

Features

- 71-76GHz and 81-86GHz High Power Amplifiers
- Tx Saturated powers up to >+30dBm
- Rx NF <4dB
- High linearity supports 1024QAM modulation
- Wide 5GHz bandwidth
- Configurable gain options
- Suitable for commercial or military applications
- Improved SWAP for airborne & HAPS applications

Description

Filtronic's range of Hades Active Diplexers enable original equipment manufacturers (OEM's) to reduce the cost of their E-band radios whilst significantly increasing RF performance.

Our Active Diplexers incorporate a configurable range of GaAs PAs & LNAs within an E-Band diplexer, maximising performance whilst reducing size and weight.

Active diplexers can be used in conjunction with a wide range of commercially available off the shelf (COTS) SMT compatible packaged GaAs or SiGe up and down converter solutions to boost performance beyond that achievable with surface mount products. This allows our customers to deploy configurable "standard power" and "high-power" E-Band links without changing the radio mechanics.

Active diplexers incorporate a Tx RF power detector to facilitate Tx power calibration and ALC. Where specified, the modules can be supplied fully calibrated with Tx detector vs. frequency/power and Rx gain information stored onto an integrated I2C EEPROM. An integrated temperature sensor provides users with accurate amplifier temperature data.

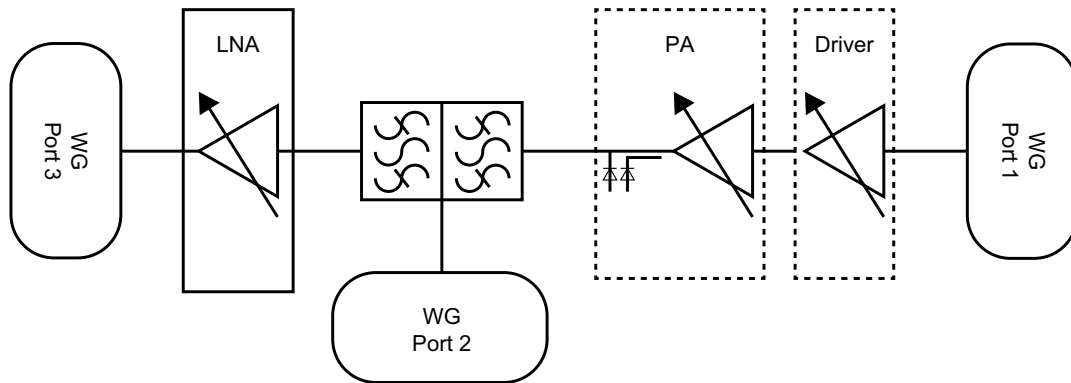
The WR12 port locations & directions can be configured upon request.

The configurable nature of Hades allows us to incorporate a range of GaAs and/or InP amplifiers in both the Tx and Rx chain and includes the option to power combine 2 GaAs PAs to deliver market leading linear Tx powers delivering unparalleled performance for long range terrestrial and non-terrestrial E-Band communications.

Options Include:

Option	Tx Gain	Tx PSAT	Rx Gain	Rx NF	Notes
1	-0.7dB	NA	-0.7dB	NA	Passive Diplexer
2	22dB	27dBm	-0.7dB	NA	Diplexer with integrated GaAs HPA
3	22dB	27dBm	13dB	5dB	Diplexer with integrated GaAs HPA & LNA
4	33dB	27dBm	13dB	5dB	Diplexer with integrated GaAs Driver, HPA & LNA
5	33dB	27dBm	18dB	5dB	Diplexer with integrated GaAs Driver, HPA & LNA
6	33dB	30dBm	18dB	5dB	Diplexer with integrated GaAs Driver, DUAL HPA* & LNA

* Two GaAs HEMT MMICs performance matched and power combined in waveguide to deliver maximum power.

Hades Active Diplexer Option 5 Block Diagram


TA440 / TA441 Connector pinout

Pin NO.	Name	Description
1	VG LNA	LNA gate bias voltage
2	VD LNA	LNA drain bias voltage
3	NC	Not connected
4	VD Driver	Driver drain bias voltage
5	VG Driver	Driver gate bias voltage
6	GND	Ground
7	VD SOUTH HPA	HPA drain bias voltage
8	VG HPA	HPA gate bias voltage
9	NC	Not connected
10	NC	Not connected
11	NC	Not connected
12	Tx VREF	Tx RF reference voltage
13	Tx VDET	Tx RF detector voltage
14	VD NORTH HPA	HPA drain bias voltage
15	GND	Ground
16	NC	Not connected
17	NC	Not connected
18	P3V3	3V3 digital supply voltage
19	I2C SDA	I2C SDA
20	I2C SCL	I2C SCL

TA440 Outline Specification

Over baseplate operating temperature -35 to +70C.
All parameters referenced to common waveguide port.

Function	Parameter	Min	Typ.	Max	Units
Common	Diplexer frequency range	71		86	GHz
	Diplexer waveguide IO port type		WR-12		
Tx	Frequency range	71		76	GHz
	Tx input port type		WR-12		
	Bandwidth	5			GHz
	Small Signal Gain		33		dB
	PSAT		27		dBm
	OIP3 @ +20dBm	30	32		dBm
	Tx Power control range	22			dB
	Input return loss	8			dB
	Output return loss (common port 71-76GHz)	8			dB
	RF detector sensitivity at 0dBm		10		mV/dB
	RF sensitivity at 20dBm		100		mV/dB
Rx	Frequency range	81		86	GHz
	Rx output port type		WR-12		
	Bandwidth	5			GHz
	Gain (small signal)		18		dB
	Noise figure		5		dB
	Input return loss	8			dB
	Output return loss	8			dB
DC	VD Tx driver		4		V
	ID Tx driver	30		400	mA
	VG Tx driver	-2		+0.3	V
	VD Tx HPA		4		V
	ID Tx HPA	75		1100	mA
	VG Tx HPA	-2		+0.3	V
	VD Rx LNA		3.5		V
	ID Rx LNA		75	95	mA
VG Rx LNA	-3		+0.3	V	
Mechanical	Size	L=67.0, W=25.0, H=6.7			mm
	Weight	25			G
	DC connector interface	Pads to mate with Samtec FSI-120-03-H-S-AD			

TA441 Outline Specification

Over baseplate operating temperature -35 to $+70^{\circ}\text{C}$.
All parameters referenced to common waveguide port.

Function	Parameter	Min	Typ.	Max	Units
Common	Diplexer frequency range	71		86	GHz
	Diplexer waveguide IO port type		WR-12		
Tx	Frequency range	81		86	GHz
	Tx input port type		WR-12		
	Bandwidth	5			GHz
	Small Signal Gain		33		dB
	PSAT		26		dBm
	OIP3 @ +20dBm	29	31		dBm
	Tx Power control range	22			dB
	Input return loss	8			dB
	Output return loss (common port 71-76GHz)	8			dB
	RF detector sensitivity at 0dBm		10		mV/dB
	RF sensitivity at 20dBm		100		mV/dB
Rx	Frequency range	71		76	GHz
	Rx output port type		WR-12		
	Bandwidth	5			GHz
	Gain (small signal)		18		dB
	Noise figure		5		dB
	Input return loss	8			dB
	Output return loss	8			dB
DC	VD Tx driver		4		V
	ID Tx driver	30		380	mA
	VG Tx driver	-2		+0.3	V
	VD Tx HPA		4		V
	ID Tx HPA	75		1200	mA
	VG Tx HPA	-2		+0.3	V
	VD Rx LNA		3.5		V
	ID Rx LNA		75	95	mA
VG Rx LNA	-3		+0.3	V	
Mechanical	Size	L=67.0, W=25.0, H=6.7			mm
	Weight	25			G
	DC connector interface	Pads to mate with Samtec FSI-120-03-H-S-AD			

Contact Us

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