

DIY™ Module Series: Synopsis Technologies Integration solution

Features

Pick your choice from our circuit's library cells to make your design. We check it, build it and verify its specifications. As a result: a multi integrated functions module tailored to your needs at very low added cost.

Synopsis Technologies has developed a low cost versatile set of solutions in order to obtain many microwaves (up to 20GHz) solutions in a few weeks.

It is based on standard multilayer PCBs receiving the bias circuit and some simple control circuits (often to offset the control signal from a TTL input level to a 0/-5V control signal). A USB interface module is also available to help you control the digitally controlled cells through this interface.

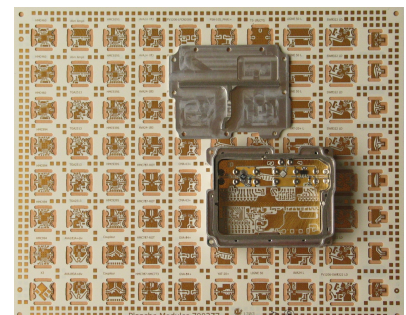
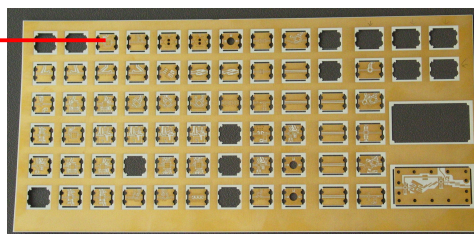
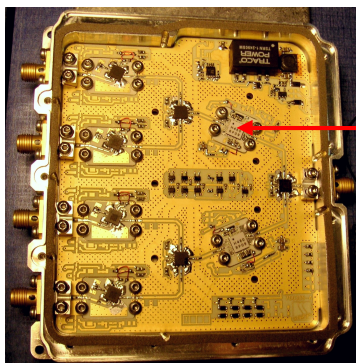
Benefits

The elementary functions are based on the latest generation SMT ICs assembled by a standard assembling process on elementary PCB.

The bias circuitry manages a bias protection of some ICs like medium power amplifiers which need a negative voltage. If the negative power supply is too low, the positive bias is switched off in a few μ s.

When complex functions are assembled, they are separated by cavities machined within the cover.

Synopsis Technologies has developed an original pattern and assembling solutions to ensure a good matching along the chain up to 20GHz. This cost effective technology is usable up to 26GHz allowing for yield margin for systems up to 20GHz.



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V 2020-12

Library of Cells

The following operating function cells are already available:

- Wide operating frequency band
- medium power (up to 28dBm) amplifier
- Wide band low cost amplifiers
- Wide band low noise amplifiers
- Wide band low cost for IF frequencies up to 4GHz medium power
- Wide band low cost for IF frequencies up to 4GHz low noise
- Wide band low cost mixers up to 4 to 20GHz
- Wide band low cost High IP3 mixers up to one octave
- Wide band High level high IP3 mixers
- Wide band switches Etched low pass filters from 10GHz
- Etched band pass filters from 11GHz
- SMT filters low pass and band pass up to 8GHz
- SMT Multipliers up to 20GHz
- Etched Couplers from 6GHz
- Digital attenuators up to 31dB and 20GHz.
- Equalizers
- Bias circuits from the RF output or RF input
- 50 ohm lines

Available circuit cells

Reference	Pin Arrangement	Function name	Fmin (GHz)	Fmax(GHz)	Direct Gain (dB)	Coupling (dB)	Isolation (dB)	NF (dB)	P1dB (dBm)	OIP3 (dBm)	Range	VSWRin	VSWRout	
CF15R5-L1		Coupler	7	14	-1,5	17	10	NA	NA			1,8	1,8	
CF15R5-L2		Coupler	7	14	-1,5	17	10	NA	NA			1,8	1,8	
CF15R5-L3		Coupler	7	14	-1,5	17	10	NA	NA			1,8	1,8	
AMP-XX		More than 10 SOT89 Amplifiers on stock	0,1	8	up to 20	NA	20	from 1.5	up to 21	up to 44		2	2	Please consult factory for more information
LNA-1		Low Noise Amplifier	5	10	18,5	NA	25	2	16	28		2	2	
LNA-2		Low Noise Amplifier	6	17	17	NA	25	2,3	12,5	25		2	2	
LNA-3		Low Noise Amplifier	0,1	20	11	NA	25	4	14	28		2	2	
LNA-4		Low Noise Amplifier	2	18	15	NA	25	4	13	24		2,3	2	
LNA-5		Low Noise Amplifier	5	18	11	NA	25	6,5	17	25		2	2	
MPA-1		Medium power Amplifier	0,1	20	12	NA	25	5	24	35		2	2	
PA-1		Power Amplifier	0,1	18	10	NA	20	5	28	40		2	2	

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V 2020-12

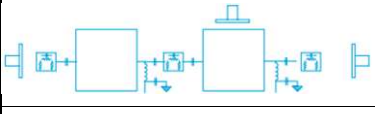
PSA-1		Splitter Amplification	7	14	6	NA	25	6,5	11	19		2	2	
SA-1		Step Attenuator	0,1	18	-7	NA	-7	7	25	43	5 bit 31dB	2	2	
SPDT-1		SPDT non reflective	0,1	18	-3	NA	30	3	23	45		2	2	
SPDT-2		SPDT non reflective	0,1	18	-3	NA	30	3	23	45		2	2	
SPDT-3		SPDT	0,1	18	-2	NA	35	2	30	48		2	2	
SPDT-4		SPDT	0,1	18	-2	NA	35	2	30	48		2	2	
SPST-1		SPST	0,1	18	-2	NA	35	2	30	48		2	2	
X2-1		Multiplier X2	1,2	4,4	-15	NA	NA	NA	NA	NA				
X2-2		Multiplier X2	2,6	7,2	-15	NA	NA	NA	NA	NA				
X2-3		Multiplier X2	5	10	-15	NA	NA	NA	NA	NA				
X2-4		Multiplier X2	10	20	-15	NA	NA	NA	NA	NA				
X2-5		Multiplier X3	3	4,5	-15	NA	NA	NA	NA	NA				
MIX-1		Mixer	6	12	-9	NA	25	10	19	30		2,3	2	
MIX-2		Mixer	6	18	-11	NA	30	11	10	18		2,3	2,3	
MIX-3		Mixer with optional matching pad	6	18	TBD	NA	TBD	TBD	TBD	TBD		2	2	
MIX-4		Mixer	6	18	-11	NA	30	11	10	18		2,3	2,3	
MIX-5		Mixer	3	10	-10	NA	30	10	15	23		3	3	
MIX-6		Mixer with optional matching pad	3	10	TBD	NA	TBD	TBD	TBD	TBD		2	2	
MIX-7		Mixer	3	10	-10	NA	30	10	15	23		3	3	
MIX-8		Mixer	1	18	-9	NA	20	9	15	25		2,7	2	

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V 2020-12

LPF-L1-XX		more than 45 SMT LPF	cutoff 0.1	cutoff 12	0 to -3	NA	20 at cutoff*1.2	NA	NA	NA		1,8	1,8	Please consult factory for more information
LPF-L2-XX		more than 35 SMT LPF	cutoff 0.1	cutoff 7.2	0 to -3	NA	20 at cutoff*1.2	NA	NA	NA		1,8	1,8	Please consult factory for more information
LPF-L3-XX		etched LPF with optional fixed ATT/equalizer	0	13	-1,5	NA	20	NA	NA			2	2	Please consult factory for more information
BPF-L1-XX		more than 25 SMT BPF	1,4	8,6	-2	NA	>25	NA	NA	NA	5 to 10%	2	2	Please consult factory for more information
BPF-L2-XX		more than 20 SMT BPF with optional fixed ATT/equalizer	1,4	4,4	-2	NA	>25	NA	NA	NA	5 to 10%	2	2	Please consult factory for more information
BPF-L3		etched BPF	13	13,5	-2	NA	>40	NA	NA	NA	5 to 10%	2	2	
TL-1		50 Ohm line	0	20	-0,5	NA	NA	NA	NA			1,5	1,5	
PAD-1		fixed Attenuator	DC	18	0 to 30	NA	NA	NA	NA			1,7	1,9	
EQ-1		Equalizer	DC	18	-7 to 2	NA	NA	NA	NA			2	2	
BC-1		Bias circuit	0,1	18	-1,5	NA	NA	NA	NA			2	2	
functions integrated on the housing PCB														
PAD-I		fixed Attenuator	DC	15	0 to 20	NA	NA	NA	NA			1,7	1,9	
EQ-I		Equalizer	DC	18	-7 to 2	NA	NA	NA	NA			2	2	
BC-I		Bias circuit on RF line	0,1	18	-1,5	NA	NA	NA	NA			2	2	
CAP-I		DC block	0,1	18	-0,5	NA	NA	NA	NA			1,8	1,8	
CPGP-1		Complex Gate biasing with protection	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
function integrated on an external fitting package														
USB-1		USB control												

Available housing

Reference		
2CP		Two circuit cells inserted in a housing PCB on which are included optional attenuators/equalizers and optional bias circuits with DC block capacitors. A third in/out port is also available.
4CP		Four circuit cells inserted in a housing PCB on which are included an optional attenuator/equalizer and optional DC block capacitors. A third in/out is available.

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