Coaxial

SPDT RF Switch

ZFSWA2-63DR+
ZFSWA2R-63DR+

50Ω 500-6000 MHz

The Big Deal

- Wide bandwidth 500 to 6000 MHz
- Very high isolation, 65 dB at 1GHz
- Very fast switching, 35ns

CASE STYLE: ZZ1322

Product Overview

The ZFSWA2-63DR+ / ZFSWA2R-63DR+ is a great general purpose SPDT solid state absorptive RF switch. With its broad frequency range, fast 35 ns switching time and excellent RF performance, the ZFSWA2-63DR+ / ZFSWA2R-63DR+ is an excellent choice for many applications. In addition to it's versatility within system block diagrams, the ZFSWA2-63DR+ / ZFSWA2R-63DR+ is designed for easy integration into your prototype design applications. ZFSWA2-63DR+ is the standard configuration. ZFSWA2R-63DR+ is the mirrored configuration with RF1 and RF2 ports interchanged.

Key Features

Feature	Advantages
Designed for any environment	The ZFSWA2-63DR+ / ZFSWA2R-63DR+ is equipped with MMIC internal device with a wide operating temperature range (-55°C to 100°C). Suitable for many environments and applications the ZFSWA2-63DR+ / ZFSWA2R-63DR+ offers excellent performance and value.
Integrated CMOS Driver	-Operates from 3-5V -Low control current 5 µA allows compatibility with a variety of driver circuits -Internal Decoupling -Fast 35 ns Switching time
Excellent for a Variety of Applications From Bench to Integrated Systems	-High speed testers -Automated switching networks -Wireless Infrastructure -Military
Excellent RF Performance	-Wide bandwidth: 500 to 6000 MHz -Low Insertion Loss: 1.4 dB Typ -High Isolation: 65 dB Typ @ 1 GHz

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Absorptive RF Switch with Internal Driver
Single Supply Voltage, +3V to +5V

Generic photo used for illustration purposes only

ZFSWA2-63DR+
ZFSWA2R-63DR+

CASE STYLE: ZZ1322

Product Features

- Wide bandwidth, 500 to 6000 MHz
- High Isolation, 65 dB typ. at 1 GHz
- Low Insertion loss, 1.4 dB typ.
- Internal CMOS driver
- Fast switching, Rise/fall time, 25 ns typ.
- Wide operating temperature, -55°C to 100°C

Typical Applications

- Cellular
- ISM, WCDMA, WIMAX
- PCN
- Automated switching networks
- Military

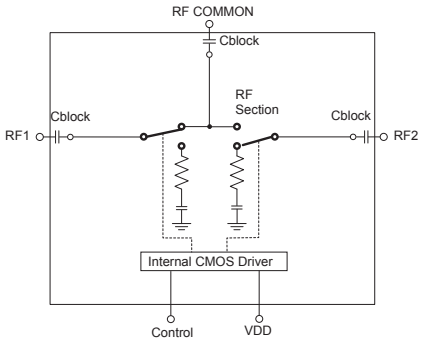
Connectors	Model	
SMA	ZFSWA2-63DR+	(Standard option)
SMA	ZFSWA2R-63DR+	(RF Ports Reversed)
BRACKET	**(OPTION "B")**	

+RoHS Compliant
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

General Description

The ZFSWA2-63DR+ / ZFSWA2R-63DR+ is a 50Ω high isolation, absorptive SPDT RF switch designed for wireless applications, covering a broad frequency range from 500 to 6000 MHz with low insertion loss. The ZFSWA2-63DR+ / ZFSWA2R-63DR+ operates on a single supply voltage in the range of +3V to +5V. This unit includes an internal CMOS driver. The ZFSWA2-63DR+ / ZFSWA2R-63DR+ switch comes with a internal MMIC device for tough environments. ZFSWA2-63DR+ is the standard configuration. ZFSWA2R-63DR+ is the mirrored configuration with RF1 and RF2 ports interchanged.

Schematic and Application Circuit



Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

RF Electrical Specifications, 500 - 6000 MHz, T_{AMB}=25°C, V_{DD}= +3V to +5V

Parameter	Condition	Min.	Typ.	Max.	Units
Frequency Range		500		6000	MHz
Insertion Loss	500 MHz		1.0	1.3	dB
	1000 MHz		1.15	1.5	
	2000 MHz		1.4	1.7	
	4000 MHz		1.7	2.1	
	6000 MHz		2.0	2.6	
Isolation between Common port and RF1/RF2 Ports	500 to 2000 MHz	50	65		dB
	2000 to 4000 MHz	48	57		
	4000 to 6000 MHz	35	45		
Isolation between RF1 and RF2 ports	500 to 2000 MHz	50	60		dB
	2000 to 4000 MHz	43	50		
	4000 to 6000 MHz	35	45		
Return Loss (ON STATE)	500 to 2000 MHz		20		dB
	2000 to 4000 MHz		17		
	4000 to 6000 MHz		15		
Return Loss @ RF1/RF2 ports (OFF STATE)	500 to 2000 MHz		17		dB
	2000 to 4000 MHz		19		
	4000 to 6000 MHz		16		
Input IP3	V_{DD}=3V, 500 to 2000 MHz		47		dBm
	2000 to 6000 MHz		40		
	V_{DD}=5V, 500 to 2000 MHz		49		
	2000 to 6000 MHz		44		
Input 1dB Compression (1)	V_{DD}=3V, 500 to 2000 MHz		24		dBm
	2000 to 6000 MHz		24		
	V_{DD}=5V, 500 to 2000 MHz		30		
	2000 to 6000 MHz		27		
DC Electrical Specifications					
VDD, Supply Voltage		3		5	V
Supply Current (2)	V_{DD}=5V		50		µA
Control Voltage Low		0		0.5	V
Control Voltage High (3)		2.7(4)		V_{DD}	V
Control Current			5		µA
Switching Specifications					
Rise/Fall Time (10 to 90% or 90 to 10% RF)	V_{DD}=5V		25		nSec
Switching Time (50% CTRL to 90/10% RF)	V_{DD}=5V		35		nSec
Video Feed through (Control 0-5V, Frequency 1 MHz)	V_{DD}=5V		30		mV_{P-P}

Notes:
1. Note absolute maximum rating for input and dissipated power. At 5V, over 2000-6000 MHz, 0.2 dB compression.
2. Increases with switching repetition rate. See graph.
3. CMOS interface latch-up condition may occur when logic high signal is applied prior to power supply.
4. 3.5V for V_{DD}=4 to 5V

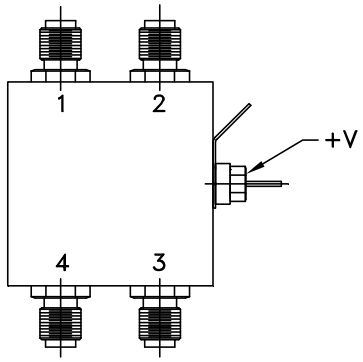
Absolute Maximum Ratings

Parameter	Ratings
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
V_{DD}, Supply Voltage	2.7 to 5.5V
Voltage Control	-0.2V Min. V_{DD} Max.
RF input power	1Watt
Dissipated Power at 25°C	370mW
ESD, HBM	Class 1A (250 to <500V) per JESD22-A114
ESD, MM	Class A (passes 50V) per JESD22-A115
ESD, CDM	Class III (500 to <1000V) per JESD22-C101

Truth Table *(State of control voltage selects the desired switch state)*

State of Control Voltage	Switch State - RF Common to	
	RF1	RF2
Low	ON	OFF
High	OFF	ON
ON- low insertion loss state OFF- Isolation State		

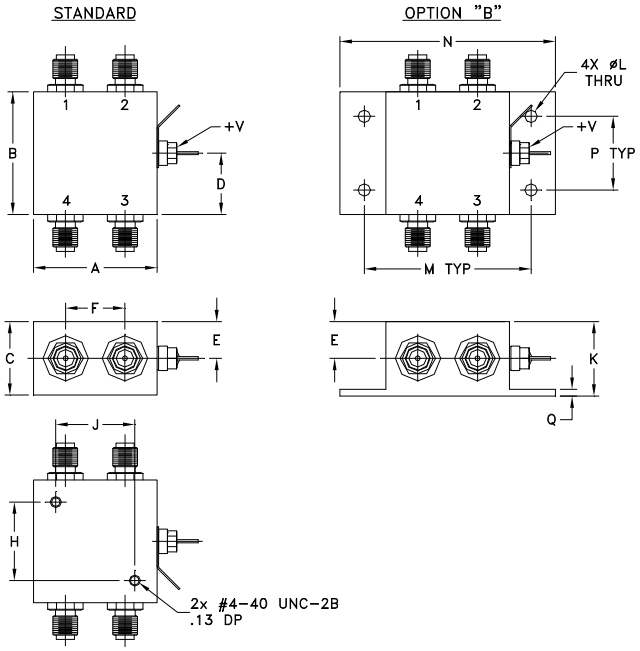
Coaxial Configuration



Coaxial Connections

Function	ZFSWA2R-63DR+	ZFSWA2-63DR+	Description
	Port Number	Port Number	
RF COM	1	1	RF Common/ SUM Port
RF1	3	4	RF Out #1/In Port #1
RF2	4	3	RF Out #2/In Port #2
Control	2	2	CMOS Control IN
VDD	V+	V+	Supply Voltage
GND	Case	Case	RF Ground

Outline Drawing (ZZ1322)



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	wt
1.25	1.25	0.75	0.63	0.38	0.6	--	0.800	0.800	0.76	0.125	1.688	2.18	0.75	0.07	grams
31.75	31.75	19.05	16.00	9.65	15.24	--	20.32	20.32	19.30	3.18	42.88	55.37	19.05	1.78	85

Additional Detailed Technical Information

Additional information is available on our web site. To access this information enter the model number on our web site home page.

Performance data, graphs

Case Style: ZZ1322

Environmental Ratings: ENV28

Pricing & Availability Information

Mouser Electronics

Authorized Distributor

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

Mini-Circuits:

ZFSWA2R-63DR+ ZFSWA2R-63DRB+