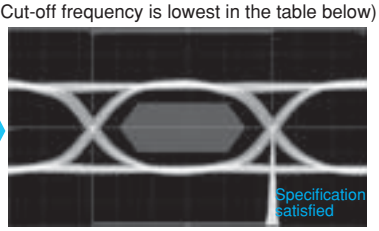




ESD protection device only



Film Type DLP11SN900HL2
(Cut-off frequency is lowest in the table below)



	Wound Type DLW21SN900HQ2	Film Type DLP11SA900HL2	Film Type Array DLP2ADN900HL4
Cut-off Frequency	Over 10GHz	Around 6GHz	Around 4GHz
Judge	Specification satisfied	Specification satisfied	Specification satisfied
Transition Time	Rise time: 83.4ps Fall time: 77.4ps	Rise time: 90.4ps Fall time: 85.5ps	Rise time: 100ps Fall time: 97.4ps

Each common mode choke coil can keep the waveform and satisfy the specification.

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Part Numbering

(Part Number)

DL	W	21	S	N	371	S	Q	2	L
❶	❷	❸	❹	❺	❻	❼	❽	❾	❿

❶Product ID

Product ID	
DL	Chip Common Mode Choke Coils

❷Structure

Code	Structure
W	Wire Wound Type
M	Multilayer Type
P	Film Type

❸Dimensions (L×W)

Code	Dimensions (L×W)	EIA
0Q	0.65×0.5mm	025020
0N	0.85×0.65mm	03025
11	1.25×1.0mm	0504
1N	1.5×0.65mm	05025
21	2.0×1.2mm	0805
2A	2.0×1.0mm	0804
31	3.2×1.6mm	1206
43	4.5×3.2mm	1812
5A	5.0×3.6mm	2014
5B	5.0×5.0mm	2020

❹Features (1)

Code	Type
S	Magnetically Shielded One Circuit Type
D	Magnetically Shielded Two Circuit Type
H	Open Magnetic One Circuit Type
G	Magnetically Shielded Audio Type
R/T	One Circuit Low Profile Type

❺Category

Code	Category
A	Expressed by a letter.
B	
C	
H	
M	
N	
R	

❻Impedance

Typical impedance at 100MHz is expressed by three figures. The unit is in ohm (Ω). The first and second figures are significant digits, and the third figure expresses the number of zeros that follow the two figures.

❻Inductance (DLW43SH)

Expressed by three figures. The unit is micro-henry (μH). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures.

❼Circuit

Code	Circuit
S	Expressed by a letter.
M	
H	
U	
T	
X	

❽Features (2)

Code	Features
D	Expressed by a letter.
K	
P	
L	
Q	
Y	

❾Number of Signal Lines

Code	Number of Signal Lines
2	Two Lines
4	Four Lines

❿Packaging

Code	Packaging	Series
K	Embossed Taping (ø330mm Reel)	**DLW5AH/DLW5BS/DLW5BT**
L	Embossed Taping (ø180mm Reel)	All Series
B	Bulk	All Series
D	Paper Taping (ø180mm Reel)	**DLP0QS/DLM11G**

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Part Numbering

(Part Number)

PL	T	10H	H	102	6R0	P	N	B
❶	❷	❸	❹	❺	❻	❼	❽	❾

❶Product ID

Product ID	
PL	Common Mode Choke Coils

❷Type

Code	Type
T	DC Type

❸Applications

Code	Applications
10H	for DC Line High-frequency Type

❹Features

Code	Features
H	for Automotive

❺Impedance

Expressed by three figures. The unit is ohm (Ω). The first and second figures are significant digits, and the third figure expresses the number of zeros that follow the two figures.

❻Rated Current

Expressed by three figures. The unit is ampere (A). The first and second figures are significant digits, and the third figure expresses the number of zeros that follow the two figures.
A decimal point is expressed by the capital letter "R." In this case, all figures are significant digits.

❼Winding Mode

Code	Winding Mode
P	Aligned Winding Type

❽Lead Dimensions

Code	Lead Dimensions
N	No Lead Terminal (SMD)

❾Packaging

Code	Packaging	Series
B	Bulk	PLT10H
L	Embossed Taping (ø178mm/ø180mm Reel)	PLT10H
K	Embossed Taping (ø330mm Reel)	PLT10H

DL□ Chip Common Mode Choke Coil Series Line Up

Type	Size Code in inch (in mm)	Thickness (mm)	Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	New	Kit	≥1A ≥3A	HD UD	Zmatch	Flow	ReFlow
Multilayer Type for Audio Lines	0504(1210) p184	0.5	DLM11GN601SD2	600ohm±25%	100mA							ReFlow
Multilayer Type for Differential Signal Lines	p185 0504(1210)	0.5	DLM11SN450HY2	45ohm±25%	100mA		Kit		HD	Zmatch		ReFlow
		0.5	DLM11SN900HY2	90ohm±25%	100mA		Kit		HD	Zmatch		ReFlow
Film Type for Differential Signal Lines	p186 025020(0605)	0.3	DLP0QSN600HL2	60ohm±25%	50mA		Kit		HD	Zmatch		ReFlow
		0.3	DLP0QSA070HL2	7ohm±2ohm	100mA		Kit		UD	Zmatch		ReFlow
		0.3	DLP0QSA150HL2	15ohm±5ohm	100mA		Kit		UD	Zmatch		ReFlow
		0.3	DLP0QSA350HL2	35ohm±10ohm	100mA		Kit		UD	Zmatch		ReFlow
	p187 03025(0806)	0.45	DLP0NSC280HL2	28ohm±20%	100mA		Kit		HD	Zmatch		ReFlow
		0.45	DLP0NSN350HL2	35ohm±10ohm	100mA		Kit		HD	Zmatch		ReFlow
		0.45	DLP0NSN670HL2	67ohm±20%	110mA		Kit		HD	Zmatch		ReFlow
		0.45	DLP0NSN900HL2	90ohm±20%	100mA		Kit		HD	Zmatch		ReFlow
		0.45	DLP0NSN121HL2	120ohm±20%	90mA		Kit		HD	Zmatch		ReFlow
		0.45	DLP0NSA070HL2	7ohm±2ohm	100mA		Kit		UD	Zmatch		ReFlow
		0.45	DLP0NSA150HL2	15ohm±5ohm	100mA		Kit		UD	Zmatch		ReFlow
	p189 0504(1210)	0.82	DLP11SN670SL2	67ohm±20%	180mA		Kit		HD			ReFlow
		0.82	DLP11SN121SL2	120ohm±20%	140mA		Kit		HD			ReFlow
		0.82	DLP11SN161SL2	160ohm±20%	120mA		Kit		HD			ReFlow
		0.82	DLP11SN900HL2	90ohm±20%	150mA		Kit		HD	Zmatch		ReFlow
		0.82	DLP11SN201HL2	200ohm±20%	110mA		Kit		HD	Zmatch		ReFlow
		0.82	DLP11SN241HL2	240ohm±20%	100mA		Kit		HD	Zmatch		ReFlow
		0.82	DLP11SN281HL2	280ohm±20%	90mA		Kit		HD	Zmatch		ReFlow
		0.82	DLP11SN331HL2	330ohm±20%	80mA		Kit		HD	Zmatch		ReFlow
		0.82	DLP11SA350HL2	35ohm±20%	170mA		Kit		UD	Zmatch		ReFlow
		0.82	DLP11SA670HL2	67ohm±20%	150mA		Kit		UD	Zmatch		ReFlow
		0.82	DLP11SA900HL2	90ohm±20%	150mA		Kit		UD	Zmatch		ReFlow
	p190	0.5	DLP11RN450UL2	45ohm±25%	100mA		Kit		HD	Zmatch		ReFlow
		0.5	DLP11RB150UL2	15ohm±5ohm	100mA		Kit		UD	Zmatch		ReFlow
		0.5	DLP11RB400UL2	40ohm±10ohm	100mA		Kit		UD	Zmatch		ReFlow
	p191	0.3	DLP11TB800UL2	80ohm±25%	100mA		Kit		UD	Zmatch		ReFlow
	p192 1206(3216)	1.15	DLP31SN121ML2	120ohm±20%	100mA				HD			ReFlow
		1.15	DLP31SN221ML2	220ohm±20%	100mA				HD			ReFlow
		1.15	DLP31SN551ML2	550ohm±20%	100mA				HD			ReFlow
Film Array Type for Differential Signal Lines	p193 05025(1506)	0.45	DLP1NDN350HL4	35ohm±20%	100mA		Kit		HD	Zmatch		ReFlow
		0.45	DLP1NDN670HL4	67ohm±20%	80mA		Kit		HD	Zmatch		ReFlow
		0.45	DLP1NDN900HL4	90ohm±20%	60mA		Kit		HD	Zmatch		ReFlow
	p194 0804(2010)	0.82	DLP2ADA350HL4	35ohm±20%	150mA		Kit		UD	Zmatch		ReFlow
		0.82	DLP2ADA670HL4	67ohm±20%	130mA		Kit		UD	Zmatch		ReFlow
		0.82	DLP2ADA900HL4	90ohm±20%	120mA		Kit		UD	Zmatch		ReFlow
		0.82	DLP2ADN670HL4	67ohm±20%	140mA		Kit		HD	Zmatch		ReFlow
		0.82	DLP2ADN900HL4	90ohm±20%	130mA		Kit		HD	Zmatch		ReFlow
		0.82	DLP2ADN121HL4	120ohm±20%	120mA		Kit		HD	Zmatch		ReFlow
		0.82	DLP2ADN161HL4	160ohm±20%	100mA		Kit		HD	Zmatch		ReFlow
		0.82	DLP2ADN201HL4	200ohm±20%	90mA		Kit		HD	Zmatch		ReFlow
		0.82	DLP2ADN241HL4	240ohm±20%	80mA		Kit		HD	Zmatch		ReFlow
		0.82	DLP2ADN281HL4	280ohm±20%	80mA		Kit		HD	Zmatch		ReFlow
	p196 1206(3216)	1.15	DLP31DN900ML4	90ohm±20%	160mA				HD			ReFlow
		1.15	DLP31DN131ML4	130ohm±20%	120mA				HD			ReFlow
		1.15	DLP31DN201ML4	200ohm±20%	100mA				HD			ReFlow
		1.15	DLP31DN321ML4	320ohm±20%	80mA				HD			ReFlow
		1.15	DLP31DN441ML4	440ohm±20%	70mA				HD			ReFlow
Wire Wound Type for Differential Signal Lines	p197 0805(2012)	1.2	DLW21SN670SQ2	67ohm±25%	400mA		Kit		HD			ReFlow
		1.2	DLW21SN900SQ2	90ohm±25%	330mA		Kit		HD			ReFlow
		1.2	DLW21SN121SQ2	120ohm±25%	370mA		Kit		HD			ReFlow
		1.2	DLW21SN181SQ2	180ohm±25%	330mA		Kit		HD			ReFlow
		1.2	DLW21SN261SQ2	260ohm±25%	300mA		Kit		HD			ReFlow
		1.2	DLW21SN371SQ2	370ohm±25%	280mA		Kit		HD			ReFlow
		1.2	DLW21SN501SK2	500ohm±25%	250mA		Kit		HD			ReFlow
		1.2	DLW21SN670HQ2	67ohm±25%	320mA		Kit		UD	Zmatch		ReFlow
		1.2	DLW21SN900HQ2	90ohm±25%	280mA		Kit		UD	Zmatch		ReFlow
		1.2	DLW21SN121HQ2	120ohm±25%	280mA		Kit		UD	Zmatch		ReFlow
	p198	1.2	DLW21SN181XQ2	180ohm±25%	240mA	New	Kit		HD			ReFlow
		1.2	DLW21SN261XQ2	260ohm±25%	220mA	New	Kit		HD			ReFlow

Continued on the following page.

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Type	Size Code in inch (in mm)	Thickness (mm)	Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	New	Kit	≥1A ≥3A	HD UD	Zmatch	Flow	ReFlow
Wire Wound Type for Differential Signal Lines	p198	1.2	DLW21SN491XQ2	490ohm±25%	190mA	New	Kit		HD			ReFlow
	p197	1.2	DLW21SR670HQ2	67ohm±25%	400mA		Kit		UD	Zmatch		ReFlow
	p199	0.9	DLW21HN670SQ2	67ohm±25%	330mA		Kit		HD			ReFlow
		0.9	DLW21HN900SQ2	90ohm±25%	330mA		Kit		HD			ReFlow
	0805(2012)	0.9	DLW21HN121SQ2	120ohm±25%	280mA		Kit		HD			ReFlow
		0.9	DLW21HN181SQ2	180ohm±25%	250mA		Kit		HD			ReFlow
		0.9	DLW21HN670HQ2	67ohm±25%	240mA		Kit		UD	Zmatch		ReFlow
		0.9	DLW21HN900HQ2	90ohm±25%	220mA		Kit		UD	Zmatch		ReFlow
		0.9	DLW21HN121HQ2	120ohm±25%	200mA		Kit		UD	Zmatch		ReFlow
	p200	1.9	DLW31SN900SQ2	90ohm±25%	370mA				HD			ReFlow
		1.9	DLW31SN161SQ2	160ohm±25%	340mA				HD			ReFlow
		1.9	DLW31SN261SQ2	260ohm±25%	310mA				HD			ReFlow
	1206(3216)	1.9	DLW31SN601SQ2	600ohm±25%	260mA				HD			ReFlow
		1.9	DLW31SN102SQ2	1000ohm±25%	230mA				HD			ReFlow
		1.9	DLW31SN222SQ2	2200ohm±25%	200mA				HD			ReFlow
Wire Wound Type for Differential Signal Lines Automotive Type	p201	2.6	DLW43SH110XK2	-	360mA							ReFlow
		2.6	DLW43SH220XK2	-	310mA							ReFlow
	1812(4532)	2.6	DLW43SH510XK2	-	230mA							ReFlow
		2.6	DLW43SH101XK2	-	200mA							ReFlow
		2.7	DLW43SH101XP2	-	170mA							ReFlow
Wire Wound Type for Power Lines and Signal Lines	p177	4.3	DLW5AHN402SQ2	4000ohm (Typ.)	200mA		Kit					ReFlow
	p179	2.2	DLW5ATN111SQ2	110ohm (Typ.)	5000mA		Kit	≥3A				ReFlow
		2.2	DLW5ATN401SQ2	400ohm (Typ.)	2000mA		Kit	≥1A				ReFlow
		2.2	DLW5ATN501SQ2	500ohm (Typ.)	1500mA		Kit	≥1A				ReFlow
		2.2	DLW5ATN851SQ2	850ohm (Typ.)	1500mA		Kit	≥1A				ReFlow
		2.2	DLW5ATN272SQ2	2700ohm (Typ.)	1000mA		Kit	≥1A				ReFlow
	p182	2.2	DLW5ATN500MQ2	50ohm (Typ.)	6000mA		Kit	≥3A			Flow	ReFlow
	2014(5036)	2.2	DLW5ATN151MQ2	150ohm (Typ.)	5000mA		Kit	≥3A			Flow	ReFlow
		2.2	DLW5ATN331MQ2	330ohm (Typ.)	4000mA		Kit	≥3A			Flow	ReFlow
		2.2	DLW5ATN501MQ2	500ohm (Typ.)	2500mA	New	Kit	≥1A			Flow	ReFlow
		2.2	DLW5ATN112MQ2	1100ohm (Typ.)	2000mA		Kit	≥1A			Flow	ReFlow
		2.2	DLW5ATN111TQ2	100ohm (Typ.)	5000mA		Kit	≥3A				ReFlow
		2.2	DLW5ATN231TQ2	230ohm (Typ.)	4000mA		Kit	≥3A				ReFlow
		2.2	DLW5ATN401TQ2	400ohm (Typ.)	2500mA	New	Kit	≥1A				ReFlow
		2.2	DLW5ATN501TQ2	500ohm (Typ.)	2000mA		Kit	≥1A				ReFlow
	p177	4.5	DLW5BSM501TQ2	500ohm (Typ.)	1000mA	New	Kit	≥1A				ReFlow
		4.5	DLW5BSM601TQ2	600ohm (Typ.)	1400mA	New	Kit	≥1A				ReFlow
		4.5	DLW5BSM801TQ2	800ohm (Typ.)	2000mA	New	Kit	≥1A				ReFlow
		4.5	DLW5BSM191SQ2	190ohm (Typ.)	5000mA		Kit	≥3A				ReFlow
		4.5	DLW5BSM351SQ2	350ohm (Typ.)	2000mA		Kit	≥1A				ReFlow
		4.5	DLW5BSM102SQ2	1000ohm (Typ.)	1500mA		Kit	≥1A				ReFlow
		4.5	DLW5BSM152SQ2	1500ohm (Typ.)	1000mA		Kit	≥1A				ReFlow
		4.5	DLW5BSM302SQ2	3000ohm (Typ.)	500mA		Kit					ReFlow
	p179	2.35	DLW5BTM101SQ2	100ohm (Typ.)	6000mA		Kit	≥3A				ReFlow
	2020(5050)	2.35	DLW5BTM251SQ2	250ohm (Typ.)	5000mA		Kit	≥3A				ReFlow
		2.35	DLW5BTM501SQ2	500ohm (Typ.)	4000mA		Kit	≥3A				ReFlow
		2.35	DLW5BTM102SQ2	1000ohm (Typ.)	2000mA		Kit	≥1A				ReFlow
		2.35	DLW5BTM142SQ2	1400ohm (Typ.)	1500mA		Kit	≥1A				ReFlow
	p182	2.35	DLW5BTM101TQ2	100ohm (Typ.)	6000mA		Kit	≥3A				ReFlow
		2.35	DLW5BTM251TQ2	250ohm (Typ.)	5000mA		Kit	≥3A				ReFlow
		2.35	DLW5BTM501TQ2	500ohm (Typ.)	4000mA		Kit	≥3A				ReFlow
		2.35	DLW5BTM102TQ2	1000ohm (Typ.)	2500mA	New	Kit	≥1A				ReFlow
		2.35	DLW5BTM142TQ2	1400ohm (Typ.)	2000mA		Kit	≥1A				ReFlow

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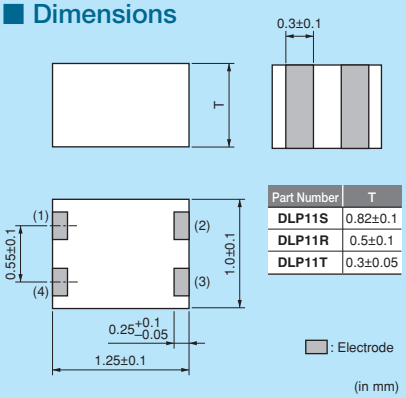
DLP11S/DLP11R/DLP11T Series 0504/1210 (inch/mm)

Reflow OK

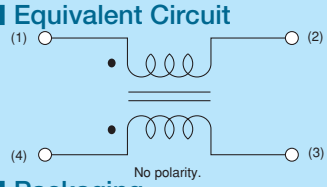
8GHz cut-off frequency (for HDMI/USB3.0) is available.

■ Dimensions



Part Number	T
DLP11S	0.82±0.1
DLP11R	0.5±0.1
DLP11T	0.3±0.05

■ Equivalent Circuit



No polarity.

■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	3000 (DLP11S)
		4000 (DLP11RN/RB)
		5000 (DLP11T)
B	Bulk(Bag)	500

Refer to pages from p.205 to p.209 for mounting information.

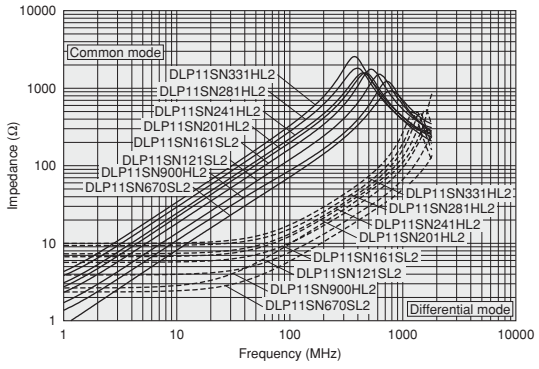
■ Rated Value (□: packaging code)

Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance	
DLP11SN670SL2□	67ohm ±20%	180mA	5Vdc	100M ohm	12.5Vdc	1.3ohm±25%	Kit HD
DLP11SN121SL2□	120ohm ±20%	140mA	5Vdc	100M ohm	12.5Vdc	2.0ohm±25%	Kit HD
DLP11SN161SL2□	160ohm ±20%	120mA	5Vdc	100M ohm	12.5Vdc	2.7ohm±25%	Kit HD
DLP11SN900HL2□	90ohm ±20%	150mA	5Vdc	100M ohm	12.5Vdc	1.5ohm±25%	Kit HD Imp Match
DLP11SN201HL2□	200ohm ±20%	110mA	5Vdc	100M ohm	12.5Vdc	3.1ohm±25%	Kit HD Imp Match
DLP11SN241HL2□	240ohm ±20%	100mA	5Vdc	100M ohm	12.5Vdc	3.5ohm±25%	Kit HD Imp Match
DLP11SN281HL2□	280ohm ±20%	90mA	5Vdc	100M ohm	12.5Vdc	4.2ohm±25%	Kit HD Imp Match
DLP11SN331HL2□	330ohm ±20%	80mA	5Vdc	100M ohm	12.5Vdc	4.9ohm±25%	Kit HD Imp Match
DLP11SA350HL2□	35ohm ±20%	170mA	5Vdc	100M ohm	12.5Vdc	0.9ohm±25%	Kit UD Imp Match
DLP11SA670HL2□	67ohm ±20%	150mA	5Vdc	100M ohm	12.5Vdc	1.2ohm±25%	Kit UD Imp Match
DLP11SA900HL2□	90ohm ±20%	150mA	5Vdc	100M ohm	12.5Vdc	1.4ohm±25%	Kit UD Imp Match

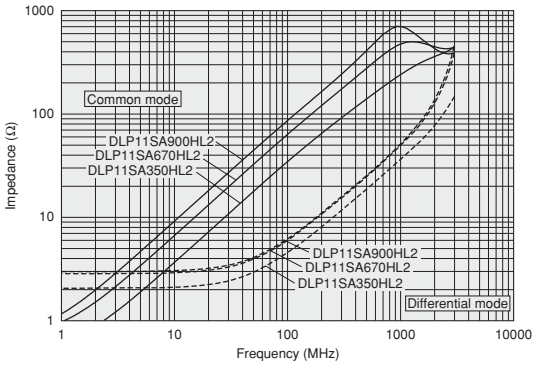
Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

■ Impedance-Frequency Characteristics

DLP11SN Series



DLP11SA Series



Continued on the following page.

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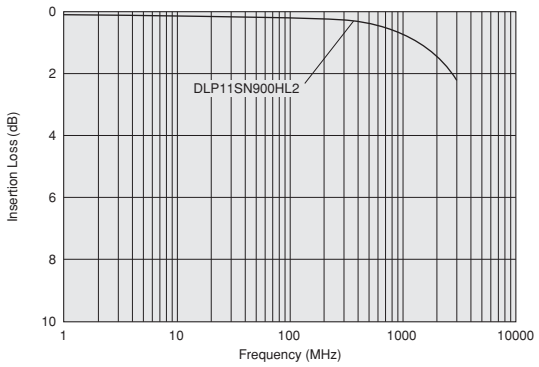
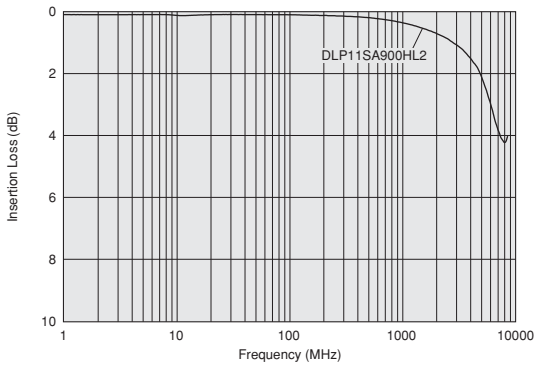
■ Differential Mode Transmission Characteristics (Typ.)

DLP11SN Series



DLP11SA Series



■ Rated Value (□: packaging code)

Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance	
DLP11RN450UL2□	45ohm ±25%	100mA	5Vdc	100M ohm	12.5Vdc	0.8ohm±25%	Kit HD Impedance Match
DLP11RB150UL2□	15ohm ±5ohm	100mA	5Vdc	100M ohm	12.5Vdc	0.8ohm±25%	Kit UD Impedance Match
DLP11RB400UL2□	40ohm ±10ohm	100mA	5Vdc	100M ohm	12.5Vdc	1.3ohm±25%	Kit UD Impedance Match

Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

Differential mode to common mode conversion characteristic (Scd21) at 2.5GHz

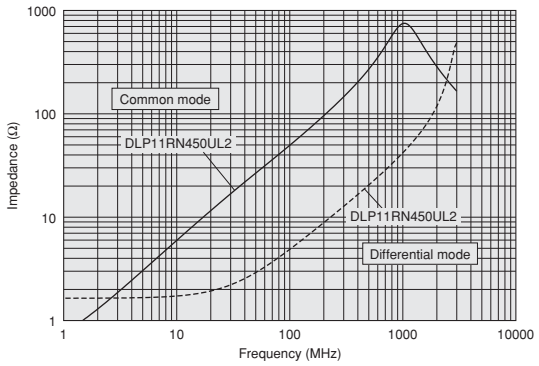
DLP11RB: -40dB

Impedance Characteristics between signal lines Z0 (TDR at 50ps)

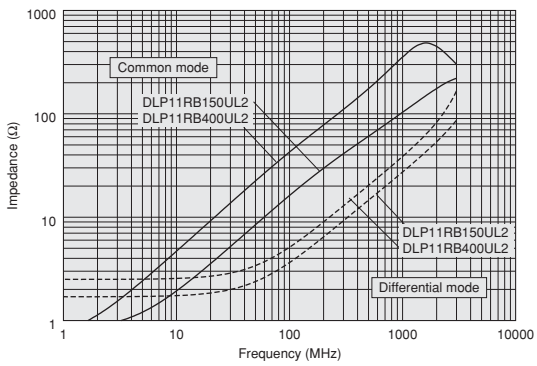
DLP11RB: 90ohm±15ohm

■ Impedance-Frequency Characteristics

DLP11RN Series

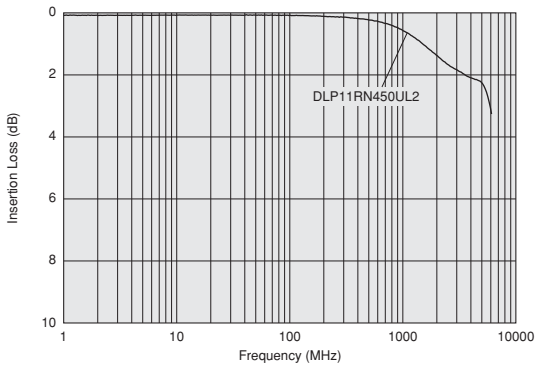


DLP11RB Series

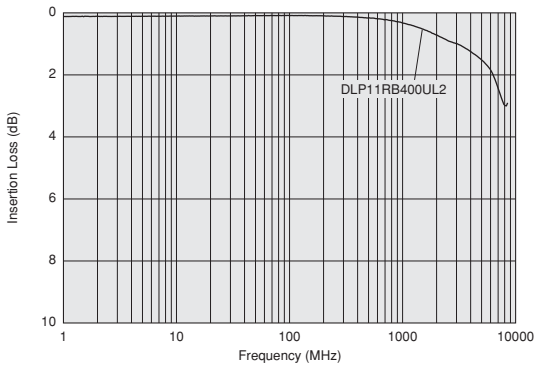


■ Differential Mode Transmission Characteristics (Typ.)

DLP11RN Series



DLP11RB Series



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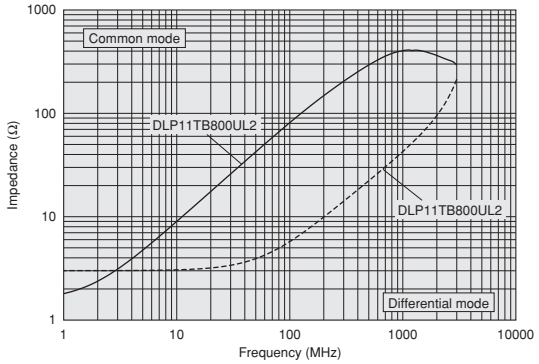
■ Rated Value (□: packaging code)

Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance	
DLP11TB800UL2□	80ohm ±25%	100mA	5Vdc	100M ohm	12.5Vdc	1.5ohm±25%	Kit UD

Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines
Differential mode to common mode conversion characteristic (Scd21) at 2.5GHz
DLP11TB: -40dB
Impedance Characteristics between signal lines Z0 (TDR at 50ps)
DLP11TB: 90ohm±15ohm

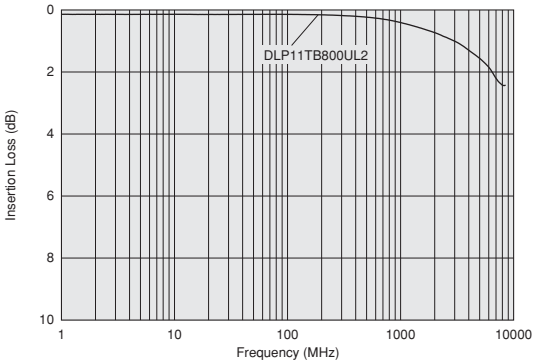
■ Impedance-Frequency Characteristics

DLP11TB Series



■ Differential Mode Transmission Characteristics (Typ.)

DLP11TB Series



⚠Caution

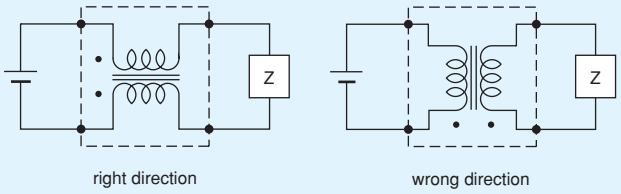
● Rating

Do not use products beyond the rated current and rated voltage as this may create excessive heat and deteriorate the insulation resistance. Be sure to provide an appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure our product.

● Soldering and Mounting

1. Self-heating
   Please provide special attention when mounting chip common mode choke coils DLW5 series in close proximity to other products that radiate heat.
   The heat generated by other products may deteriorate the insulation resistance and cause excessive heat in this component.

2. Mounting Direction
   Mount Chip Common Mode Choke Coils in right direction. Wrong direction, which is 90 degrees rotated from right direction, causes not only open or short circuit but also flames or other serious trouble.



right direction　　wrong direction

Notice

● Storage and Operating Conditions

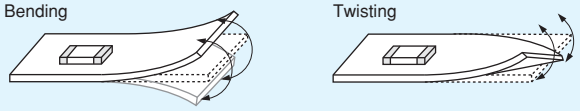
<Operating Environment>
Do not use products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.
Do not use products in the environment close to the organic solvent.
<Storage and Handling Requirements>
1. Storage Period
   DLM11G series should be used within 6 months, the other series should be used within 12 months. Solderability should be checked if this period is exceeded.
2. Storage Conditions
   (1) Storage temperature: -10 to +40˚C
   Relative humidity: 15 to 85%
   Avoid sudden changes in temperature and humidity.
   (2) Do not store products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.

● Notice (Soldering and Mounting)

1. Cleaning
   Failure and degradation of a product are caused by the cleaning method. When you clean in conditions that are not in mounting information, please contact Murata engineering.
2. Soldering
   Reliability decreases with improper soldering methods. Please solder by the standard soldering conditions shown in mounting information.
3. Other
   Noise suppression levels resulting from Murata's EMI suppression filters EMIFIL® may vary, depending on the circuits and ICs used, type of noise, mounting pattern, mounting location, and other operating conditions. Be sure to check and confirm in advance the noise suppression effect of each filter, in actual circuits, etc. before applying the filter in a commercial-purpose equipment design.

● Handling

1. Resin Coating (Except for DLW Series.)
   Using resin for coating/molding products may affect the products performance.
   So please pay careful attention in selecting resin.
   Prior to use, please make the reliability evaluation with the product mounted in your application set.
2. Resin Coating (DLW Series)
   The impedance value may change due to high cure-stress of resin to be used for coating/molding products. An open circuit issue may occur by mechanical stress caused by the resin, amount/cured shape of resin, or operating condition etc. Some resin contains some impurities or chloride possible to generate chlorine by hydrolysis under some operating condition may cause corrosion of wire of coil, leading to open circuit.
   So, please pay your careful attention in selecting resin in case of coating/molding the products with the resin.
   Prior to use the coating resin, please make sure no reliability issue is observed by evaluating products mounted on your board.
3. Caution for Use (DLW Series)
   When you hold products with a tweezer, please hold by the sides. Sharp materials, such as a pair of tweezers, should not touch the winding portion to prevent breaking the wire. Mechanical shock should not be applied to the products mounted on the board to prevent breaking the core.
4. Brushing
   When you clean the neighborhood of products such as connector pins, bristles of cleaning brush shall not be touched to the winding portion of this product to prevent the breaking of wire.
5. Handling of a Substrate
   After mounting products on a substrate, do not apply any stress to the product caused by bending or twisting to the substrate when cropping the substrate, inserting and removing a connector from the substrate or tightening screw to the substrate. Excessive mechanical stress may cause cracking in the Product.



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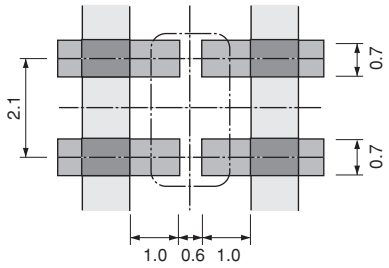
1. Standard Land Pattern Dimensions

Land Pattern + Solder Resist
Land Pattern
Solder Resist
(in mm)

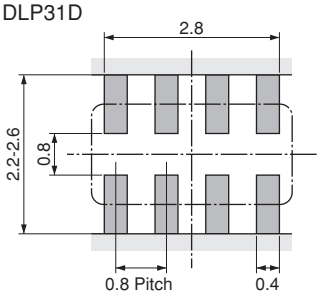
DLM11S
DLM11G
DLP0QS
DLP0NS
DLP11S
DLP11R
DLP11T
DLP1ND
DLP2AD
DLP31S
DLP31D
DLW21S
DLW21H
DLW31SN
DLW43S
DLW5A
DLW5B

●Reflow and Flow

DLP31S

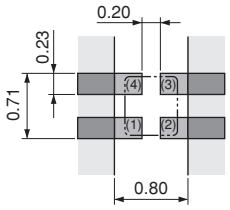


DLP31D

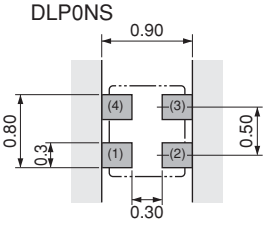


●Reflow Soldering

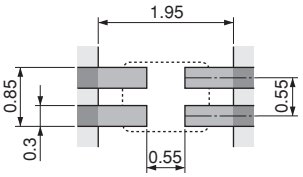
DLP0QS



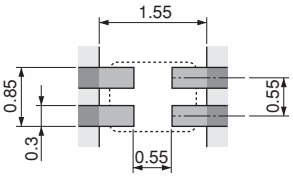
DLP0NS



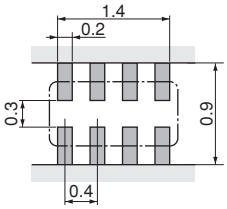
DLP11S/DLM11S



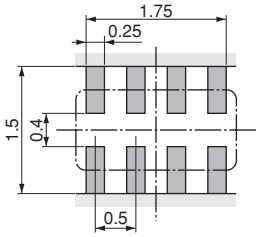
DLP11R/11T



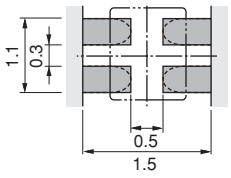
DLP1ND



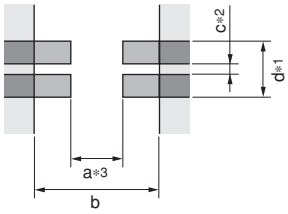
DLP2AD



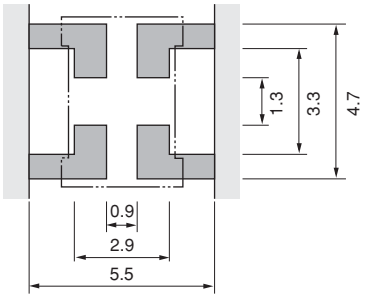
DLM11G



DLW21S/21H/31SN/43S



DLW5A/5B (Except for DLW5AT_MQ2)



Series	a	b	c	d
DLW21S/H	0.8	2.6	0.4	1.2
DLW31SN	1.6	3.7	0.4	1.6
DLW43SH110/220/510	3.0	5.9	1.6	3.4
DLW43SH101	3.2	5.9	1.6	3.4

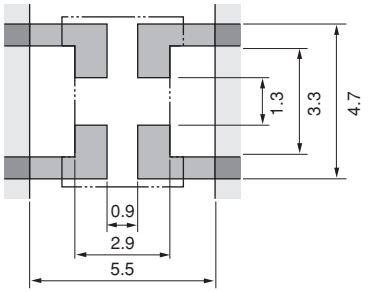
*1: If the pattern is made with wider than 1.2mm (DLW21) / 1.6mm (DLW31S) it may result in components turning around, because melting speed is different. In the worst case, short circuit between lines may occur.
*2: If the pattern is made with less than specified dimensions, in the worst case, short circuit between lines may occur due to spread of soldering paste or mount placing accuracy.
*3: If the pattern is made with wider than 0.8mm (DLW21) / 1.6mm (DLW31SN), the bending strength will be reduced.
Do not use gild pattern; excess soldering heat may dissolve metal of a copper wire.

Land Pattern + Solder Resist
Land Pattern
Solder Resist
(in mm)

DLW5AT_MQ2

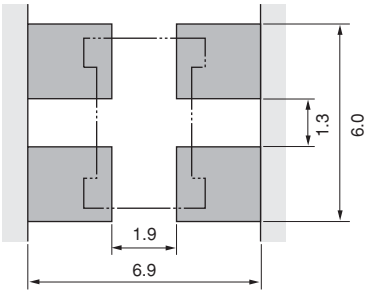
●Reflow Soldering Chip Mounting Side

DLW5AT_MQ2



●Flow Soldering Chip Mounting Side

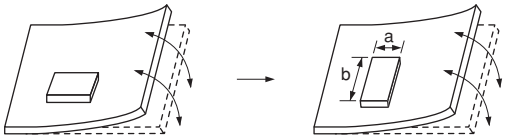
DLW5AT_MQ2



● PCB Warping

PCB should be designed so that products are not subjected to the mechanical stress caused by warping the board.

Products should be located in the sideways direction (Length: a<b) to the mechanical stress.



2. Solder Paste Printing and Adhesive Application

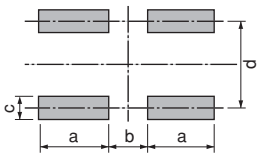
When reflow soldering the chip common mode choke coils, the printing must be conducted in accordance with the following cream solder printing conditions.
If too much solder is applied, the chip will be prone to damage by mechanical and thermal stress from the PCB and may crack.
Standard land dimensions should be used for resist and copper foil patterns.

When flow soldering the chip common mode choke coils, apply the adhesive in accordance with the following conditions.
If too much adhesive is applied, then it may overflow into the land or termination areas and yield poor solderability. In contrast, if insufficient adhesive is applied, or if the adhesive is not sufficiently hardened, then the chip may become detached during flow soldering process.

(in mm)

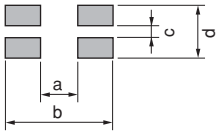
Series	Solder Paste Printing	Adhesive Application
DLP **DLW** **DLM**	●Guideline of solder paste thickness: 80-100μm: DLP0QS 100-150μm: DLW21S/21H/31S, DLP0NS/11S/11R/11T/1ND/2AD/DLM11S/11G 150μm: DLW43S 150-200μm: DLP31D/31S, DLW5A/5B *Solderability is subject to reflow conditions and thermal conductivity. Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.	■ DLP31S/DLP31D/DLW5AT_MQ2 Apply 0.3mg of bonding agent at each chip.

DLP0QS/0NS/11S/11R/11T/31S/DLM11S/11G



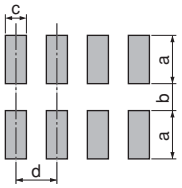
Series	a	b	c	d
DLP0QS	0.3	0.2	0.23	0.48
DLP0NS	0.3	0.3	0.3	0.5
DLM11S/DLP11S	0.7	0.55	0.3	0.55
DLP11R/T	0.5	0.55	0.3	0.55
DLP31S	1.0	0.6	0.7	2.1
DLM11G	0.5	0.5	0.4	0.7

DLW21S/21H/31S



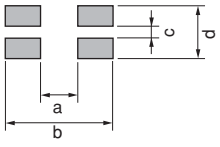
Series	a	b	c	d
DLW21S/H	0.8	2.6	0.5	1.2
DLW31S	1.6	3.7	0.4	1.6

DLP1ND/2AD/31D



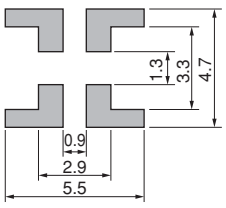
Series	a	b	c	d
DLP1ND	0.3	0.3	0.2	0.4
DLP2AD	0.55	0.4	0.25	0.5
DLP31D	1.0	0.8	0.4	0.8

DLW43S

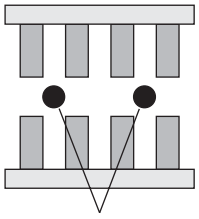


Series	a	b	c	d
DLW43S	3.0 (110/220/510)	5.9	1.6	3.4
	3.2 (101)			

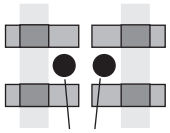
DLW5A/5B



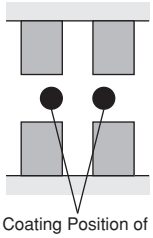
DLP31D



DLP31S



DLW5AT_MQ2



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3. Standard Soldering Conditions

(1) Soldering Methods

Use flow and reflow soldering methods only.
Use standard soldering conditions when soldering chip common mode choke coils.
In cases where several different parts are soldered, each having different soldering conditions, use those conditions requiring the least heat and minimum time.

Solder: Use Sn-3.0Ag-0.5Cu solder. Use of Sn-Zn based solder will deteriorate performance of products.
If using DLP/DLM series with Sn-Zn based solder, please contact Murata in advance.

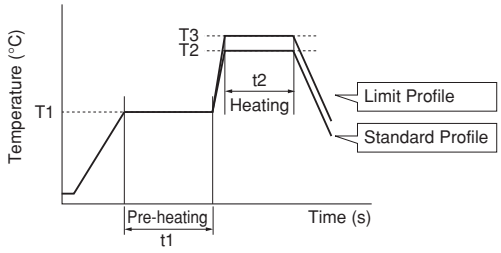
Flux:

- Use Rosin-based flux.
  In case of DLW21/31 series, use Rosin-based flux with converting chlorine content of 0.06 to 0.1wt%.
  In case of using RA type solder, products should be cleaned completely with no residual flux.
- Do not use strong acidic flux (with chlorine content exceeding 0.20wt%)
- Do not use water-soluble flux.

For additional mounting methods, please contact Murata.

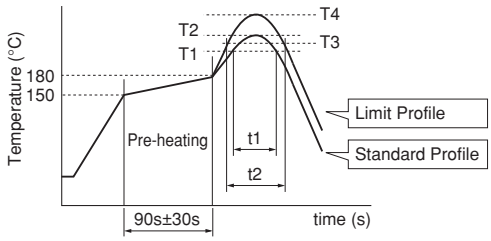
(2) Soldering Profile

●Flow Soldering Profile
(Sn-3.0Ag-0.5Cu Solder)



Series	Pre-heating		Standard Profile			Limit Profile		
			Heating		Cycle of Flow	Heating		Cycle of Flow
	Temp. (T1)	Time. (t1)	Temp. (T2)	Time. (t2)		Temp. (T3)	Time. (t2)	
DLW5AT_MQ2 DLP31D/31S	150°C	60s min.	250°C	4 to 6s	2 times max.	265±3°C	5s max.	2 times max.

●Reflow Soldering Profile
(Sn-3.0Ag-0.5Cu Solder)



Series	Standard Profile				Limit Profile			
	Heating		Peak Temperature (T2)	Cycle of Reflow	Heating		Peak Temperature (T4)	Cycle of Reflow
	Temp. (T1)	Time. (t1)			Temp. (T3)	Time. (t2)		
DLM/DLP DLW21/31	220°C min.	30 to 60s	245±3°C	2 times max.	230°C min.	60s max.	260°C/10s	2 times max.
DLW43S	220°C min.	30 to 60s	245±3°C	2 times max.	240°C min.	30s max.	260°C/10s	2 times max.
DLW5A/5B	220°C min.	30 to 60s	250±3°C	2 times max.	230°C min.	60s max.	260°C/10s	2 times max.

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(3) Reworking with Solder Iron

The following conditions must be strictly followed when using a soldering iron.

Pre-heating: 150°C 60s min.

Soldering iron power output / Tip diameter:

30W max. / ø3mm max.

Temperature of soldering iron tip / Soldering time / Times:

350°C max. / 3-4s / 2 times*1

*1 DLP0QS, DLP0NS, DLP11S, DLP11T, DLP1ND, DLP2AD: 380°C max. / 3-4s / 2 times
DLW43S: 350°C max. / 3s / 2 times

Do not allow the tip of the soldering iron to directly contact the chip.

For additional methods of reworking with a soldering iron, please contact Murata engineering.

4. Cleaning

Following conditions should be observed when cleaning chip EMI filter.

(1) Cleaning Temperature: 60°C max. (40°C max. for alcohol type cleaner)

(2) Ultrasonic

Output: 20W/liter max.

Duration: 5 minutes max.

Frequency: 28 to 40kHz

(3) Cleaning agent

The following list of cleaning agents have been tested on the individual components. Evaluation of final assembly should be completed prior to production.

Do not clean DLW (Except for DLW21H) series.

Before cleaning, please contact Murata engineering.

(a) Alcohol cleaning agent

Isopropyl alcohol (IPA)

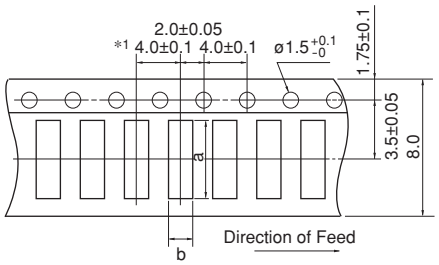
(b) Aqueous cleaning agent

Pine Alpha ST-100S

(4) Ensure that flux residue is completely removed.

Component should be thoroughly dried after aqueous agent has been removed with deionized water.

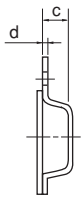
■ Minimum Quantity and Dimensions of 8mm Width Paper / Embossed Tape



*1 DLM11G/DLP0QS: 2.0±0.05
DLP0NS: 2.0±0.1

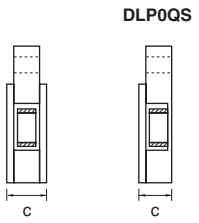
Dimension of the cavity of embossed tape is measured at the bottom side.

<Embossed>



c: Depth of Cavity
(Embossed Tape)

<Paper>

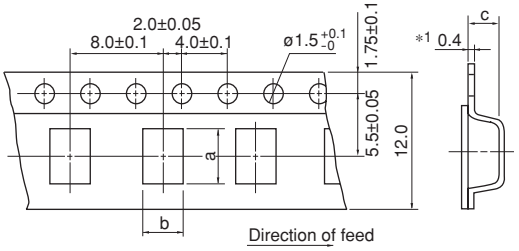


c: Total Thickness of Tape
(Paper Tape)

Part Number	Dimensions				Minimum Qty. (pcs.)				
					ø180mm Reel		ø330mm Reel		Bulk
	a	b	c	d	Paper Tape	Embossed Tape	Paper Tape	Embossed Tape	
DLM11G	1.45	1.2	0.8 max.	-	10000	-	-	-	1000
DLM11S	1.4	1.15	0.65	0.25	-	4000	-	-	500
DLP0QS	0.73	0.6	0.55 max.	-	15000	-	-	-	500
DLP0NS	0.95	0.75	0.55	0.25	-	10000	-	-	500
DLP11S	1.4	1.2	0.98	0.25	-	3000	-	-	500
DLP11R	1.4	1.15	0.7	0.25	-	4000	-	-	500
DLP11T	1.35	1.1	0.45	0.25	-	5000	-	-	500
DLP1ND	1.7	0.84	0.57	0.25	-	5000	-	-	500
DLP2AD	2.2	1.2	0.98	0.25	-	3000	-	-	500
DLP31D/31S	3.5	1.9	1.3	0.25	-	3000	-	-	500
DLW21S	2.25	1.45	1.4	0.3	-	2000	-	-	500
DLW21H	2.3	1.55	1.1	0.25	-	3000	-	-	500
DLW31S	3.6	2.0	2.1	0.3	-	2000	-	-	500

(in mm)

■ Minimum Quantity and Dimensions of 12mm Width Embossed Tape



*1 DLW43/DLW5AT: 0.3 c: Depth of Cavity

Dimension of the cavity is measured at the bottom side.

Part Number	Dimensions			Minimum Qty. (pcs.)		
	a	b	c	ø180mm Reel	ø330mm Reel	Bulk
DLW43SH_XK	4.9	3.6	2.7	500	2500	100
DLW43SH_XP	4.9	3.6	2.9	500	2500	100
DLW5AH	5.4	4.1	4.4	400	1500	100
DLW5AT	5.4	4.1	2.7	700	2500	100
DLW5BS	5.5	5.4	4.7	400	1500	100
DLW5BT	5.5	5.5	2.7	700	2500	100

(in mm)

"Minimum Quantity" means the number of units of each delivery or order. The quantity should be an integral multiple of the "Minimum Quantity."

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●EKEMDL21AQ-KIT (Chip Common Mode Choke Coils)

No.	Part Number	Quantity (pcs.)	Common Mode Impedance (at 100MHz, 20 degrees C)	Rated Voltage (Vdc)	Rated Current (mA)
1	DLW21HN670SQ2	10	67Ω±25%	50	330
2	DLW21HN900SQ2	10	90Ω±25%	50	330
3	DLW21HN121SQ2	10	120Ω±25%	50	280
4	DLW21HN181SQ2	10	180Ω±25%	50	250
5	DLW21HN670HQ2	10	67Ω±25%	20	240
6	DLW21HN900HQ2	10	90Ω±25%	20	220
7	DLW21HN121HQ2	10	120Ω±25%	20	200
8	DLW21SN501SK2	10	500Ω±25%	50	250
9	DLW21SN670SQ2	10	67Ω±25%	50	400
10	DLW21SN900SQ2	10	90Ω±25%	50	330
11	DLW21SN121SQ2	10	120Ω±25%	50	370
12	DLW21SN181SQ2	10	180Ω±25%	50	330
13	DLW21SN261SQ2	10	260Ω±25%	50	300
14	DLW21SN371SQ2	10	370Ω±25%	50	280
15	DLW21SN670HQ2	10	67Ω±25%	20	320
16	DLW21SN900HQ2	10	90Ω±25%	20	280
17	DLW21SN121HQ2	10	120Ω±25%	20	280
18	DLW21SR670HQ2	10	67Ω±25%	20	400
19	DLW21SN181XQ2	10	180Ω±25%	20	240
20	DLW21SN261XQ2	10	260Ω±25%	20	220
21	DLW21SN491XQ2	10	490Ω±25%	20	190
22	DLP0NSC280HL2	10	28Ω±20%	5	100
23	DLP0NSN350HL2	10	35Ω±10Ω	5	100
24	DLP0NSN670HL2	10	67Ω±20%	5	110
25	DLP0NSN900HL2	10	90Ω±20%	5	100
26	DLP0NSN121HL2	10	120Ω±20%	5	90
27	DLP0NSA070HL2	10	7Ω±2Ω	5	100
28	DLP0NSA150HL2	10	15Ω±5Ω	5	100
29	DLP0QSN600HL2	10	60Ω±25%	5	50
30	DLP0QSA070HL2	10	7Ω±2Ω	5	100
31	DLP0QSA150HL2	10	15Ω±5Ω	5	100
32	DLP0QSA350HL2	10	35Ω±10Ω	5	100
33	DLP1NDN350HL4	10	35Ω±20%	5	100
34	DLP1NDN670HL4	10	67Ω±20%	5	80
35	DLP1NDN900HL4	10	90Ω±20%	5	60
36	DLP11SA350HL2	10	35Ω±20%	5	170
37	DLP11SA670HL2	10	67Ω±20%	5	150
38	DLP11SA900HL2	10	90Ω±20%	5	150
39	DLP11SN670SL2	10	67Ω±20%	5	180
40	DLP11SN121SL2	10	120Ω±20%	5	140
41	DLP11SN161SL2	10	160Ω±20%	5	120
42	DLP11SN900HL2	10	90Ω±20%	5	150
43	DLP11SN201HL2	10	200Ω±20%	5	110
44	DLP11SN241HL2	10	240Ω±20%	5	100
45	DLP11SN281HL2	10	280Ω±20%	5	90
46	DLP11SN331HL2	10	330Ω±20%	5	80
47	DLP11RB150UL2	10	15Ω±5Ω	5	100
48	DLP11RB400UL2	10	40Ω±10Ω	5	100
49	DLP11RN450UL2	10	45Ω±25%	5	100
50	DLP11TB800UL2	10	80Ω±25%	5	100
51	DLP2ADA350HL4	10	35Ω±20%	5	150
52	DLP2ADA670HL4	10	67Ω±20%	5	130
53	DLP2ADA900HL4	10	90Ω±20%	5	120
54	DLP2ADN670HL4	10	67Ω±20%	5	140
55	DLP2ADN900HL4	10	90Ω±20%	5	130

Continued on the following page.

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Continued from the preceding page.

No.	Part Number	Quantity (pcs.)	Common Mode Impedance (at 100MHz, 20 degrees C)	Rated Voltage (Vdc)	Rated Current (mA)
56	DLP2ADN121HL4	10	120Ω±20%	5	120
57	DLP2ADN161HL4	10	160Ω±20%	5	100
58	DLP2ADN201HL4	10	200Ω±20%	5	90
59	DLP2ADN241HL4	10	240Ω±20%	5	80
60	DLP2ADN281HL4	10	280Ω±20%	5	80
61	DLM11SN450HY2	10	45Ω±25%	5	100
62	DLM11SN900HY2	10	90Ω±25%	5	100

●EKEMDCC5AF-KIT (Chip Common Mode Choke Coils for DC Power Lines / SMD Block Type EMIFIL® for Power Lines)

No.	Part Number	Quantity (pcs.)	Common Mode Impedance (at 100MHz, 20 degrees C)	Rated Voltage (Vdc)	Rated Current (mA)
1	DLW5AHN402SQ2	5	4000Ω (Typ.)	50	200
2	DLW5ATN111SQ2	5	110Ω (Typ.)	50	5000
3	DLW5ATN401SQ2	5	400Ω (Typ.)	50	2000
4	DLW5ATN501SQ2	5	500Ω (Typ.)	50	1500
5	DLW5ATN851SQ2	5	850Ω (Typ.)	50	1500
6	DLW5ATN272SQ2	5	2700Ω (Typ.)	50	1000
7	DLW5BSM501TQ2	5	500Ω (Typ.)	50	1000
8	DLW5BSM601TQ2	5	600Ω (Typ.)	50	1400
9	DLW5BSM801TQ2	5	800Ω (Typ.)	50	2000
10	DLW5BSM191SQ2	5	190Ω (Typ.)	50	5000
11	DLW5BSM351SQ2	5	350Ω (Typ.)	50	2000
12	DLW5BSM102SQ2	5	1000Ω (Typ.)	50	1500
13	DLW5BSM152SQ2	5	1500Ω (Typ.)	50	1000
14	DLW5BSM302SQ2	5	3000Ω (Typ.)	50	500
15	DLW5BTM101SQ2	5	100Ω (Typ.)	50	6000
16	DLW5BTM251SQ2	5	250Ω (Typ.)	50	5000
17	DLW5BTM501SQ2	5	500Ω (Typ.)	50	4000
18	DLW5BTM102SQ2	5	1000Ω (Typ.)	50	2000
19	DLW5BTM142SQ2	5	1400Ω (Typ.)	50	1500

●EKEMDL5AAC-KIT (Chip Common Mode Choke Coils for DC Power Lines / SMD Block Type EMIFIL® for Power Lines / 105 degree C available Type)

No.	Part Number	Quantity (pcs.)	Common Mode Impedance (at 100MHz, 20 degrees C)	Rated Voltage (Vdc)	Rated Current (mA)
1	DLW5ATN500MQ2	5	50Ω (Typ.)	50	6000
2	DLW5ATN151MQ2	5	150Ω (Typ.)	50	5000
3	DLW5ATN331MQ2	5	330Ω (Typ.)	50	4000
4	DLW5ATN501MQ2	5	500Ω (Typ.)	50	2500
5	DLW5ATN112MQ2	5	1100Ω (Typ.)	50	2000
6	DLW5ATN111TQ2	5	110Ω (Typ.)	50	5000
7	DLW5ATN231TQ2	5	230Ω (Typ.)	50	4000
8	DLW5ATN401TQ2	5	400Ω (Typ.)	50	2500
9	DLW5ATN501TQ2	5	500Ω (Typ.)	50	2000
10	DLW5BTM101TQ2	5	100Ω (Typ.)	50	6000
11	DLW5BTM251TQ2	5	250Ω (Typ.)	50	5000
12	DLW5BTM501TQ2	5	500Ω (Typ.)	50	4000
13	DLW5BTM102TQ2	5	1000Ω (Typ.)	50	2500
14	DLW5BTM142TQ2	5	1400Ω (Typ.)	50	2000
15	DLW5BSM501TQ2	5	500Ω (Typ.)	50	1000
16	DLW5BSM601TQ2	5	600Ω (Typ.)	50	1400
17	DLW5BSM801TQ2	5	800Ω (Typ.)	50	2000