



TRM-xxx-DP1203

Data Guide
(Preliminary)

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Electrical Specifications

Absolute Maximum Ratings

Absolute Maximum Ratings			
Description	Min.	Max.	Unit
Vdd – Power Supply	2.4	3.6	VDC
Operating Temperature	-40	+85	°C
Storage Temperature	-55	+125	°C
Soldering Temperature (max 15 seconds)		+260	°C

Figure 2: Absolute Maximum Ratings



Warning: ESD sensitive device. Precautions should be taken when handling the device in order to prevent permanent damage.

Detailed Electrical Specifications

Figure 3 gives the specifications of the TRM-xxx-DP1203 modules under the following conditions:

Supply voltage $V_{DD} = 3.3V$, temperature = $25^{\circ}C$, frequency deviation $\Delta f = 5kHz$, Bit-rate = $4.8kbps$, base-band filter bandwidth $BW_{SSB} = 10kHz$, carrier frequency $f_c = 434MHz$ for the TRM-433-DP1203, $f_c = 869MHz$ for the TRM-868-DP1203 and $f_c = 915MHz$ for the TRM-915-DP1203, bit error rate $BER = 0.1\%$ (measured at the output of the bit synchronizer), antenna output matched at 50Ω .

Detailed Electrical Specifications						
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
FR	Synthesized Frequency Range	TRM-433-DP1203	433		435	MHz
		TRM-868-DP1203	868		870	MHz
		TRM-915-DP1203	902		928	MHz
IDDSL	Sleep Mode Supply Current			0.2	1	μA
IDDST	Standby Mode Supply Current	39MHz running		0.85	1.1	mA
IDDR	Rx Mode Supply Current			14	17	mA
IDDT	Tx Mode Supply Current	$P_{RF} = 5dBm$		33	40	mA
		$P_{RF} = 11dBm$		62	75	mA
RFS	RF Sensitivity	A-mode		-111	-108	dBm
FDA	Frequency Deviation	Programmable	1		255	kHz
BR	Bit Rate	Programmable	1.2		152.3	kbps
P_{RF}	RF Output Power	RFOP1 (programmable)	-3	0		dBm
		RFOP2 (programmable)	+2	+5		dBm
		RFOP3 (programmable)	+7	+10		dBm
		RFOP3 (programmable)	+12	+15		dBm
TS_TR	Transmit Wake-up Time	From Oscillator Enabled		150	250	μs
TS_RE	Receive Wake-up Time	From Oscillator Enabled		0.5	08	ms
TS_OS	Quartz Oscillator Wake-up Time	Fundamental		1	2	ms
XTAL	Quartz Oscillator Frequency			39		MHz
VIH	Digital Input Level High	% VDD	75			%
VIL	Digital Input Level Low	% VDD			25	%

Figure 3: Detailed Electrical Specifications

Pin Descriptions

Pin Descriptions			
Pin	Name	I/O	Description
1	GND		Ground
2	RF_IN/OUT	IN/OUT	RF input/output terminal
3	GND		Ground
4	VDDP		Supply voltage/advised NC
5	VDDA		Supply voltage
6	GND		Ground
7	VDD		Supply voltage
8	EN	IN	3-wire interface communication enable signal
9	SWITCH	IN/OUT	Operating mode selection
10	GND	IN	Ground
11	GND	IN	Ground
12	SO	OUT	Data output of the 3-wires interface
13	SI	IN	Data input of the 3-wires interface
14	SCK	IN	Input clock of the 3-wires interface
15	CLKOUT	OUT	Output clock at quartz frequency divided by 4, 8, 16 or 32
16	DCLK	OUT	Transmitter or receiver clock
17	DATA	IN/OUT	Transmitter input or receiver output data
18	DATAIN	IN	Transmitter input data
19	PATTERN	OUT	Output of the pattern recognition block
20	RX	IN	Antenna switch RX select
21	TX	IN	Antenna switch TX select

Figure 5: Pin Descriptions

ConfigSwitch, SWITCH pin and SWParam Configuration Register			
ConfigSwitch Register	Switch pin	RTPParam_switch_ext configuration parameter	SWParam configuration set selected
0	Switch is an output: '1' in transmitter mode '0' in the other mode	0	Set #1 SWParam_mode_1 SWParam_Power_1 SWParam_Rmode_1 SWParam_t_delsig_in_1 SWParam_freq_1
1	Switch is an output: '1' in transmitter mode '0' in the other mode	0	Set #2 SWParam_mode_2 SWParam_Power_2 SWParam_Rmode_2 SWParam_t_delsig_in_2 SWParam_freq_2
X	0	0	Set #1 SWParam_mode_1 SWParam_Power_1 SWParam_Rmode_1 SWParam_t_delsig_in_1 SWParam_freq_1
X	1	0	Set #2 SWParam_mode_2 SWParam_Power_2 SWParam_Rmode_2 SWParam_t_delsig_in_2 SWParam_freq_2

Figure 7: ConfigSwitch, SWITCH pin and SWParam Configuration Register

Standard Sequence for Switching between Receiver and Transmitter

The TRM-xxx-DP1203 is able to switch between any configuration by using the 3-wire bus or by using the pin SWITCH. This section (Figures 8 and 9) describes the switching sequence from Set #1 to Set #2.

Switching sequence by using the 3-wire bus

Switch_ext = 0 (Bit 3, Address 00010)

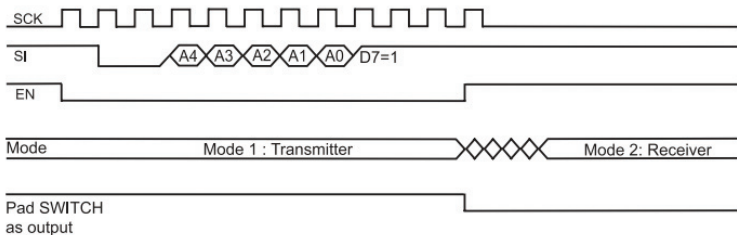


Figure 8: Switching Sequence Using 3-wire Bus



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