iT5083
11.4 Gb/s RZ Modulator Driver Amplifier
(Advanced Information)

Description

The iT5083 is a general-purpose modulator driver designed for RZ communication systems operating up to 11.4 Gb/s. The driver is typically used to amplify a data signal between an NRZ/RZ encoder and an optical modulator.

The iT5083 is available in an SMA connectorized module. The primary heat conduction path is through the base of the module, therefore proper thermal management is required. Operating case temperature range is 0°C to 70°C.

Features

- Optimized for RZ bit rates up to 11.4 Gb/s
- Non-inverted RZ signal
- 20 dB gain
- 4.5 Vpp output amplitude
- 8 V bias supply
- AC-coupled RF inputs and outputs

Absolute Maximum Ratings

Exceeding the maximum ratings may cause damage to this product or lead to reduced reliability. Functional performance is specified over the recommended operating conditions for power supply and temperature. AC and DC device characteristics at or beyond the absolute maximum ratings are not assured or implied.

Symbol	Parameter	Min	Typ	Max	Units
+V	Positive supply voltage	0		10.0	V
-V	Negative supply voltage	-6.0		0	V
VDIN	Input data amplitude			1.0	Vpp
VGC	Amplitude control voltage	0		6	V
VCP	Cross point control voltage	-6		6	V
VB	Output DC bias	-20		+20	V
TCASE	Case operating temperature	0		70	^{O}C
TSTO	Storage temperature	-65		+125	^{O}C
RH	Relative humidity	5		95	%

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Electrical Characteristics

Tcase from 0 to 70° C

Symbol	Parameter	Min	Typ	Max	Units
	Output signal format	Non-inverted RZ format			
Vo	Output amplitude (Vgc = 0 V)	4.0		4.5	Vpp
ΔV	Output amplitude stability 0 to 70° C at VGC = 0 V			0.3	Vpp
RZcon	RZ contrast at VGC = 0 V	60			%
DR	RZ duty ratio at VGC = 0 V	45		65	%
Jitter	RMS jitter (Note 1)			10	ps
	Noise amplitude				
	Mark, Nmo, σ_m/Vo		0.03	0.06	-
	Space, Nso, σ_s/Vo		0.06	0.12	-
	Mark1-0, Nm10, $\lvert \sigma_{m1} - \sigma_{mo} \rvert$		18	30	mV
	Mark2-0, Nm20, $\lvert \sigma_{m2} - \sigma_{mo} \rvert$		18	30	mV
	Mark1-2, Nm12, $\lvert \sigma_{m1} - \sigma_{m2} \rvert$		18	30	mV
	RZ peak position	-5		+5	ps
G	Gain (1 GHz)		20		dB
ΔG	Gain variation		4	5	dB
Flc	Low-frequency bandwidth (1 GHz ref, -3 dB)			200	kHz
Fhc	Low-frequency bandwidth (1 GHz ref, -3 dB)	7	10		GHz
S11	Input return loss (50 MHz – 12 GHz)			-8	dB
S22	Output return loss (50 MHz – 12 GHz)			-8.5	dB
+V	Positive bias supply	7.75	8.0	8.25	V
Icc	Positive supply current	120		320	mA
-V	Negative bias supply	-5.25	-5.0	-4.75	V
I_{EE}	Negative supply current	100	110	120	mA

1. Jitter = Sqrt(measured RMS output jitter)^2 + (measured RMS input jitter)^2)

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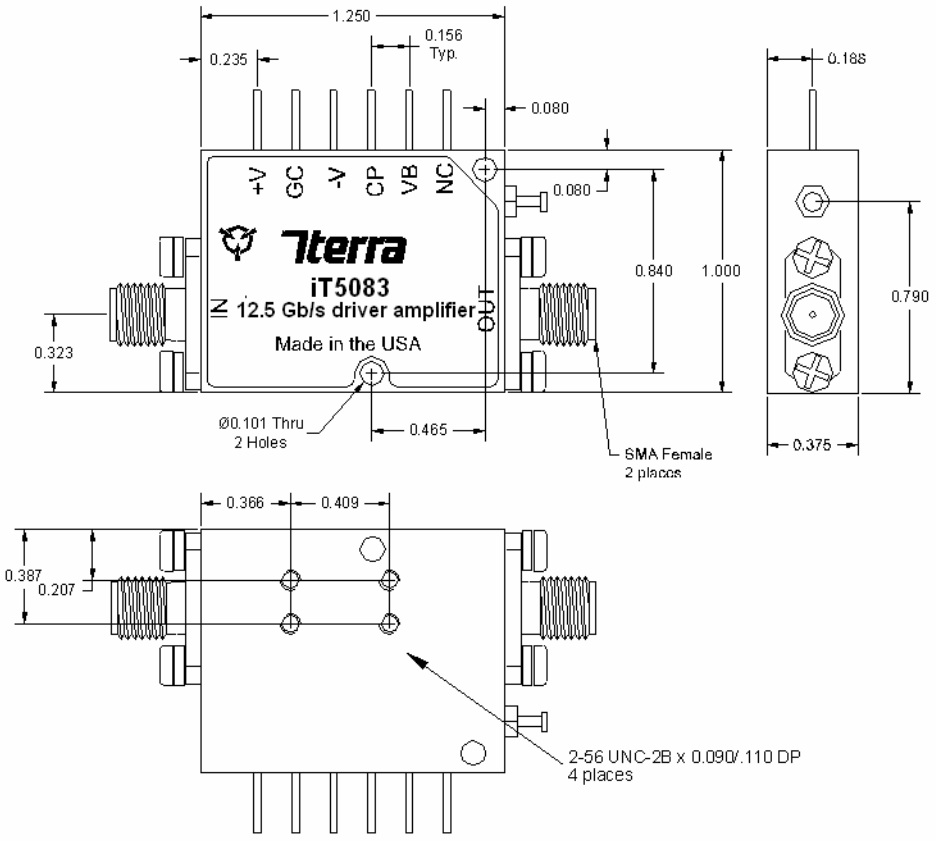
Input Signal Conditions

Symbol	Parameter	Min	Typ	Max	Units
	Signal format		Non-inverted RZ format		
	Impedance	45	50	55	ohm
	Test signal pattern		PN23		
	Mark ratio		1/2		
	Bit rate	10.7		11.4	Gb/s
	Amplitude	0.44		0.51	Vpp
	RMS jitter		5.0	10.0	ps
	RZ peak position	-3.0		+3.0	ps
	RZ contrast	80	85		%
	RZ duty ratio	47	50	53	%
	Noise amplitude (mark) σ_{m1}/Vi		0.03	0.06	
	Noise amplitude (mark) σ_{s1}/Vi		0.03	0.06	

Mechanical Information



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