

SPDL Series

Ultra Compact SMD Common Mode Chokes

The SPDL product Series is a new family of ultra-compact SMD common mode chokes for EMI suppression of differential mode noise as required in electronic devices filtering signals over network interfaces. It is applicable in the consumer, industrial and automotive interface market.

In automotive, electronic design applications involve applying power over high speed data lines, catering to protocols/communication interfaces present in the cabin of an automobile, such as CAN bus, Ethernet, USB or FlexRay. Conversely, for consumer and industrial applications such as computers, peripherals and personal charging devices, more proprietary protocols may even be utilized, furthering the need for differential noise suppression. Signal provides solutions for both market segments.

In conjunction with the latest winding technology and ferrite cores, Signal's designs achieve excellent noise suppression, offering high common mode impedance in the noise band and low differential mode impedance in the signal band. A low differential mode impedance with a high coupling coefficient assures virtually no distortion of high-speed signals.



General Features

- Ultra thin and compact SMD packages
- Excellent Differential Mode EMC noise suppression
- Automotive grade with AECQ-200 compliance
- Virtually no distortion of high-speed signals
- Excellent thermal characteristics

Specifications

- Number of Lines: Two
- Impedance range: 90 to 2200 ohms at 100 MHz
- Current capacity: 150 mA to 400 mA
- Metric size codes: 2012, 3216, 3225 or 4532
- Operating Range: -40 °C to +125 °C

Applications

- Automotive Infotainment and Multimedia
- Personal Computers and Peripherals
- High speed signal transmission lines

PRODUCT IDENTIFICATION

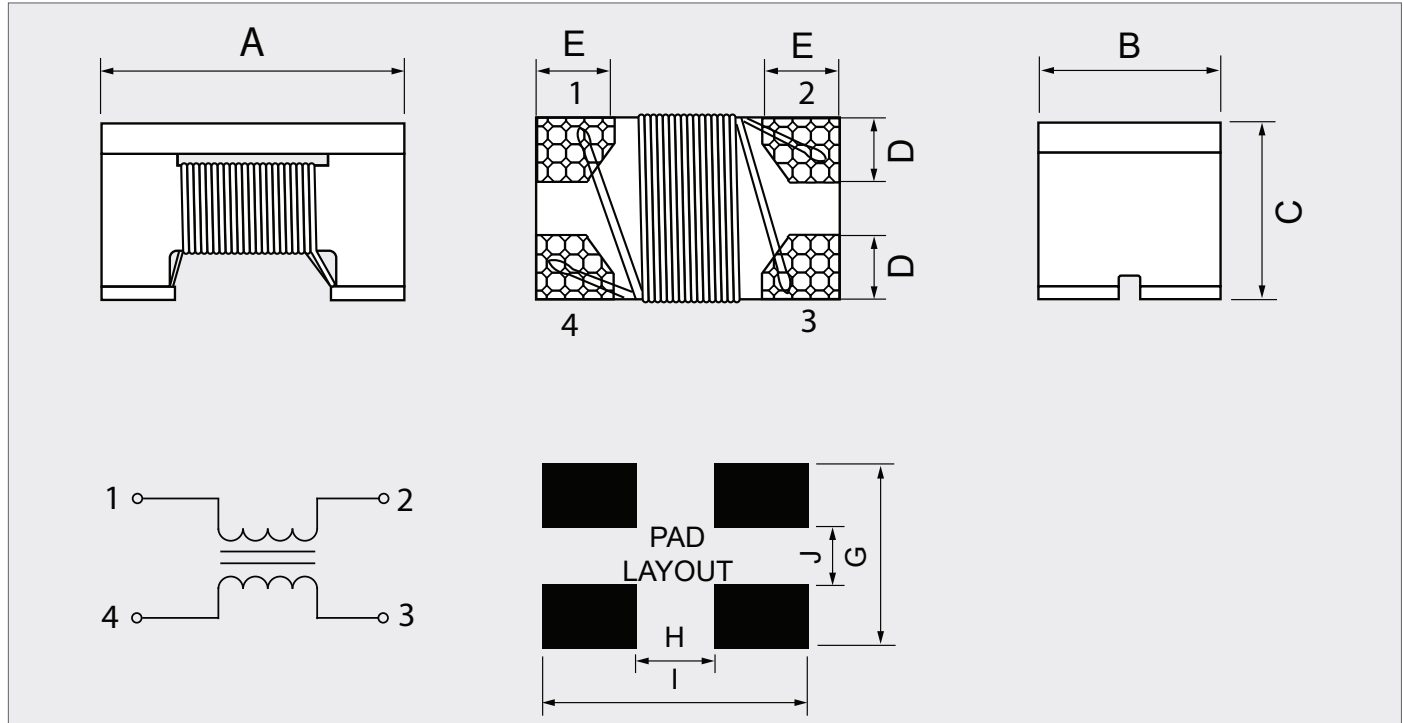
SPDL 2012 - 900 - 2P - T
 (1) (2) (3) (4) (5)

- (1) SPDL = SMD Common Mode Choke Part Series
- (2) 2012 = Dimension / Package Type
- (3) 900 = Impedance (last digit 0 = under 100, 1 => 100, 2 => 1000)
- (4) 2P = Two Lines
- (5) T = Tape & Reel

MECHANICAL SPECIFICATIONS

Dimensions are in mm.

SERIES	A	B	C	D	E	G	H	I	J
SPDL2012	2.00 ± 0.20	1.20 ± 0.20	1.20 ± 0.20	0.51	0.50	1.40	1.25	2.60	0.45
SPDL3216	3.20 ± 0.20	1.60 ± 0.20	2.00 ± 0.20	0.50	0.50	1.60	1.90	3.70	0.40
SPDL3225	3.30 ± 0.20	2.50 ± 0.20	2.50 ± 0.20	0.75	0.55	2.30	2.20	3.70	0.60
SPDL4532	4.50 ± 0.50	3.20 ± 0.20	2.80 ± 0.20	0.85	0.75	3.60	3.40	5.00	1.70



Custom versions available upon request.

ELECTRICAL SPECIFICATIONS

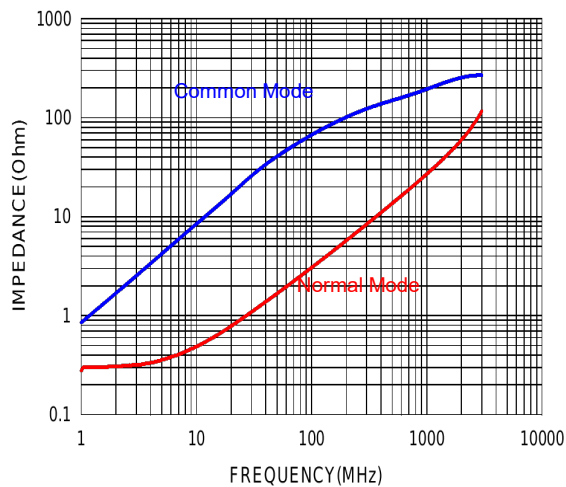
Electrical specifications for all part numbers measured at 25°C unless otherwise stated.

SPDL2012 Series

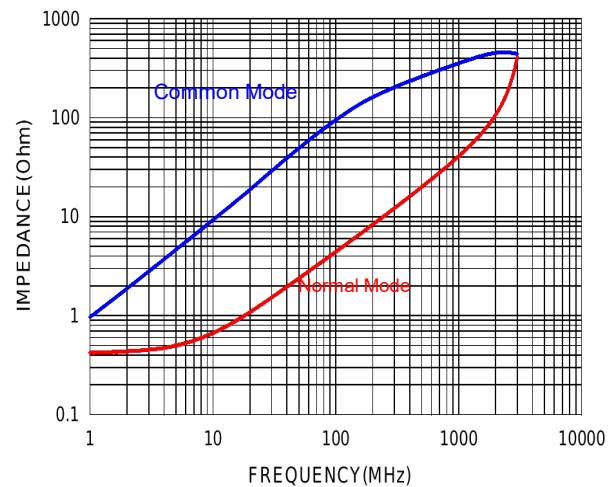
Part Number	Impedance @ 100 MHz (Ω)	DCR (Ω) Max.	Rated Voltage (Vdc) Max.	Insulation Resistance (M Ω) Min.	Rated Current (mA) Max.
SPDL2012-670-2P-T	67 $\pm$ 25 %	0.25	50	10	400
SPDL2012-900-2P-T	90 $\pm$ 25 %	0.30	50	10	400
SPDL2012-121-2P-T	120 $\pm$ 25 %	0.30	50	10	400
SPDL2012-161-2P-T	160 $\pm$ 25 %	0.35	50	10	350
SPDL2012-181-2P-T	180 $\pm$ 25 %	0.35	50	10	350
SPDL2012-201-2P-T	200 $\pm$ 25 %	0.40	50	10	300
SPDL2012-221-2P-T	220 $\pm$ 25 %	0.40	50	10	300
SPDL2012-261-2P-T	260 $\pm$ 25 %	0.40	50	10	300
SPDL2012-361-2P-T	360 $\pm$ 25 %	0.50	50	10	300

Notice: Please read Cautions and Warnings and Notes for electrical characteristics test at the end of this document.

TYPICAL PERFORMANCE CURVES:



SPDL2012-670-2P-T



SPDL2012-900-2P-T

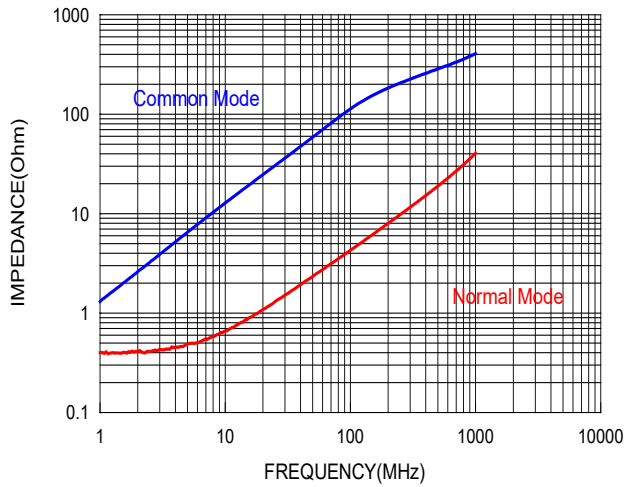
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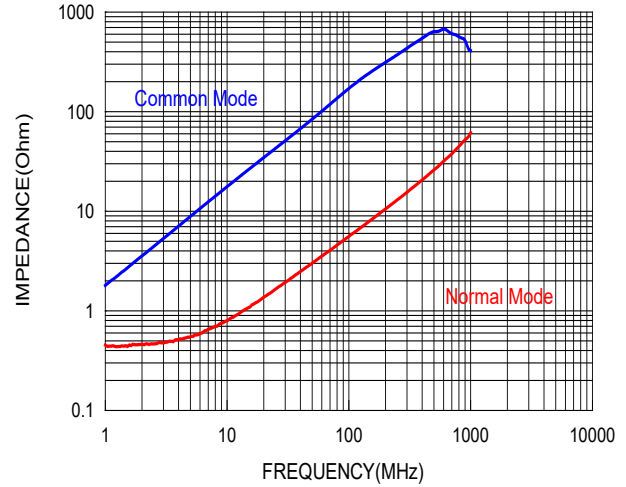
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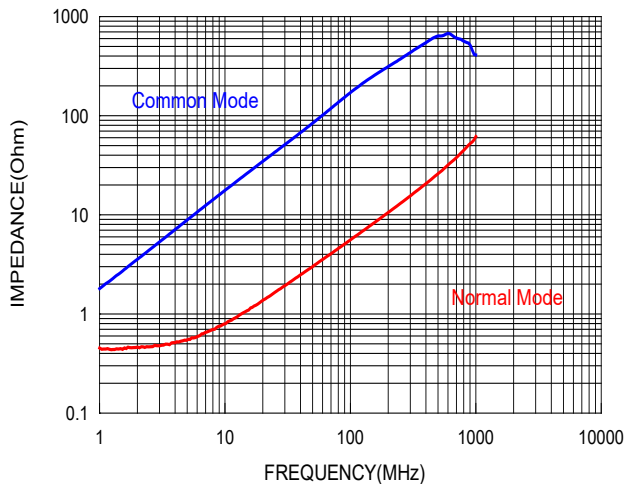
SPDL Series Datasheet



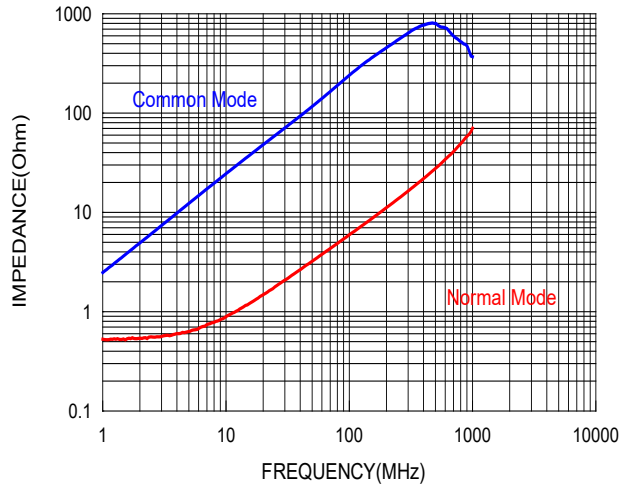
SPDL2012-121-2P-T



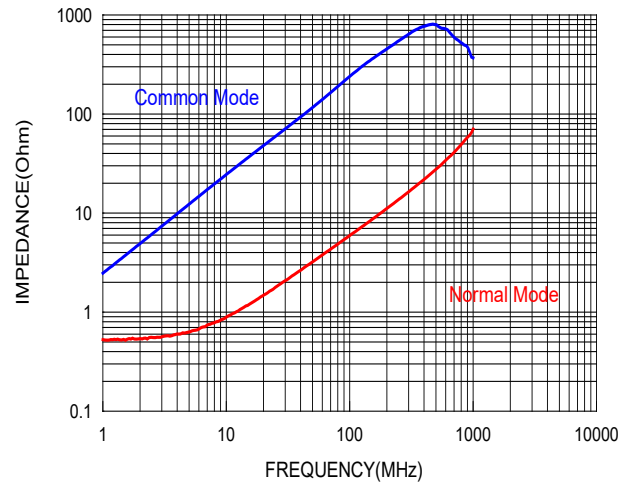
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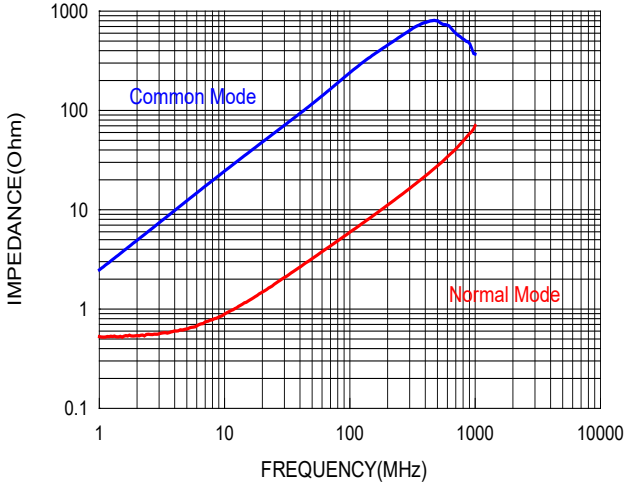
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SPDL2012-201-2P-T



SPDL2012-221-2P-T



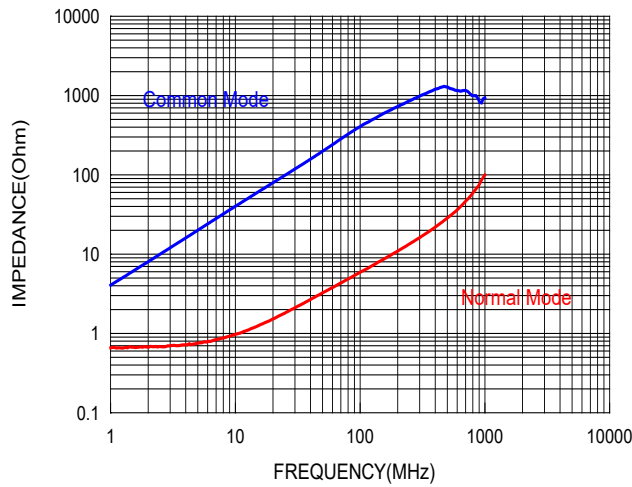
SPDL2012-261-2P-T

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SPDL2012-361-2P-T

SPDL3216 Series

Part Number	Impedance @ 100 MHz (Ω)	DCR (Ω) Max.	Rated Voltage (Vdc) Max.	Insulation Resistance (M Ω) Min.	Rated Current (mA) Max.
SPDL3216-900-2P-T	90 $\pm$ 25 %	0.30	50	10	400
SPDL3216-121-2P-T	120 $\pm$ 25 %	0.30	50	10	350
SPDL3216-161-2P-T	160 $\pm$ 25 %	0.40	50	10	350
SPDL3216-221-2P-T	220 $\pm$ 25 %	0.45	50	10	300
SPDL3216-261-2P-T	260 $\pm$ 25 %	0.50	50	10	300
SPDL3216-361-2P-T	360 $\pm$ 25 %	0.60	50	10	300
SPDL3216-601-2P-T	600 $\pm$ 25 %	0.80	50	10	300
SPDL3216-102-2P-T	1000 $\pm$ 25 %	1.00	50	10	200
SPDL3216-222-2P-T	2200 $\pm$ 25 %	1.20	50	10	200

Notice: Please read Cautions and Warnings and Notes for electrical characteristics test at the end of this document.

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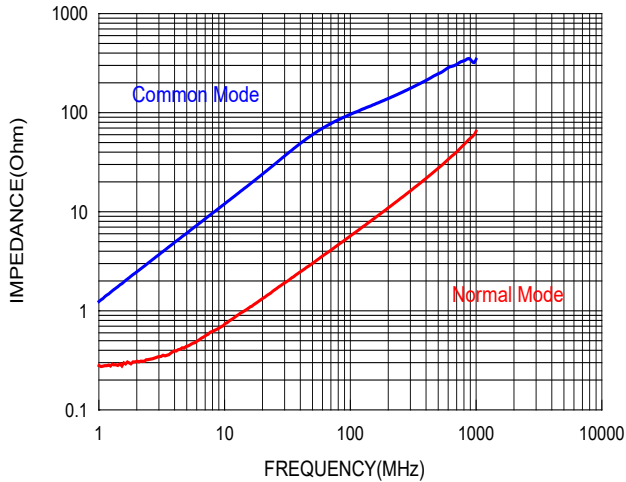


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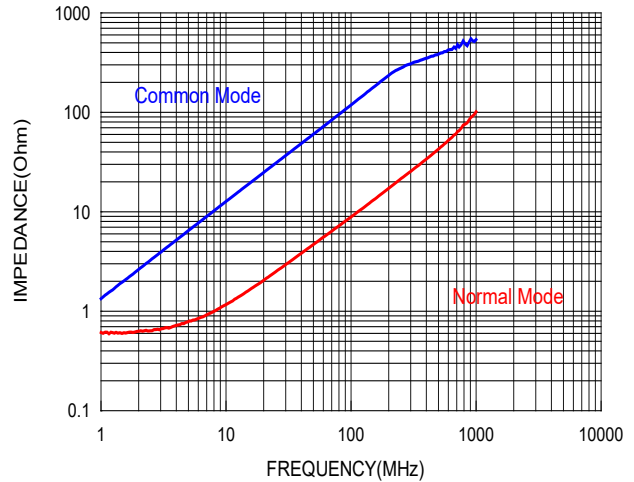
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SPDL Series Datasheet

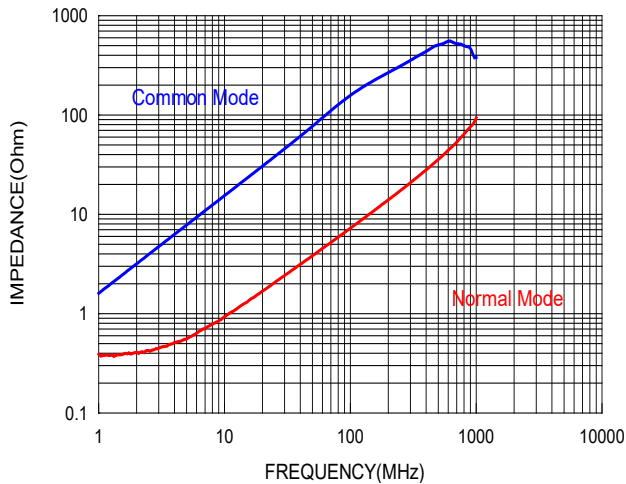
TYPICAL PERFORMANCE CURVES:



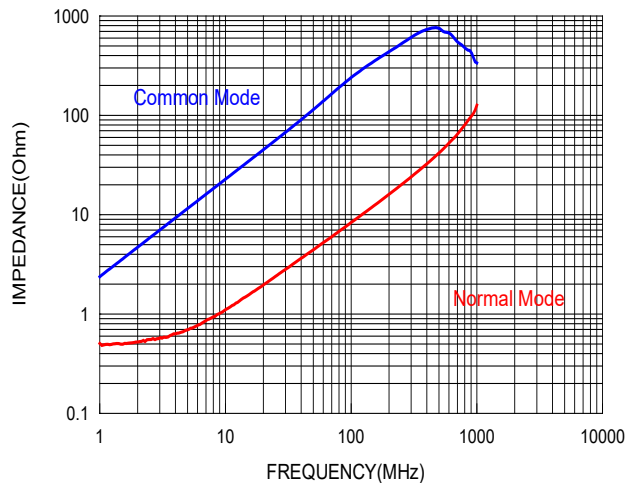
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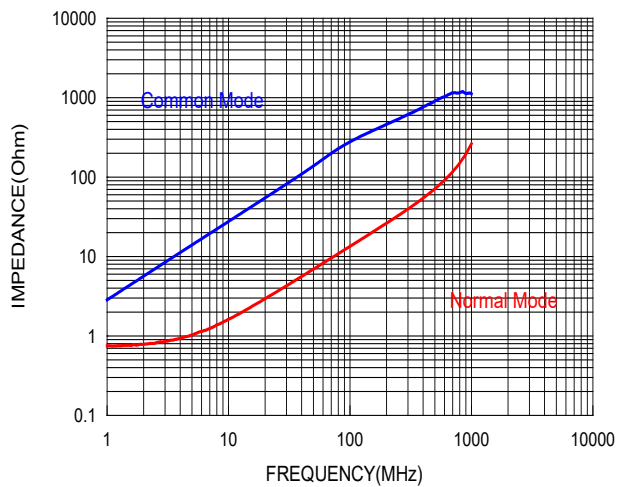
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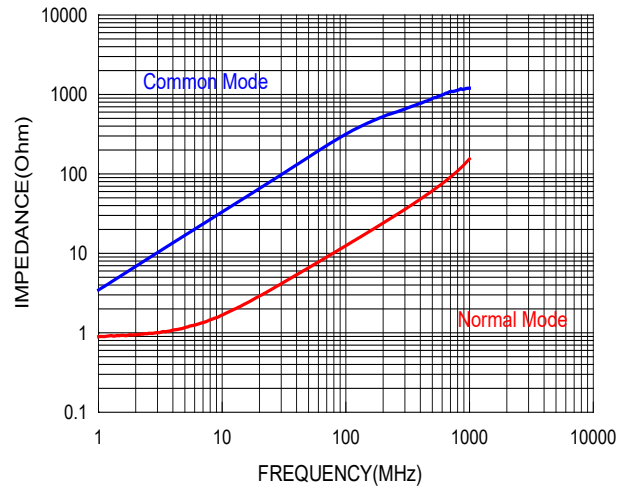
SPDL3216-161-2P-T



SPDL3216-221-2P-T



SPDL3216-261-2P-T

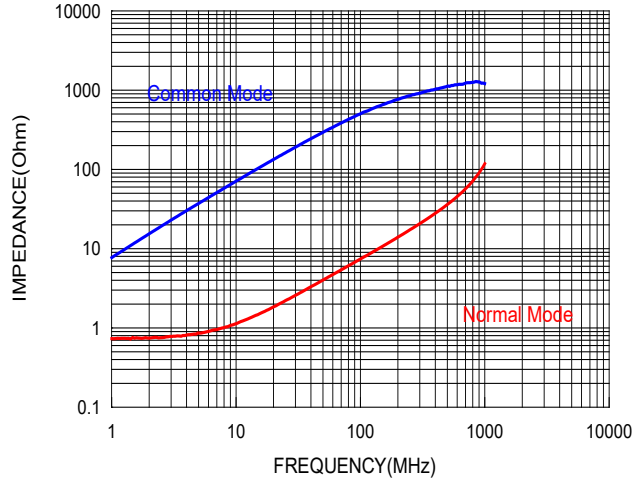


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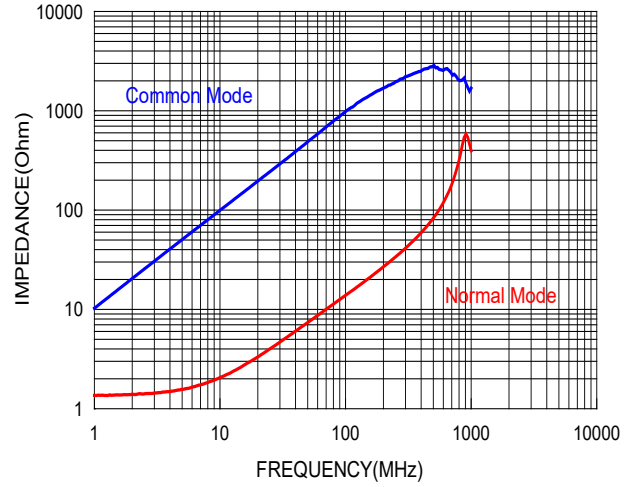
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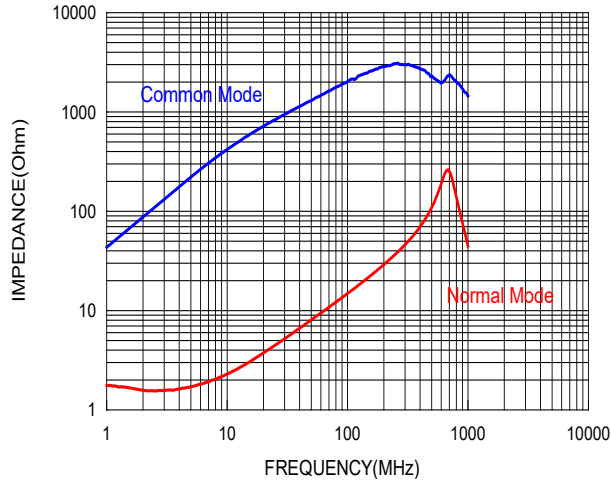
SPDL Series Datasheet



SPDL3216-601-2P-T



SPDL3216-102-2P-T



SPDL3216-222-2P-T

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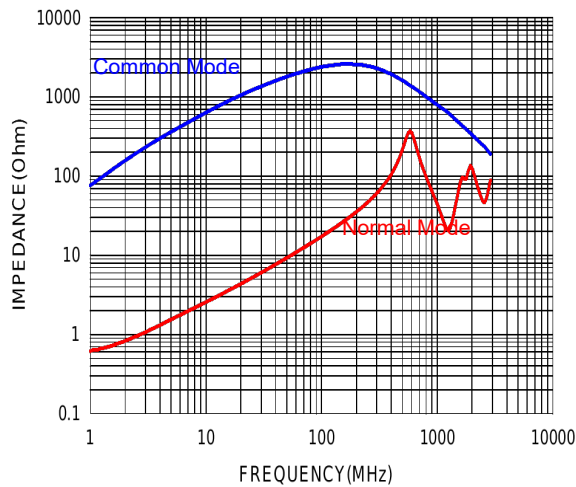
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SPDL3225 Series

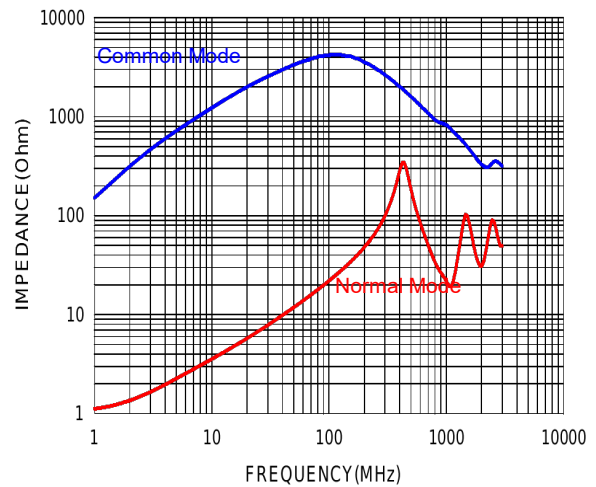
Part Number	Impedance @ 10 MHz (Ω)		Inductance (μH) +50 / -30 % (100 kHz / 0.1 V)	DCR (Ω) Max.	Rated Voltage (Vdc) Max.	Insulation Resistance (MΩ) Min.	Rated Current (mA) Max.
SPDL3225-110-2P-T	300 min	500 typ.	11	0.40	50	10	300
SPDL3225-220-2P-T	500 min	1100 typ.	22	0.50	50	10	250
SPDL3225-510-2P-T	1000 min	2600 typ.	51	0.70	50	10	200
SPDL3225-101-2P-T	2200 min	5100 typ.	100	1.50	50	10	150

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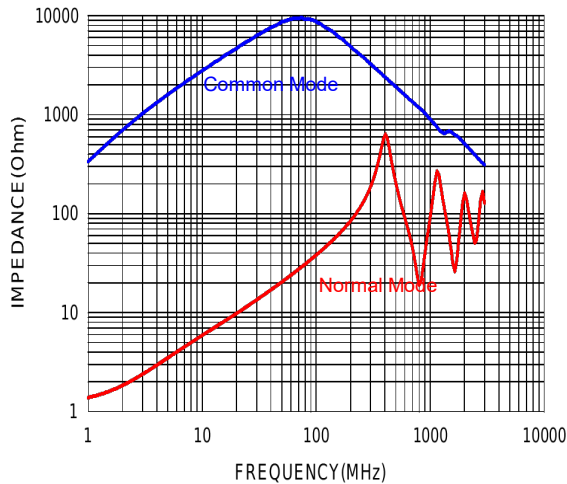
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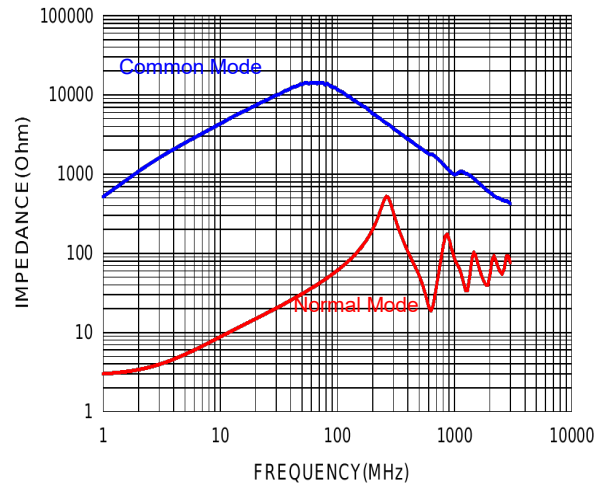
SPDL3225-110-2P-T



SPDL3225-220-2P-T



SPDL3225-510-2P-T



SPDL3225-101-2P-T

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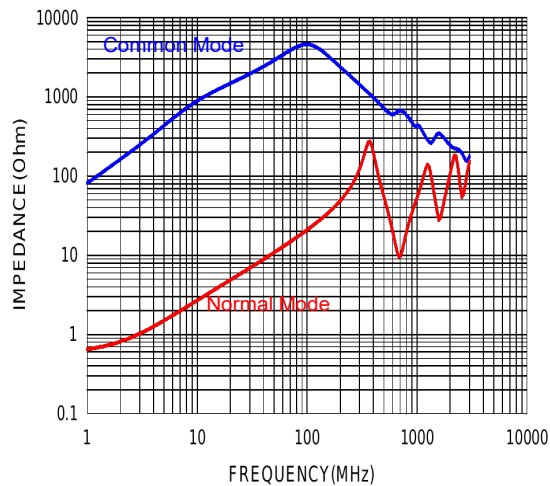
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SPDL4532 Series

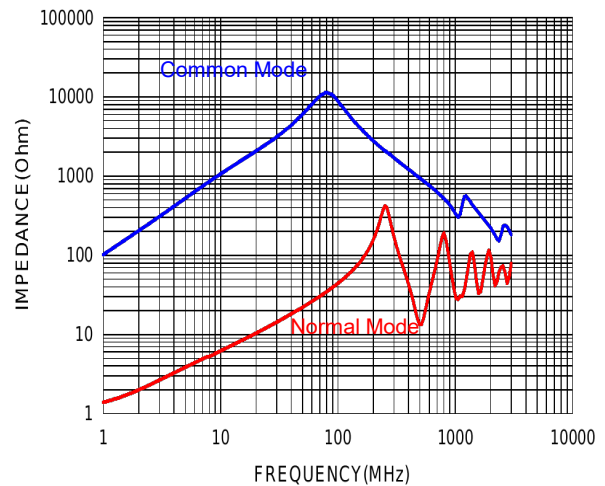
Part Number	Impedance @ 10 MHz (Ω)		Inductance (μH) +50 / - 30% (100 kHz / 0.1 V)	DCR (Ω) Max.	Rated Voltage (Vdc)Max.	Insulation Resistance (MΩ) Min.	Rated Current (mA) Max.
SPDL4532-110-2P-T	300 min	600 typ.	11	0.60	50	10	360
SPDL4532-220-2P-T	500 min	1200 typ.	22	1.00	50	10	310
SPDL4532-510-2P-T	1000 min	2800 typ.	51	1.00	50	10	230
SPDL4532-101-2P-T	2200 min	5800 typ.	100	2.00	50	10	200

Notice: Please read Cautions and Warnings and Notes for electrical characteristics test at the end of this document

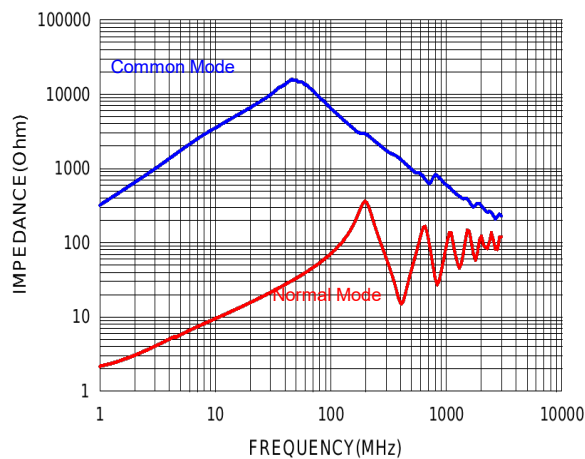
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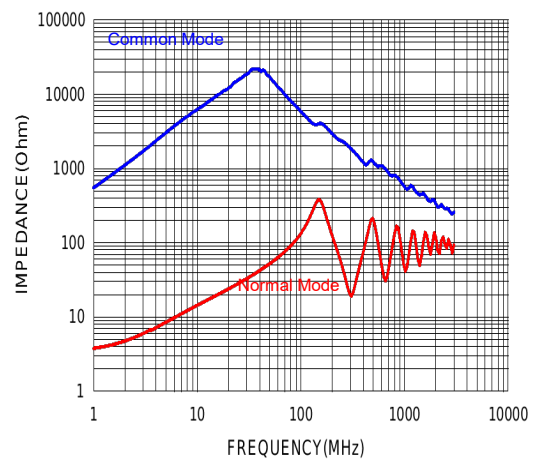
SPDL4532-110-2P-T



SPDL4532-220-2P-T



SPDL4532-510-2P-T



SPDL4532-101-2P-T

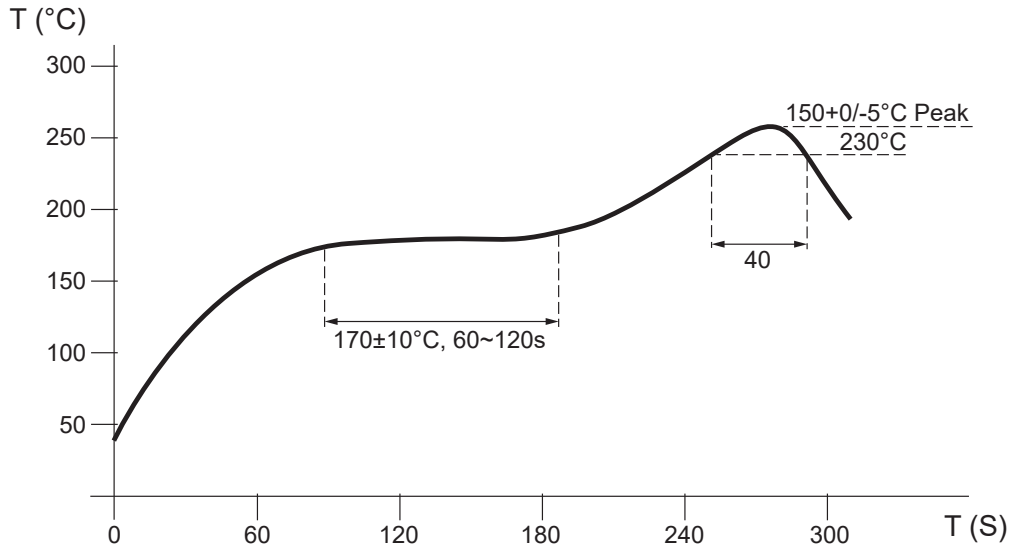
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RECOMMENDED REFLOW SOLDERING CONDITIONS (SMT-TYP)



ADD:

The recommended reflow conditions as above graph, is set according to our soldering equipment, due to various manufactures may have different reflow soldering equipment, products, process conditions, set methods, and so on. When setting the reflow conditions, please adjust and confirm according to users' environment/equipment.

Notice:

- Solder reflow temperature: $+260^{\circ}\text{C}$ Max. for 10 seconds max.
- To solder inductors by soldering iron is not recommended.
- Please contact us for details

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TAPE AND REEL SPECIFICATIONS

Fig1

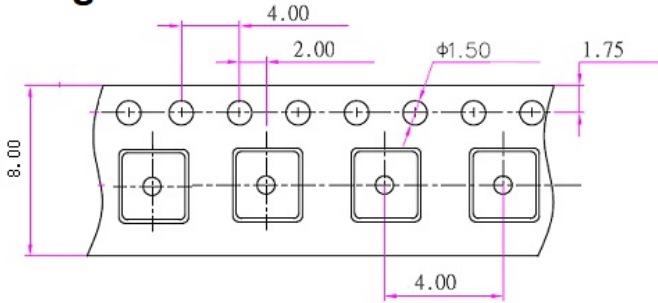
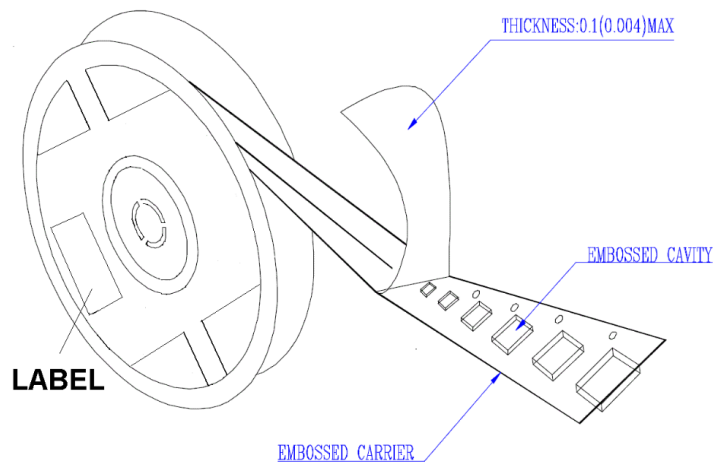
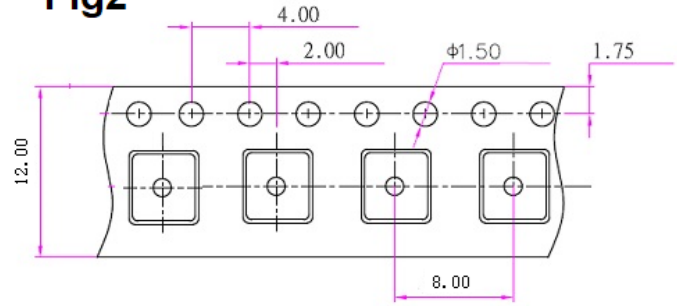


Fig2



Part Number	Shape	Reel	Pcs / Reel
SPDL2012	Fig1	7 mm x 8 mm	2000
SPDL3216	Fig1	7 mm x 8 mm	2000
SPDL3225	Fig1	7 mm x 8 mm	2000
SPDL4532	Fig2	7 mm x 12 mm	500

Taping Specification: EIA -481 Compliant

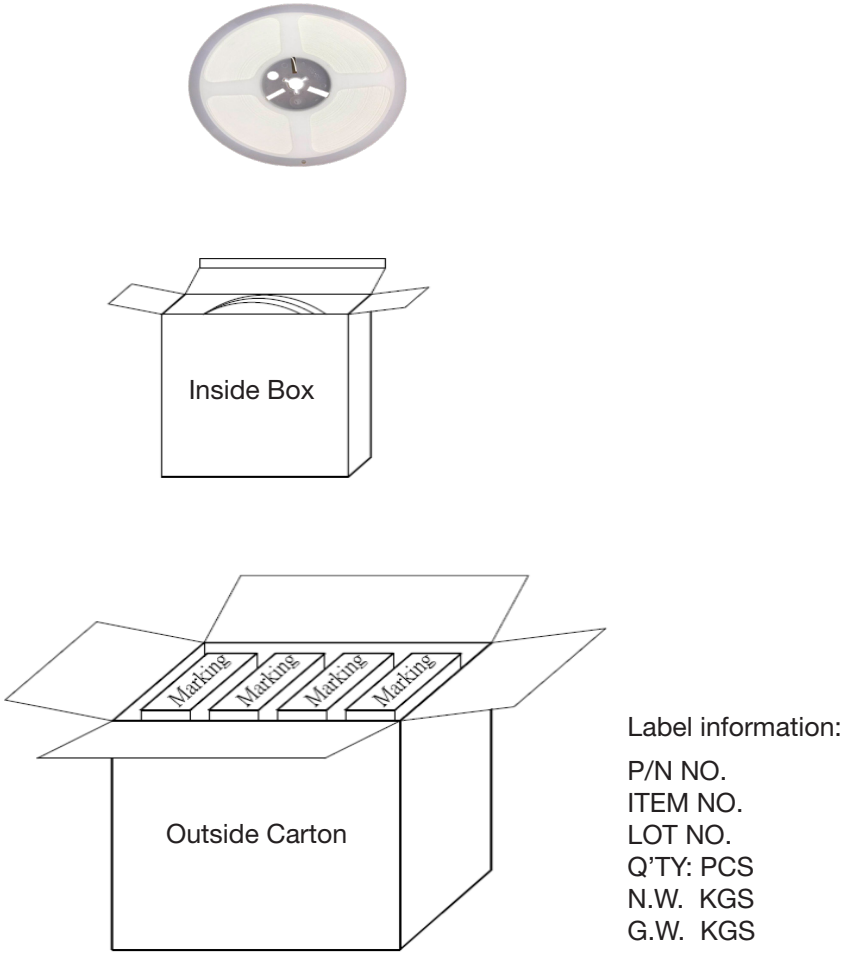
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PACKAGE SPECIFICATIONS



Storage Conditions:

- a) Temperature and humidity conditions: < 35°C and < 35 - 65 %.
- b) Recommendation: inductors should be used within 12 months from the time of delivery
- c) Packaging material should be kept away from where chlorine or sulfur exists.

The Outside Carton Package Quantity:

Part Number	Inside Box	Outside Carton
SPDL2012	10000	50000
SPDL3216	10000	50000
SPDL3225	10000	50000
SPDL4532	2000	10000

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About Signal Transformer

Signal Transformer is known as the world's leader of wire wound magnetic solutions since 1959. With over 50 years of experience manufacturing transformers, chokes, inductors and custom or modified standard products. Signal offers not only the most comprehensive line of certified standard power conversion products, with our vast engineering, manufacturing and regulatory resources; Signal Transformer excels in the design and manufacturer of cost effective, specialized platforms.



**For more information,
please contact us:**

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Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Bel:

<u>SPDL2012-361-2P-T</u>	<u>SPDL2012-900-2P-T</u>	<u>SPDL3216-222-2P-T</u>	<u>SPDL3225-101-2P-T</u>	<u>SPDL4532-101-2P-T</u>
<u>SPDL4532-110-2P-T</u>	<u>SPDL4532-220-2P-T</u>	<u>SPDL4532-510-2P-T</u>	<u>SPDL2012-121-2P-T</u>	<u>SPDL2012-221-2P-T</u>
<u>SPDL2012-261-2P-T</u>	<u>SPDL2012-670-2P-T</u>	<u>SPDL3216-102-2P-T</u>	<u>SPDL3216-121-2P-T</u>	<u>SPDL3225-110-2P-T</u>
<u>SPDL3225-220-2P-T</u>	<u>SPDL3225-510-2P-T</u>	<u>SPDL2012-161-2P-T</u>	<u>SPDL2012-181-2P-T</u>	<u>SPDL2012-201-2P-T</u>
<u>SPDL3216-161-2P-T</u>	<u>SPDL3216-221-2P-T</u>	<u>SPDL3216-261-2P-T</u>	<u>SPDL3216-361-2P-T</u>	<u>SPDL3216-601-2P-T</u>
<u>SPDL3216-900-2P-T</u>				