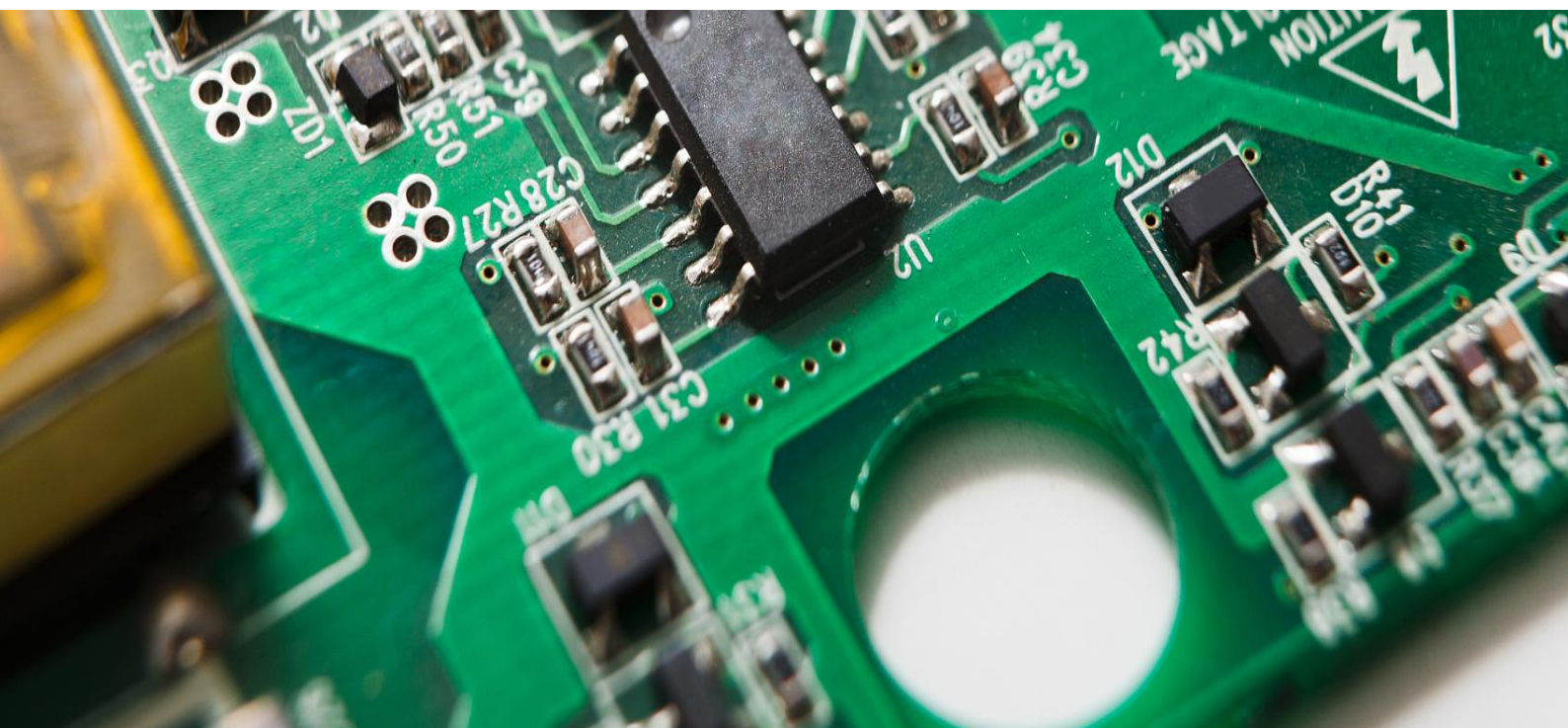


Product Catalog

MMIC / System-in-Package



Tianfuchip (chengdu) co., Ltd.

Product Catalog-MMIC

1、Control Products

Switches

Part#	Type	Frequency (GHz)	Description	Insertion Loss (dB)	Isolation (dB)	Voltage (V)
TFC112A	FET	DC-20	Absorptive/SPDT	1.6	50	0/-5V
TFC113B	FET	DC-20	Absorptive/SPST	1.5	60	0/+5V
TFC113-1	FET	DC-50	Absorptive/SPST	1.6	40	0/+5V
TFC114B	FET	DC-20	Absorptive/SPDT	1.5	55	0/+5V
TFC114-4B	FET	DC-4	Reflective SPDT	0.4	60	0/+5V
TFC116B	FET	DC-20	Absorptive/SP4T	2	60	0/+5V
TFC116BM	FET	DC-20	Absorptive/SP4T	2	60	0/+5V
TFC117	FET	0.1-8	Absorptive/SPDT	0.9	60	0/+5V
TFC118-6MPD	FET	0.1-8	Absorptive/SP8T	1.6	55	0/+5V
TFC118-6PD	FET	0.1-8	Absorptive/SP8T	1.6	55	0/+5V
TFC119	FET	0.1-20	Absorptive/SPST	1.4	50	0/+5V
TFC120	FET	0.1-20	Absorptive/SP4T	2	40	0/+5V
TFC120M	FET	0.1-20	Absorptive/SP4T	2	40	0/+5V
TFC120-6	FET	0.1-6	Absorptive/SP4T	0.9	60	0/+5V
TFC120-6M	FET	0.1-6	Absorptive/SP4T	0.9	60	0/+5V
TFC121	FET	0.1-50	Reflective SPDT	2	40	0/+5V
TFC122	FET	0.1-40	Absorptive/SP4T	3	40	0/+5V
TFC127	FET	0.1-20	Absorptive/SPDT	1.5	60	0/+5V
TFC127M	FET	0.1-20	Absorptive/SPDT	1.5	60	0/+5V
TFC128	FET	0.1-40	Absorptive/SPDT	1.5	45	0/+5V
TFC128M	FET	0.1-40	Absorptive/SPDT	1.5	45	0/+5V

Voltage Controlled Attenuator

Part#	Frequency (GHz)	Insertion Loss (dB)	Attenuation Range (dB)	IP1dB (dBm)
TFC2201	0.001-6	2.5	0-30	18

Temperature Compensating Attenuators

Part#	Frequency (GHz)	Attenuation Range (dB)	Return Loss (dB)	Insertion Loss (dB)
TFC192-3B	DC-36	3	15	4
TFC192-3C	DC-32	3	15	4
TFC192-6A	DC-50	6	15	4.5

Phase Shifters

Part#	Frequency (GHz)	Description	Insertion Loss (dB)	Phase Shift Range (°)	Voltage (V)
TFC252L	1.7-2.7	6-bit	3.5	5.625-360	0/-5V
TFC266	0.8-2	6-bit	8.5	5.625-360	0/+5V
TFC267	1.2-1.8	6-bit	4	5.625-360	0/+5V
TFC257PD	12-18	6-bit	9	5.625-360	0/+5 V
TFC259	8-12	6-bit	7	5.625-360	0/-5V

True Time Delay

Part#	Frequency (GHz)	Description	Insertion Loss (dB)	Delay Range (ps)	Delay error (ps)	Voltage (V)
TFC281	6-18	7-bit	18	1.5-190.5	1.5	0/+5V
TFC288A	0.1-18	6-bit	10	1.25-78.75	±0.5	0/+5V
TFC289A	0.1-18	4-bit	15	40-600	±5	0/+5V

Digital Step Attenuators

Part#	Frequency (GHz)	Description	Insertion Loss (dB)	Attenuation Range (dB)	Voltage (V)
TFC211H	0.5-12	6-bit	2	0.5-31.5	0/+5V
TFC212	0.1-18	6-bit	2	0.5-31.5	0/+5V
TFC216H	0.5-18	6-bit	3	0.5-31.5	0/+5V
TFC219	0.5-18	5-bit	1.5	0.5-15.5	0/+5V
TFC234C	DC-20	3-bit	2.6	5-35	0/+5
TFC234D	1-20	3-bit	2.6	5-35	0/+5
TFC217B	DC-20	7-bit	2.7	0.25-31.75	0/+5V
TFC241-12A	DC-12	6-bit	2	0.5-31.5	0/+5V
TFC241LPD	DC-18	6-bit	4	0.5-31.5	0/+5V

Part#	Frequency (GHz)	Description	Insertion Loss (dB)	Attenuation Range (dB)	Voltage (V)
TFC242A	DC-50	7-bit	6	0.25-31.75	0/+5V

2、Amplifiers

Low Noise Amplifiers

Part#	Frequency (GHz)	Gain (dB)	NF (dB)	OP1dB (dBm)	Power Supply
TFC301-1A	0.5-4	18	1.8	20	+5V @85mA
TFC301-11	0.5-4	32	0.7	19.5	+5V @65mA
TFC301-2	0.5-4	21	5	14	+5V @35mA
TFC312	18-32	26	2.2	13	+5V @60mA
TFC314	6-28	23.5	2	17.5	+5V @77mA
TFC320	6-18	23	1.1	13.5	+5V @28mA
TFC320H	6-18	22	1.3	16	+5V @45mA
TFC329H	2-8	27	0.9	13	+5V @37mA
TFC332	0.7-2.5	28.5	0.6	16	+5V @62mA
TFC334	2-4	25	0.9	16	+5V @60mA
TFC343	18-40	14	2.2	12.5	+5V @27mA
TFC344	24-40	19.5	1.8	12	+5V @40mA
TFC345	24-40	21	2	3.5	+5V @13mA
TFC346	32-38	22	1.5	10.5	+5V @29mA
TFC360H	DC-20	19	2.3	15.5	+8V @70mA
TFC361	2-18	17	2.3	14	+5V @67mA
TFC362H	1-20	17	2.5	16	+5V @64mA
TFC363H	2-20	21	3	14	+5V @42mA
TFC363L	2-18	25	1	13	+5V @37mA
TFC363S	2-20	23	1.5	16.5	+5V @65mA
TFC364	0.8-18	16.5	1.9	18	+5V @45mA
TFC366H	0.05-20	23.5	1.7	11	+5V @55mA
TFC367	0.1-18	15	1.8	15	+5V @36mA
TFC368	0.8-20	17	2.5	14	+5V @58mA

Medium Power Amplifiers

Part#	Frequency (GHz)	Gain (dB)	NF (dB)	Saturated Power (dBm)	OP1dB (dBm)	Power Supply
TFC180-13	0.02-6	21	1	29	28	+5/+8/+10V @125mA
TFC401	0.8-18	9.5	6	22.5	20	+5V @105mA
TFC402	6-18	25	1.5	18	17	+5V @60mA
TFC406	1-10	20	1.2	21.5	20.5	+5V @65mA
TFC410	10-40	8.5	4.5	21	19.5	+5V @106mA
TFC418H	0.8-20	13	3	29.5	29.5	+8/+10/+12V @250mA
TFC419	6-18	26	-	31	30	+5V @700mA
TFC426	2-8	13	2	21	19	+5V @52mA
TFC429	6-18	18	3	25.5	25	+5/+6/+7V @160mA
TFC437	DC-20	21	-	29.5	27.5	+8/+10/+12V @350mA
TFC444	1-12	16	1.6	20.5	18.5	+5V @45mA
TFC447	18-40	20	2.5	17.5	16	+5V @69mA
TFC448	18-40	16	2.5	17.5	16	+5V @67mA
TFC454	18-50	17	4.5	17	16	+5V @87mA
TFC462	2-18	21	2	24	21	+5/+6/+7V @120mA
TFC466	2-20	19.5	2.5	24	22	+7V @130mA

Gain Block Amplifiers

Part#	Frequency (GHz)	Gain (dB)	NF (dB)	OP1dB (dBm)	Power Supply
TFC300-14	0.1-3	23	1	20	+5V @50mA
TFC300-16	0.01-6	25 dB@90mA 24.5 dB@70mA	0.8	20.5 dBm@90mA 20 dBm@70mA	+5V @90mA (VG Floating) +5V @70mA (VG GND)
TFC300-2	0.01-4	18	1.8	19	+5V @85mA
TFC180-4B	0.03-4	32	0.6	19	+5V @92mA

3、Frequency Conversion

Mixers

Part#	RF/LO frequency (GHz)	IF Frequency (GHz)	Conversion Gain (dB)	LO/RF Isolation (dB)	IP1dB (dBm)
TFC518	18-40	DC-18	-10	30	11
TFC518M	18-40	DC-18	-10	30	11

Part#	RF/LO frequency (GHz)	IF Frequency (GHz)	Conversion Gain (dB)	LO/RF Isolation (dB)	IP1dB (dBm)
TFC527	12-27	DC-13	-8	35	12
TFC527M	12-27	DC-13	-8	35	12
TFC536H	3-12	DC-4.5	-8	60	12
TFC536HM	3-12	DC-4.5	-8	60	12
TFC551	1.5-5	DC-3	-9	60	15
TFC554	6-26	DC-9	-9	40	16
TFC555	18-50	DC-22	-10	45	14
TFC541	6-20	DC-6	-8	40	12
TFC542	6-20	DC-6	-8	40	12
TFC550	0.5-2.5	DC-1	-10	45	13
TFC566L	6-26	DC-8	-10	30	12

Frequency Multiplier

Part#	Type	Multiply Factor	Input frequency (GHz)	Output Frequency(GHz)	Conversion Loss(dB)	1xFin Leakage (dBc)
TFC578	Passive	2	8-20	16-40	12	40

4、Passives

Equalizers

Part#	Frequency (GHz)	Description	Insertion Loss (dB)	Return Loss (dB)
TFC131-4	1-18	4dB Equalizer	0.5	25
TFC131-6	1-18	6dB Equalizer	0.7	25
TFC131-8A	1-18	8dB Equalizer	0.95	25
TFC133-4A	2-12	4dB Equalizer	0.5	25
TFC134-4A	6-18	4dB Equalizer	0.6	20

Power Dividers

Part#	Frequency (GHz)	Function	Insertion Loss (dB)	Isolation (dB)	Return Loss (dB)
TFC150	0.5-2	2-Way	1.2	20	20
TFC151L	0.8-2	2-Way	0.7	20	15
TFC152L	2-8	2-Way	0.7	20	15

Part#	Frequency (GHz)	Function	Insertion Loss (dB)	Isolation (dB)	Return Loss (dB)
TFC153	1-18	2-Way	1.6	20	12
TFC154L	6-18	2-Way	0.6	20	15
TFC155	2-18	2-Way	0.9	20	15
TFC159	12-30	2-Way	0.9	20	15
TFC157L	18-40	2-Way	0.9	25	15

Filters

Part#	Frequency (GHz)	Description	Insertion Loss (dB)	Rejection (dB)	Return Loss (dB)
TFC176	4.29-4.31	Band-stop	2.5	20	10
TFC170-2H	2-20	High-pass	1	40@1.2GHz	15
TFC170-5	5.5-26	High-pass	2.2	45@4.1GHz	20
TFC170-8	8-30	High-pass	2.4	38@6GHz	20
TFC170-20L	20-40	High-pass	2.2	39@16GHz	15
TFC170-30	30-50	High-pass	2	55@21GHz	15
TFC171-2.5	DC-2.5	Low-Pass	1.4	40@4.1GHz	18
TFC171-6	DC-6	Low-Pass	1.8	40@8GHz	20
TFC171-8	DC-8	Low-Pass	2	40@10.4GHz	20
TFC178-10L	DC-10	Low-Pass	1.9	40@15.1GHz	20
TFC178	DC-18	Low-Pass	2.1	30@21GHz	10
TFC178-24	DC-24	Low-Pass	2.0	30@29.5GHz	15

Limiters

Part#	Frequency (GHz)	Flat Leakage Power (dBm)	Power Handling (W)	Insertion Loss (dB)	Return Loss (dB)
TFC181-13A2	DC-2	15	125 (Pulse)	0.3	15
TFC181-1A	DC-18	16	3(CW)	0.4	20
TFC181-2A2	6-18	16.5	5(CW)	0.45	20

Fixed Attenuators

Part#	Frequency (GHz)	Attenuation (dB)	Return Loss (dB)
TFC191-1L	DC-40	1	20

Part#	Frequency (GHz)	Attenuation (dB)	Return Loss (dB)
TFC191-2L	DC-40	2	20
TFC191-3L	DC-40	3	18
TFC191-4L	DC-40	4	18
TFC191-5L	DC-40	5	18
TFC191-6L	DC-40	6	18
TFC191-7	DC-40	7	16
TFC191-8L	DC-40	8	16
TFC191-9	DC-40	9	16
TFC191-10L	DC-40	10	16
TFC191-15L	DC-40	15	16
TFC191-20L	DC-40	20	25
TFC191-30L	DC-40	30	13

Directional Coupler

Part#	Frequency (GHz)	Insertion Loss (dB)	Coupling (dB)	Return Loss (dB)
TFC162L	2-18	1.25	12	15

5、Power Control

FET Driver

Part#	Description	Output Voltage(V)	Output Voltage (V)	Input Voltage (V)	Quiescent Current (mA)	Clock Frequency (MHz)
TFC160-1	1-Channel FET Driver	0	-5	5/0	1	30
TFC160-1H	1-Channel FET Driver	0	-4.8	5/0	1	10

Serial-to-Parallel Converter

Part#	Description	Output Voltage (V)	Output Voltage (V)	Input Voltage (V)	Quiescent Current (mA)	Clock Frequency (MHz)
TFC166-3	13-Bit Serial-to-Parallel Converter	5	0	0/2.5/3.3/5	0.1	10

6、Multifunctional

Switchable Filter Bank

Part#	Description	Frequency (GHz)	Insertion Loss (dB)	Voltage (V)
TFC664	7 Segment	0.8-18	9	0/-5V or 0/+5V
TFC667	7 Segment	1.9-18	9	0/+5V
TFC670	4 Segment	18-42.5	10	0/+5V

Switchable Bidirectional Amplifier

Part#	Frequency (GHz)	NF (dB)	Gain (dB)	OP1dB (dBm)	Power Supply
TFC651	2-20	2.5	21.5	15.5	+5V@65mA

Core Chip(Rx -Tx)

Part#	Description	Frequency (GHz)	Gain Rx (dB)	Attenuation Range Rx(dB)	Phase Shift Range Rx(°)	Gain Tx(dB)	Phase Shift Range/Tx Mode (°)
TFC605	6-bit Attenuation/6-bit Phase Shifter	5-6	13.5	0.5-31.5	5.625-360	13.5	5.625-360

7、Frequency Generation

VCOs

Part#	Output Frequency(GHz)	Output Power (dBm)	SSB Phase Noise (dBc/Hz)	Power Supply
TFC592-3-W2123	7-12	10	-92, 100KHz Offset	+5V/+3.3V@60mA
TFC592-3-W2120	8-12	10	-92, 100KHz Offset	+5V/+3.3V@60mA
TFC592-3-M452	7.4-12.7	12	-95, 100KHz Offset	5V/@60mA
TFC592-3-W2121	7.5-13	10	-92, 100KHz Offset	+5V/+3.3V@60mA

Product Catalog-Packaged Chip

1、Control Products

Switches

Part#	Frequency (GHz)	Type	Description	Insertion Loss (dB)	P1dB (dBm)	Isolation (dB)	Control Voltage(V)	Package
TFC114LP3	DC-20	FET	Absorptive/ SPDT	2	--	45	0/2.5/3.3/5	3X3 QFN16-Lead
TFC117LP4	0.1-8	FET	Absorptive/ SPST	1.5	--	60	0/2.5/3.3/5	4X4 QFN16-Lead
TFC117LC4	0.1-8	FET	Absorptive/ SPST	2	--	60	0/2.5/3.3/5	4X4 QFN16-Lead
TFC127LP3	0.1-20	FET	Absorptive/ SPDT	2.5	--	40	0/+3.3V	3X3 QFN16-Lead
TFC127LC4	0.1-20	FET	Absorptive/ SPDT	2.1	--	55	0/+5V	4X4 QFN19-Lead
TFC129-1LP3	DC-18	FET	Reflective SPDT	1	--	40	0/-5V	3X3 QFN12-Lead
TFC129LP3	DC-18	FET	Reflective SPDT	1.5	--	30	0/-5V	3X3 QFN12-Lead
TFC114-4DLC3	DC-4	FET	Reflective SPDT	1.1	24.5	38	0/+5V	3X3 QFN 16-Lead
TFC127MLC4	0.1-20	FET	Absorptive/ SPDT	2	--	50	0/+5V	4X4 QFN19-Lead
TFC120-6LC4	0.1-6	FET	Absorptive/ SP4T	1.4	--	60	0/+5V	4X4 QFN24-Lead
TFC116MPDLP4	DC-20	FET	Absorptive/ SP4T	3	--	40	0/2.5/3.3/5	4X4 QFN24-Lead
TFC118-6MPDLP4	0.1-8	FET	Absorptive/ SP8T	2	--	40	0/+5V	4X4 QFN24-Lead
TFC1001LP4	DC-8	SOI	Absorptive/ SPDT	0.9	36	60	0/2.5/3.3/5	4X4 QFN16-Lead
TFC1002LP4	0.1-6	SOI	Absorptive/ SPDT	0.8	35	60	0/2.5/3.3/5	4X4 QFN16-Lead
TFC1004LP4	DC-6	SOI	Absorptive/ SPDT	0.9	36	60	0/2.5/3.3/5	4X4 QFN20-Lead
TFC1005LP4	0.1-6	SOI	Absorptive/ SPDT	0.8	35	50	0/2.5/3.3/5	4X4 QFN20-Lead
TFC1015LP3	DC-13	SOI	Absorptive/ SPDT	1.1	36	40	0/2.5/3.3/5	3X3 QFN16-Lead

Part#	Frequency (GHz)	Type	Description	Insertion Loss (dB)	P1dB (dBm)	Isolation (dB)	Control Voltage(V)	Package
TFC1001DLP4	DC-8	SOI	Absorptive/ SPDT	0.9	--	60	0/2.5/3.3/5	4X4 QFN16-Lead
TFC1004DLP4	DC-6	SOI	Absorptive/ SP2T	1	36	60	0/2.5V ~ 5V	4X4 QFN20-Lead
TFC1015DLP3	DC-13	SOI	Absorptive/ SP2T	1.1	36	40	0/2.5 ~ 5/-2.5	3X3 QFN16-Lead
TFC1007LP4	DC-6	SOI	Absorptive/ SP2T	1.4	35	40	0/2.5/3.3/5	4X4 QFN24-Lead
TFC1007DLP4	DC-6	SOI	Absorptive/ SP2T	1	35	50	0/2.5 ~ 5V	4X4 QFN24-Lead
TFC1009LP4	DC-6	SOI	Absorptive/ SP4T	1.4	35	40	0/2.5/3.3/5	4X4 QFN24-Lead
TFC1009DLP4	DC-6	SOI	Absorptive/ SP4T	1.3	35	45	1.8V/2.5V/3.3V LVTTTL, 5V TTL	4X4 QFN24-Lead
TFC1011LP4	DC-6	SOI	Absorptive/ SP5T	1	35	50	0/2.5/3.3/5	4X4 QFN24-Lead
TFC1013LP4	DC-6	SOI	Absorptive/ SP6T	1.2	34	50	0/2.5/3.3/5	4X4 QFN24-Lead
TFC1013DLP4	DC-6	SOI	Absorptive/ SP6T	1.2	34	50	0/2.5V ~ 5V	4X4 QFN24-Lead
TFC1021LP4	DC-4	SOI	Absorptive/ SP8T	1.9	30	40	0/2.5/3.3/5	4X4 QFN24-Lead
TFC1021MLP4	DC-4	SOI	Absorptive/ SP8T	1.9	30	40	0/2.5/3.3/5	4X4 QFN24-Lead
TFC1021MDLP4	DC-4	SOI	Absorptive/ SP8T	1.9	--	40	0/2.5/3.3/5	4X4 QFN24-Lead

Digital Step Attenuators

Part#	Frequency (GHz)	Description	Insertion Loss (dB)	Attenuation Range (dB)	Control Voltage (V)	Package
TFC232HLP3	0.1-18	1-bit Digital Attenuator	2	16	0/3.3/5	3X3 QFN16-Lead
TFC211HLC4	0.5-6	6-bit Digital Attenuator	2	0.5-31.5	0/+5V	4X4 QFN24-Lead
TFC241LPDLP4	DC-18	6-bit Digital Attenuator	4.5	0.5-31.5	0/3.3/5	4X4 QFN24-Lead
TFC2002LP4	DC-6	7-bit Digital Attenuator	2	0.25-31.75	0/2.5/3.3/5	4X4 QFN24-Lead
TFC2001LP4	0.1-6	7-bit Digital Attenuator	1.4	0.25-31.75	0/2.5/3.3/5	4X4 QFN24-Lead

Part#	Frequency (GHz)	Description	Insertion Loss (dB)	Attenuation Range (dB)	Control Voltage (V)	Package
TFC2005LP4	DC-6	7-bit Digital Attenuator	1.4	0.25-31.75	0/2.5/3.3/5	4X4 QFN24-Lead
TFC2002DLP4	DC-6	7-bit Digital Attenuator	2	0.25-31.75	0/2.5 ~ 5/-2.5	4X4 QFN24-Lead
TFC2005DLP4	DC-6	7-bit Digital Attenuator	1.4	0.25-31.75	0/2.5 ~ 5/-2.5	4X4 QFN24-Lead
TFC2004LP4	0.1-6	7-bit Digital Attenuator	1.4	0.25-31.75	0/2.5/3.3/5	4X4 QFN24-Lead
TFC2004CLP4	0.1-6	7-bit Digital Attenuator	1.4	0.25-31.75	0/2.5/3.3/5	4X4 QFN24-Lead
TFC2008LP4	0.1-13	7-bit Digital Attenuator	2.8	0.25-31.75	0/2.5/3.3/5	4X4 QFN24-Lead

True Time Delay

Part#	Frequency (GHz)	Description	Insertion Loss (dB)	Delay Range (ps)	Delay Accuracy RMS (ps)	Control Voltage (V)
TFC288LC5	0.1-18	5-bit	10	2.5-77.5	1.5	0/+5V

Phase Shifter

Part#	Frequency (GHz)	Description	Insertion Loss (dB)	Phase Shift Range (°)	Control Voltage (V)	Package
TFC254LP4	0.8-1.4	6-bit	5	5.625-360	0/-5V	4X4 QFN24-Lead

Temperature Compensating Attenuators

Part#	Frequency (GHz)	Insertion Loss (dB)	Attenuation Compensation Range (dB)	Temperature Compensation Range (°C)	Return Loss (dB)	Package
TFC192-3LP3	DC-20	3.9	3	-55-+85	20	3X3 QFN16-Lead

2、Amplifiers

Gain Block Amplifiers

Part#	Features	Frequency (GHz)	Gain (dB)	NF (dB)	P1dB (dBm)	Power Supply	Package
TFC300-14LP3	--	0.1-3	22	1.5	19.5	+5V@50mA	3X3 QFN16-Lead
TFC300-14ST89C	--	0.1-3	22	1	20	+5V@50mA	SOT-89
TFC300-1LP3	--	DC-4	16	3.5	16	+5V@40mA	3X3 QFN16-Lead

Part#	Features	Frequency (GHz)	Gain (dB)	NF (dB)	P1dB (dBm)	Power Supply	Package
TFC180-18LC3	Low Phase Noise	DC-4	18	4.5	14	+5V@40mA	3X3 QFN16-Lead
TFC300-1LC3B	--	DC-4	16	3.5	15	+5V@40mA	3X3 QFN16-Lead
TFC300-1ST89	--	DC-4	15	3.5	14.5	+5V@40mA	SOT-89
TFC300-1ST89C	--	DC-4	15	4	14.5	+5V@40mA	SOT-89
TFC180-1ST89	--	0.005-4	19	2.5	19.5	+5V@50mA	SOT-89
TFC180-1ST89C	--	0.005-4	19	1.5	20	+5V@50mA	SOT-89
TFC300-2LP3	--	0.01-4	17	2	18	+5V@85mA	3X3 QFN16-Lead
TFC300-2LC3	--	0.01-4	18	2	18	+5V@85mA	3X3 QFN16-Lead
TFC300-2ST89	--	0.01-4	17	2	18.5	+5V@85mA	SOT-89
TFC300-15LC3	--	0.02-4	23dB@58mA 22dB@38mA	1	20.5dBm@58mA 19dBm@38mA	+5V@58mA (VG floating) +5V@38mA (VG grounded)	3X3 QFN16-Lead
TFC300-15LP3	--	0.02-4	23dB@58mA 22dB@38mA	1	21dBm@58mA 19dBm@38mA	+5V@58mA (VG floating) +5V@38mA (VG grounded)	3X3 QFN16-Lead
TFC180-4BLP3	--	0.03-4	32	0.7	18	+5V@92mA	3X3 QFN16-Lead
TFC180-8ALC3	--	0.03-4	17 dB@61mA 16.5 dB@37mA	1.3	20dBm@61mA 18.5dBm@37mA	+5V@61mA (VG floating) +5V@37mA (VG grounded)	3X3 QFN16-Lead
TFC180-4BLC3	--	0.03-4	32	1.1	19	+5V@92mA	3X3 QFN16-Lead
TFC180-8LC3	--	0.03-4	15.5	2.3	21	+5V@105mA	3X3 QFN16-Lead
TFC180-8LP3	--	0.03-4	16	2.3	21	+5V@105mA	3X3 QFN16-Lead
TFC180-8ST89C	--	0.03-4	15	2.8	20.5	+5V@105mA	SOT-89
TFC300-16LC3	--	DC-6	24 dB@76mA 23.5 dB@58mA	0.9	20dBm@76mA 19.5dBm@58mA	+5V@76mA (VG floating) +5V@58mA (VG grounded)	3X3 QFN16-Lead

Part#	Features	Frequency (GHz)	Gain (dB)	NF (dB)	P1dB (dBm)	Power Supply	Package
TFC180-21LC3	--	0.01-6	13.5	7	16	+5V@95mA	3X3 QFN16-Lead
TFC300-16LP3	--	0.03-6	24dB@76mA 23.5dB@58mA	1	20dBm@76mA 19.5dBm@58mA	+5V@76mA (VG floating) +5V@58mA (VG grounded)	3X3 QFN16-Lead
TFC300-16ALC3	--	0.03-6	21.5 dB@60mA 21 dB@40mA	1	20dBm@60mA 19dBm@40mA	+5V@60mA	3X3 QFN16-Lead
TFC180-17LP3	Low Phase Noise	DC-12	12	5.5	13	+5V @ 50mA	3X3 QFN16-Lead

Low Noise Amplifiers

Part#	Frequency (GHz)	Gain (dB)	NF (dB)	OP1dB (dBm)	Power Supply	Package
TFC332LC4	0.7-2.5	28	0.6	16	+5V@62mA	3X3 QFN16-Lead
TFC301-1LP3	0.5-4	17	2.3	19.5	+5V@85mA	3X3 QFN16-Lead
TFC329HLP3	2-8	27	1.2	13	+5V@37mA	3X3 QFN12-Lead
TFC364LP3	0.8-18	15	1.9	17.5	+5V@45mA	3X3 QFN16-Lead
TFC363LP3	2-18	24	1.4	13	+5V@37mA	3X3 QFN16-Lead

3、Frequency Conversion

Mixers

Part#	RF/LO frequency (GHz)	IF Frequency(GHz)	Conversion Gain (dB)	LO/RF Isolation (dB)	IP1dB (dBm)	Package
TFC550LP4	0.5-2	DC-1	-10	45	13	4X4 QFN24-Lead
TFC550LC4	0.5-2.5	DC-1	-10	45	13	4X4 QFN24-Lead
TFC551LP4	1.5-5	DC-3	-9	60	14.5	4X4 QFN24-Lead
TFC551LC4	1.5-5	DC-3	-9	55	14.5	4X4 QFN24-Lead
TFC551MLP4	1.5-5	DC-3	-9	55	14.5	4X4 QFN24-Lead
TFC536HLP3	3-12	DC-4	-9	60	12	3X3 QFN12-Lead
TFC536HMLP3	3-12	DC-4	-9	60	12	3X3 QFN12-Lead
TFC566LLP3	6-26	DC-8	-12	30	12	3X3 QFN12-Lead

Frequency Multiplier

Part#	Function	Input frequency (GHz)	Output Frequency(GHz)	Conversion Loss (dB)	Output Power (dBm)	Fo Isolation (dBc)
TFC573LLC4	Multiply Factor	4-8	8-16	13	--	45

4、Passive

Equalizers

Part#	Frequency (GHz)	Slope (dB) Typ.	Insertion Loss (dB)	Return Loss (dB)	Package
TFC132-4LP3	2-6	4	1.1	20	3X3 QFN12-Lead

Power Dividers

Part#	Frequency (GHz)	Function	Insertion Loss (dB)	Isolation (dB)	Return Loss (dB)	Package
TFC150LC4	0.5-2	2-Way	1.2	20	20	4X4 QFN16-Lead
TFC151LLC4	0.8-2	2-Way	1	20	20	4X4 QFN16-Lead
TFC151LP3	1-3	2-Way	1.2	18	20	3X3 QFN16-Lead
TFC151LC4	1-3	2-Way	1.2	18	20	4X4 QFN16-Lead
TFC152HLP3	2-6	2-Way	1	20	20	3X3 QFN16-Lead
TFC152LLC4	2-8	2-Way	1.2	18	12	4X4 QFN19-Lead
TFC153LC5	1-18	2-Way	1.6	20	15	5X5 QFN14-Lead
TFC159LP3	12-26	2-Way	1	20	15	3X3 QFN16-Lead

Filters

Part#	Frequency (GHz)	Function	Insertion Loss (dB)	Rejection (dB)	Return Loss (dB)	Package
TFC170-20LP3	20—40	High-pass filter	2.5	≥18@16.2≥28@15.4	20	3X3 QFN12-Lead

Limiters

Part#	Frequency (GHz)	Output Power Limit (dBm)	Power Handling (W)	Insertion Loss (dB)	Return Loss (dB)	Package
TFC3001LP3	DC-6	6-13	10	1.2	15	3X3 QFN12-Lead
TFC3002LP3	DC-6	27-33	20	1.2	10	3X3 QFN12-Lead
TFC181-10LLC4	1-2	16	50	0.5	23	4X4 QFN24-Lead
TFC181-7ALC4	1-6	16	10	0.5	20	4X4 QFN24-Lead

5、Power Control

FET Driver

Part#	Description	Voh (V)	Vol (V)	Input Voltage (V)	Quiescent Current (mA)	Clock Frequency(MHz)
TFC160-1BS8E	1-bit FET Driver Complementary Output	0	-5	5/0	0.1	30
TFC160-1S8E	1-bit FET Driver Complementary Output	0	-5	5/0	0.4	30
TFC160-8LP4	6-bit FET Driver Complementary Output	0	-5	5/0	1.5	30

Serial-to-Parallel Converter

Part#	Description	Voh (V)	Vol (V)	Input Voltage (V)	Quiescent Current(mA)	Clock Frequency (MHz)	Package
TFC166-3LP4	13-bit Serial-Parallel Converter	5	0	0/2.5/3.3/5	0.1	10	4X4 QFN24-Lead

Product Catalog-System-in-Package

1、Switch Filter Module

Part#	Name	Frequency (GHz)	Insertion Loss (dB)	Input P1dB (dBm)	Passband Bandwidth (GHz)	Stopband Rejection (dBc)	Package
TFC9101LC2015	16 - segment Frequency Switch Filter Bank	0.957-1.2271	8	20	0.02	40 (f0±30MHz)	20X15 SMD11-Lead
TFC9102LC1412	16 - segment Switch Filter Bank	0.957-1.2271	8	20	0.02	40 (f0±30MHz)	14X12 BGA

2、RF Front-End Module

Part#	Name	Frequency (GHz)	Gain (dB)	NF (dB)	Output P1dB (dBm)	Max power handling (W)	Package
TFC9611LC5	RF Front-End	1.258-1.278	30	1.5	18	10	5X5 QFN32-Lead
TFC9616LC5	RF Front-End	1.258-1.278	31	1.0	18.5	10	5X5 QFN32-Lead
TFC9313LC7	Amplification and Bypass Multifunctional Module	6-18	20.5	2.5	13	—	7X7 QFN26-Lead
TFC9314LC5	Harmonic Suppression Amplifier Module	0.45-0.75	22	0.9	17	—	5X5 QFN14-Lead

3、Limiting Low-Noise Amplification Module

Part#	Name	Frequency (GHz)	Gain (dB)	NF (dB)	Output P1dB (dBm)	Tolerable Power (W)	Package
TFC9306LC7	Limiting Low-Noise Amplifier	0.5-2	38	1	20	3	7X7 QFN26-Lead
TFC6301LC7	Limiting Low-Noise Amplifier	1-4	32	1.2	19	10	7X7 QFN22-Lead
TFC9307LC7	Limiting Low-Noise Amplifier	4-8	39	1.1	16	3	7X7 QFN26-Lead

4、Attenuation and Amplification

Part#	Name	Frequency (GHz)	Gain (dB)	NF (dB)	Output P1dB (dBm)	Attenuation Range (dB)	Package
TFC9201LC7	Voltage Controlled Attenuation and Amplification Module	0.1-2	28.5	—	19	0 ~ 30	7X7 QFN26-Lead
TFC9202LC7	Digital Controlled Attenuation and Amplification Module	0.1-2	29.5	—	19	0.5 ~ 31.5	7X7 QFN26-Lead
TFC9203LC7	Digital Controlled Attenuation and Amplification Module	4-8	21	—	16	0.5 ~ 31.5	7X7 QFN26-Lead
TFC9217LC7	Digital Controlled Attenuation, Temperature-Compensated Amplification and Multifunctional Module	2-8	23	—	10	0.5-31.5	7X7 QFN26-Lead
TFC9218LC7	Digital Controlled Attenuation, Temperature-Compensated Amplification and Multifunctional Module	0.5-4	18	—	17	0.5-31.5	7X7 QFN26-Lead

5、Frequency Conversion Module

Part#	Name	RF Frequency (GHz)	IF Frequency (GHz)	Conversion Gain (dB)	Output P1dB (dBm)	LO Input Power (dBm)	Package
TFC9505LC7	Up - conversion Module	4-9	0.1-2	5	—	3	7X7 QFN26-Lead
TFC9503LC7	Down - conversion Module	0.5-2	0.01-0.5	6	15	3	7X7 QFN26-Lead
TFC9504LC9	Down - conversion Module	4-9	0.1-2	5.5	15	3	9X9 QFN20-Lead
TFC9512LC2116	Down - conversion Module	0.8-18	1.3-2.3	30	10	5	21X16 BGA
TFC9514LC7	Multifunctional Frequency Conversion Module	12-27	DC-3	-12	3	-4	7X7 QFN26-Lead
TFC9515LC7	Multifunctional Frequency Conversion SiP Module	3-12	DC-4.5	-12	2	3	7X7 QFN26-Lead
TFC9603LC2116	Multifunctional Frequency Conversion SiP Module	20.5	0.8-18	4	-6	0	21X16 BGA
TFC9509LC2116	Up - conversion Module	0.8-18	1.3-2.3	33	13	0	21X16 BGA
TFC9508LC2116	Down - conversion Module	0.8-18	1.3-2.3	33	6	3	21X16 BGA

6、Phase and Amplitude Control Multifunctional Module

Part#	Name	Frequency (GHz)	Gain (dB)	Output P1dB (dBm)	Attenuation Range (dB)	Phase Shift Range (°)	Package
TFC9210LC9	Phase and Amplitude Control Multifunctional Module	0.85-1.25	-8	15.5	0.5-31.5	360	9X9 QFN64-Lead
TFC9601LC9	Phase and Amplitude Control Multifunctional Module	2.7-3.5	7.5	18	0.25-31.75	360	9X9 QFN20-Lead

7、Transceiver Module

Part#	Name	Frequency (GHz)	Gain (dB)	Output P1dB (dBm)	Phase Shift Range (°)	Package
TFC9620LC2116	Four - Channel Transmit Module	1.8-2.7	23.5	14.5	360	21X16 BGA
TFC9632LC2116	Four - Channel Transmit Module	1.8-2.7	24	14	360	21X16 BGA
TFC9103LC5	Switch Multifunctional Module	0.35-2	-1/ ~ 5	20	—	5X5 QFN32-Lead



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