PHASE SHIFTER

1. Electrical Characteristics (at -40 ~ +85 °C)

Part Number		LFP151G9E030E111
Nominal Characteristics Impedance		50 Ω
Band Pass Range	f1	892.00 ± 68.00 MHz
	f2	1850.00 ± 140.00 MHz
	f3	2140.00 ± 30.00 MHz
	f4	750.00 ± 50.00 MHz
Insertion Loss in BW	f1	0.70 dB max. at +25 °C 0. 80 dB max. at -40 ~ +85 °C
	f2	0.50 dB max. at +25 °C 0.60 dB max. at -40 ~ +85 °C
	f3	0.50 dB max. at +25 °C 0.60 dB max. at -40 ~ +85 °C
	f4	0.85 dB max. at +25 °C 0.95 dB max. at -40 ~ +85 °C
V.S.W.R. in BW	f1	2.30 max.
	f2	2.30 max.
	f3	2.30 max.
	f4	2.30 max.
Phase Shift in BW		94.5 ± 5.5 ° at 824.00 MHz 79.5 ± 5.5 ° at 960.00 MHz 39.5 ± 5.0 ° at 1710.00 MHz 30.0 ± 5.0 ° at 1990.00 MHz 26.5 ± 5.0 ° at 2110.00 MHz 24.5 ± 5.0 ° at 2170.00 MHz 112.5 ± 5.5 ° at 700.00 MHz 97.5 ± 5.5 ° at 800.00 MHz
Power Capacity		3 W

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Part Number		LFP151G9E015E112
Nominal Characteristics Impedance		50 Ω
Band Pass Range	f1	892.00 ± 68.00 MHz
	f2	1850.00 ± 140.00 MHz
	f3	2140.00 ± 30.00 MHz
	f4	750.00 ± 50.00 MHz
Insertion Loss in BW	f1	0.73 dB max. at +25 °C 0.83 dB max. at –40 ~ +85 °C
	f2	0.50 dB max. at +25 °C 0.60 dB max. at –40 ~ +85 °C
	f3	0.50 dB max. at +25 °C 0.60 dB max. at –40 ~ +85 °C
	f4	0.85 dB max. at +25 °C 0.95 dB max. at –40 ~ +85 °C
V.S.W.R. in BW	f1	2.30 max.
	f2	2.30 max.
	f3	2.30 max.
	f4	2.30 max.
Phase Shift in BW		72.0 ± 5.5 ° at 824.00 MHz 61.5 ± 5.0 ° at 960.00 MHz 23.5 ± 5.0 ° at 1710.00 MHz 15.0 ± 5.0 ° at 1990.00 MHz 12.0 ± 5.0 ° at 2110.00 MHz 10.0 ± 5.0 ° at 2170.00 MHz 87.5 ± 5.5 ° at 700.00 MHz 75.5 ± 5.5 ° at 800.00 MHz
Power Capacity		3 W

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Part Number		LFP151G9B004E113
Nominal Characteristics Impedance		50 Ω
Band Pass Range	f1	892.00 ± 68.00 MHz
	f2	1810.00 + 180.00 / - 100.00 MHz
	f3	2140.00 + 30.00 / - 30.00 MHz
Insertion Loss in BW	f1	0.15 dB max. at +25 °C 0.20 dB max. at -40 ~ +85 °C
	f2	0.20 dB max. at +25 °C 0.25 dB max. at -40 ~ +85 °C
	f3	0.20 dB max. at +25 °C 0.25 dB max. at -40 ~ +85 °C
V.S.W.R. in BW	f1	1.70 max.
	f2	1.70 max.
	f3	1.70 max.
Phase Shift in BW		-3.0 ± 4.0 ° at 824.00 MHz -3.0 ± 4.0 ° at 960.00 MHz -4.0 ± 5.0 ° at 1710.00 MHz -4.0 ± 5.0 ° at 1990.00 MHz -6.0 ± 5.0 ° at 2110.00 MHz -6.0 ± 5.0 ° at 2170.00 MHz
Power Capacity		3 W

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Part Number		LFP151G9F015E114
Nominal Characteristics Impedance		50 Ω
Band Pass Range	f1	892.00 ± 68.00 MHz
	f2	1850.00 ± 140.00 MHz
	f3	2140.00 ± 30.00 MHz
	f4	750.00 ± 50.00 MHz
Insertion Loss in BW	f1	0.12 dB max. at +25 °C 0.17 dB max. at -40 ~ +85 °C
	f2	0.20 dB max. at +25 °C 0.25 dB max. at -40 ~ +85 °C
	f3	0.20 dB max. at +25 °C 0.25 dB max. at -40 ~ +85 °C
	f4	0.12 dB max. at +25 °C 0.17 dB max. at -40 ~ +85 °C
V.S.W.R. in BW	f1	1.60 max.
	f2	1.60 max.
	f3	1.60 max.
	f4	1.60 max.
Phase Shift in BW		-6.0 ± 4.0 ° at 824.00 MHz -7.0 ± 4.0 ° at 960.00 MHz -12.5 ± 5.0 ° at 1710.00 MHz -15.0 ± 5.0 ° at 1990.00 MHz -16.0 ± 5.0 ° at 2110.00 MHz -16.5 ± 5.0 ° at 2170.00 MHz -5.0 ± 4.0 ° at 700.00 MHz -6.0 ± 4.0 ° at 800.00 MHz
Power Capacity		3 W

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Part Number		LFP151G9F030E115
Nominal Characteristics Impedance		50 Ω
Band Pass Range	f1	892.00 ± 68.00 MHz
	f2	1850.00 ± 140.00 MHz
	f3	2140.00 ± 30.00 MHz
	f4	750.00 ± 50.00 MHz
Insertion Loss in BW	f1	0.18 dB max. at +25 °C 0.23 dB max. at –40 ~ +85 °C
	f2	0.25 dB max. at +25 °C 0.30 dB max. at –40 ~ +85 °C
	f3	0.28 dB max. at +25 °C 0.33 dB max. at –40 ~ +85 °C
	f4	0.18 dB max. at +25 °C 0.23 dB max. at –40 ~ +85 °C
V.S.W.R. in BW	f1	1.60 max.
	f2	1.60 max.
	f3	1.60 max.
	f4	1.60 max.
Phase Shift in BW		-12.0 ± 4.0 ° at 824.00 MHz -14.0 ± 4.0 ° at 960.00 MHz -25.5 ± 5.0 ° at 1710.00 MHz -30.0 ± 5.0 ° at 1990.00 MHz -32.0 ± 5.0 ° at 2110.00 MHz -33.0 ± 5.0 ° at 2170.00 MHz -10.5 ± 4.0 ° at 700.00 MHz -12.0 ± 4.0 ° at 800.00 MHz
Power Capacity		3 W

All the technical data and Information contained herein are subject tochange without prior notice.

Part Number		LFP151G9F045E116
Nominal Characteristics Impedance		50 Ω
Band Pass Range	f1	892.00 ± 68.00 MHz
	f2	1850.00 ± 140.00 MHz
	f3	2140.00 ± 30.00 MHz
	f4	750.00 ± 50.00 MHz
Insertion Loss in BW	f1	0.20 dB max. at +25 °C 0.25 dB max. at -40 ~ +85 °C
	f2	0.28 dB max. at +25 °C 0.33 dB max. at -40 ~ +85 °C
	f3	0.30 dB max. at +25 °C 0.35 dB max. at -40 ~ +85 °C
	f4	0.25 dB max. at +25 °C 0.30 dB max. at -40 ~ +85 °C
V.S.W.R. in BW	f1	1.60 max.
	f2	1.60 max.
	f3	1.60 max.
	f4	1.60 max.
Phase Shift in BW		-18.5 ± 4.0 ° at 824.00 MHz -21.5 ± 4.0 ° at 960.00 MHz -38.5 ± 5.0 ° at 1710.00 MHz -45.0 ± 5.0 ° at 1990.00 MHz -48.0 ± 5.0 ° at 2110.00 MHz -49.5 ± 5.0 ° at 2170.00 MHz -15.5 ± 4.0 ° at 700.00 MHz -17.5 ± 4.0 ° at 800.00 MHz
Power Capacity		3 W

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Part Number		LFP151G9F060E117
Nominal Characteristics Impedance		50 Ω
Band Pass Range	f1	892.00 ± 68.00 MHz
	f2	1850.00 ± 140.00 MHz
	f3	2140.00 ± 30.00 MHz
	f4	750.00 ± 50.00 MHz
Insertion Loss in BW	f1	0.30 dB max. at +25 °C 0.35 dB max. at -40 ~ +85 °C
	f2	0.40 dB max. at +25 °C 0.45 dB max. at -40 ~ +85 °C
	f3	0.45 dB max. at +25 °C 0.50 dB max. at -40 ~ +85 °C
	f4	0.30 dB max. at +25 °C 0.35 dB max. at -40 ~ +85 °C
V.S.W.R. in BW	f1	1.60 max.
	f2	1.60 max.
	f3	1.60 max.
	f4	1.60 max.
Attenuation (Absolute value)		3.0 dB min. at 6840.00 ~ 12750.00 MHz
Phase Shift in BW		-23.5 ± 4.0 ° at 824.00 MHz -27.5 ± 4.0 ° at 960.00 MHz -50.5 ± 5.0 ° at 1710.00 MHz -60.0 ± 5.0 ° at 1990.00 MHz -64.5 ± 5.0 ° at 2110.00 MHz -67.0 ± 5.0 ° at 2170.00 MHz -20.0 ± 4.0 ° at 700.00 MHz -23.0 ± 4.0 ° at 800.00 MHz
Power Capacity		3 W

All the technical data and Information contained herein are subject tochange without prior notice.

Part Number		LFP151G9F075E118
Nominal Characteristics Impedance		50 Ω
Band Pass Range	f1	892.00 ± 68.00 MHz
	f2	1850.00 ± 140.00 MHz
	f3	2140.00 ± 30.00 MHz
	f4	750.00 ± 50.00 MHz
Insertion Loss in BW	f1	0.35 dB max. at +25 °C 0.40 dB max. at -40 ~ +85 °C
	f2	0.45 dB max. at +25 °C 0.50 dB max. at -40 ~ +85 °C
	f3	0.48 dB max. at +25 °C 0.53 dB max. at -40 ~ +85 °C
	f4	0.35 dB max. at +25 °C 0.40 dB max. at -40 ~ +85 °C
V.S.W.R. in BW	f1	1.60 max.
	f2	1.60 max.
	f3	1.60 max.
	f4	1.60 max.
Attenuation (Absolute value)		8.0 dB min. at 6840.00 ~ 12750.00 MHz
Phase Shift in BW		-30.0 ± 4.0 ° at 824.00 MHz -35.0 ± 4.0 ° at 960.00 MHz -64.0 ± 5.0 ° at 1710.00 MHz -75.0 ± 5.5 ° at 1990.00 MHz -80.0 ± 5.5 ° at 2110.00 MHz -82.5 ± 5.5 ° at 2170.00 MHz -26.0 ± 4.0 ° at 700.00 MHz -29.5 ± 4.0 ° at 800.00 MHz
Power Capacity		3 W

All the technical data and Information contained herein are subject tochange without prior notice.

Part Number		LFP151G9F090E119
Nominal Characteristics Impedance		50 Ω
Band Pass Range	f1	892.00 ± 68.00 MHz
	f2	1850.00 ± 140.00 MHz
	f3	2140.00 ± 30.00 MHz
	f4	750.00 ± 50.00 MHz
Insertion Loss in BW	f1	0.38 dB max. at +25 °C 0.43 dB max. at -40 ~ +85 °C
	f2	0.50 dB max. at +25 °C 0.60 dB max. at -40 ~ +85 °C
	f3	0.55 dB max. at +25 °C 0.65 dB max. at -40 ~ +85 °C
	f4	0.38 dB max. at +25 °C 0.43 dB max. at -40 ~ +85 °C
V.S.W.R. in BW	f1	1.60 max.
	f2	1.60 max.
	f3	1.60 max.
	f4	1.60 max.
Attenuation (Absolute value)		7.0 dB min. at 5130.00 ~ 5730.00 MHz
		10.0 dB min. at 6840.00 ~ 12750.00 MHz
Phase Shift in BW		-36.0 ± 4.0 ° at 824.00 MHz -42.0 ± 4.0 ° at 960.00 MHz -76.5 ± 5.5 ° at 1710.00 MHz -90.0 ± 5.5 ° at 1990.00 MHz -96.0 ± 5.5 ° at 2110.00 MHz -99.0 ± 5.5 ° at 2170.00 MHz -31.0 ± 4.0 ° at 700.00 MHz -35.0 ± 4.0 ° at 800.00 MHz
Power Capacity		3 W

All the technical data and Information contained herein are subject tochange without prior notice.

Part Number		LFP151G9F105E120
Nominal Characteristics Impedance		50 Ω
Band Pass Range	f1	892.00 ± 68.00 MHz
	f2	1850.00 ± 140.00 MHz
	f3	2140.00 ± 30.00 MHz
	f4	750.00 ± 50.00 MHz
Insertion Loss in BW	f1	0.35 dB max. at +25 °C 0.40 dB max. at -40 ~ +85 °C
	f2	0.55 dB max. at +25 °C 0.65 dB max. at -40 ~ +85 °C
	f3	0.60 dB max. at +25 °C 0.70 dB max. at -40 ~ +85 °C
	f4	0.35 dB max. at +25 °C 0.40 dB max. at -40 ~ +85 °C
V.S.W.R. in BW	f1	1.60 max.
	f2	1.60 max.
	f3	1.60 max.
	f4	1.60 max.
Attenuation (Absolute value)		8.0 dB min. at 5130.00 ~ 5730.00 MHz
		5.0 dB min. at 6840.00 ~ 12750.00 MHz
Phase Shift in BW		-41.5 ± 4.0 ° at 824.00 MHz -48.5 ± 4.0 ° at 960.00 MHz -89.0 ± 5.5 ° at 1710.00 MHz -105.0 ± 5.5 ° at 1990.00 MHz -112.5 ± 5.5 ° at 2110.00 MHz -116.0 ± 5.5 ° at 2170.00 MHz -35.5 ± 4.0 ° at 700.00 MHz -40.0 ± 4.0 ° at 800.00 MHz
Power Capacity		3 W

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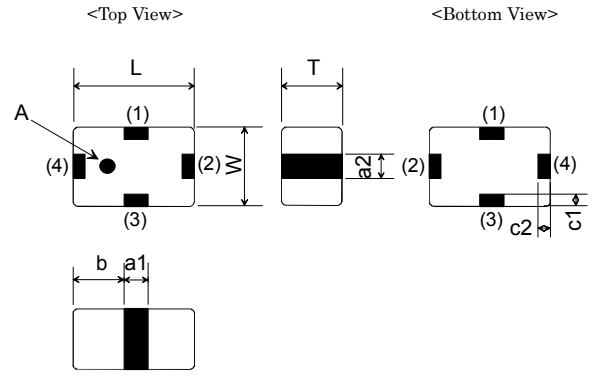
2. Construction, Dimensions & Marking



(in mm)

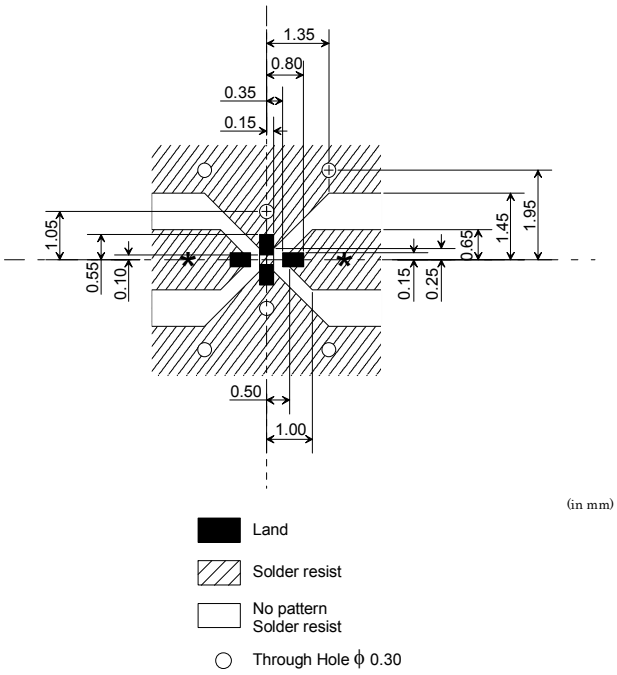
Mark	Meaning
A	Directional Input Mark

Mark	Dimension	Mark	Dimension
L	1.00 ± 0.05	a2	0.3 ± 0.1
W	0.50 ± 0.05	b	0.35 ± 0.10
T	0.40 max.	c1	0.10 ± 0.05
a1	0.3 ± 0.1	c2	0.10 ± 0.05

TERMINAL CONFIGURATION

Terminal No.	Terminal Name	Terminal No.	Terminal Name
(1)	GND	(3)	GND
(2)	OUT	(4)	IN

3. Land Pattern



* Line width to be designed to match 50 ohm characteristic impedance, Depending on PCB material and thickness.

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⚠ CAUTION

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- Power plant control equipment
- Medical equipment.
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- Disaster prevention / crime prevention equipment.
- Burning / explosion control equipment
- Application of similar complexity and/ or reliability requirements to the applications listed in the above.

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