

I/Q PHASE DETECTOR WITH OPTIONAL VIDEO AMPS AND/OR DIGITAL OUTPUTS

MODELS: IQM, IQD AND IQDD16020

FEATURES

- RF/LO coverage 150 to 170 MHz
- Center frequency 160 MHz
- Phase accuracy $\pm 5^\circ$ typical
- I/Q output voltage ± 2.5 volts (IQD Model)
- Variable offset and gain adjust
- Internal ± 5 volt regulators
- Optional 8 BIT TTL output (IQDD Model)



The IQM, IQD, and IQDD model I/Q phase detectors all utilize high isolation mixers and hybrids to minimize residual AC and DC circuit errors that limit phase accuracy. 10 MHz bandwidth video amplifiers are available (IQD model) to buffer outputs leading to the user's post circuitry or optional MITEQ A/D converters (IQDD model). IQM and IQD models require +13 dBm reference LO power and -20 to +10 dBm RF power for DC outputs. For AC video outputs, the lowest RF input power is limited by noise. The angular accuracy of the IQM and IQD models is measured at the maximum RF reference power.

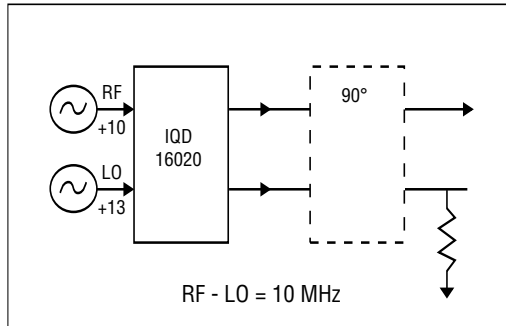
ELECTRICAL SPECIFICATIONS

INPUT PARAMETERS	CONDITION	UNITS	MIN.	TYP.	MAX.
RF/LO frequency range (information B/W)		MHz	150		170
RF phase accuracy bandwidth		MHz	4	10	
RF VSWR (RF = +10 dBm, LO = +13 dBm)		Ratio		1.5:1	
LO power range		dBm	10		13
LO VSWR (LO = +13 dBm)	Ratio		1.7:1		
Current IQD	-15/+15	mA		-100/+100	
IQDD	-15/+15	mA		-100/+500	
TRANSFER CHARACTERISTICS	CONDITION	UNITS	MIN.	TYP.	MAX.
Conversion loss (IQM model)		dB		8	10
Conversion gain, K (IQD model)	Volt=KV _{RMS} COS Ø	K ratio		3.5	
Equivalent image rejection (see reverse side)	IF = 10 MHz	dB	22	25	
Linear phase accuracy $\tan^{-1} V_Q/V_I$	LO = 13, RF = +3	Degrees		5	7
OUTPUT PARAMETERS	CONDITION	UNITS	MIN.	TYP.	MAX.
IQM • Output voltage (RF = +10 dBm) • DC offset (LO = +13 dBm, RF off) • VSWR (LO = +13 dBm)	50 ohm reference	mV		400	
		mV		2	5
		Ratio		1.5:1	
IQD • Output voltage (RF = +10 dBm) • DC offset (LO = +13 dBm, RF off) • VSWR (LO = +13 dBm)	-90 ohm reference	Volts		2.5	
		mV		30	
		Ratio		1.5:1	
IQDD TTL 8-BIT clock rate required		MHz		20	

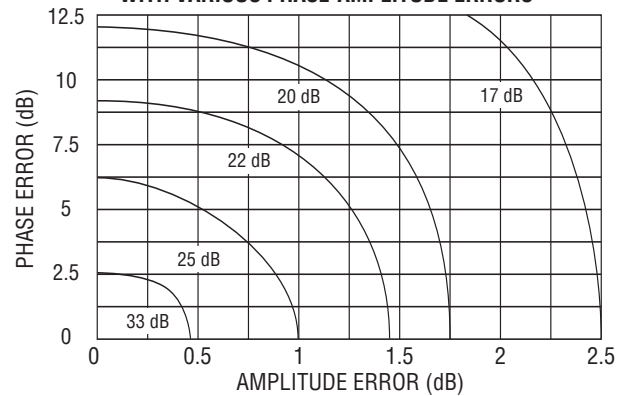


IQ SERIES REFERENCE DATA

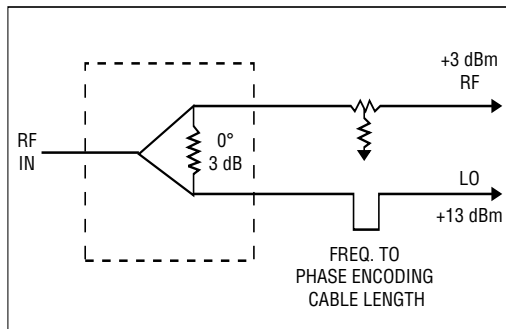
TEST SETUP FOR EQUIVALENT IMAGE REJECTION (FOR NON-DC VIDEO)



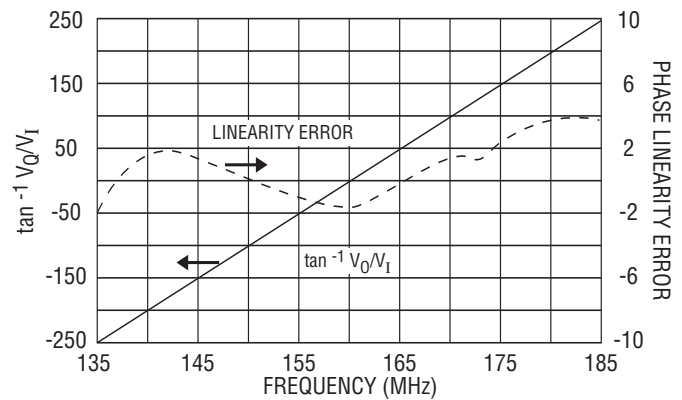
EQUIVALENT IMAGE REJECTION WITH VARIOUS PHASE-AMPLITUDE ERRORS



TEST SIGNALS FOR MEASURING I/Q PHASE LINEARITY (FOR DC VIDEO)



$\tan^{-1} \frac{V_Q}{V_I}$ VERSUS FREQUENCY AND TYPICAL PHASE LINEARITY ERROR OF IQD16020C4



MAXIMUM RATINGS

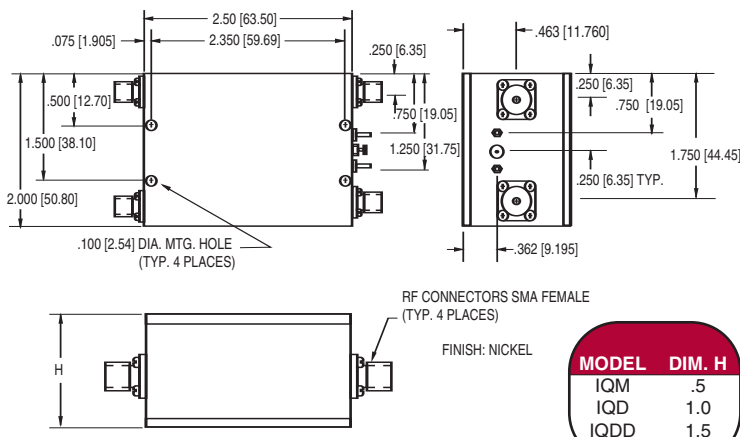
Specification temperature..... +25°C
Operating temperature -30 to +70°C
Storage temperature -55 to +125°C

GENERAL NOTES

1. Application and test, question and answer sheet are available from MITEQ.
2. RF limiter models available with -60 to 0 dBm input dynamic range.

OUTLINE DRAWING

C4 HOUSING (Nonhermetic)



NOTE: All dimensions shown in brackets [] are in millimeters.

BLOCK DIAGRAM

