

RSWU-8SPST-CS

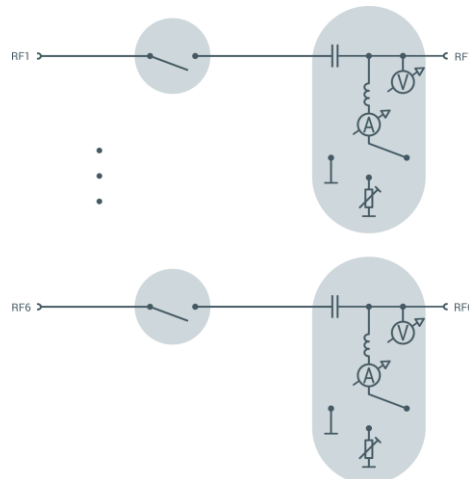
8 Channel, High Isolation RF Switch with DC Load Simulation 100 kHz...7500 MHz

Features

- suitable for bi-directional signals
- 80 dB OFF isolation
- integrated DC test functions
OPEN / LOAD / SHORT
- integrated DC volt and ampere meter
- DC over current protection
- Up to ± 500 mA DC current

Applications

- production
- EOL testing



At a Glance

The RSWU-8SPDT-CS slot-in module is a cost efficient, wideband 8 channel SPST RF switch with integrated DC load simulation. The module is designed for the integration into the Becker Nachrichtentechnik SR6-11C system platform. The RF switches are non-reflective, in the case of open switch the port are also terminate with 50 ohms.

Wideband

Due to its wide frequency range the RSWU-8SPDT-CS is suitable for all broadcast, cellular bands, including 5 G and wireless standards including 802.11p for V2V and V2X communication.

High OFF Isolation

The 8 SPST RF switches have high OFF isolation for an effective suppression of RF signals at the input.

Extensive DC Test Possibilities

Each channel offers extensive functions for DC testing. In example for the test of antenna diagnostics, the RSWU-8SPST-CS offers LOAD, SHORT and OPEN conditions for DC. The LOAD can be defined for each channel by an external resistor at a connector on the module front side. The LOAD ports can alternatively connect to VBAT (battery voltage) to enable a SHORT to VBAT test condition.

Volt- and Ampere Meters

Internal volt and ampere meters allow the measurement of DC voltages and currents superposed to the RF signal in each of the 6 channels. Internal DC measurement function makes long wires to external DC measuring equipment redundant and thus avoids the EMI influences from live signals coming from the environment to the internal RF signals. In the case SHORT to GND the current flow is from the DUT into the RF+DC port of the RSWU-8SPST-CS module and in the case SHORT to VBAT the current flow out of the RF+DC port into the DUT.

For this reason the ampere meter has two quadrant functions. The measured currents can be positive or negative.

DC Overcurrent Protection

Each channel is equipped with an overcurrent detector to avoid damages to the BIAS-T coils in the case of failures during the DC tests. If the DC current exceeds the maximum value of 500 mA, the SHORT, and LOAD switches will be opened automatically. After a reset by software the SHORT and LOAD switches will be closed again.

Remote Control

In combination with the SR6-CU controller module, the RSWU-8SPST-CS is remote controllable via standard interfaces USB and LAN with simple ASCII strings.

RF Specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	Z_{in} / Z_{out}		50		Ohm	
number of channels	n		8			
low frequency	f_{min}			100	kHz	
high frequency	f_{max}	7000	7500		MHz	
insertion loss	S_{21}	-4.5	-3		dB	$f \leq 4\text{GHz}$
		-6.0	-4		dB	$f > 4\text{GHz}$
OFF isolation	S_{21}		-100	-80	dB	$f \leq 6\text{GHz}$, SPDT switch open
			-95	-70		$f > 6\text{GHz}$
	S_{21}		-100	-80	dB	$f \leq 6\text{GHz}$, SPDT switch closed
			-95	-70		$f > 6\text{GHz}$
channel isolation	S_{23}		-100	-80	dB	$f \leq 6\text{GHz}$, SPDT switch closed
			-90	-70		$f > 6\text{GHz}$
LOAD to RF isolation	S_{41}		-50		dB	"LOAD", $f > 1\text{MHz}$
return loss	S_{11}		-14	-10	dB	$f \leq 6\text{GHz}$
			-12	-9		$f > 6\text{GHz}$
RF power	P_{CWTR}			+33	dBm	CW, "ON/OFF", $f > 25\text{MHz}$
	$P_{PULSETR}$			+38 ^{*1}	dBm	pulse, "ON/OFF", $f > 25\text{MHz}$
DC voltage	U_{DC}			20	V	DUT ports
DC current	I_{DC}			± 500 ^{*2}	mA	DUT ports
internal DC resistance	R_{DC}		3		Ω	SHORT to GND
maximum DC Voltage	U_{max}			20	V	SPDT ports
ESD discharge resistor	R_{ESD}		4.7		k Ω	SPDT ports
voltmeter range	U_{DC}	0		20	V	
resolution	ΔU_{DC}		5.3		mV	
accuracy	dU_{DC}		± 0.3	± 1	%	$U_{DC} \geq 3\text{V}$
	dU_{DC}		± 5	± 30	mV	$U_{DC} < 3\text{V}$
ampere meter range	I_{DC}	0		± 500	mA	
resolution	ΔI_{DC}		322		μA	
accuracy	dI_{DC}		± 0.3	± 1	%	$I_{DC} \geq \pm 60\text{mA}$
	dI_{DC}		± 0.3	$\pm 0,6$	mA	$I_{DC} < \pm 60\text{mA}$
RF connectors	X_{RF}	SMA female				rear side
DC connectors	X_{DC}	2 x 8 pole				front side
connector type (socket)	X_{DC}	Phoenix Contact DFK-MC1,5/8-GF-3,81				8 LOAD ports, 2 x 8 pole
counterpart (plug)	X_{DC}	Phoenix Contact MC1,5/8-STF-3,81				2 pcs is part of delivery

^{*1} burst < 0.1 s, repetition rate > 1 s.

^{*2} switches SHORT and LOAD are opened when maximum current exceeds

Common Specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
power supply	U_{DC}	23.5		24.5	V	
power consumption	P_{DC}		2		W	
dimensions	W x H x D	approx.30 x 262 x 197			mm	6 U, 6HP
weight	m		1		kg	
operating temp. range	T_o	+5		+55	$^{\circ}\text{C}$	ambiance
storage temp. range	T_s	-40		+70	$^{\circ}\text{C}$	
ordering information	RSWU-8SPST-CS		P/N: 1907.4000.1			



Appearances



Front View



Rear View

SR6-11C System Platform

Scope

Up to 11 slot-in modules are integrate able in one SR6-11C system platform. The SR6-11C is AC mains supplied and has a power supply for feeding the integrated slot-in modules with DC power. Also the SR6-11C offers a data bus for digital control the slot-in modules.

Remote Control

With help of the SR6-CU controller slot-in unit, modules like RF switches or matrices can be controlled. SR6-CU controller has LAN and USB remote interfaces and offers an intuitive graphic user interface for e.g. system configurations.

The instruction set grows dynamic with the number of slot-in modules installed in the SR6-11C.

Prepared for Time Critical Applications

For the use in time critical applications the SR6-11C system platform has a bi-directional hardware trigger interface. The execution of commands can be triggered by an external TTL signal or alternatively the SR6-11C can produce a TTL signal for triggering further SR6-11C systems.



Related Products

Product	Description	P/N
SR6-11C	System Platform with 11 Slots	1409.1202.1
SR6-CU	Controller Unit with LAN and USB Remote Interface	1409.3000.1
WSDU-1X8A	8 Way, High Dynamic Signal Conditioning Multicoupler 100 kHz ... 4000 MHz	1807.6300.1
WSDU-1X8L	8 Way High Dynamic Multicoupler 100 kHz ... 4000 MHz	1807.6100.1
WSDU-2X4L	2 Section High Dynamic 4 Way Multicoupler 100 kHz ... 4000 MHz	1807.6200.1
WSDU-2X4E+	2 Channel 1X4 plus 1 Channel 1X2 extremely wideband Multicoupler 20 ... 8000 MHz	1501.6200.1
RSWU-2SP4TS+	2 Channel SP4T Switches plus 1 Channel SP2T Switch, Non-reflective, 100 kHz ... 8500 MHz	1408.4040.1
RSWU-8SPSTS	8 Channel Non-reflective SPST Switches 100 kHz ... 8500 MHz	1408.4000.1
RSWU-4SPDTS	4 Channel Non-reflective SPDT Switches 100 kHz ... 8500 MHz	1408.4020.1
RSWM-4X4	4X4 Switching Matrix -non-blocking- 100 kHz...4000 MHz	1205.4100.1
BSDU-2X4A+	2 Section 4 Way Wideband Signal Conditioning plus 2 Way Splitter/Combiner 500 MHz...7500 MHz	1903.6100.1
BSDU-2X4+	2 Section 4 Way Wideband plus 2 Way Splitter/Combiner 500 MHz...7500 MHz	1903.6200.1
BSWM-4X4	4X4 High Isolation Bi-Directional Switching Matrix –blocking- 100 kHz ... 7500 MHz	1205.4600.1
PT-4CS	4 Channel with Programmable DC Sink 0...400 mA, 100 kHz...8500 MHz	1605.2020.1
PT-4CL	4 Channel DC Load, 100 kHz...8500 MHz	1605.2040.1
RSWU-8SPST-CS	6 Channel, High Isolation RF Switch with DC Load Simulation 100 kHz...7500 MHz	1907.4000.1
ATT-8E	8 Channel Digital Step Attenuator 0 ... 31.75 dB 100 kHz ... 8500 MHz	1503.4000.1
DLL-4	4 Channel Programmable Delay Line 0 ... 1700 ps 250 ... 4000 MHz	1303.4200.1