

Specification

Preliminary Specification

Switchplexer® +SAW

for GSM Quad(850/900/1800/1900)/UMTS1/2/3

P/N: LMSP43QLA003

Jun. 12. 2009

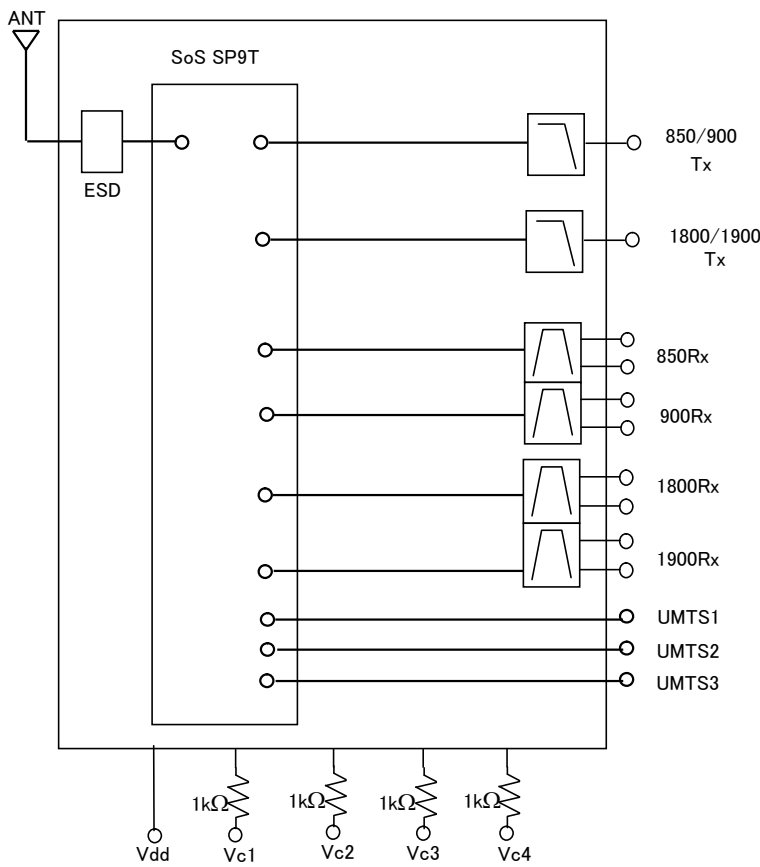
1. Part number

Murata part number	LMSP43QLA003
--------------------	--------------

2. General information

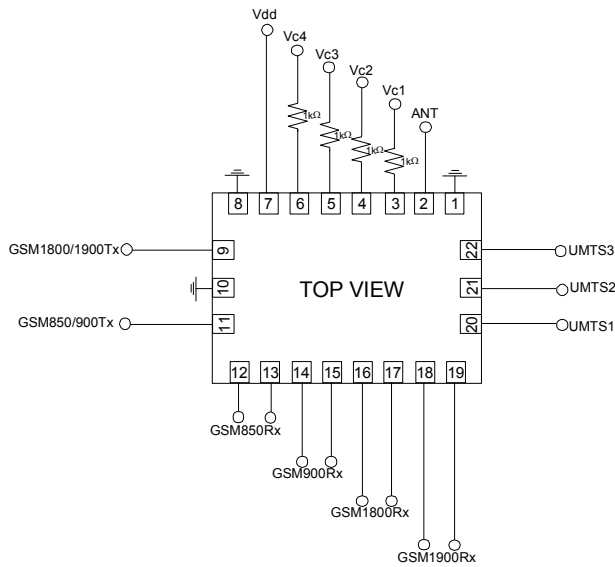
Operating temperature range	-25 °C ~ +75 °C
Storage temperature range	-40 °C ~ +85 °C
MSL	3
Component size	4.5 (typ.) x 3.2 (typ.) x 1.20(max.) mm
Weight (X)	43.7 mg

3. Block Diagram



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

4. Evaluation Circuit & Evaluation Board



Rx Balance Matching Impedance for

Simulating on Network Analyzer

GSM850 Rx : 150ohm // 82nH

GSM900 Rx : 150ohm // 56nH

GSM1800 Rx: 150ohm // 15nH

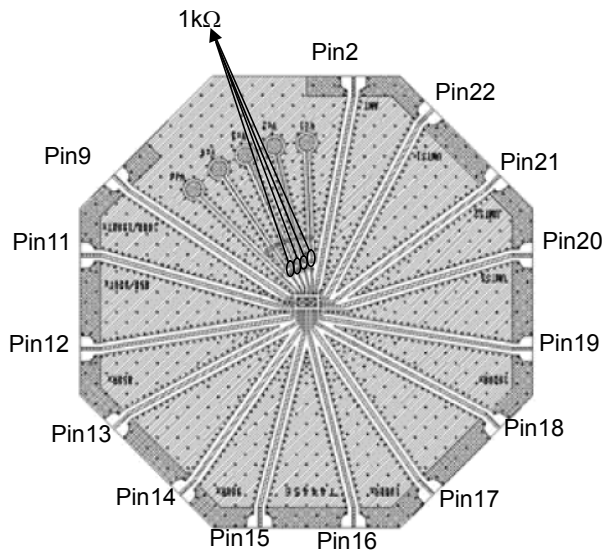
GSM1900 Rx: 150ohm // 18nH

Line Loss Value

Band	Loss	Unit
Low Band (GSM850/900)	0.25	dB
High Band (GSM1800/1900)	0.45	
UMTS Low Band (Band5)	0.25	
UMTS High Band (Band1)	0.50	

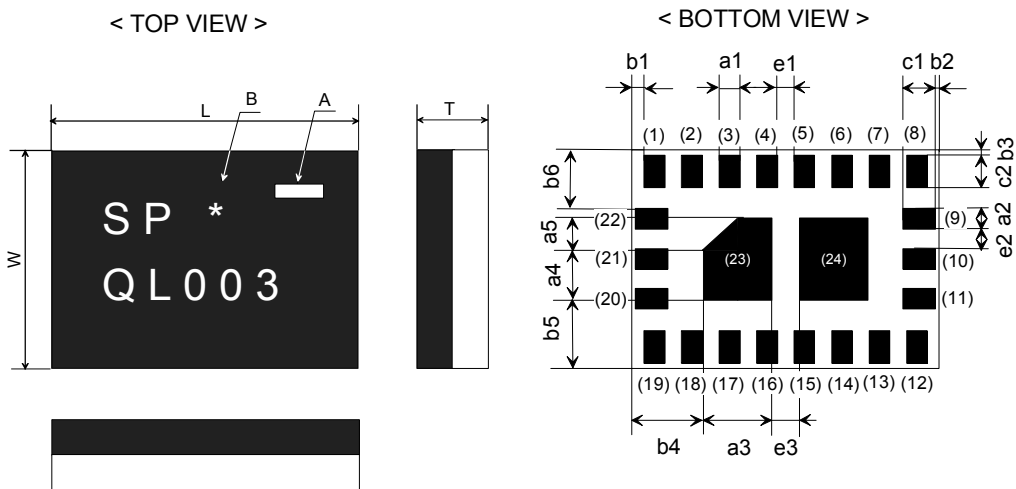
Port Extension Value

Pin No.	Value	Unit
1	GND	-
2	ANT	202.0
3	Vc1	-
4	Vc2	-
5	Vc3	-
6	Vc4	-
7	Vdd	-
8	GND	-
9	GSM1800/1900 Tx	201.5
10	GND	-
11	GSM850/900 Tx	201.0
12	GSM850 Rx	207.0
13	GSM850 Rx	209.0
14	GSM900 Rx	207.0
15	GSM900 Rx	206.0
16	GSM1800 Rx	202.0
17	GSM1800 Rx	205.0
18	GSM1900 Rx	206.0
19	GSM1900 Rx	205.0
20	UMTS1	201.5
21	UMTS2	204.5
22	UMTS3	206.0



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

5. Dimension & Marking



Mark	Meaning
A	Pin 1 Marking
B	Date Code (EIAJ)

(in mm)

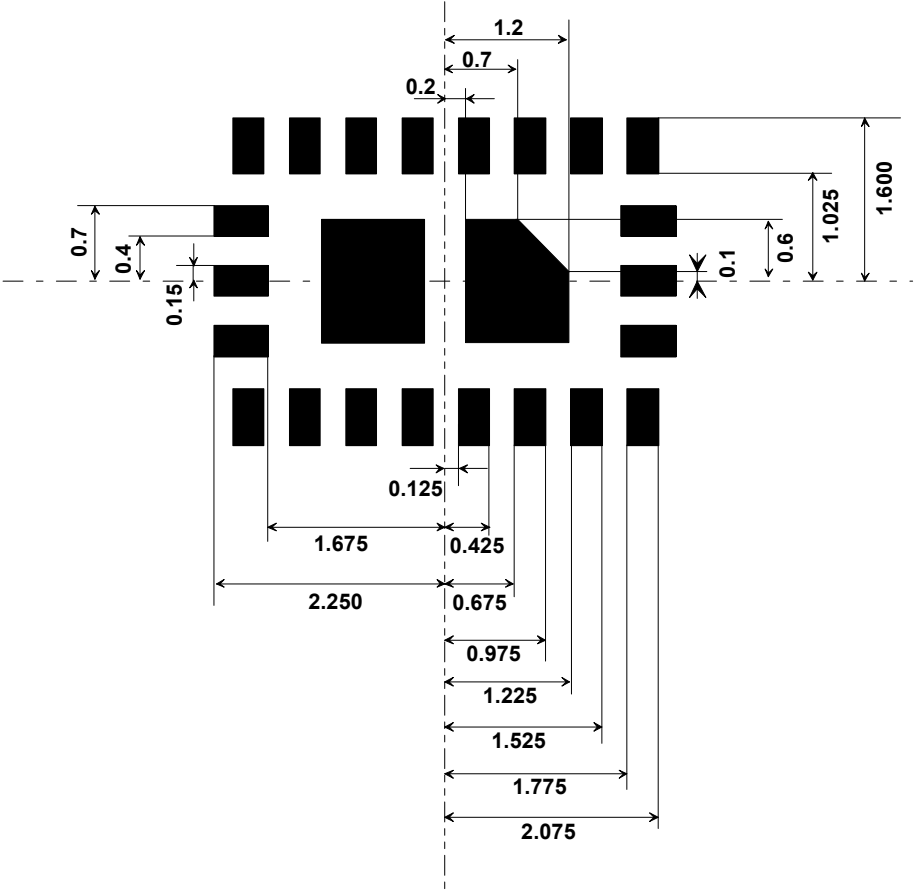
Mark	Dimension	Mark	Dimension	Mark	Dimension
L	4.5 ± 0.2	a5	0.5 ± 0.1	c1	0.425 ± 0.100
W	3.2 ± 0.2	b1	0.175+0.200/-0.175	c2	0.425 ± 0.100
T	1.15 ± 0.05	b2	0.15+0.20/-0.15	e1	0.25 ± 0.10
a1	0.3 ± 0.1	b3	0.15+0.20/-0.15	e2	0.25 ± 0.10
a2	0.3 ± 0.1	b4	1.05 ± 0.20	e3	0.4 ± 0.1
a3	1.0 ± 0.1	b5	1.0 ± 0.2	-	-
a4	0.7 ± 0.1	b6	0.9 ± 0.2	-	-

TERMINAL CONFIGURATION

Terminal No.	Terminal Name	Terminal No.	Terminal Name
(1)	GND	(13)	GSM850Rx
(2)	ANT	(14)	GSM900Rx
(3)	Vc1	(15)	GSM900Rx
(4)	Vc2	(16)	GSM1800Rx
(5)	Vc3	(17)	GSM1800Rx
(6)	Vc4	(18)	GSM1900Rx
(7)	Vdd	(19)	GSM1900Rx
(8)	GND	(20)	UMTS1
(9)	GSM1800/1900Tx	(21)	UMTS2
(10)	GND	(22)	UMTS3
(11)	GSM850/900Tx	(23)	GND
(12)	GSM850Rx	(24)	GND

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

6. Land pattern



 Land

(in mm)

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

7. Electrical Characteristics (at $-25 \sim +75 \text{ }^{\circ}\text{C}$)

<GSM850/900 Band>

Tx mode	Frequency Range (MHz)	fatl	824.00 ~ 849.00	
		fgtl	880.00 ~ 915.00	
	Insertion Loss (dB)	Tx-ANT	1.35 max (at 25°C)	
			1.50 max (at $-25 \sim +75^{\circ}\text{C}$)	
	Attenuation (Absolute value) (dB)	Tx-ANT	27.0 min. at 2 x fatl, fgtl	
	V.S.W.R.	Tx	1.60 max	
			Tx-GSM850Rx	35.0 min
	Isolation (dB)	Tx-GSM900Rx	35.0 min	
		Current Consumption (mA)		0.22 max.
	Power Capacity (dBm)	Tx-ANT	35.0 max.	
Harmonics (dBc)	Tx-ANT	-70.0 max. at 2 x fatl, fgtl MHz		
		-70.0 max. at 3 x fatl, fgtl MHz		
GSM850 Rx mode	Frequency Range (MHz)	farl	869.00 ~ 894.00	
	Pass band ripple (dB)	ANT-Rx	1.30 max	
	Balanced output impedance (ohm)		150(nominal)	
	Terminating Load Inductance (nH)		82	
	Amplitude Balance (dB)	ANT-Rx	± 1.5	
	Phase (degree)	ANT-Rx	180+/-10	
	V.S.W.R.	ANT	2.30 max.	
		Rx	2.50 max.	
	Insertion Loss (dB)	ANT-Rx	3.20 max (at 25°C)	
			3.50 max (at $-25 \sim +75^{\circ}\text{C}$)	
	Attenuation (Absolute value) (dB)	ANT-Rx	100-849MHz	30.0 min.
			914-954MHz	24.0 min.
			954-1738MHz	30.0 min.
			1738-1788MHz	45.0 min.
1788-3476MHz			40.0 min.	
Isolation (dB)	Tx-ANT at fatl	3476-6000MHz	35.0 min.	
		25.0 min.		
Current Consumption (mA)		0.22 max.		
GSM900 Rx mode	Frequency Range (MHz)	fgrl	925.00 ~ 960.00	
	Pass band ripple (dB)	ANT-Rx	1.30 max	
	Balanced output impedance (ohm)		150 (nominal)	
	Terminating Load Inductance (nH)		56	
	Amplitude Balance (dB)	ANT-Rx	± 1.5	
	Phase (degree)	ANT-Rx	180 \pm 10	
	V.S.W.R.	ANT	2.30 max.	
		Rx	2.30 max.	
	Insertion Loss (dB)	ANT-Rx	3.20 max (at 25 °C)	
			3.50 max (at $-25 \sim +75^{\circ}\text{C}$)	
	Attenuation (Absolute value) (dB)	ANT-Rx	100-905MHz	25.0 min.
			905-915MHz	20.0 min.
			980-1000MHz	20.0 min.
			1000-1850MHz	23.0 min.
1850-1920MHz			40.0 min.	
Isolation (dB)	Tx-ANT at fgtl	1920-6000MHz	35.0 min.	
		25.0 min.		
Current Consumption (mA)		0.22 max.		

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

<GSM1800/GSM1900 Band>

Tx mode	Frequency Range (MHz)	fdth	1710.00 ~ 1785.00
		fpth	1850.00 ~ 1910.00
	Insertion Loss (dB)	Tx-ANT	1.25 max (at 25°C) 1.40 max (at -25 ~ +75°C)
	Attenuation (Absolute value) (dB)	Tx-ANT	30.0 min. at 2 x fatl, fgtl 30.0 min. at 3 x fatl, fgtl
	V.S.W.R.	Tx	1.60 max.
	Isolation (dB)	Tx-GSM1800Rx	35.0 min.
		Tx-GSM1900Rx	35.0 min.
	Current Consumption (mA)		0.22 max.
	Power Capacity (dBm)	Tx-ANT	33.0 max.
Harmonics (dBc)	Tx-ANT		-67.0 max. at 2 x fdth, fpth MHz
			-67.0 max. at 3 x fdth, fpth MHz

GSM1800 Rx mode	Frequency Range (MHz)	fdrh	1805.00 ~ 1880.00	
	Pass band ripple (dB)	ANT-Rx	1.30 max	
	Balanced output impedance (ohm)		150 (nominal)	
	Terminating Load Inductance (nH)		15	
	Amplitude Balance (dB)	ANT-Rx	± 1.7	
	Phase (degree)	ANT-Rx	180 ± 20	
	V.S.W.R.	ANT	2.40 max.	
		Rx	2.30 max.	
	Insertion Loss (dB)	ANT-Rx		3.10 max (at 25°C)
				3.40 max (at -25 ~ +75°C)
	Attenuation (Absolute value) (dB)	ANT-Rx	100-1705MHz	19.0 min.
			1705-1785MHz	10.0 min.
			1920-1980MHz	13.0 min.
			1980-2030MHz	15.0 min.
2030-6000MHz			22.0 min.	
Isolation (dB)	Tx-ANT at fdth		20.0 min.	
Current Consumption (mA)			0.22 max.	
GSM1900 Rx mode	Frequency Range (MHz)	fprh	1930.00 ~ 1990.00	
	Pass band ripple (dB)	ANT-Rx	1.30 max.	
	Balanced output impedance (ohm)		150 (nominal)	
	Terminating Load Inductance (nH)		18	
	Amplitude Balance (dB)	ANT-Rx	± 1.7	
	Phase (degree)	ANT-Rx	180 ± 15	
	V.S.W.R.	ANT	2.30 max.	
		Rx	2.30 max.	
	Insertion Loss (dB)	ANT-Rx		3.20 max (at 25°C)
				3.60 max (at -25 ~ +75°C)
	Attenuation (Absolute value) (dB)	ANT-Rx	100-1830MHz	27.0 min.
			1830-1850MHz	21.0 min.
			1850-1890MHz	16.0 min.
			1890-1910MHz	12.0 min.
2010-2070MHz			10.0 min.	
2070-2400MHz			20.0 min.	
	2400-6000MHz	30.0 min.		
Isolation (dB)	Tx-ANT at fpth		20.0 min.	
Current Consumption (mA)			0.22 max.	

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

<UMTS1/2/3>

Low Band	Frequency Range (MHz)	ful	824.00 ~ 960.00 (Band5/6/8)
	Insertion Loss (dB)	UMTS1/2/3-ANT	0.9 max. (at 25°C) ----- 1.05 max. (at -25 ~ +75°C)
	V.S.W.R.	UMTS1/2/3	1.60 max.
High Band	Frequency Range (MHz)	fuh	1710.00 ~ 2170.00 (Band1/2/3/4/9)
	Insertion Loss (dB)	UMTS1/2/3-ANT	1.15 max (at 25°C) ----- 1.30 max. (at -25 ~ +75°C)
	V.S.W.R.	UMTS1/2/3	1.60 max.
	Current Consumption (mA)		0.22 max.
	Power Capacity (dBm)		26.0 max.
	Harmonics (dBc)	UMTS1/2/3-ANT	-67.0 max. at 2 x ful, fuh MHz ----- -67.0 max. at 3 x ful, fuh MHz

*Note: The condition is, Vdd=2.65V. (Minimum Voltage for Estimating Worst Performance)

The above-mentioned values have been obtained according to our own measuring methods (testing jig : Fig.1, Zo=50 Ω) and may vary depending on the circuit, in which this component is actually incorporated.

You are, therefore, kindly requested to test the performance of this component incorporating in your set.

CONTROL LOGIC (Final, 2008/03/10)

Mode	Vc1	Vc2	Vc3	Vc4	Vdd
GSM850/900 Tx	High	Low	Low	Low	2.65-2.85V
GSM1800/1900 Tx	High	High	Low	Low	
GSM850 Rx	Low	High	High	Low	
GSM900 Rx	Low	Low	High	Low	
GSM1800 Rx	Low	Low	Low	Low	
GSM1900 Rx	Low	High	Low	Low	
UMTS1	Low	Low	Low	High	
UMTS2	Low	High	Low	High	
UMTS3	Low	Low	High	High	

High : 1.4 - Vdd (V)

Low : 0 - 0.4 (V)

Notice**Limitation of Applications:**

The product is designed and manufactured for consumer application only and is not available for any application listed below which requires especially high reliability for the prevention of such defect as may directly cause damage to the third party's life, body or property.

- Aircraft equipment.
- Aerospace equipment
- Undersea equipment.
- Medical equipment.
- Transportation equipment (vehicles, trains, ships, etc.).
- Traffic signal equipment.
- Disaster prevention / crime prevention equipment.
- Application of similar complexity and/ or reliability requirements to the applications listed in the above.

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