

TS3232 Series [Preliminary]

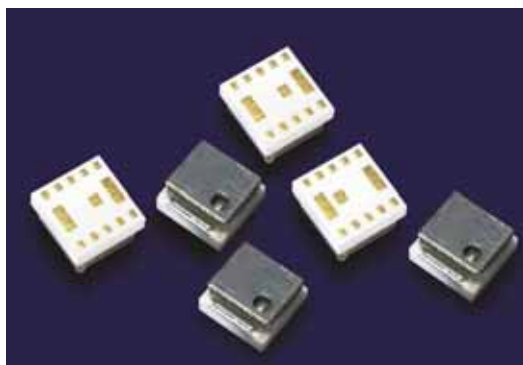
Antenna Switch Module

Features

- ❖ Combined function of diplexer, three Tx/Rx switches, and two low-pass filters
- ❖ Small, low profile SMD

Applications

- ❖ Triple-band cellular phones.



Electrical Specifications

<GSM-850 Band>

Tx mode	Frequency Range (MHz)	fat	824~849 MHz
	Insertion Loss (dB)	Tx - ANT	1.6 max.
	Attenuation (dB)	Tx - ANT	30.0 min. @ 2xfat MHz
			26.0 min. @ 3xfat MHz
	Return Loss (dB)	Tx & ANT	10.0 min.
	Isolation (dB)	Tx - GSM850/900_Rx	21.0 min.
		Tx - GSM1800_Rx	21.0 min.
Tx - GSM1900_Rx		21.0 min.	
Current Consumption (mA)		10.0 max.	
Power Capacity (dBm)		35.0 typ.	
Rx mode	Frequency Range (MHz)	far	869~894 MHz
	Insertion Loss (dB)	ANT - Rx	1.2 max.
	Return Loss (dB)	Rx & ANT	10.0 min.
	Isolation (dB)	Tx - ANT	21.0 min.

<GSM-900 Band>

Tx mode	Frequency Range (MHz)	fgt	880~915 MHz
	Insertion Loss (dB)	Tx - ANT	1.6 max.
	Attenuation (dB)	Tx - ANT	30.0 min. @ 2xfgt MHz
			26.0 min. @ 3xfgt MHz
	Return Loss (dB)	Tx & ANT	10.0 min.
	Isolation (dB)	Tx - GSM850/900_Rx	21.0 min.
		Tx - GSM1800_Rx	21.0 min.
Tx - GSM1900_Rx		21.0 min.	
Current Consumption (mA)		10.0 max.	

	Power Capacity (dBm)		35.0 typ.
Rx mode	Frequency Range (MHz)	fgr	925~960 MHz
	Insertion Loss (dB)	ANT - Rx	1.2 max.
	Return Loss (dB)	Rx & ANT	10.0 min.
	Isolation (dB)	Tx - ANT	21.0 min.

<GSM-1800 Band>

Tx mode	Frequency Range (MHz)	fdt	1710~1785 MHz
	Insertion Loss (dB)	Tx - ANT	1.90 max.
	Attenuation (dB)	Tx - ANT	30.0 min. @ 2xfdt MHz
			22.0 min. @ 3xfdt MHz
	Return Loss (dB)	Tx & ANT	10.0 min.
	Isolation (dB)	Tx - GSM850/900_Rx	21.0 min.
		Tx - GSM1800_Rx	30.0 min.
		Tx - GSM1900_Rx	16.0 min.
Current Consumption (mA)		10.0 max.	
Power Capacity (dBm)		33.0 typ	
Rx mode	Frequency Range (MHz)	fdr	1805~1880 MHz
	Insertion Loss (dB)	ANT - Rx	1.50 max.
	Return Loss (dB)	Rx & ANT	10.0 min.
	Isolation (dB)	Tx - ANT	21.0 min.

<GSM-1900 Band>

Tx mode	Frequency Range (MHz)	fpt	1850~1910 MHz
	Insertion Loss (dB)	Tx - ANT	1.70 max.
	Attenuation (dB)	Tx - ANT	25.0 min. @ 2xfpt MHz
			20.0 min. @ 3xfpt MHz
	Return Loss (dB)	Tx & ANT	10.0 min.
	Isolation (dB)	Tx - GSM850/900_Rx	21.0 min.
		Tx - GSM1800_Rx	30.0 min.
		Tx - GSM1900_Rx	21.0 min.
Current Consumption (mA)		10.0 max.	
Power Capacity (dBm)		33.0 typ	
Rx mode	Frequency Range (MHz)	fpr	1930~1990 MHz
	Insertion Loss (dB)	ANT - Rx	1.80 max.
	Return Loss (dB)	Rx & ANT	10.0 min.
	Isolation (dB)	Tx - ANT	21.0 min.

Operating Temperature Range : -30 ~ +85 °C
 Storage Temperature Range : +5 ~ +35 °C, Humidity 45~75%RH
 Storage Period : 6 months max.
 Q'ty/Reel (pcs) : 2,000

<Control voltage application>

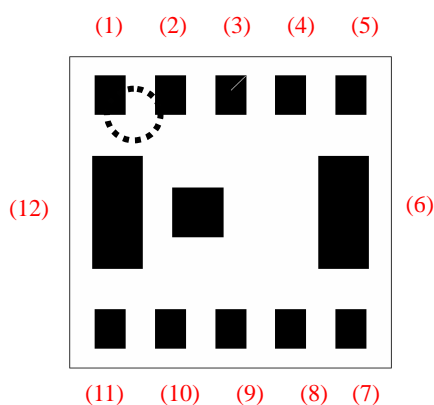
Mode	Vc1	Vc2	Vc3	Current
GSM850/900-Tx	2.4~2.8 V	0~0.1 V	0~0.1 V	10mA max.
GSM850/900-Rx	0~0.1 V	0~0.1 V	0~0.1 V	--
GSM1800/1900-Tx	0~0.1 V	2.4~2.8 V	2.4~2.8 V	10mA max.
GSM1800-Rx	0~0.1 V	0~0.1 V	0~0.1 V	--
GSM1900-Rx	0~0.1 V	0~0.1 V	2.4~2.8 V	3mA max.

Part Number

TS 3232 - B 0918 AA □
 ① ② ③ ④ ⑤ ⑥

① Type	TS : Tri-band Switch Module	② Dimensions (L × W)	3.2 × 3.2 mm
③ Material Code	B	④ Frequency Range	0918=900MHz /1800MHz
⑤ Specification Code	AA	⑥ Packaging	T: Tape & Reel B: Bulk

Terminal Configuration

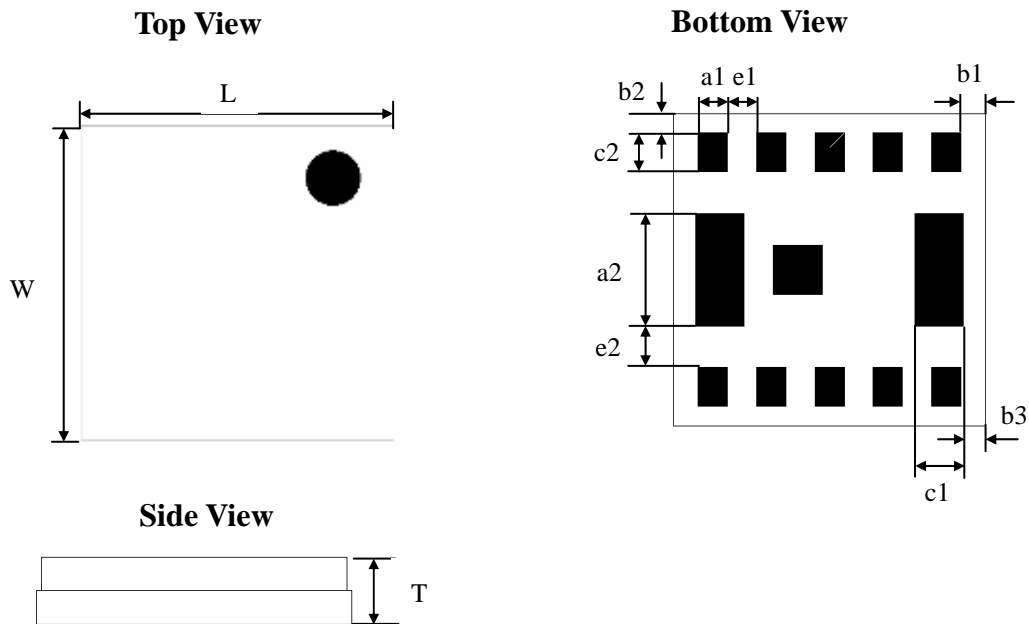


No.	Terminal Name	No.	Terminal Name
(1)	GSM1800-Rx	(7)	GSM850/900-Tx
(2)	Vc3	(8)	GND
(3)	GSM850/900-Rx	(9)	ANT
(4)	Vc1	(10)	Vc2
(5)	GSM1800/1900-Tx	(11)	GSM1900-Rx
(6)	GND	(12)	GND

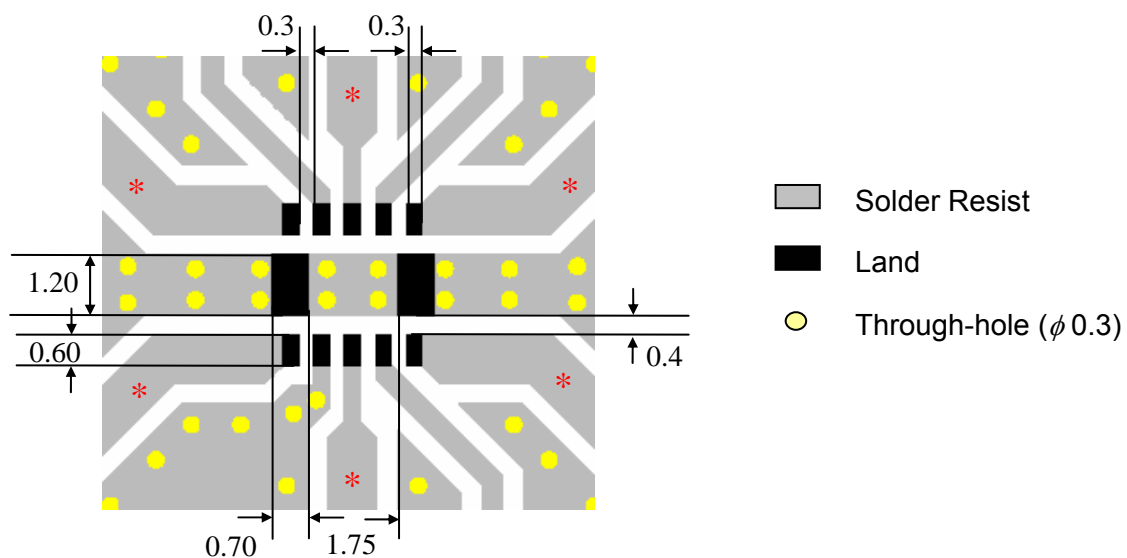
<Bottom View>

Dimensions and Recommended PC Board Pattern

Unit : mm

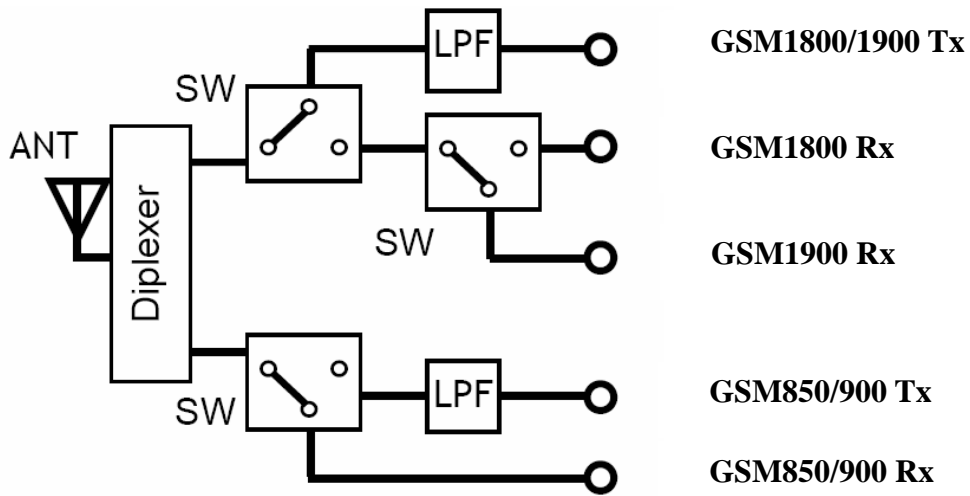


Mark	Dimensions	Mark	Dimensions
L	3.2 ± 0.2	b2	0.2 ± 0.2
W	3.2 ± 0.2	b3	0.2 ± 0.2
T	1.35 max.	c1	0.5 ± 0.1
a1	0.3 ± 0.1	c2	0.4 ± 0.1
a2	1.2 ± 0.1	e1	0.3 ± 0.1
b1	0.25 ± 0.2	e2	0.4 ± 0.1

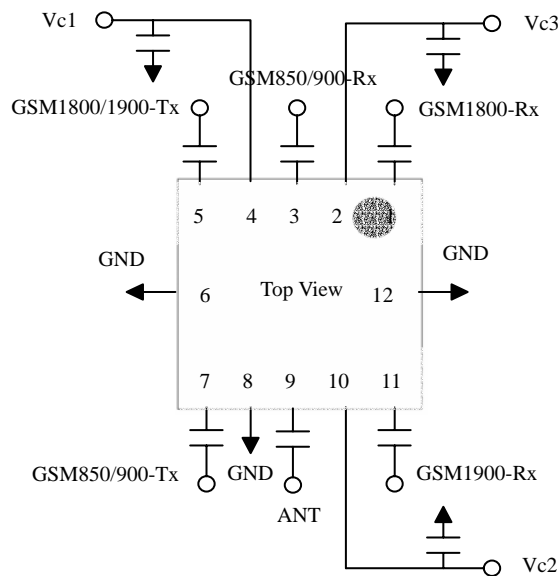


* Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.

Circuit Block



Measuring Diagram



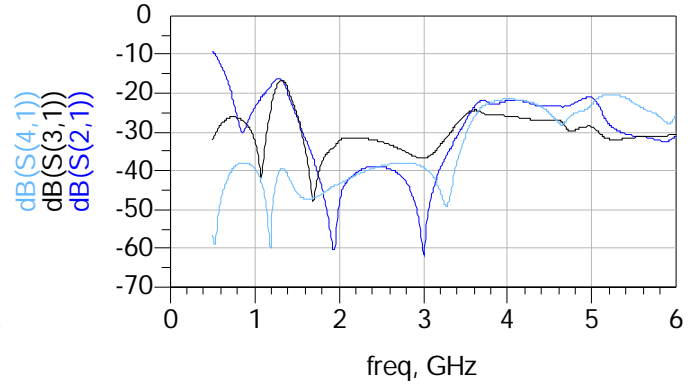
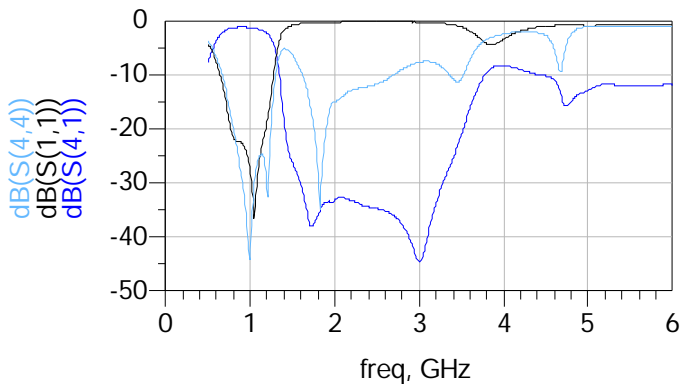
* Blocking and de-coupling capacitance: 100pF

Typical Electrical Characteristics (T=25°C)

GSM850/900-Tx Mode:

(Port1 :GSM850/900_Tx, Port4:Ant)

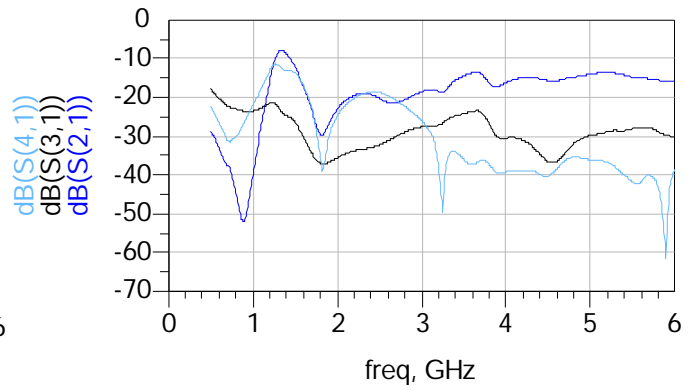
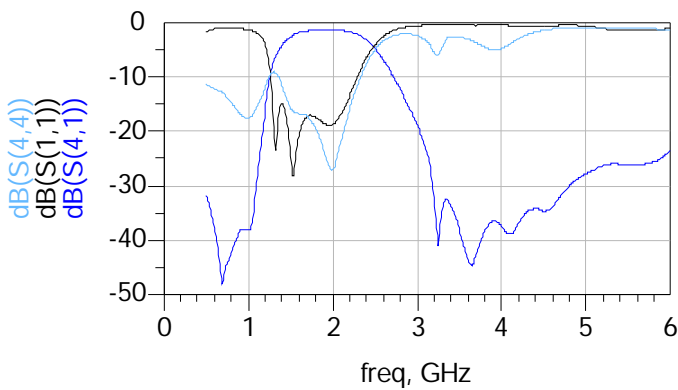
(Port1:GSM850/900_Tx, Port2:GSM850/900_Rx,
Port3:GSM1800_Rx, Port4:GSM1900_Rx)



GSM1800/1900-Tx Mode:

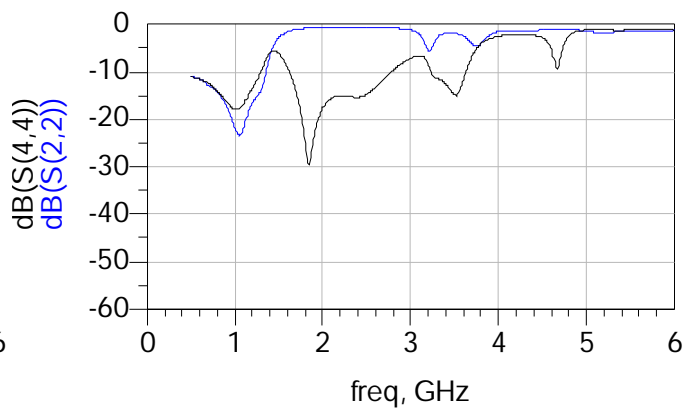
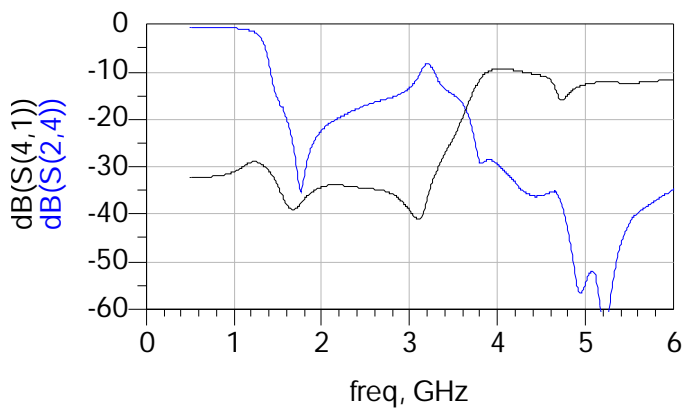
(Port1 :GSM1800/1900_Tx, Port4:Ant)

(Port1:GSM1800/1900_Tx, Port2:GSM850/900_Rx,
Port3:GSM1800_Rx, Port4:GSM1900_Rx)



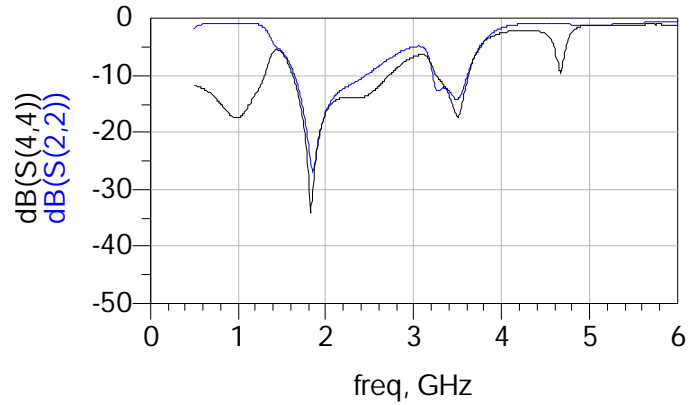
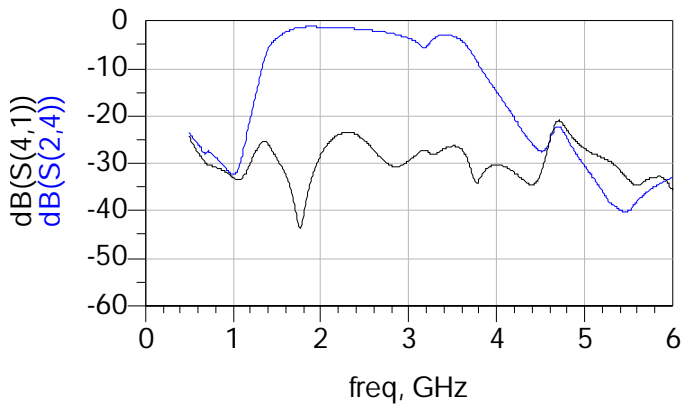
GSM850/900-Rx Mode:

(Port1:GSM850/900_Tx , Port2:GSM850/900_Rx, Port4:Ant)



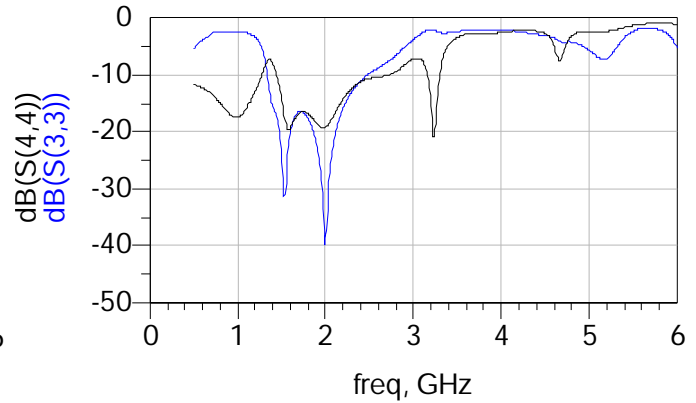
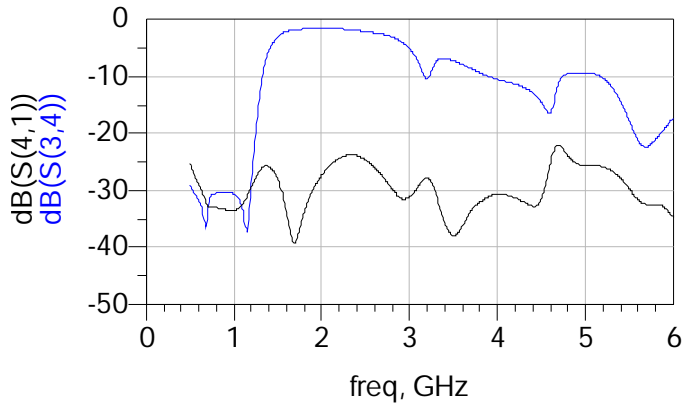
GSM1800-Rx Mode:

(Port1:GSM1800/1900_Tx , Port2:GSM1800_Rx, Port4:Ant)



GSM1900-Rx Mode:

(Port1:GSM1800/1900_Tx , Port3:GSM1900_Rx, Port4:Ant)



Notes

- ❖ The contents of this data sheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

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