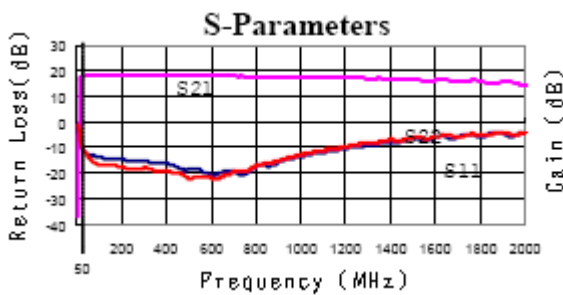


Product Description

F230 is a high performance InGaP HBT MMIC amplifier utilizing a Darlington configuration with an active bias network. The active bias network provides stable current over temperature and process Beta variations. Designed to run directly from a 5V supply, the F230 does not require a dropping resistor as compared to typical Darlington amplifiers. The F230 product is designed for high linearity 5V gain block applications that require small size and minimal external components.

F230 is RoHS compliant and manufactured with green molding compounds.



F230



RoHS Compliant & Green Package

50-1000MHz, Cascadable

Active Bias InGaP/GaAs HBT Amplifier



Product Features:

- RoHS compliant
- P1dB=19dBm@1000MHz
- Single +5V Supply
- 1000V ESD, Class 1C
- MSL 1 moisture rating

Applications:

- CATV Amplifier

Symbol	Parameter	Units	Frequency	Min.	Typ.	Max.
G	Small Signal Gain	dB	1000MHz	14	15.5	17
P _{1dB}	Output Power at 1dB Compression	dBm	1000MHz	18	19	
OIP ₃	Third Order Intercept Point	dBm	①	38.5	42	
S ₁₁	Input Return Loss	dB	50-1000MHz		16	
S ₂₂	Output Return Loss	dB	50-1000MHz		16	
NF	Noise Figure	dB	1200MHz		3.6	
V _O	Output Voltage	dBuV	②		116	
CSO	50-870MHz	dB	③		-54	
CTB	50-870MHz	dB	③		-68	
V _D	Device Operating Voltage	V			5.0	5.3
I _D	Device Operating Current	mA		80	95	110

Test Conditions: V_s=5V I_D=95mA Typ T_L=25°C Z_S=Z_L=75 Ohms

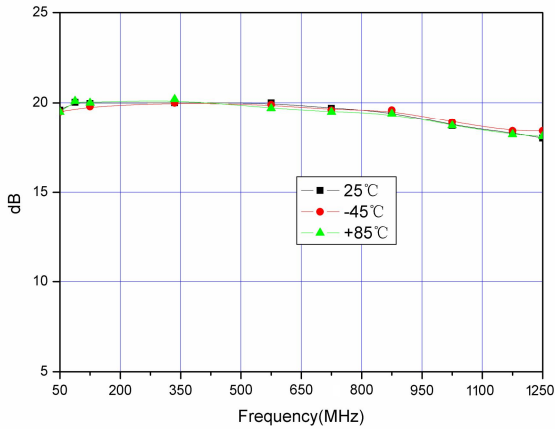
①OIP₃ Tone Spacing=1MHz, Pout per ton=5 dBm

②fp=847.25MHz; Vp=Vo; fq=853.25MHz; Vq=Vo-6dB; fr=855.25MHz; Vr=Vo-6dB; measured at fp+fq-fr=845.25MHz

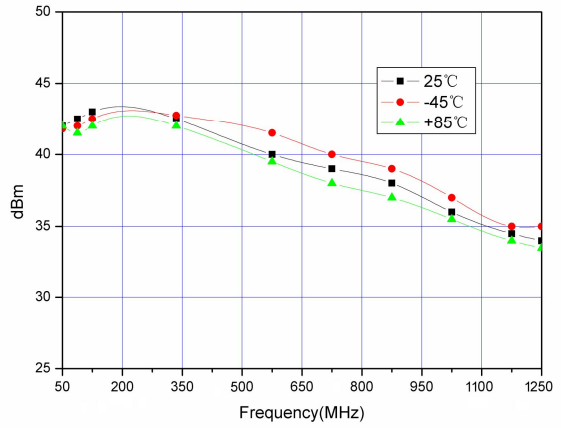
③99 channels, +93dBuV/ch, Single

Data on Charts taken with 870 MHz Application Circuit

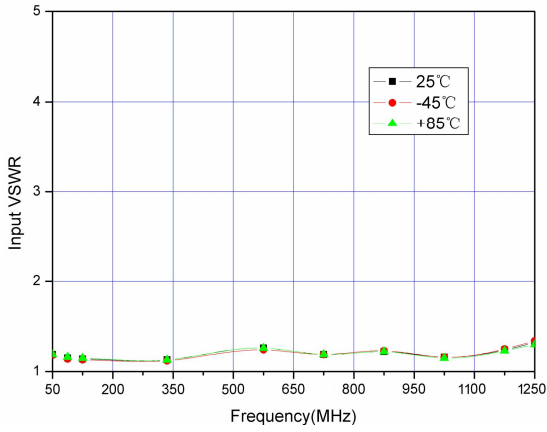
P1dB vs. Frequency



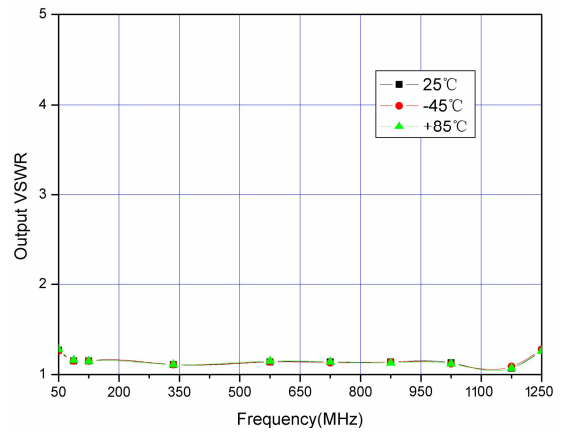
OIP3 vs. Frequency



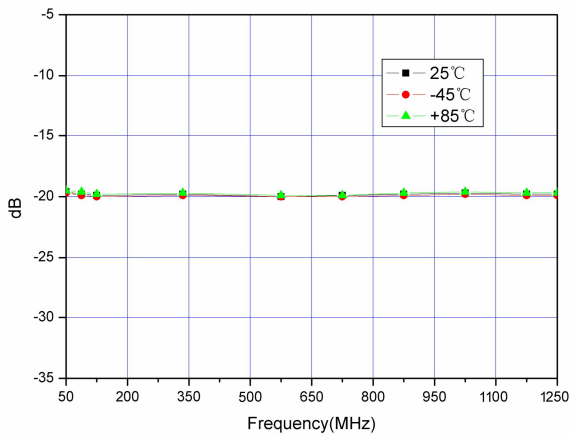
Input VSWR vs. Frequency



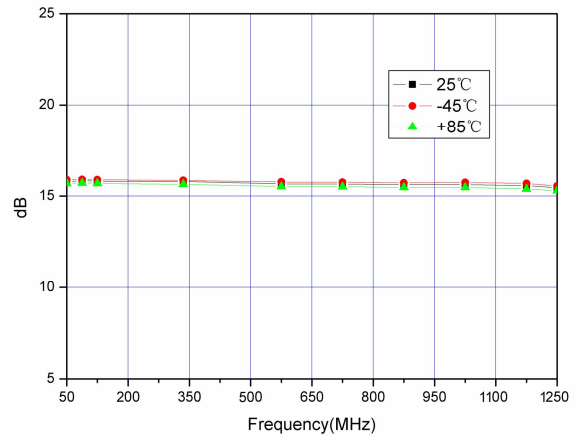
Output VSWR vs. Frequency



S12 vs. Frequency

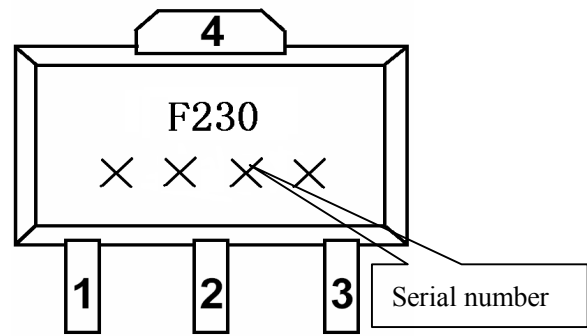


S21 vs. Frequency

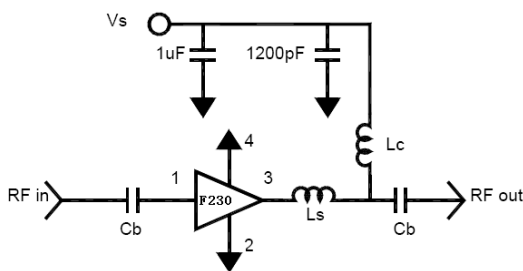


Pin	Function	Description
1	RF IN	RF input pin. This pin requires an external DC blocking capacitor.
2, 4	GND	Connecting to ground. Use via holes for best performance to reduce lead inductance.
3	RF OUT / BIAS	RF output and bias pin. DC blocking capacitor is necessary for proper operating.

Marking and Pin Definition



Application Schematic



Application Circuit Element Values

Reference Designator	Frequency (MHz)
	50-870
C _B	8200 pF
L _C	1200 nH
L _S	2.7 nH

Mounting Instructions

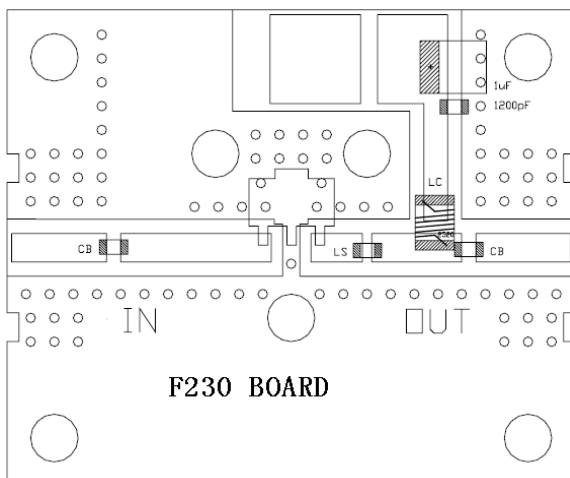
1. Solder the copper pad on the backside of the device package to the ground plane.
2. Use a large ground pad area with many plated through-holes as shown.
3. Measurement for this data sheet is made on 0.5 mm thick FR-4 board with 3.38 dielectric constant.



ESD Class 1C

Appropriate precautions in handling, packaging and testing devices must be observed!

Evaluation Board Layout

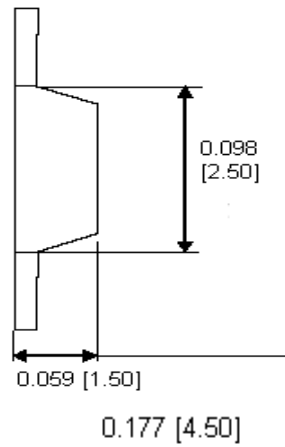
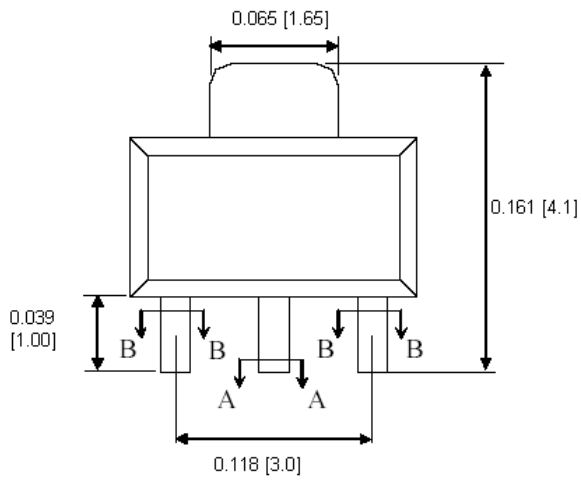


Absolute Maximum Ratings

Parameter	Absolute Limit
Max. Device Current (ID)	120 mA
Max. Device Voltage (VD)	5.5V
Max. RF Input Power	+12 dBm
Max. Junction Temp. (TJ)	+150°C
Max. Operating Dissipated Power	0.66W
Operating Temp. Range (TL)	-40°C to +85°C
Max. Storage Temp.	+150°C
Operation beyond any one of these limits may cause permanent damage.	

SOT89 Packaging and PCB Pad Layout

Units: inch [millimeter]



Symbol	inch	millimeter
A	0.016	0.42
B	0.019	0.5

