



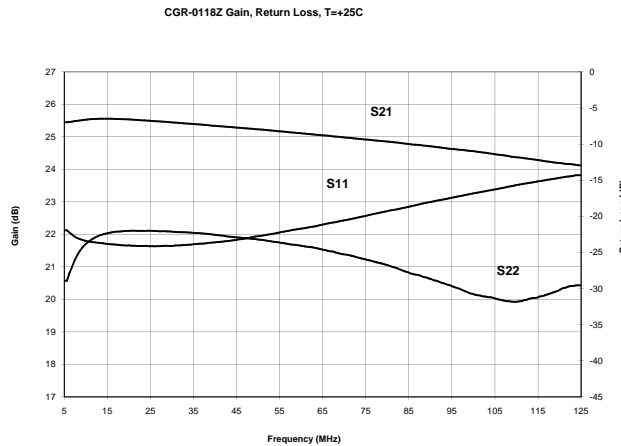
RFMD Green, RoHS Compliant, and Pb-Free Product
Package: SOIC 8

Product Description

RFMD's CGR-0118Z is a high performance 75Ω push-pull GaAs HBT MMIC amplifier utilizing a Darlington configuration with an active bias network. The active bias network provides stable current over temperature and process variations. Designed to run over a wide range of supply voltage, from 5V to 12V, the CGR-0118Z does not require a bias resistor as compared to typical Darlington amplifiers. The CGR-0118Z is designed for 75Ω return path applications where linear performance is needed over the frequency range 5MHz to 120MHz.

Optimum Technology Matching® Applied

- GaAs HBT
- GaAs MESFET
- InGaP HBT
- SiGe BiCMOS
- Si BiCMOS
- SiGe HBT
- GaAs pHEMT
- Si CMOS
- Si BJT
- GaN HEMT
- InP HBT
- RF MEMS
- LDMOS



Features

- Flat Gain Response: 25.4 ± 0.3dB
- Excellent OIP3: 37.5dBm
- Superior Return Loss: >20dB
- Extremely Low CSO/CTB: -80/-62dBc
- Low Noise Figure: 3.0dB
- Single Supply: 5V to 12V
- Low DC Current: 138mA

Applications

- CATV Return Path Amplifier
- CATV Line Amplifier
- Optical RX/TX

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Electrical Characteristics					
V _{CC} =8/12V, T _A =25°C, 75Ω System					
Gain	24.7	25.4	26.2	dB	5 MHz to 65 MHz
Slope			±0.3	dB	5 MHz to 65 MHz
Input Return Loss	18	20		dB	5 MHz to 65 MHz
Output Return Loss	18	20		dB	5 MHz to 65 MHz
Noise Figure		3.0	3.5	dB	5 MHz to 65 MHz
Composite Triple Beat		-67		dB	See Note 1
Cross Modulation		-65		dBc	See Note 1
Composite Second Order		-80		dBc	See Note 1
1dB Gain Compression Point	68.5	73.5		dBmV	65 MHz
Output 3rd Order Intercept Point	34.5	37.5		dBm	See Note 2
Supply Voltage	8	12		V	
Operating Current		138		mA	

Note 1: Composite Triple, Cross Modulation, Composite Second Order are all measured with 7 channels (T7 through T13) at 50dBmV/ch output and at 25°C. Data reported is worse case in band.

Note 2: Two tone test, 5dBm/tone at output, 1MHz Spacing.

Absolute Maximum Ratings

Parameter	Rating	Unit
DC Supply (V_{CC})	14	V_{DC}
RF Input Voltage (Single Tone) (V_{IN})	65	dBmV
Operating Case Temperature Range (TC)	-40 to +100	$^{\circ}C$
Storage Temperature Range (T_{STG})	-65 to +150	$^{\circ}C$

Operation of this device beyond any one of these limits may cause permanent damage. For reliable continuous operation, the device voltage and current must not exceed the maximum operating values specified in the table on page one.



Caution! ESD sensitive device.

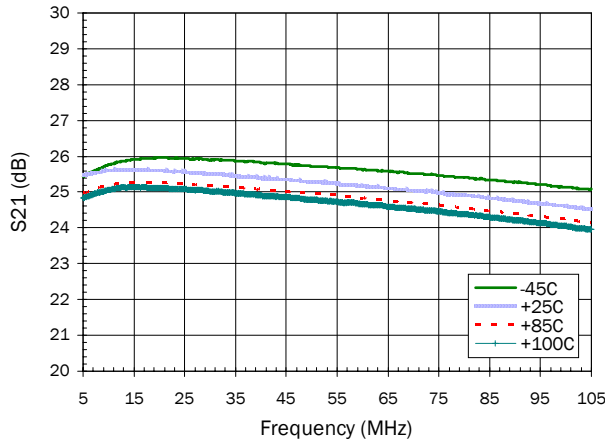
Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability. Specified typical performance or functional operation of the device under Absolute Maximum Rating conditions is not implied.

RoHS status based on EU Directive 2002/95/EC (at time of this document revision).

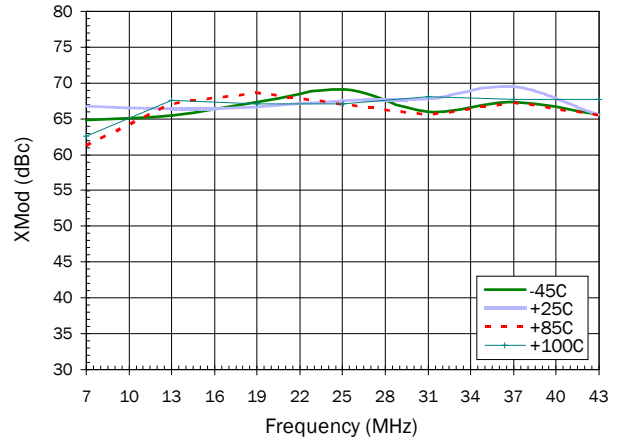
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Typical Performance Curves ($T_A = 25^{\circ}C$)

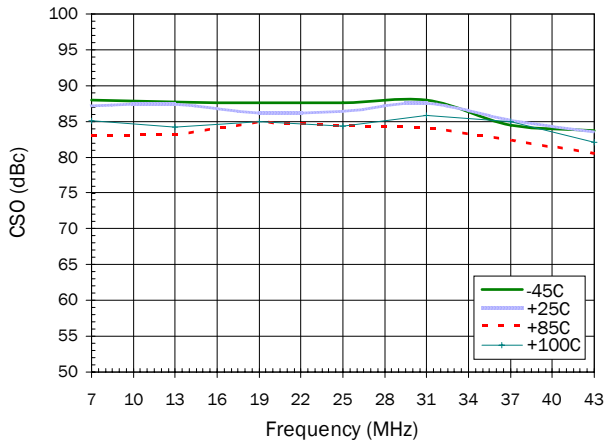
Forward Gain versus Temperature



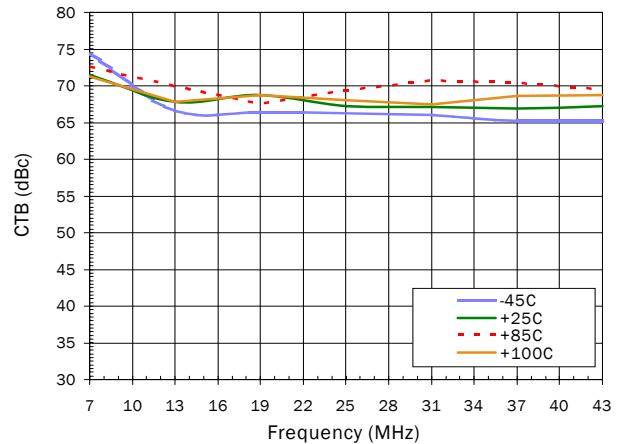
Cross Mod versus Temperature



CSO versus Temperature

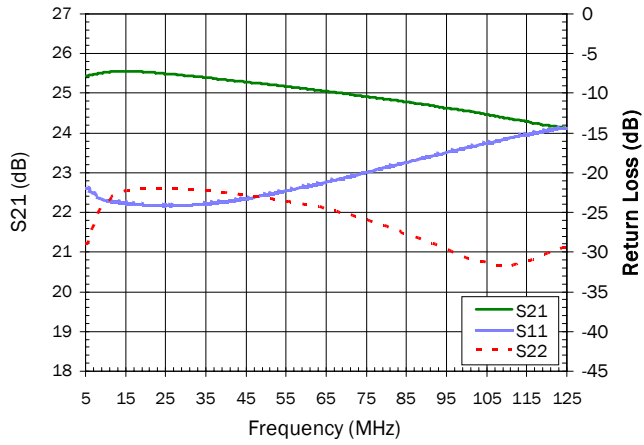


CTB vs. Temp.

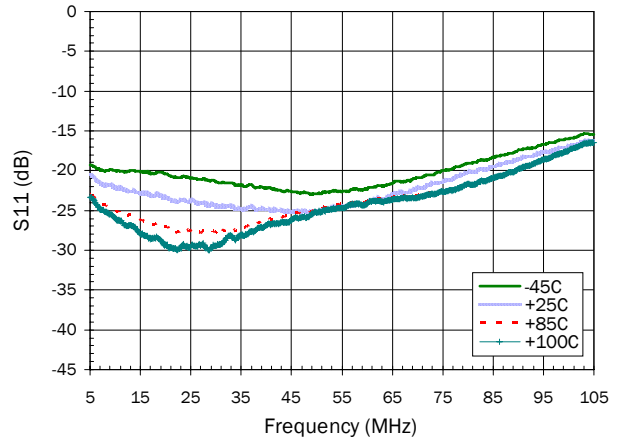


Typical Performance Curves (TA=25 °C)

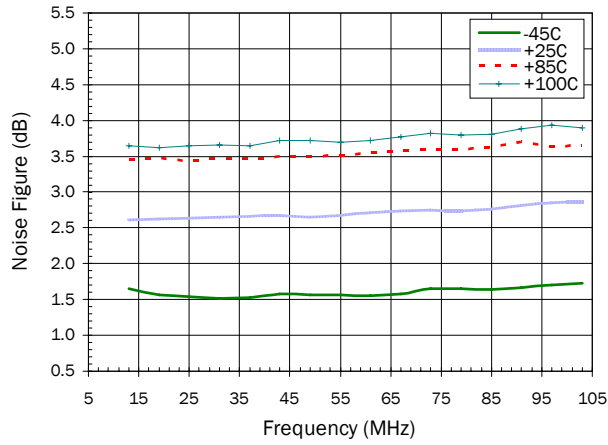
Gain, Return Loss, T=+25 °C



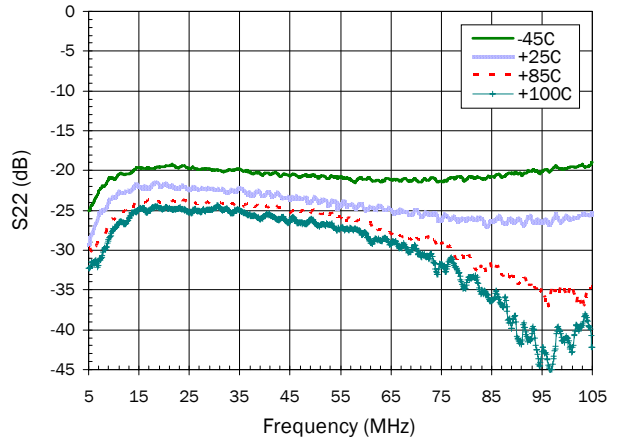
Input Return Loss versus Temperature



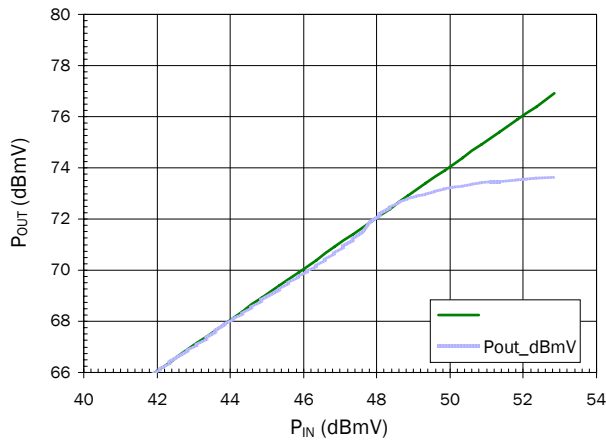
Noise Figure versus Temperature



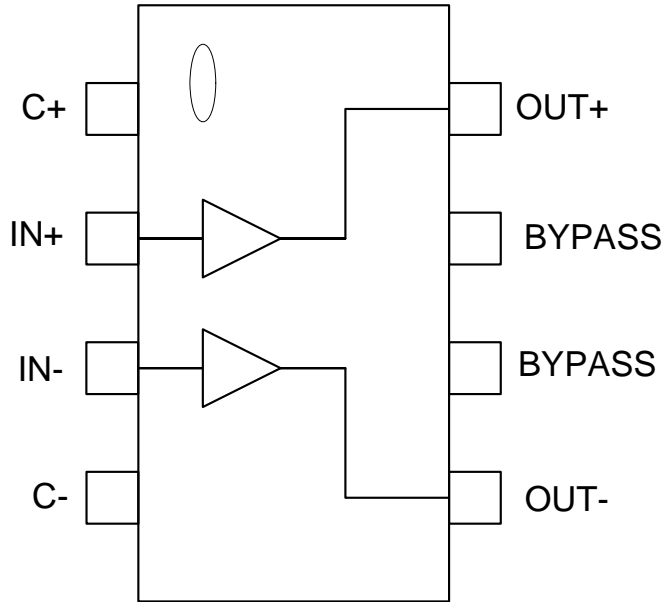
Output Return Loss versus Temperature



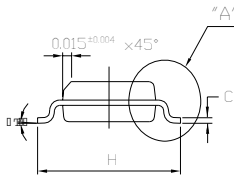
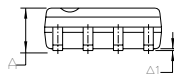
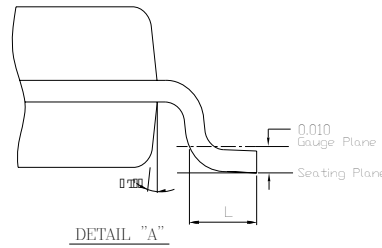
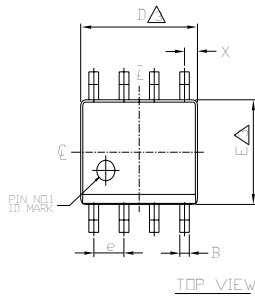
Power In versus Power Out @ 65MHz, +25 °C.



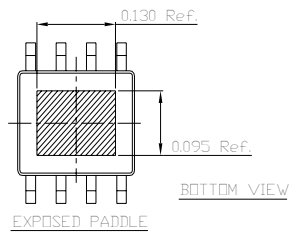
Pin Assignment



Outline Dimensions

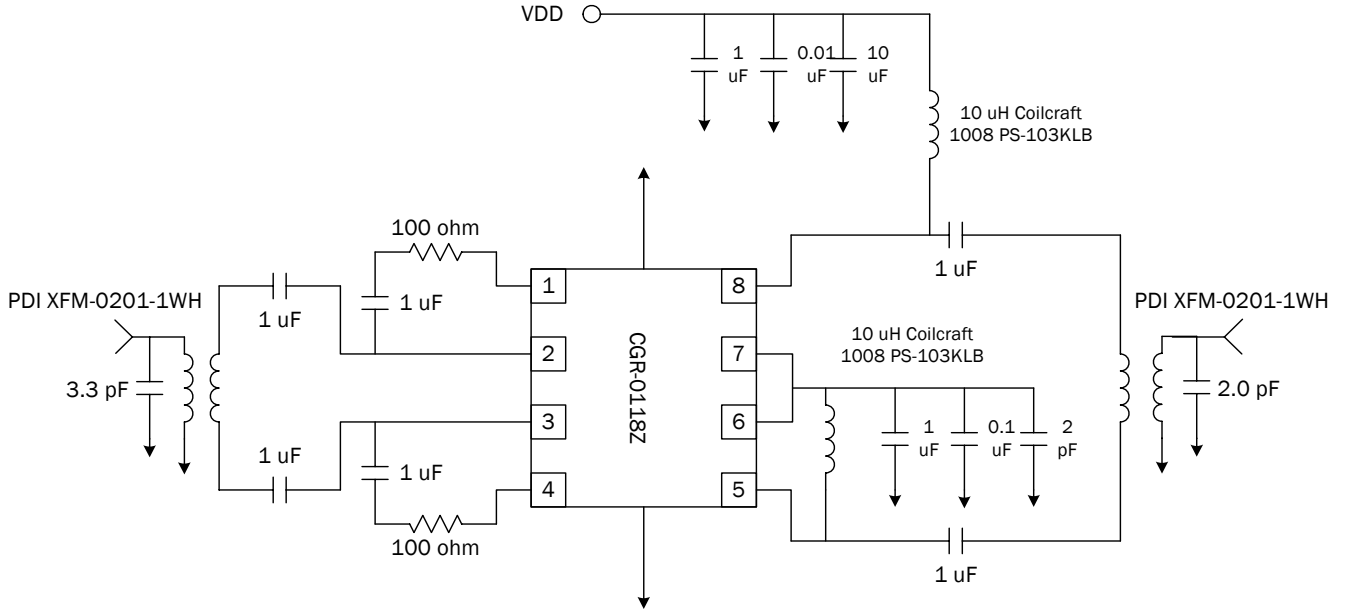


8 SOIC		
SYMBOL	MIN	MAX
A	0.054	0.068
A1	0.001	0.004
B	0.014	0.019
D	0.189	0.196
E	0.150	0.157
H	0.229	0.244
e	0.050	BSC
C	0.0075	0.0098
L	0.020	0.040
X	0.0215	REF
	0°	8°
	7°	BSC

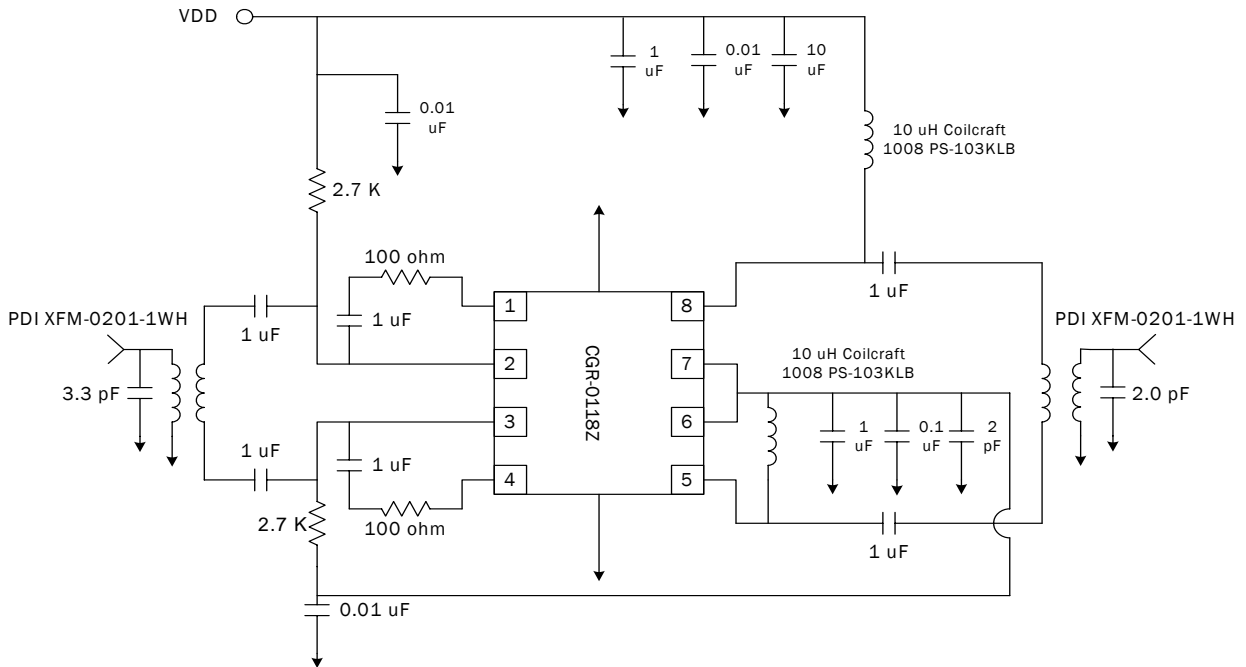


NOTE:
 1. TOP PACKAGE SURFACE TO BE MATTE FINISH VDI 24-27.
 2. BOTTOM PACKAGE SURFACE TO BE MATTE FINISH VDI 8-11.
 Δ DIMENSION ARE EXCLUSIVE MOLD FLASH AND GATE BURR.
 4. FOOT LENGTH MEASURING IS BASED ON THE GAUGE PLANE METHOD.

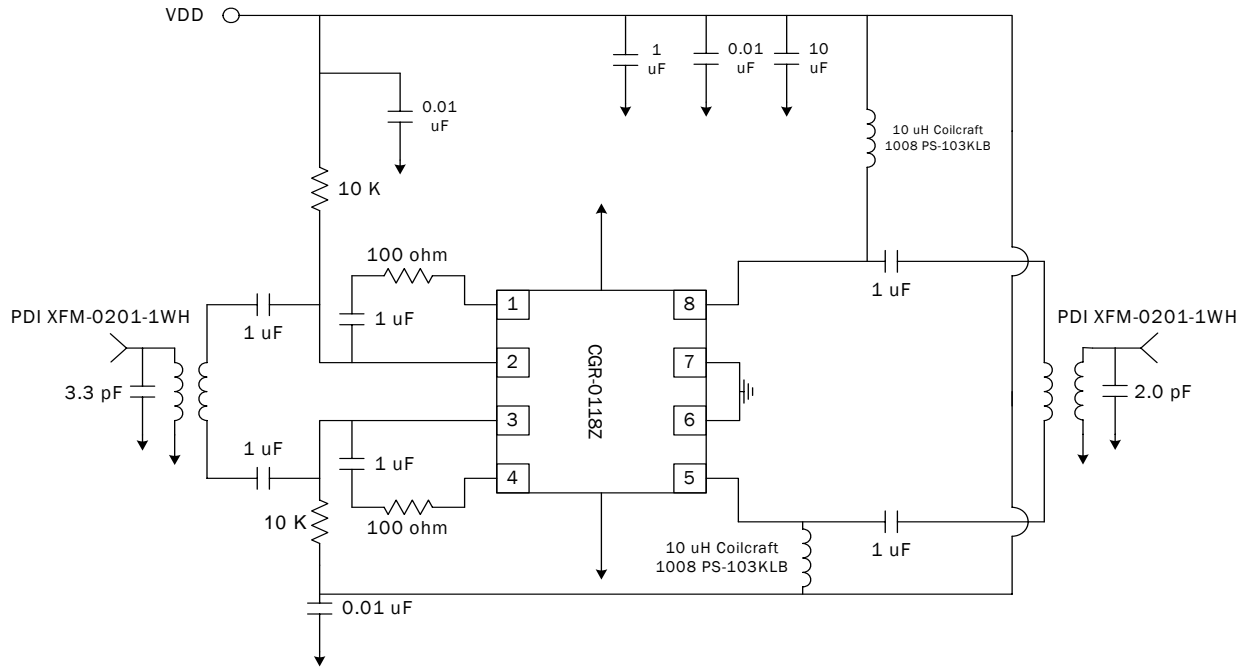
12V Application Schematic



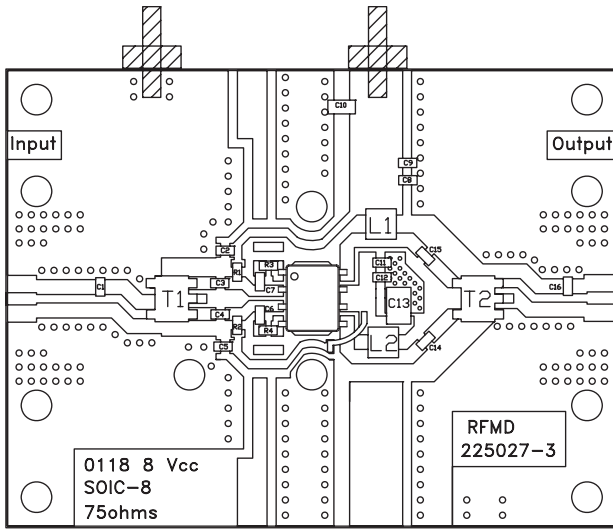
8V Application Schematic



5V Application Schematic

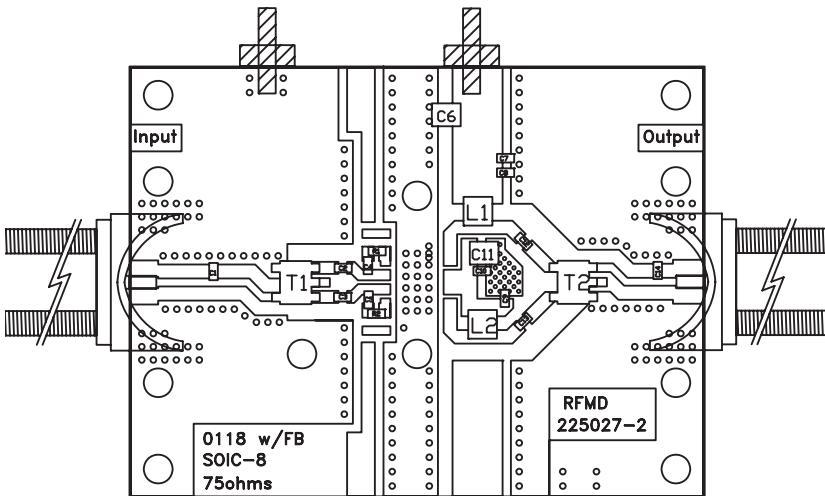


8V Evaluation Board Layout



COMPONENT CHART		
Value	QTY	Location
2pF	2	C12,16
3.3pF	1	C1
0.1uF	4	C2,5,8,11
1uF	7	C3,4,6,7,9,14,15
10uF	2	C10,13
2.7K Ω	2	R1,2
100 Ω	2	R3,4
10nH*	2	L1,2
*1008 PS-103 KLB		
XFM-0201-1WH		T1,2

12V Evaluation Board Layout



COMPONENT CHART		
Value	QTY	Location
2pF	2	C10,14
3.3pF	1	C1
0.1uF	2	C8,9
1uF	7	C2,3,4,5,7,12,13
10uF	2	C6,11
100 Ω	2	R1,2
10nH*	2	L1,2
*1008 PS-103 KLB		
XFM-0201-1WH		T1,2

