

# 2019

# RF & MICROWAVE

*RF Custom design & Manufacture*



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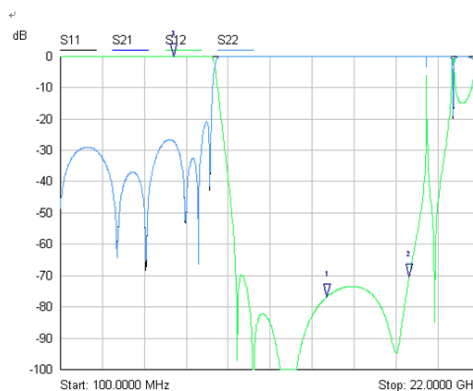
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## 4.5G -6G LC BandPass Filter

Pass Band Frequency Range	4.5~6.0GHz
Pass Band Insertion Loss	$\leq 1.0(\text{dB})$
Stop Band Frequency Range	DC~3.6GHz , 6.7~15GHz
VSWR	$\leq 1.4$
Package Type	SMA female*2
Impedance	$50\pm 1\Omega$ @ I/O
Power Handling	1W
Operating Temperatures	-55~+85°C
Flatness	less than +/- 1 dB



## 0.5G -2G LC BandPass Filter

Pass band	500 MHz to 2 GHz
VSWR @ pass band	1.4:1 max
Insertion Loss @pass band	1.2 dB max
Rejection	>65 dBc @ DC-280 MHz & 3.2-6 GHz
Ripple in band	1.0 dB peak to peak
Impedance	50Ω
Operating Temperature	-55~+85°C

## Filter Bank Microstrip High Pass Filter

- Application: Filter Bank, Laboratory
- Impedance: 50 Ohms
- Miniature Design
- Low Pass option
- ODM & OEM Service



Pass Band	1.2-8 GHz	3-18 GHz	18-28 GHz	1-8 GHz	7-18 GHz
Attenuation	> 40dB	> 60dB	> 50dB	> 50dB	> 60dB
Insertion Loss	< 1.5dB	< 2.0dB	< 2.0dB	< 1.5dB	< 1.5dB
VSWR	< 1.5	< 1.5	< 1.8	< 1.8	< 1.5
Power	15W				
Connector	SMA				

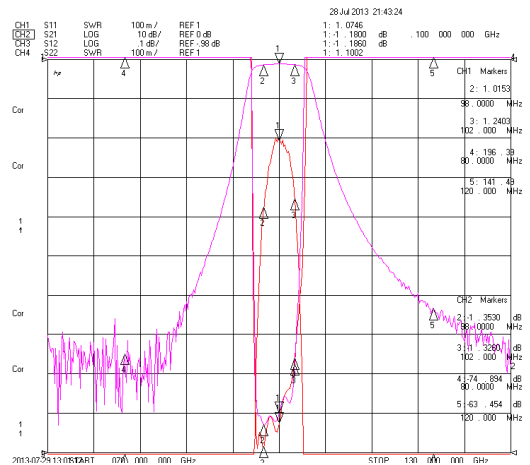
## IF Covert Filter

### FM & UMTS & GSM Filters

Band-Pass	FM Band	UMTS Band	GSM Band
Pass Band	88-108MHz	1920-2170MHz	880-960MHz
Insertion Loss	2.2dB	2.0dB	2.0dB
Rejection	>30dB @20M-78M >30dB @115M-3000M	>40dB @20M-1820M >40dB @2270M-3000M	>30dB @20M-845M >30dB @995M-3000M
Band-Stop	FM Band	UMTS Band	GSM Band
Stop Band	88-108MHz	1920-2170MHz	880-960MHz
Stop Band Loss	>30dB	>25dB	>30dB
Pass Band Loss	<2dB @20M-78M <2dB @115M-1800M	<2dB @20M-1820M <2dB @2270M-3000M	<2dB @20M-845M <2dB @995M-2000M
Power	> 1Watt		
Impedance	50 ohm		
Connector	Input/Output: SMA-Female		

### IF Convert Filter- Spiral BPF

Center Frequency	100 MHz
Bandwidth	4MHz (98MHz ~ 102MHz)
Insertion Loss	≤3.0dB
Ripple	≤1.0dB
VSWR	≤1.3:1
Rejection	≥30dB@DC ~ 80MHz ≥30dB@120MHz ~ 250MHz
Impedance	50Ω
Power	5 W
Surface Finish	Black Paint
Connectors	SMA-Female variable



## Outdoor GSM Cavity Band Pass Filter

- Application: LoRa Gateway GSM 800
- Impedance: 50 Ohms
- Reliable & Rugged
- Notch Filter option
- Low PIM option
- ODM & OEM Service

Pass Band Freq	862-872MHz	865-870MHz
Insertion Loss	1.5dB	0.6dB
Attenuation	≥40dB	≥30dB
Power handling	20Watt	10Watt
Connector	N	N
<b>Water Resist</b>	<b>IP67</b>	<b>IP66</b>



## GSM 900 Cavity Band Pass Filter

- Application: BTS (clear up CDMA 800 interference)
- Impedance: 50 Ohms
- Insertion Loss: < 0.3~1.5 dB
- Custom Design



Stop Band	0-899 MHz
Pass Band Freq	890-915 & 935-950 MHz
Rejection	> 30 dB @858-888 MHz
Intermodulation	< -150dBc(3rd order; 2x20W)
Power	300 Watt
Connector	7-16 DIN-male
<b>Water Resist</b>	<b>IP66</b>



\*Mounting Clamp Kit Supply

## High Power 100W, 200W Band Rejection Filter For LTE Base Station

Parts Number	TCF-541/555M-N	TCF-547/561M-N	TCF-589/603M-N	TCF-619/633M-N
Frequency	541 ~ 555 MHz	547 ~ 561 MHz	589 ~ 603 MHz	619 ~ 633 MHz
Insertion loss	≤1.0dB	≤1.0dB	≤1.1dB	≤1.1dB
Return loss	≥18dB	≥18dB	≥18dB	≥18dB
Rejection	45dB @300 ~ 532M 45dB @564 ~ 1000M	50dB @300 ~ 538M 50dB @570 ~ 1000M	45dB @300 ~ 580M 45dB @612 ~ 1000M	50dB @300 ~ 609M 50dB @642 ~ 1000M
Impedance	50Ω			
Connector	N-F			
Power	100W			
SIZE	122*83*72mm	122*83*72mm	122*83*69mm	119*81*69mm



## LTE Channel Band Rejection Filter



	<b>LTE Band 1</b>	<b>LTE Band 2</b>	<b>LTE Band 3-4</b>	<b>LTE Band 5</b>	<b>LTE Band 7</b>
Stop Band	1940-1960MHz	1870-1890MHz	1722.5-1742.5MHz	826.5-846.5MHz	2525-2545MHz
Attenuation	>50dB	>50dB	>50dB	>50dB	>50dB
	<b>LTE Band 8</b>	<b>LTE Band 13</b>	<b>LTE Band 17</b>	<b>LTE Band 20</b>	<b>LTE Band 25</b>
Stop Band	887.5-907.5MHz	777-787MHz	704-716MHz	837-857MHz	1872.5-1892.5MHz
Attenuation	>50dB	>50dB	>50dB	>50dB	>50dB
	<b>GSM850 CH 190</b>	<b>GSM900 CH 63</b>	<b>GSM1800 CH 699</b>	<b>GSM1900 CH 661</b>	
Stop Band	835.5-837.5MHz	901.6-903.6MHz	1746.6-1748.6MHz	1799-1881MHz	
Attenuation	>50dB	>50dB	>50dB	>50dB	
Power	<50 Watt				
Impedance	50 ohm				
Connector	Input/Output: SMA-Female				

## 3.5GHz Cavity Band-Reject (Notch) Filter

- Application: WLAN Amplifier
- Impedance: 50 Ohms
- Low Insertion Loss
- Connectors variable
- OEM & ODM Service



Stop Band Freq	3.1-3.5 GHz
Stop Band Attenuation	>45 dB
Insertion Loss	<1.5 dB
Temperature Range	-40°C to +80°C
Power handling	5Watt
Connector	SMA-Female

## GSM Double Notch Filter

Freq Range	1. 876-880 MHz 2. 921-925 MHz
Attenuation	≥50dB
Power Handling	10 Watt
Impedance	50 ohm
Connector	N-Female
Other	IEC 61373



## DECT Notch Filters

- ✓ Solved system work conflict between PCS & EU DECT band
- ✓ High Accuracy, Competitive Price
- ✓ Apps: Telecommunication, Mobile, Repeater
- ✓ Band-pass, Ceramic design can discuss

Stop Band Freq.	1880-1990 MHz
Stop Band Attenuation	≥ 60dB
Pass Band Freq.	DC-1810 & 2060-5000 MHz
Pass Band Insertion Loss	≤ 1.0dB
Pass Band VSWR	≤ 1.5:1
Power Handling	≤ 10 Watt
In/Out Impedance	50 Ω
Connectors	SMA-Female



## LTE Band High Power Cavity Band Pass Filter

- Application: Base Station
- Power: 100 Watt
- Impedance: 50 Ohms
- Connector: N-Female (variable)
- Water Resist option
- Custom Design

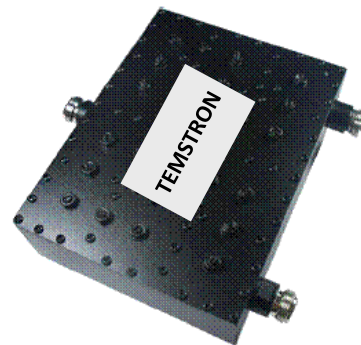


Center Freq	632MHz	692MHz	2535MHz	2655MHz
Bandwidth	14MHz	14MHz	70MHz	70MHz
Insertion Loss (in BW)	1.5dB	1.5dB	2.3dB	2.3dB
Rejection	≥ 70dB			
VSWR	≤ 1.3:1	≤ 1.3:1	≤ 1.3:1	≤ 1.3:1

## LTE 700 Comb Band Pass Filter

Center Freq	752MHz
Bandwidth	108MHz
Insertion Loss	≤ 1.0dB
VSWR	≤ 1.3:1
Attenuation	≥ 50dB @ DC-630MHz ≥ 50dB @ 874-1500MHz
Impedance	50 ohm
Power	≤ 10W
Connector	SMA-Female

- Application: Telecom System
- Connector variable
- Water Resist option
- OEM & ODM Service



## LTE 700 Cavity Diplexer

- Application: Telecom System
- Reliable & Rugged
- Water Resist option
- Low PIM option
- Custom Design

	RX	TX
Pass Band Freq	703-748MHz	758-803MHz
Insertion Loss	≤ 1.7dB	≤ 1.7dB
VSWR	≤ 1.4:1	≤ 1.4:1
Attenuation	≥ 60dB	≥ 60dB
Impedance	50 ohm	
Power	≤ 10W	
Connector	SMA-Female	

## 75ohm Band Pass Filters

- Impedance: 75 Ohms
- Power handling : 100 W
- ODM & OEM Service

Channels		Rejection	IL	VSWR
14-19	470~506MHz	≥30dB	≤1.0dB	≤1.4:1
14-21	470~518MHz	≥30dB	≤1.0dB	≤1.4:1
14-22	470~524MHz	≥30dB	≤1.0dB	≤1.4:1
14-29	470~566MHz	≥30dB	≤1.0dB	≤1.4:1
14-30	470~572MHz	≥30dB	≤1.0dB	≤1.4:1
15-24	476~536MHz	≥30dB	≤1.0dB	≤1.4:1
17-36	488~608MHz	≥30dB	≤1.0dB	≤1.4:1
23-36	524~608MHz	≥30dB	≤1.0dB	≤1.4:1
25-31	536~578MHz	≥30dB	≤1.0dB	≤1.4:1
25-36	536~608MHz	≥30dB	≤1.0dB	≤1.4:1
25-36	536~608MHz	≥30dB	≤1.0dB	≤1.4:1
25	536~542MHz	≥25dB	≤1.6dB	≤1.8:1
27	548~554MHz	≥25dB	≤1.6dB	≤1.8:1
Operate Temp.		- 30°C ~ +50°C		



## DVB-C BandStop Filter

Stop Band	522~530MHz
Stop Band Attenuation	≥40dB
Pass Band	5~480 & 573~1000 MHz
Pass Band Insertion Loss	≤1.5dB @5~480MHz ≤1.5dB @573~1000MHz
Return Loss	≥14dB
Impedance	75 ohms
Connectors	F Female
Dimension Size	87mm x 27mm x 17mm

## CATV BandStop Filter

Stopband	352.25 ~ 487.25 MHz
Insertion Loss	≤4.0 dB @ 5~336.25MHz
	≤ 4.0 dB @ 503.25~860MHz
Attenuation	≥40dB@336.25MHz~487.25MHz
Return Loss	≥12 dB @ 5~336.25MHz
	≥12 dB @ 503.25~860MHz
Impedance	75 ohms
Connectors	F Female





## C-Band 6750MHz BPF

Specification	
Center Freq (Fo)	6750 MHz
Bandwidth	600 MHz (6450~7050MHz)
Insertion Loss	<1.0dB
Stop Band Rejection	>80dB @DC~5500M, 11000~16500M >60dB @5500~6250M, 7250~11000M
Power Handling	<2 Watt
Temperature	-30°C ~ +70°C
Impedance	50 ohm
Connector	Input: SMA-Female Output: SMA-Male
Dimension	212x23x12 mm

L-Band (1-2 Ghz)  
S-Band (2-4 Ghz)  
C-Band (4-8 Ghz)  
X-Band (8-12 Ghz)  
Ku-Band (12-18 Ghz)  
Ka-Band (26-40 Ghz)

## S-Band 2900MHz BPF



Specification	
Center Freq (Fo)	2900 MHz
Bandwidth	30 MHz (2885~2915MHz)
Insertion Loss	<1.5dB
Rejection	>40dB @Fo±60MHz (DC~2840M, 2960~7000M)
Power Handling	<20 Watt
Temperature	-40°C ~ +70°C
Impedance	50 ohm
Connector	SMA-Female
Surface Color	Black Paint or Silver Plain
Dimension	97x30x20 mm

## Ku Band 11.7GHz BPF



Specification	
Center Freq (Fo)	11.7 GHz
Bandwidth	1500 MHz (10.95~12.45GHz)
Insertion Loss	<2.0dB
Ripple Band	<0.3dB peak-peak in any 80MHz interval <1.2dB peak-peak within signal BW (1500MHz)
Rejection	>80dB @DC~10.25GHz >60dB @10.25-10.4GHz >80dB @13-14.5GHz, 15.05-16.55GHz
VSWR	<1.23 (-20dB)
Temperature	-30°C ~ +70°C
Impedance	50 ohm
Connector	SMA-K
Surface Color	Black Paint
Dimension	81x18x13 mm

## K-Band Microstrip High Pass Filter & Band Pass Filter

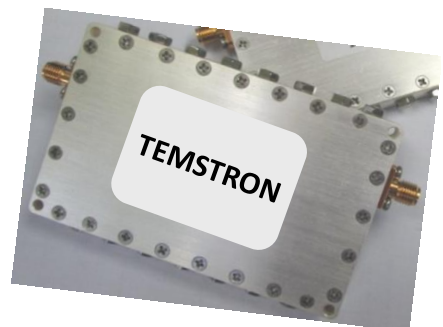
- Application: Satellite, Aerospace
- Impedance: 50 Ohms
- Insertion Loss: < 1.0 dB
- Outdoor option
- Custom Design



Pass Band	10.5-40 GHz	24.25-27.5 GHz	24.25-29.5 GHz	26.5-29.5 GHz
Center Freq	10.5 GHz (Cut off)	25.87 GHz	26.87 GHz	28 GHz
Bandwidth	n/a	3.25 GHz	5.25 GHz	3.0 GHz
Attenuation	50 dB	30 dB	30 dB	30 dB
Power	15 Watt	10 Watt	10 Watt	10 Watt
Connector	2.92mm(K)-Female			

## High Power S-Band Cavity Band Pass Filter

- Application: Satellite Ground Station
- Impedance: 50 Ohms
- Insertion Loss: < 0.6 dB
- Water Resist option
- Custom Design



Power	200W CW	
Center Freq	2408 MHz	2283 MHz
Bandwidth	7.5 MHz	
Attenuation	> 50 dB	
Connector	N	
Temp Range	-30°C to +80°C	

## Rural UHF Broadband Comb Band Pass Filter



- Application: Rural Broadband
- Power: 20 Watt
- Impedance: 50 Ohms
- Connector variable
- ODM & OEM Service

Pass Band Freq.	470~564MHz	540~648MHz	620~749MHz	720~798MHz
Insertion Loss	$\leq 1.0\text{dB}$	$\leq 1.0\text{dB}$	$\leq 1.0\text{dB}$	$\leq 1.3\text{dB}$
Flatness	$\leq 0.6\text{dB}$	$\leq 0.6\text{dB}$	$\leq 0.6\text{dB}$	$\leq 0.7\text{dB}$
Rejection	$\geq 60\text{dB}$			
VSWR	$\leq 1.3:1$	$\leq 1.3:1$	$\leq 1.3:1$	$\leq 1.3:1$
Connector	SMA-Female	SMA-Female	SMA-Female	SMA-Female

## 5.8GHz Railway Cavity Band Pass Filter

- Application: Railway System
- Impedance: 50 Ohms
- Connector Changeable
- Band Stop & Waterproof option
- ODM & OEM Service

Pass Band Freq	5735-5835 MHz
Insertion Loss	<1.0 dB
Attenuation	>20 dB
Power	<10 W
Altitude	60,000 ft. 1.0psi min
Connector	N-f & N-m



# Suspended Substrate Stripline Filters



## High Pass Filter Series

Model	3dB Cut off(GHz)	1dB Pass Band(GHz)	Insertion Loss(dB)	VSWR	Stop Band Rejection (dB@GHz)	Power Handling(W)	Connectors	Size LxWxH(mm)
TA0138-HS	1	1.1 ~ 4	≤1.0	≤2.0	≥45@DC ~ 0.85 (Type50)	15	SMA-F	71x40x10
TA0139-HS	2	2.2 ~ 12	≤1.0	≤2.0	≥45@DC ~ 1.7 (Type50)	15	SMA-F	38x34x10
TA0140-HS	3	3.3 ~ 12	≤1.0	≤2.0	≥45@DC ~ 2.55 (Type50)	15	SMA-F	35x31x10
TA0141-HS	4	4.4 ~ 12	≤1.0	≤2.0	≥45@DC ~ 3.4 (Type50)	15	SMA-F	34x25x10
TS-A0107-HS	5	5.5 ~ 16	≤1.0	≤2.0	≥45@DC ~ 4.25 (Type50)	15	SMA-F	26x25x10
TA0072-HS	6	6.6 ~ 18	≤1.0	≤2.0	≥45@DC ~ 5.1 (Type50)	15	SMA-F	29x28x10
TA0142-HS	7	7.7 ~ 18	≤1.0	≤2.0	≥45@DC ~ 5.95 (Type50)	15	SMA-F	29x23x10
TA0143-HS	8	8.8 ~ 18	≤1.0	≤2.0	≥45@DC ~ 6.8 (Type50)	15	SMA-F	23x25x10
TA0144-HS	9	9.9 ~ 18	≤1.0	≤2.0	≥45@DC ~ 7.65 (Type50)	15	SMA-F	25x24x10
TA0145-HS	10	11 ~ 18	≤1.0	≤2.0	≥45@DC ~ 8.5 (Type50)	15	SMA-F	25x23x10
TA0146-HS	11	12.1 ~ 18	≤1.0	≤2.0	≥45@DC ~ 9.35 (Type50)	15	SMA-F	24x22x10
TA0147-HS	12	13.2 ~ 18	≤1.0	≤2.0	≥45@DC ~ 10.2 (Type50)	15	SMA-F	24x21x10
TA0034-HS	----	2 ~ 18	≤1.0	≤2.0	≥50@DC ~ 1.5 (Type60)	15	SMA-F	44x17x10
TA0223-HS	----	3 ~ 18	≤1.0	≤2.0	≥65@DC ~ 2 (Type70)	15	SMA-F	31x17x10
TA0225-HS	----	4 ~ 18	≤1.0	≤2.0	≥40@DC ~ 3 (Type45)	15	SMA-F	28x17x10
TA0074-HS	----	1.5 ~ 13	≤1.0	≤2.0	≥50@DC ~ 1 (Type65)	15	SMA-F	53x20x10
TA0233-HS	----	4 ~ 18	≤1.0	≤2.0	≥40@DC ~ 2.5	15	SMA-F	22x17x10

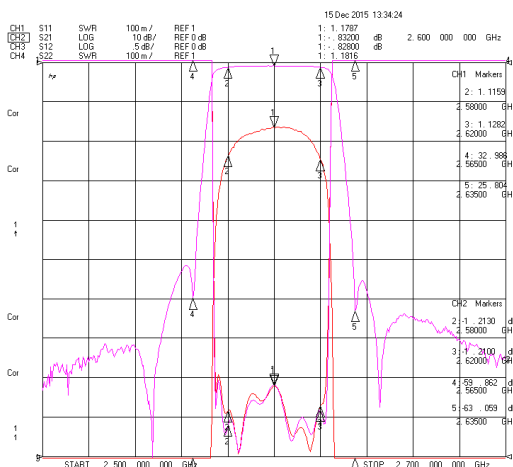
## Low Pass Filter Series

Model	3dB Cut off(GHz)	1dB Pass Band(GHz)	Insertion Loss(dB)	VSWR	Stop Band Rejection (dB@GHz)	Power Handling(W)	Connectors	Size LxWxH(mm)
TA0148-LS	1	DC ~ 0.9	≤1.0	≤2.0	≥45@1.2 ~ 4 (Type50)	15	SMA-F	120x41x10
TA0098-LS	2	DC ~ 1.8	≤1.0	≤2.0	≥45@2.3 ~ 6 (Type50)	15	SMA-F	53x36x10
TA0106-LS	3	DC ~ 2.7	≤1.0	≤2.0	≥45@3.45 ~ 8 (Type50)	15	SMA-F	41x34x10
TA0149-LS	4	DC ~ 3.6	≤1.0	≤2.0	≥45@4.6 ~ 10 (Type50)	15	SMA-F	39x27x10
TA0150-LS	5	DC ~ 4.5	≤1.0	≤2.0	≥45@5.8 ~ 12 (Type50)	15	SMA-F	35x24x10
TA0137-LS	6	DC ~ 5.4	≤1.0	≤2.0	≥45@6.9 ~ 14 (Type50)	15	SMA-F	35x22x10
TA0151-LS	7	DC ~ 6.3	≤1.0	≤2.0	≥45@8 ~ 15 (Type50)	15	SMA-F	33x22x10
TA0152-LS	8	DC ~ 7.2	≤1.0	≤2.0	≥45@9.2 ~ 16 (Type50)	15	SMA-F	33x21x10
TA0079-LS	9	DC ~ 8.1	≤1.0	≤2.0	≥45@10.4 ~ 16.5 (Type50)	15	SMA-F	25x19x10
TA0153-LS	10	DC ~ 9	≤1.0	≤2.0	≥45@11.5 ~ 17 (Type50)	15	SMA-F	24x18.5x10
TA0154-LS	11	DC ~ 9.9	≤1.0	≤2.0	≥45@12.5 ~ 17.5 (Type50)	15	SMA-F	23x18.5x10
TA0155-LS	12	DC ~ 10.8	≤1.0	≤2.0	≥45@13.8 ~ 18 (Type50)	15	SMA-F	20x18x10
TA0229-LS	13	DC ~ 11.7	≤1.0	≤2.0	≥45@15 ~ 19 (Type50)	15	SMA-F	20x17.5x10
TA0224-LS	14	DC ~ 12.6	≤1.0	≤2.0	≥45@16.1 ~ 20 (Type50)	15	SMA-F	19x17.5x10
TA0173-LS	----	DC ~ 2	≤1.0	≤2.0	≥50@2.5 ~ 13 (Type55)	15	SMA-F	83x35x10
TA0071-LS	----	DC ~ 2.75	≤1.6	≤1.7	≥40@3 ~ 8.5 (Type45)	15	SMA-F	59x39x10

## Single TV Channel Filters

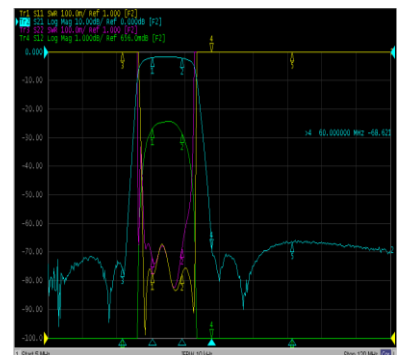
Application: Wireless Video Link, Broadcast, Telecom

Pass Band	2065~2100 MHz	2090~2100 MHz	2250~2270 MHz	2580~2620 MHz
Bandwidth	35 MHz	10 MHz	20 MHz	40 MHz
Return Loss	≥16dB	≥15dB	≥17dB	≥17dB
Power	50 Watt	50 Watt	20 Watt	20 Watt
Connector	N-F / N-M	N-F	N-F	N-F



## Satellite & D-TV (ch1-12) Channel BP Filters

Channel	Pass Band	Channel	Pass Band
<b>VHF-FM</b>		<b>K-WNW</b>	
CH1	30-40 MHz	CH7	108-157 MHz
CH2	40-50 MHz	CH8	147-230 MHz
CH3	50-60 MHz	CH9	220-290 MHz
CH4	60-70 MHz	CH10	280-345 MHz
CH5	70-80 MHz	CH11	335-405 MHz
CH6	80-88 MHz	CH12	395-512 MHz
IL	≤ 4.0 dB		
Ripple	≤ 1.2 dB		
VSWR	≤ 1.5 : 1		
Rejection	≤ -40dB		
Power	1 Watt		
I/O PORT	50 ohm Feed		
Dimension	39*10.5*8 mm		



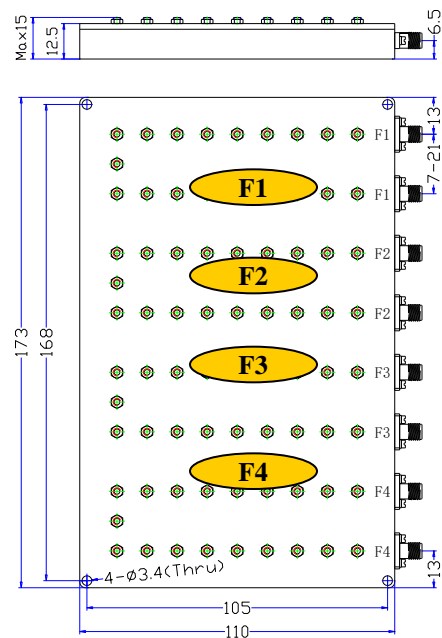
## WLAN & Wi-Fi 4.9G & 5.8G Bandpass Filters Indoors & Outdoors IP65

Center Frequency	4965MHz	5800MHz
Bandwidth	50MHz	150MHz
Insertion Loss	≤1.0dB	≤0.5dB
Ripple	≤1.0dB	≤1.0dB
Return Loss	≥10dB	≥10dB
Power	50W	50W
Impedance	50Ω	50Ω
Rejection	≥6dB@4890MHz ≥6dB@5040MHz	≥6dB@5570MHz ≥6dB@6030MHz
Operating Temperature	-40°C ~ +85°C	-40°C ~ +85°C
Surface Finish	Black Paint	Black Paint
Port Connectors	N-Female	N-Female
Waterproof ability	IP 65	IP65
Configuration	As Below ( Tolerance±0.2 )	As Below ( Tolerance±0.2 )



## WiMax 3.5G 4 Channel in-out Group Filters

Number of Filter	4
Center Freq (F0)	3540MHz
Pass Band Freq	3480 ~ 3600MHz
Insertion Loss	≤ 1.0~1.5 dB
Return Loss	≥ 20 dB
Impedance	50 ohms
Power Handling	5W



## 1GHz to 27GHz Interdigital Band Pass Filter

- Application: Radar
- Attenuation: > 50 dB
- Insertion Loss: < 1.5 dB
- SMA connectors (variable)
- Impedance: 50 Ohms
- Low Pass & High Pass option
- ODM & OEM Service

#	Pass Band	#	ar
1	0.9-1.5 GHz	9	3.6-6.8 GHz
2	1-1.6 GHz	10	4.8-9.2 GHz
3	1-2 GHz	11	6-8 GHz
4	1.5-2.6 GHz	12	6.4-12.4 GHz
5	2-3.6 GHz	13	10-18 GHz
6	2-4 GHz	14	18-20 GHz
7	2.4-4.5 GHz	15	25-27 GHz
8	3-5.6 GHz	---	-----



## Radar L-Band Cavity Diplexer

- Application: Radar
- Low Insertion Loss
- High Power
- Connector variable
- OEM & ODM Service

	Low	High
Pass Band Freq	1030-1090MHz	1200-1400MHz
Rejection	> 40 dB	
VSWR	1.3:1	
Power	Average 100W; Peak 1000W	
Temperature	-30°C ~ +70°C	
Connector	SMA-Female	
Impedance	50 Ω	



## TETRA Cavity Duplexer

	Rx	Tx
Center Frequency	382.5 MHz	392.5 MHz
Pass Band Freq.	380~385 MHz	390~395 MHz
Insertion Loss	≤4.2dB	≤4.2dB
Ripple in BW	≤2.5dB	≤2.5dB
Return Loss	≥15dB	≥15dB
Attenuation	≥60dB@390-395M	≥60dB@380-385M
Power	50 Watt CW	



## Helix Cavity Duplexer

	ANT-RX	ANT-TX
Frequency Range	248.75~253.75MHz	226.25~231.25MHz
Insertion Loss	≤3.0dB	≤3.0dB
Ripple in Band	≤1.0dB	≤1.0dB
VSWR	≤1.5	≤1.5
Rejection	≥40dB@1 ~ 216MHz ≥60dB@226.25 ~ 231.25MHz ≥40dB@300 ~ 1000MHz	≥40dB@1 ~ 216MHz ≥60dB@248.75 ~ 253.75MHz ≥50dB@300 ~ 462.5MHz ≥40dB@462.5 ~ 1000MHz
Isolation (TX/RX)	Min 74dB (Room Temperature)	
Power	10W	
Surface Finish	Black Paint	
Port Connectors	SMA-Female	
Operation Temperature	-30°C~+85°C	



## LTE800 & GSM900 Low PIM Diplexer

	RX	TX
Frequency Range	790-862 MHz	880-960 MHz
Insertion Loss	≤1.0 dB	≤1.0 dB
Ripple	≤0.8 dB	≤0.8 dB
Return Loss	≥17 dB	≥17 dB
Rejection	≥35 dB@880-960 MHz	≥35 dB@790-862 MHz
IM3	≤-150dbc@2*43dbm	
Power Input	≤ 200 W	
Impedance	50Ω	
Connectors	N-Female	
Surface Finish	Black Paint	





## GSM1800 & UMTS & GSM900

	ANT--RX		ANT--TX
	880-960MHz	1710-1880MHz	1920-2170MHz
Frequency Range	880-960MHz	1710-1880MHz	1920-2170MHz
Insertion Loss	≤0.7dB	≤0.7dB	≤0.7dB
Flatness over passband	≤0.5dB	≤0.5dB	≤0.5dB
Return Loss	≥18dB	≥18dB	≥18dB
Rejection	≥34dB@1710-1880MHz	≥34dB@1920-2170MHz	≥34dB@1710-1880MHz
	≥50dB@1920-2170MHz	≥50dB@880-960MHz	≥50dB@880-960MHz
Isolation	≥35dB@1710-1880MHz&1920-2170MHz&880-960MHz		
Power handling c.w	50W		
Port Connectors	N-Female		
Surface Finish	Black paint		
Port Sign	Port 1: ANT ; Port 2:RX ; Port 3:TX		
Operational Temperature	-20 to +55°C		
Configuration	125.5 X125.5X 30 mm		

## 5.8G Coaxial Duplexer

Pass Band	5787.5-5807.5MHZ	5827.5-5847.5MHZ
Insertion Loss	≤2.4dB	≤2.4dB
Rejection	5827.5-5847.5MHz ≥55dBc	5787.5-5807.5MHz ≥55dBc
	5650-5665MHz ≥50dBc	5745-5770MHz ≥50dBc
	4500-5650MHz ≥35dBc	4500-5745MHz ≥35dBc
	5847.5-6700MHz ≥35dBc	5880-6700MHz ≥35dBc
Connector	SMA-J	
VSWR	≤1.5	≤1.5
Impedance	50ohm	
Temperature	-20~+75°C	
Power Handling	≥1W	
Configuration	200x 30x 16 mm	

## Mobile Radio Quadriplexer

	(Port 1) GSM 850/900	(Port 2) GSM 1800	(Port 3) UMTS	(Port 4) LTE
Passband	824-960 MHz	1710-1880 MHz	1920-2170 MHz	2500-2690 MHz
Insertion Loss	≤0.6dB	≤1.2dB	≤1.2dB	≤0.8dB
VSWR	≤1.35			
Isolation	≥70dB @1710-1880M	≥70dB @824-960M ≥70dB @1920-2170M	≥70dB @1710-1880M ≥70dB @2500-2690M	≥70dB @1920-2170M
Power (CW)	100W			
Connector	N-Female			
Surface Color	Black Paint			

## C-Band Cavity Diplexer

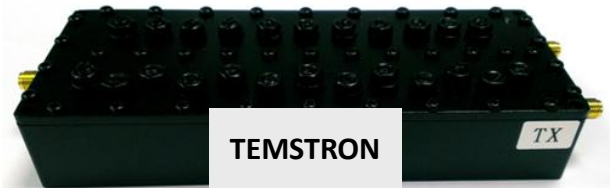
- Application: Satellite, Space, Ground Station
- Miniature Design
- High Stability
- Custom Service



	RX	TX
Pass Band Freq	DC-5600.2MHz	5705-6000MHz
Insertion Loss	< 1.0 dB	
Rejection	>40 dB@6100.2MHz	>40 dB@5205MHz
VSWR	1.8:1	
Power	< 16W	
Temperature	-40°C ~ +70°C	
Connector	SMA-Female	
Impedance	50 Ω	

## UHF Narrow Bandwidth Cavity Diplexer

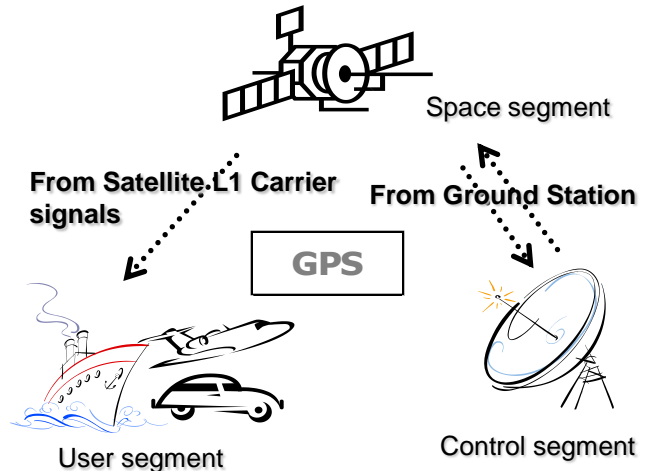
	Tx Band	Rx Band
Specify Freq Range	450-518 MHz	
Pass Band Bandwidth	1.5 MHz	1.5 MHz
Insertion Loss	< 1.8 dB	
Ripple	< 0.5 dB	
Isolation	> 75 dB	
Impedance	50 ohm	
Power	20W	
Connector	N-female	



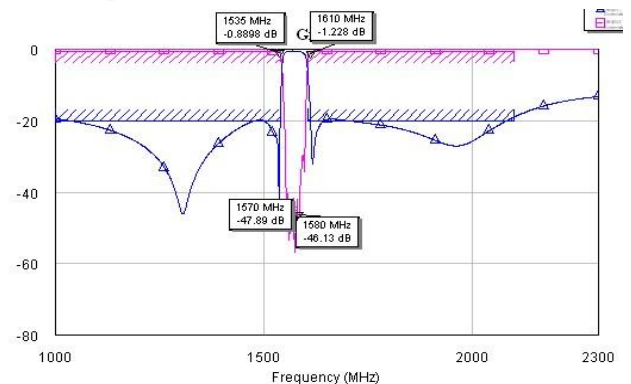
- Application: Repeater, Transceiver, Communication Devices
- Tx & Rx Band can be specified between 450 to 518 MHz range
- Reliable & Rugged
- Water Resist option
- Low PIM option
- Custom Design

## GPS Notch SMD Filters

- ✓ L1: 1575.42MHz
- ✓ L2: 1227.60MHz
- ✓ L3: 1381.05MHz
- ✓ L4: 1379.913MHz
- ✓ L5: 1176.45MHz



Reject Freq.	1575 MHz
Reject BW	10 MHz
Attenuation	35 dB min.
Pass Band [BW]	Low Band DC~1535 MHz
	High Band 1610 MHz
IL in BW	Low Band 3.0 dB max.
	High Band 3.0 dB max.
Input Power	3 Watt
In/Out Impedance	50 Ω
O.T. Range	-40°C to +85°C
Dimension	33.5 * 18.5 * 7.5 mm



## 3G,4G,5G SMD BPF

- DR / LC / Saw Filters design available
- Application: Navigation, Detector, Telecommunication, Radar, Receiver, WiMAX/Wi-Fi devices and etc.
- Band Stop Filter is available.



Application Bands		DCS and WCDMA 3G	LTE 4G	WLAN 5G
Parameters / Part No.		TDRF1940B460	TDRF2545B290	TDRF5800B150
1	Pass Band	1710~2170 MHz	2400~2690 MHz	5725~5875 MHz
2	Insertion Loss	3.0 dB	3.0 dB	2.0 dB
3	Attenuation	>20.0 dB @1500M >7.0 dB @2300M	>10.0 dB @2300M >7.0 dB @2790M	>30.0 dB @5400M >30.0 dB @6200M
4	Impedance	50 ohms		
5	Input Power	2.0 Watts		
6	Operation Temperature	-40°C to +85 °C		

## L-Band SMD Ceramic Band Pass Filter

- Application: Air Traffic Control System
- Group Delay: 10ns max
- Ripple: < 1.0 dB
- Return Loss: > 15 dB
- Insertion Loss: <1.5~2.2 dB
- Power: 2 Watt
- Impedance: 50 Ohms
- Height: 5.5~6.5 mm
- Operate Temp: -40°C to +85°C
- ODM & OEM Service



Centre Freq	Pass Band
1450 MHz	1350-1550 MHz
1640 MHz	1540-1740 MHz
1830 MHz	1730-1930 MHz
2020 MHz	1920-2120 MHz
2210 MHz	2110-2310 MHz
2400 MHz	2300-2500 MHz
2590 MHz	2490-2690 MHz

## MHF SMD Band Pass Filter

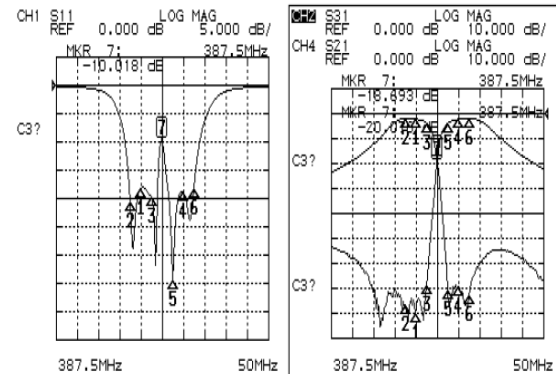
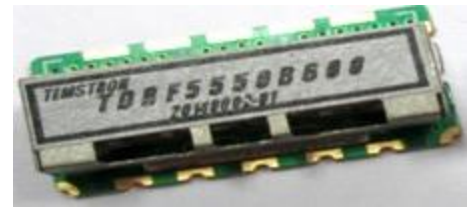
- Application: Radio Communication
- Insertion Loss: < 3.0 dB
- Power up to 24dBm
- Rejection: >30 dB & >50 dB
- Impedance: 50 Ohms
- Custom Design

Centre Freq	Bandwidth
2.15 MHz	0.7 MHz
3.25 MHz	1.5 MHz
5.0 MHz	2.0 MHz
7.5 MHz	3.0 MHz
12.0 MHz	6.0 MHz
18.5 MHz	7.0 MHz
26.0 MHz	8.0 MHz



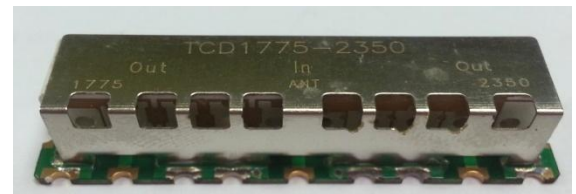
## SMD TETRA Duplexers

	Lower	Upper
Frequency	382.5MHz	392.5MHz
Bandwidth	Fo±2.5 (380-385M)	Fo±2.5 (390-395M)
Insertion Loss	4.0dB (Model A) 2.8dB (Model B)	4.0dB (Model A) 2.8dB (Model B)
Ripple	2.5 dB	2.5 dB
Attenuation	60dB @390~395M (Model A) 25dB @390~395M (Model B)	60dB @390~395M (Model A) 25dB @390~395M (Model B)
Operating Temperature	-40 °C to +85 °C (Model A) -20 °C to +70 °C (Model B)	
Impedance	50Ω	
Input Power	10 W	



## SMD Multiplexer (Multi-Channels Filters)

- Integrate several signals in one module to save board space.
- Applications: Microwave Telecommunication, Radar, Aviation, Navigation, Mining, Electronics counterwork, Channel Management, Satellite-Ground etc.
- SMD, Connector and Niddle type are available.



ELECTRICAL SPECIFICATIONS (SMD type, 5 in 5 out demo specs)

Parameters		CH1	CH2	CH3	CH4	CH5
1	Center Frequency	742.5	872.5	1962.5	2132.5	2593
2	Bandwidth [BW]	728-757	851-894	1930-1995	2110-2155	2496-2690
3	Insertion Loss in BW	3.0 dB max				
4	Ripple in BW	1.0 dB max				
	VSWR in BW	1.5 dB max.				
5	Attenuation [Absolute Value]	30 @ 851-894M 30 @ 1930-1995M 30 @ 2110-2155M	30 @ 728-757M 30 @ 1930-1995M 30 @ 2110-2155M	30 @ 728-757M 30 @ 851-894M 30 @ 2110-2155M	30 @ 728-757M 30 @ 851-894M 30 @ 1930-1995M	30 @ 2110-2155M
6	Input Power	3.0 W max.				
7	In/Out Impedance	50 ohm				
8	Operation Temperature	-40 °C to +85 °C				
9	Dimension	123x38x10.5 mm				

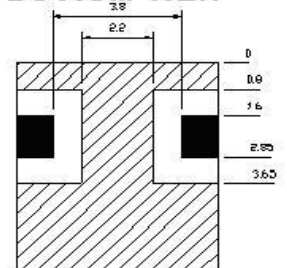
## Features:

- ✓ TOKO & Murata Compatible
- ✓ Center Freq. Range: 800MHz – 6000MHz
- ✓ 2 Pole – 5 Pole
- ✓ Application: Cellular, GPS, Cordless Phone, MCA, Satellite, Spread Spectrum, CATV, TCAS, WLAN, Inmarsat, Antenna Duplexer, DR Resonator and etc.

Toko No.	TDFM3A-1590J-10A	4DFA-1227D-12
Temstron Across No.	TDF32C1590S50B	TDF32C1227S10B
Frequency	1590.0 MHz	1227.0 MHz
Band Width	$f_0 \pm 25\text{MHz}$ [1565MHz~1615MHz]	$f_0 \pm 5\text{MHz}$ [1222MHz~ 1232MHz]
Insertion Loss	2.0 dB (Max.)	1.5 dB (Max.)
VSWR	2.0 : 1 (Max.)	2.0 : 1 (Max.)
Attenuation	10.0 min. @ $f_0 \pm 140\text{ MHz}$	15.0 min. @ $f_0 + 140\text{ MHz}$ 20.0 min. @ $f_0 - 140\text{ MHz}$
Impedance	50Ω	
Operation Temp	-40°C to +85°C	
Toko Dimensions	4.5 x 5.1 x 2.8mm	12.5x 14 x 5.0mm
Temstron DIM.	7.5 x 6.0 x 3.0mm	6.5 x 6.0 x 3.0mm



**BOTTOM VIEW**



Tolerance Unless  
Otherwise Specified :  $\pm 0.20$   
Unit : mm

- ✓DR Filters
- ✓DR Duplexers
- ✓DR Resonators

## LTE Ceramic Duplex Filters

LTE Band	UL Freq	DL Freq
2	1850-1910 MHz	1930-1990 MHz
3	1710-1785 MHz	1805-1880 MHz
5	824-849 MHz	869-894 MHz
8	880-915 MHz	925-960 MHz
20	832-862 MHz	791-821 MHz
28	703-748 MHz	758-803 MHz
Power	10W(avg), 100W(peak)	
Operate Temp.	-40 to +85 °C	
Impedance	50 ohm	



## GPS & GLONASS SMD SAW Filter

- Application: GPS / COMPASS / GLONASS Devices
- Usable Passband: 2.0 / 4.095 / 8.34 MHz
- Low-amplitude Ripple
- Sharp Rejection
- Impedance: 50 Ohms
- Tape & Reel pack (10K per reel)
- Custom Design

Centre Freq	1582.4 MHz
Insertion Loss	1.0 dB
Ripple	0.5 dB
VSWR	1.2
Size (approx.)	1.1x0.9x0.65mm



## SMD Resonator

Mode	$\lambda/4$
Freq Range (Fo)	2830±14 MHz
Dielectric Constant	37±1 dB
Temp.Coeff Tolerance	0±10 ppm/°C
Q value	>420
VSWR	1.5
Impedance	11.1 $\Omega$
Temp.Range	-40°C to +85°C

- 4mm Height, on T&R
- High Accuracy
- Tailor-Made service
- OEM & ODM support



## 700M-2.7GHz Power Divider

Model	2-Way	3-Way	4-Way
TPD-0.7/2.7	1 In, 2 Out	1 In, 3 Out	1 In, 4 Out
Cover Frequency	700MHz to 2700MHz		
Insertion Loss	≤ 0.5dB	≤ 1.2dB	≤ 0.8dB
VSWR	≤ 1.3:1	≤ 1.65:1	≤ 1.3:1
Isolation	≥ 20dB	≥ 16dB	≥ 20dB
Power Handling	50 Watts Max.		
Port Connector	N-Female or SMA for option		
Impedance	50 ohm		
Temperature	Operate at -25°C ~ +65°C		
Package	Indoors ( IP65 Outdoors upon requests)		
Dimensions (mm)	75 x 46 x 19	84 x 77 x 19	94 x 77 x 19



## 3 Db Hybrid Couplers

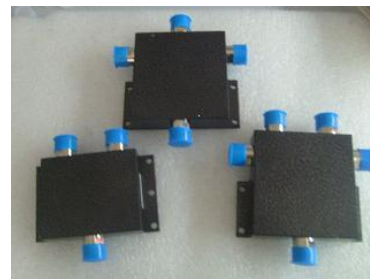
Frequency Range	800-2500MHz	700-2700MHz	800-2700MHz
Insertion Loss	≤0.5dB		
Coupling	3±0.5 dB	3±0.7 dB	3±0.7 dB or 3±0.5 dB
Isolation	≥20 dB		
VSWR	≤1.3:1		
Impedance	50 OHMS		
Power Handling	200 Watts		300 Watts or 500 Watts
IM3	≤-140dBc@(+43dBm×2)		
Port Connectors	N-Female		N-Female of DIN-F
Operate Temperature	-20°C to +60°C		-30°C to +70°C





## Cavity Power Splitter

Frequency(MHz)	350-2700MHz		
Product Name	2 way	3 way	4 way
Insertion Loss(dB)	≤3.2	≤5.4	≤6.5
VSWR	≤1.25:1		
Power Capacity(W)	200		
Impedance(ohm)	50		
RF Connector	N-female or DIN(7/16)-female		
Application	Indoor		
Operating Temperature(deg)	-35~+60		
Color	Black-plated or Silvery-white Plated		
Material	Aluminum		
Relative Humidity	5%-95%		



## Micro-Strip Power Splitter

Insertion Loss(dB)	≤3.4max	≤5.5max	≤6.5max
Isolation(dB)	≥20		
	≥16		
Power Rating(W)	50		
Impedance(ohm)	50		
VSWR	≤1.30:1		
RF Connector	N-type or SMA-type		
Dimensions (mm)	210.1×60.4×20	235.4×60.4×18	235.4×60.4×18
Including Connectors			
Weight(kg)	0.175	0.21	0.23
Color	Black-plated		
Relative Humidity	5%-95%		
Temperature(deg)	-35~+60		
Application	Indoor or Outdoor		



## CATV, D-TV Power Splitter (75 ohm)

Specification		2 WAY		3 WAY		4 WAY		6 WAY		8 WAY	
		TYP	QA	TYP	QA	TYP	QA	TYP	QA	TYP	QA
Insertion loss	Frequency Range										
	5-40MHz	4.5	5.5	8.0	8.5	9.0	10.0	11.0	12.0	12.5	13.5
	40-862MHz	4.5	5.5	8.0	8.5	9.0	10.0	11.0	12.0	12.5	13.5
	862-1750MHz	5.5	6.0	10.0	10.5	11.5	12.0	14.5	16.0	16.0	17.5
	1750-2050MHz	5.5	6.0	10.0	10.5	11.5	12.0	15.0	16.0	16.0	17.5
	2050-2450MHz	5.5	6.5	11.0	11.5	12.0	12.5	16.5	17.5	17.5	18.5
Isolation	5-40MHz	20	16	22	18	25	20	25	20	25	20
	40-862MHz	35	29	35	29	35	29	35	29	35	29
	862-1750MHz	23	20	23	20	23	20	23	20	23	20
	1750-2050MHz	23	20	23	20	23	20	23	20	23	20
	2050-2450MHz	23	20	23	20	23	20	23	20	23	20
Return loss input	5-40MHz	12	10	12	10	12	10	12	10	10	8
	40-862MHz	12	10	12	10	12	10	12	10	10	8
	862-1750MHz	12	10	12	10	12	10	12	10	12	10
	1750-2050MHz	12	10	12	10	12	10	12	10	12	10
	2050-2450MHz	12	10	12	10	12	10	12	10	12	10

## VHF 160 & UHF 460 Repeater Duplexer

- Application: Mobile Radio
- Narrow Bandwidth
- Impedance: 50 Ohms
- Power: 50 Watt
- High Stability & Rugged
- Custom Design



Freq. Rang	157.7-162.3MHz	457.5-462.5MHz
Bandwidth	≤ 200KHz	≤ 200KHz
Freq. Spacing	4.6MHz	5.0MHz
Insertion Loss	≤ 1.2dB	≤ 1.2dB
Isolation	≥ 80 dB	≥ 80 dB
Suppression	≥ 80 dB	≥ 80 dB
Return Loss	≥ 16dB	≥ 16dB
VSWR	≤ 1.3:1	≤ 1.3:1

## High Power Coaxial Circulator

- Application: Military, Space and Commercial Devices
- Impedance: 50 Ohms
- Custom Design



Freq Range	2500-2700MHz	590-710MHz
Insertion Loss	< 0.3dB	< 0.4dB
Isolation	> 23dB	> 20dB
VSWR	1.2:1	1.25:1
Power	200 Watt	500 Watt
Connector	N-F	N-F

# Drop-in & SMD CIRCULATOR

Application: Military, Space, Commercial  
 Custom Design support  
 RoHS Compliant



Model Number	Freq. Range (MHz)	Insertion Loss Max(dB)	Isolation Min(dB)	VSWR Max	Power(W) FWD/REV
TSSM100-410T420	410 ~ 420	0.5	20	1.25	100/100
TSSM100-600T640	600 ~ 640	0.4	20	1.25	100/100
TSSM100-700T750	700 ~ 750	0.3	23	1.2	100/100
TSSM100-830T915	830 ~ 915	0.35	23	1.2	100/100
TSSM100-925T960	925 ~ 960	0.3	23	1.2	100/100
TSSM100-1200T1300	1200 ~ 1300	0.35	21	1.2	100/100
TSSM100-1400T1600	1400 ~ 1600	0.35	21	1.25	100/100
TSSM100-1500T1700	1500 ~ 1700	0.35	21	1.25	100/100
TSSM100-1700T1900	1700 ~ 1900	0.35	21	1.25	100/100
TSSM100-1805T1990	1805 ~ 1990	0.35	21	1.2	100/100
TSSM100-1900T2200	1900 ~ 2200	0.35	21	1.25	100/100
TSSM100-2300T2500	2300 ~ 2500	0.3	23	1.2	100/100
TSSM100-2400T2600	2400 ~ 2600	0.3	23	1.2	100/100
TSSM100-2500T2700	2500 ~ 2700	0.3	23	1.2	100/100
TSSM100-2700T3100	2700 ~ 3100	0.4	20	1.25	100/100
TSSM100-3150T3250	3150 ~ 3250	0.3	23	1.2	100/100

# Drop-in & SMD CIRCULATOR

Application: Military, Space, Commercial  
 Custom Design support  
 RoHS Compliant



Model Number	Freq. Range (MHz)	Insertion Loss Max(dB)	Isolation Min(dB)	VSWR Max	Power(W) FWD/REV
TSDI30-824T849	824 ~ 849	0.4	20	1.25	100/30
TSDI30-925T960	925 ~ 960	0.4	20	1.25	100/30
TSDI30-1070T1210	1070 ~ 1210	0.5	18	1.3	100/30
TSDI30-1200T1400	1200 ~ 1400	0.5	20	1.25	100/30
TSDI30-1250T1450	1250 ~ 1450	0.5	20	1.25	100/30
TSDI30-1450T1550	1450 ~ 1550	0.3	23	1.2	100/30
TSDI30-1500T1700	1500 ~ 1700	0.5	20	1.25	100/30
TSDI30-1805T1880	1710 ~ 1785	0.3	23	1.2	100/30
TSDI30-1805T1880	1805 ~ 1880	0.3	23	1.2	100/30
TSDI30-1920T1990	1920 ~ 1990	0.3	23	1.2	100/30
TSDI30-2110T2170	2110 ~ 2170	0.3	23	1.2	100/30
TSDI30-2400T2600	2400 ~ 2600	0.35	21	1.2	100/30
TSDI30-3150T3250	3150 ~ 3250	0.3	23	1.2	100/30
TSDI30-3400T3600	3400 ~ 3600	0.3	23	1.2	100/30
TSDI30-3600T3800	3600 ~ 3800	0.3	23	1.2	100/30
TSDI100-824T849	824 ~ 849	0.4	20	1.25	100/100
TSDI100-869T894	869 ~ 894	0.4	20	1.25	100/100
TSDI100-925T960	925 ~ 960	0.4	20	1.25	100/100
TSDI100-1070T1210	1070 ~ 1210	0.5	18	1.3	100/100
TSDI100-1200T1400	1200 ~ 1400	0.5	18	1.3	100/100
TSDI100-1450T1550	1450 ~ 1550	0.3	23	1.2	100/100
TSDI100-1500T1700	1500 ~ 1700	0.5	20	1.25	100/100
TSDI100-1805T1880	1710 ~ 1785	0.3	23	1.2	100/100
TSDI100-1805T1880	1805 ~ 1880	0.3	23	1.2	100/100
TSDI100-1920T1990	1920 ~ 1990	0.3	23	1.2	100/100
TSDI100-2110T2170	2110 ~ 2170	0.3	23	1.2	100/100
TSDI100-2400T2600	2400 ~ 2600	0.35	21	1.2	100/100
TSDI100-3150T3250	3150 ~ 3250	0.3	23	1.2	100/100
TSDI100-3400T3600	3400 ~ 3600	0.3	23	1.2	100/100
TSDI100-3600T3800	3600 ~ 3800	0.3	23	1.2	100/100

## RF Power Amplifier

Application: CW, AM, FM modulated signals,  
EMC test facilities, PIM test etc

High Output Power & Good Gain

Highly rugged and reliable design

Thermal Overload Protection & Over Current Protection

Custom Design, Frequency Range: 0.1 MHz to 6 GHz



Frequency Range	700 MHz to 6GHz
Gain	46 dB @ 0dBm
Gain Flatness	+/- 2.0 dB
Output Power	50W CW; 100W Peak
AC supply voltage	100-250 (single phase) Vac
AC Input Power	400W max.
RF Connector (in/out)	N(f) / N(f)
Noise Figure	14 dB
Operating Temperature	0 to +45°C
Dimension (approx.)	132*460*430 mm
Weight (approx.)	23 KG

Frequency Range	100 kHz to 200 MHz
Gain	44 dB @ 0dBm
Gain Flatness	+/- 2.0 dB max.
Output Power	30W CW
AC supply voltage	100-250 (single phase) Vac
AC Input Power	170W max.
RF Connector (in/out)	N(f) / N(f)
Noise Figure	9 dB (10MHz-200MHz)
Operating Temperature	0 to +50°C
Dimension (approx.)	132*460*430 mm
Weight (approx.)	21 KG

Frequency Range	6 GHz to 12 GHz
Gain	43 dB @ 0dBm
Gain Flatness	+/- 2.0 dB
Output Power	20W CW; 35W Peak
AC supply voltage	100-250 (single phase) Vac
AC Input Power	200W max.
RF Connector (in/out)	N(f) / N(f)
Noise Figure	9 dB
Operating Temperature	0 to +50°C
Dimension (approx.)	132*460*430 mm
Weight (approx.)	21 KG

Frequency Range	400-450 MHz
Gain	20 dB
Output Power	10W (40dBm)
Working Voltage	27VDC
RF in / out Ports	SMA-Female
Monitoring function	1-16dB
Size (approx.)	136*112*26mm

## RF Power Amplifier

Frequency Range	960-1216 MHz
Gain	7 dB
Output Power	>700W
Power supply	50Volts
Connector (RF in / out)	SMA Female
Monitoring signal bit rate	RF OUT-20db to RF OUT-60db
Size (approx.)	180*104*36mm

## Low Noise Amplifier With BUILT-IN Isolator

Frequency Range	5.8-6.5 GHz	6.4-7.2 GHz	10.25-10.70 GHz
Gain	>21-23 dB		
Output power	>10 dBm		
Size (approx.)	100 x 30 x 20 mm		

## Step Attenuator

Freq Range	960-1215 MHz
Attenuation Step	1 、 2 、 4 、 8 、 16 、 20 、 20 、 30 dB
VSWR	≤1.4
Power Rating	5W
Connector	N-female

## RF Coaxial Attenuator

2W, 5W, 10W, 25W, 50W, 100W, 200W, 300W, STEP attenuator, etc.

Freq Range	Attenuation Value &							VSRW
	3~6	10	20	30	40	50	60	
DC-3GHz	±0.5	±0.8	±1.0	±1.0	±2.0	±2.5	±3.0	≤1.20
DC-5GHz	1~9	10	20	30	40			≤1.25
	±0.6	±0.6	±0.6	±1.0	±1.2			
DC-8GHz	±0.7	±0.7	±0.7	±1.0	±1.2			≤1.25
DC-12.4GHz	±1.0	±0.7	±1.0	±1.2	±1.5			≤1.35
DC-18GHz	±1.2	±1.0	±1.2	±1.5	±1.8			≤1.40
Impedance	50 Ohm							
Connector	N or SMA or DIN -male or female							
Average Power (option)	1-5W, 10W, 30W, 50W, 100W, 200W or more higher							
Temperature (°C)	-40 ~ +80 or -55 ~ +125							
IP Grade (option)	IP60 or IP65							
Color (option)	Black or Silver							



## Coaxial DC-3G (2G) Dummy Loads/Termination Loads



Frequency	DC-3GHz						
VSWR	≤ 1.20:1						
Power	5w(2w)	10w	30w	50w	100w	200w	300w
Impedance	50 ohm						
Connector	N-type or DIN-type						
Temperature	-40~+125						
Humidity	5%-95%						

## DC Blocks



Frequency	DC-3GHz
VSWR	≤ 1.20:1
Power	200W
Impedance	50 ohm
Connector	N-type
Temperature	-55~+125C
Intermodulation	-120dbC

## Surge Protectors



Frequency	DC-3GHz
VSWR	≤ 1.15:1
Insertion loss	≤ 0.2dB
Connector	N-F/N-F
Power	200W PEP
Discharge Voltage	DC230V±15%
Puls Voltage(1x40) us	1000V
Puls Current(1x40) us	6KA
Resistance at 100V	>10,000MΩ

No.	Frequency (MHz)	Bandwidth (MHz)	Gain (dBi)	Max. Power Input Watts	Diameter of Chassis	Connector	Length
1	400~470	10~15	5.5	100	27mm	SL16-J	93CM
2	144 & 430	6~12	2.15 & 3	100	18mm	SL16-J	43CM
3	144 & 430	5~12	2.15 & 5.5	70	20mm	SL16-J	98CM
4	144 & 430	5~12	2.15 & 5.5	70	20mm	SL16-J	99CM
5	144 & 430	5~12	2.15 & 5.2	70	21.7mm	SL16-J	74CM
6	144 & 430	6~12	2.15 & 3	100	18mm	SL16-J	39CM
7	144 & 430	5~12	2.15 & 5.2	100	21.7mm	SL16-J	65CM
8	27	3	2	150	26mm	SL16-J	71CM
9	29	3	2	150	26mm	SL16-J	105CM
<b>VSWR</b>	≥ 1.5			<b>Radiation</b>		Omni	
<b>Impedance</b>	50ohm			<b>Lighting Protection</b>		Direct Ground	
<b>Polarization</b>	Vertical			<b>Radiating Element Material</b>		Stainless Steel	

Frequency Range (Dual Band)	136~174 / 400~470 MHz	136~174 / 400~470 MHz
Bandwidth	2 / 5 MHz	3/7 MHz
Impedance	50 ohm	50 ohm
VSWR	≤ 1.5	≤ 1.5
Gain	1.5 dBi	2.15 dBi
Input Power	10 Watt	10 Watt
Length	7 cm	18.2 cm
Connector	BNC/SMA-Male/SMA-Female/Motorola Connector	
Diameter of Chassis	14.6 mm	14.3 mm
Radiating Element Material	Copper (CU)	Copper (CU)
Net Weight	21.6 g	14.6 g





**Applications: AM and FM IFTs, Amateur Radio, QRP Circuits, Toys, Audio System, and etc**

**Alternatives of TOKO , Smida, and other custom Coils**

## **5mm TYPE 5P, 5PG, 5PA, 5PAG**

**Frequency Range:** 5P, 5PG 0.2~2.0MHz, 5PA, 5PAG 0.1-1MHz

5P, 5PG High Frequency 1-15MHz

**Inductance Range:** 5P, 5PG 30-680uH

5P, 5PG High Frequency 1-40UH

5PA, 5PAG 100uH-4.5mH

TYPE: 5PNR, 332PN, 451AN



## **7mm TYPE 7P High Frequency**

**Frequency Range:** 2-20MHz

**Inductance Range:** 1-82uH

**Internal Capacitance Values:** 5-100pF

TYPE: A119ANS, 119AC, 119FC, 119LC

## **7mm TYPE 7KL**

**Frequency Range:** 1-120MHz

**Inductance Range:** 0.03-50uH

**Internal Capacitance Values:** 5~100pF

## **7mm TYPE 7PA**

**Frequency Range:** 10-200kHz

**Inductance Range:** 1-25mH

**Internal Capacitance Values:** 10~6800pF

TYPE: 126ANS

## **7mm TYPE 7KM**

**Frequency Range:** 2-120MHz

**Inductance Range:** 0.03-82uH

**Internal Capacitance Values:** 5~100pF

## **7mm TYPE 7PLA**

**Frequency Range:** 10-200kHz

**Inductance Range:** 1-15mH

**Internal Capacitance Values:** 10-6800pF

TYPE: 284XNS

## **10mm TYPE 10PA**

**Frequency Range:** 10-200kHz

**Inductance Range:** 1-56mH

TYPE: CLNS

## **10mm TYPE 10K**

**Frequency Range:** 2-120MHz

**Inductance Range:** 0.08-82uH

**Internal Capacitance Values:** 5-100pF

## **10mm TYPE 10EZ**

**Frequency Range:** 0.2-2MHz (10EZ)

2-15MHz (10EZ High Freq.)

**Inductance Range:** 1uH-2mH (10EZ)

2-55uH (10EZ High Freq.)

**Internal Capacitance Values:** 150-390pF (10EZ),

5-100pF (10EZ High Freq.)

## **12mm TYPE 12VX**

### **Bias Oscillator Coils**

**Frequency Range:** 10-200kHz

**Inductance Range:** 560uH-18mH

## **Ferrite Core**



Remark: The Specification of the Replacement is subject to final confirmation which might be slight tolerance to the selection guide.

**Applications: Maritime communication device, Satellite phone, Airborne Transceiver & Telecommunication equipment, and etc**  
**Alternatives of TOKO , Sumida, and other custom Coils**

## TYPE FSDV

For Reflow Soldering

**Frequency Range:** 0.2~15MHz

**Inductance Range:** 1uH~7mH

**Q Approx:** 60 (at 455kHz and 10.7MHz)

TYPE: 836AN, 836BN

## TYPE 5CCB

For Reflow Soldering

**Frequency Range:** 10~150MHz

**Inductance Range:** 0.03~10uH

**Q Approx:** 50 (at 100MHz)

## TYPE 5CCE

For Reflow Soldering

**Frequency Range:** 10~150MHz

**Inductance Range:** 0.05~2.7uH

**Q Approx:** 70 (at 100MHz)

## TYPE 5CCD

For Reflow Soldering

**Frequency Range:** 0.1MHz-2MHz

0.1MHz-15MHz (High Freq)

**Inductance Range:** 1uH-1400uH

**Unloaded Q :** 30/65 (ref)

**Inductance Variable Range :** Lo±3 to 5% (ref)

TYPE: 614BN



# Molded Coils (DIP & SMD)

## TYPE MC120

**Frequency Range:** 30~150MHz

**Inductance Range:** 0.03~0.53uH

## TYPE MC137

**Frequency Range:** 30~150MHz

**Inductance Range:** 0.02~0.4uH

## TYPE MC141

**Frequency Range:** 30~150MHz

**Inductance Range:** 0.03~0.35uH

## TYPE MC152

**Frequency Range:** 30~150MHz

**Inductance Range:** 29~142nH (without case)

27~94nH (with case)

Remark: The Specification of the Replacement is subject to final confirmation which might be slight tolerance to the selection guide.