www.macomtechasia.com

M/A-COM Tech Asia

Microwave / mm-wave
ITAR Free GaAs MMICs

For Military & Commercial Applications

September 2012
Product Selection Guide

What we do

M/A-COM Tech Asia designs and develops monolithic microwave integrated circuits (MMICs) and modules for microwave and millimeter wave applications. Our commercial off the shelf (COTS) product portfolio is **ITAR Free** and includes highly integrated multifunction ICs, high power amplifiers (HPAs), low noise amplifiers (LNAs), attenuators and phase shifters.

In addition to our COTs product portfolio we also offer a custom MMIC design service making use of our extensive IP portfolio to minimise both risk and time to market. We extend this custom design service to microwave and mm-wave modules where we can utilise our systems expertise and MMIC portfolio to develop customised application specific modules representing the next level in technical performance and integration.

For customers engaged in their own MMIC design activity we can also take on the qualification and production supply of these products leveraging our manufacturing and supply chain expertise. This service greatly simplifies your internal production MMIC procurement activity providing your procurement department with in essence a “one stop shop”

Our Facilities and Capabilities

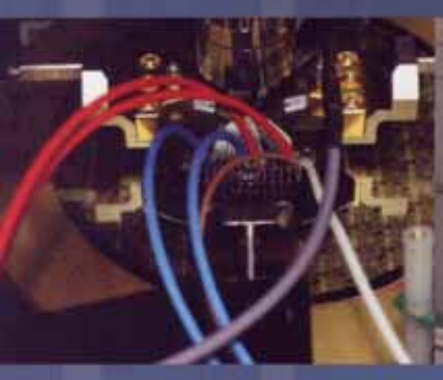
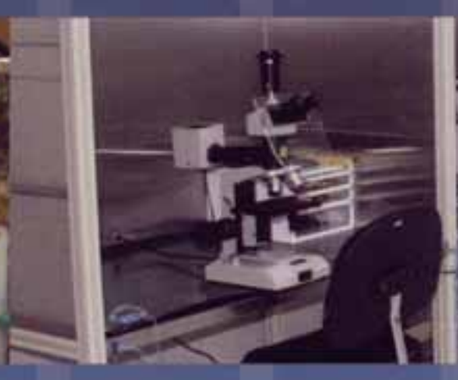
We operate ISO 9001-registered design centres in Belfast, Northern Ireland and Cork, Ireland. Within these state-of-the-art facilities are comprehensive assembly, test and reliability capabilities enabling us to design, develop, qualify and bring to market our chosen portfolio of industry-leading devices.

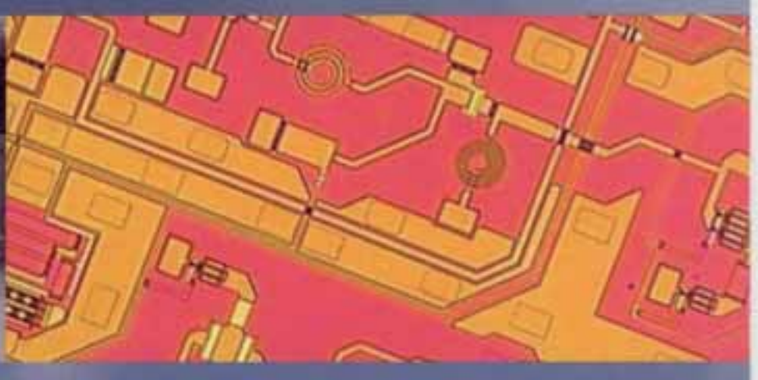
Our production facility is located in Hsinchu, Taiwan. The close proximity of our production facility to our wafer fabrication and assembly providers reduces production cycle time and ensures expedited product delivery to our customer base.

The production facility in Taiwan includes a clean room for die picking and visual inspection along with 11,500 square feet of production floor space dedicated to assembly and test. Our continued investment in the latest on-wafer, package and module level test equipment ensures short cycle times and best in class levels of product quality.

Quality Assurance

At M/A-COM Tech Asia quality is integrated into all our business processes. We are proud to operate a ISO 9001-registered quality management system. All our employees are empowered to continually identify and implement improvements that enhance product quality and customer satisfaction. We extend this same philosophy to our subcontractors and suppliers who are in turn ISO 9001-registered.



Our Unique Service & Product Offering

M/A-COM Tech Asia offers a complete ITAR free supply chain based on state of the art 6” GaAs technology. Our COTs product portfolio represents best in class performance optimised towards the needs of the markets we serve. Our extensive IP portfolio allows us to offer custom design services at both the component (MMIC) and module level.

Our goal is to make it easy for you to use our products to build better systems. To achieve that goal our applications support team are there to help you throughout your product life-cycle.

We believe our applications support is a key differentiator and we have put in place local teams to help with the integration of our products into your sub-systems. We realise that your requirements vary and we are proud to offer a flexible bespoke service to ensure you get the ideal solution for your system requirement.

As a member of the M/A-COM Tech family of companies, we are in a unique position to provide complete block diagram solutions that are unmatched by our competitors. We do this by combining our ITAR Free M/A-COM Tech Asia products with EAR99 products from other members of the M/A-COM Tech family of companies.

M/A-COMs long heritage in the RF & microwave market coupled with its financial size and stability makes us the ideal long term partner for your MMIC requirements. You can therefore be sure that if you select a M/A-COM Tech Asia product you are specifying a part that will meet both todays and tomorrows technical and cost requirements.

Power Amplifiers

S-Band

Part Number	Description	Status	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Output Psat (dBm)	Bias	Package
XP5002-BD	14W PA	■	2.7 -3.8	32	+/- 1.5	41.5	4.5A @ 8V	Die
XP5002-LC	14W Surface Mount PA	■	2.7 -3.8	32	+/- 1.5	41.5	4.5A @ 8V	9x9 Air Cavity QFN
XP5003-BD	20W PA	■	2.7 - 3.5	15	+/- 0.5	43	9A @ 7V	Die

X-Band

Part Number	Description	Status	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Output Psat (dBm)	Bias	Package
XP1014-BD	1.2W PA	■	8.5 - 11	18	+/- 1	31	0.45A @ 8V	Die
XP1014-SM	1W Surface Mount PA	■	8.5 - 11	15	+/- 1	30	0.45A @ 8V	6x6 Air Cavity QFN
XP5028-BD	Hi-Efficiency 5W PA	■	8.5 - 11	25	+/- 1	37	1.5A @ 8V	Die
XP5028-LB	Hi-Efficiency Surface Mount 5W PA	■	8.5 - 11	25	+/- 1	37	1.5A @ 8V	7x7 Air Cavity QFN
XP1006-BD	10W PA	■	8.5 - 11	21	+/- 0.5	40	4.5A @ 8V	Die
XP1006-FA	10W Flange Mounted Packaged PA	■	8.5 - 11	21	+/- 0.5	40	4.5A @ 8V	Ceramic, Flange Mount
XP1006-QP	3W Surface Mount PA	■	8.5 - 11.7	21	-	35	2A @ 6V	8x9 Air Cavity QFN
XP5006-BD	Hi-Efficiency Compact 10W PA	■	8 - 11.75	24	+/- 1	40	3A @ 8V	Die
XP5032-LB	7.5W Surface Mount PA	■	8.5 - 11	19	+/- 1	38.5	3A @ 8V	7x7 Air Cavity QFN
MAAP-XP5030-BD	Hi-Efficiency 12W PA	■	8.5 - 11	27	+/- 1	41	3.75A @ 8V	Die
MAAP-XP5035-BD	Hi-Efficiency Hi-Gain 12W PA	■	8.25 - 11.5	36	+/- 1	41	4A @ 8V	Die
MAAP-XP5036-BD	Hi-Efficiency 15W PA	■	8.5 - 10.5	18	+/- 1	42	5.25A @ 8V	Die

Ku-Band

Part Number	Description	Status	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Output Psat (dBm)	Bias	Package
XP5024-BD	8W PA	■	14.5 - 17.5	20	+/- 1	39	3.5A @ 8V	Die
XP5024-FA	8W Flange Mounted Packaged PA	■	14.5 - 17.3	20	+/- 1	39	3.5A @ 8V	Ceramic, Flange Mount
XP5033-BD	10W PA	■	13.5 - 16	17	+/- 1	40	3.7A @ 7.5V	Die

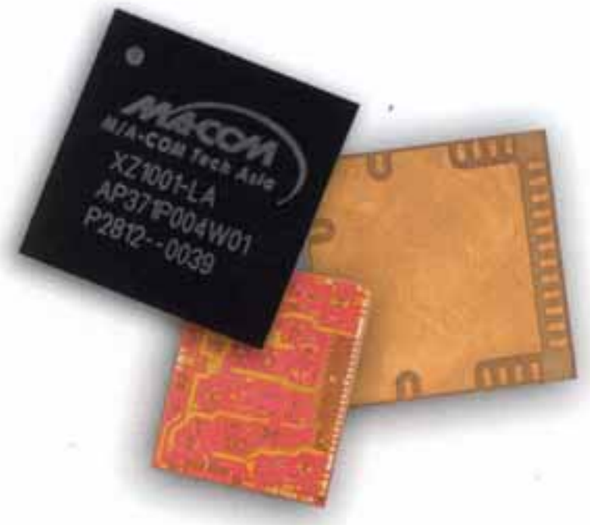
Ka-Band

Part Number	Description	Status	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Output Psat (dBm)	Bias	Package
MAAP-XP5016-BD	4W PA	■	32 - 38	18	+/- 1	36	4.5A @ 6V	Die
MAAP-XP5034-BD	2W PA	■	30 - 40	18	+/- 1	33	2.2A @ 6V	Die

■ Final: In full production ■ Preliminary (Pre-Production): Full device characterization completed and transitioning to production ■ Advanced: In development

Our Markets

- Military Radar (Air / Sea / Land)
- Ground Based Commercial Surveillance Radar (Airports / Harbours / Waterways)
- Marine Radar
- Satellite Communications
- Air Traffic Control
- Active Electronic Scanned Phased Array (AESA) radar
- Electronic Warfare
- Military Radio
- Coastguard Surveillance Radar (Air / Sea)
- Cellular Backhaul (Point-Point Radio).



Signal Conditioning / Control Components

Core Chips

Part Number	Description	Status	Frequency (GHz)	Rx/Tx Gain (dB)	Rx/Tx P1dB (dBm)	Rx NF (dB)	Attn Step/ Range (dB)	6-Bit Phase Step Size (deg)	Bias (mA @ V)	Package
XZ1001-BD	S-Band Core Chip	■	2.5 - 4	33 / 33	26 / 26	2.7	0.45 / 28.35	5.625	582 @ 5,7 / 35 @ -5,-10	Die
MAMU-XZ1001-LA	Surface Mount S-Band Core Chip	■	2.5 - 4	33 / 33	26 / 26	2.7	0.45 / 28.35	5.625	582 @ 5,7 / 35 @ -5,-10	10x10 Air Cavity QFN
XZ1002-BD	X-Band Core Chip	■	8.5 - 11	21 / 22	18 / 22	5.2	0.9 / 27.9	5.625	280 @ 4 / 35 @ -5	Die

Phase Shifters

Part Number	Description	Status	Frequency (GHz)	Insertion Loss (dB)	Step Size (deg)	RMS Phase Error (deg)	Input P1dB (dBm)	Bias (mA @ V)	Package
XS1001-BD	6-Bit S-Band Phase Shifter	■	2.5 - 4	6	5.625	2.5	26	9 @ -10	Die
XS1001-QK	6-Bit S-Band Surface Mount Phase Shifter	■	2.5 - 4	6	5.625	2.5	26	9 @ -10	7x7 Air Cavity QFN
XS5004-BD	4-Bit S-Band Phase Shifter Driver	■	2.7 - 3.5	19 (Gain)	22.5	3	-	700 @ 7	Die
XS1000-BD	6-Bit X-Band Phase Shifter	■	7 - 13	6.5	5.625	2.5	25	10 @ -7.5	Die
XS1000-QK	6-Bit X-Band Surface Mount Phase Shifter	■	7 - 13	8	5.625	3	25	10 @ -7.5	7x7 Air Cavity QFN

Attenuators

Part Number	Description	Status	Frequency (GHz)	Step Size (dB)	Attenuation Range (dB)	Insertion Loss (dB)	RMS Attn Error (dB)	Bias (mA @ V)	Package
XA1000-BD	5-Bit Digital Attenuator	■	DC - 18	0.9	27.9	3 - 7	0.5	9 @ -7.5	Die
XA1000-QH	5-Bit Digital Surface Mount Attenuator	■	DC - 18	0.9	27.9	4 - 8	0.5	9 @ -7.5	4x4 QFN

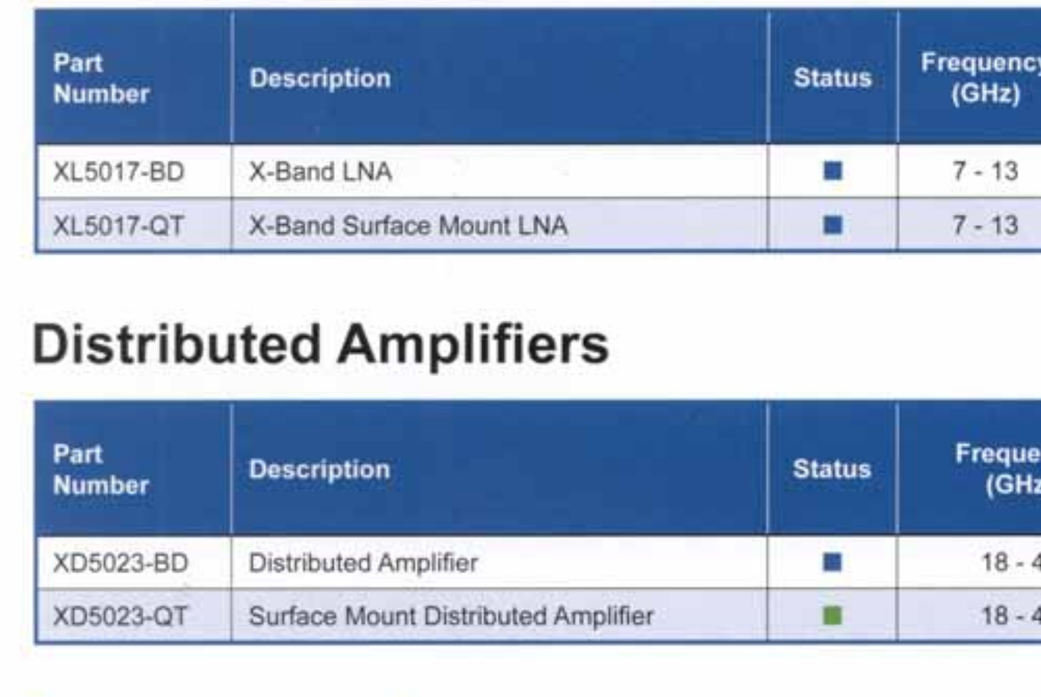
Low Noise Amplifiers

Part Number	Description	Status	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Noise Figure (dB)	Output P1dB (dBm)	Bias (mA @ V)	Package
XL5017-BD	X-Band LNA	■	7 - 13	20	+/- 0.5	1.4	10	60 @ 5	Die
XL5017-QT	X-Band Surface Mount LNA	■	7 - 13	19	+/- 0.5	1.7	10	65 @ 5	3x3 QFN

Distributed Amplifiers

Part Number	Description	Status	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Psat (dBm)	Bias (mA @ V)	Package
XD5023-BD	Distributed Amplifier	■	18 - 40	26	+/- 0.5	21	385 @ 4	Die
XD5023-QT	Surface Mount Distributed Amplifier	■	18 - 40	24	+/- 0.5	20	385 @ 4	3x3 QFN

■ Final: In full production ■ Preliminary (Pre-Production): Full device characterization completed and transitioning to production ■ Advanced: In development



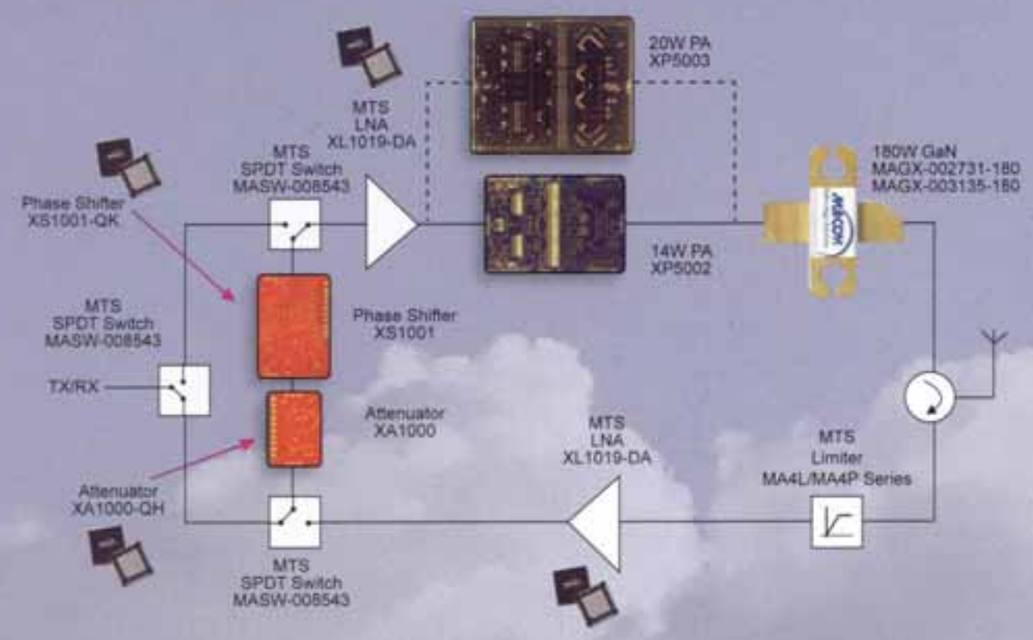
Core Chip Technology:

The Next Generation of Integration

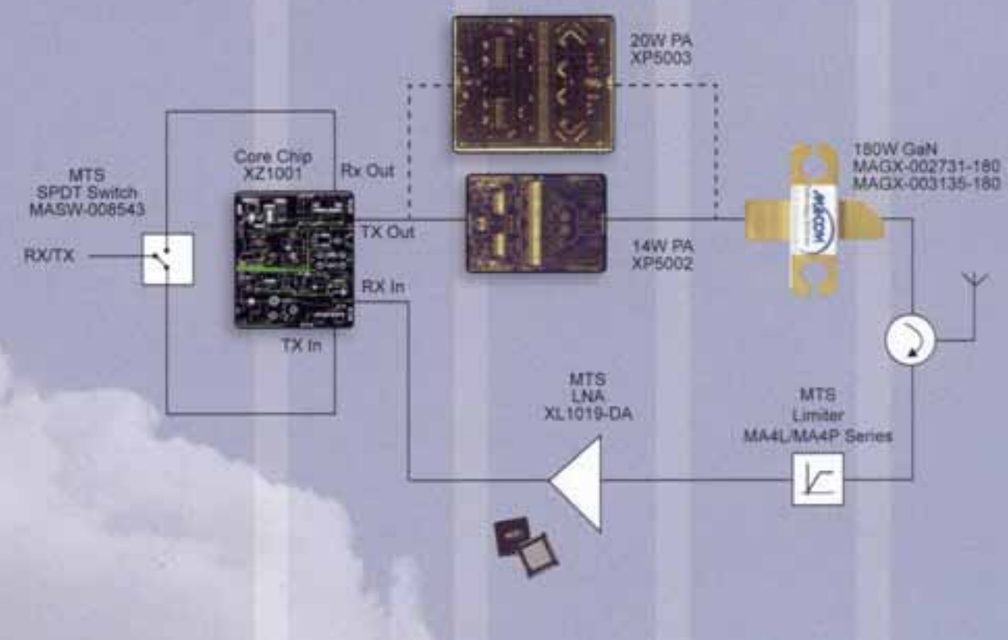
Our highly integrated, unique core chips provide a high degree of functionality and greatly simplify the design task for T/R modules. The core chip integrates a phase shifter, attenuator, transmit/receive switches, LNA, medium power amplifier, digital logic control and on-chip bias circuitry all onto a single GaAs MMIC. The major benefits of this approach include a simpler design, fewer components, smaller board space, lower cost, higher reliability and better control performance. The core chip is available at S-Band (XZ1001-BD) and X-Band (XZ1002-BD) and is ideally suited for phased array radar applications.

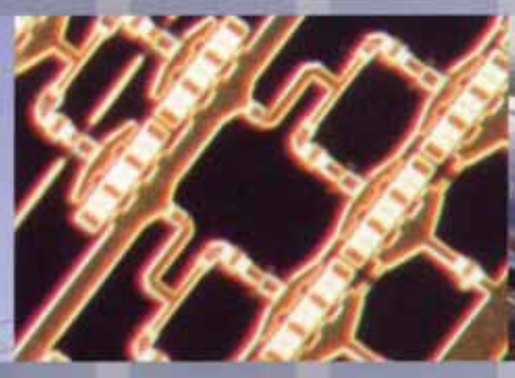
Chip set solutions for S-Band and X-Band T/R Modules

S-Band Chip Set – MMIC TRM

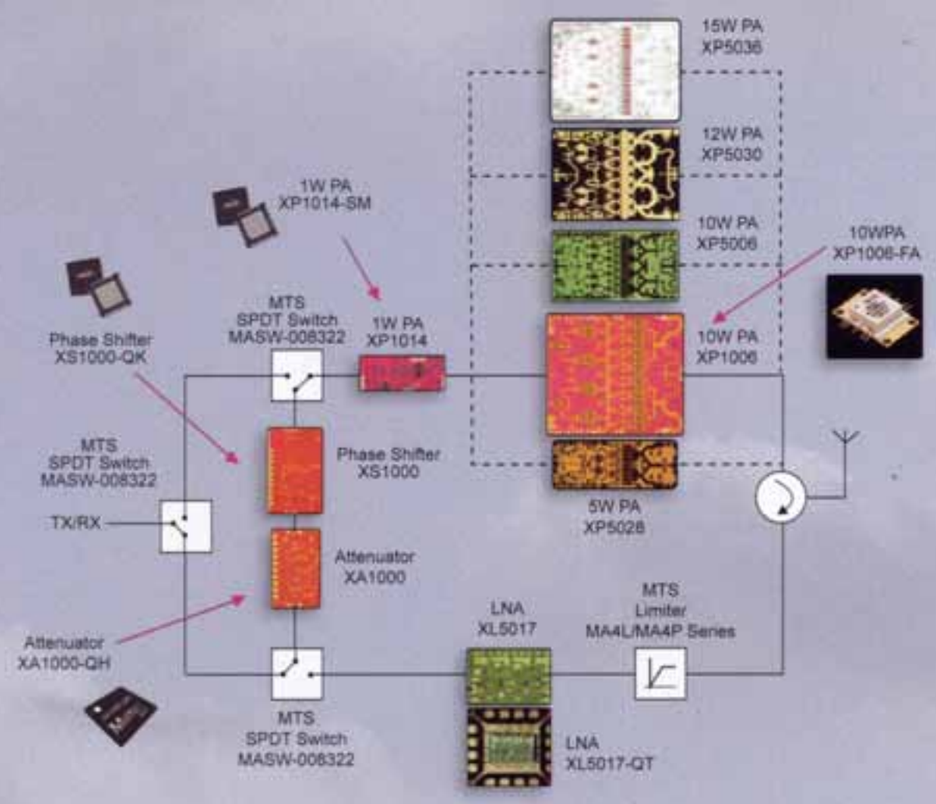


S-Band Chip Set – Core Chip TRM

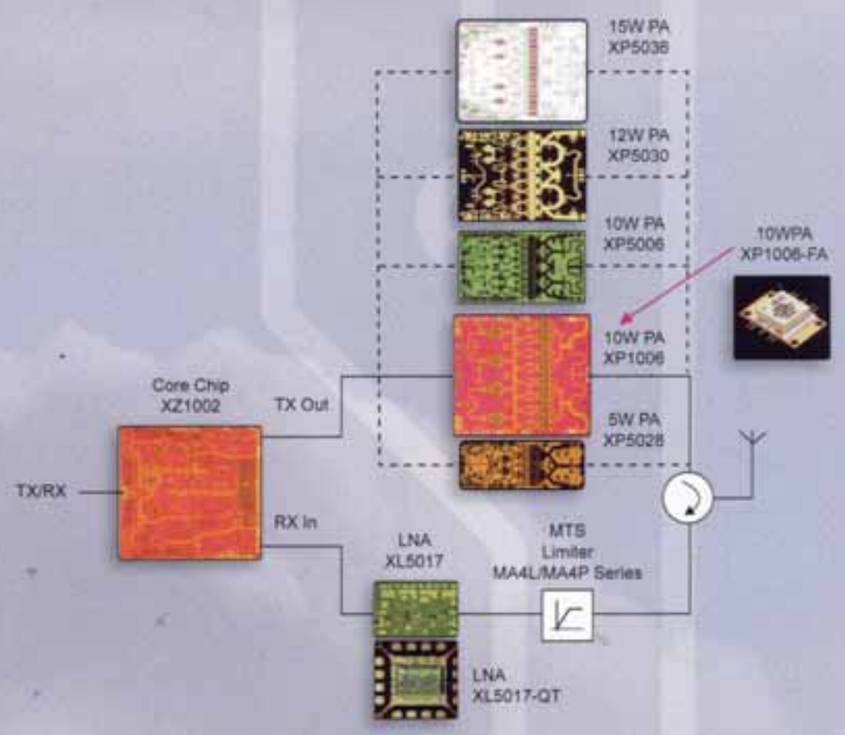




X-Band Chip Set – MMIC TRM



X-Band Chip Set – Core Chip TRM



Multiple output power options supported

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