

### Features

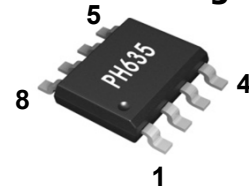
- 800MHz - 2300MHz
- 17.0 dB Gain at 900MHz
- +31 dBm P1dB
- +46 dBm Output IP3
- Dual Bias Supply
- Lead-free / Green / RoHS-compliant SOIC-8 Package



### Applications

- Mobile Infrastructure
- Cellular, GSM
- PCS, WCDMA, WiBro, WiMax
- W-LAN / ISM
- RFID / Fixed Wireless

### Functional Diagram



Function	Pin No.
RF IN	3
RF OUT / Vcc	6,7
Vref	1
Ground / NC	2,4,5 / 8

### Description

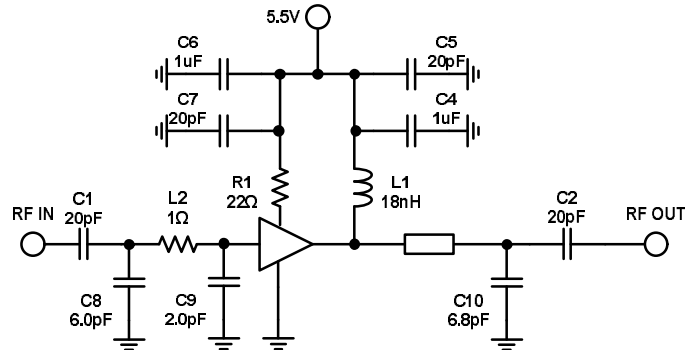
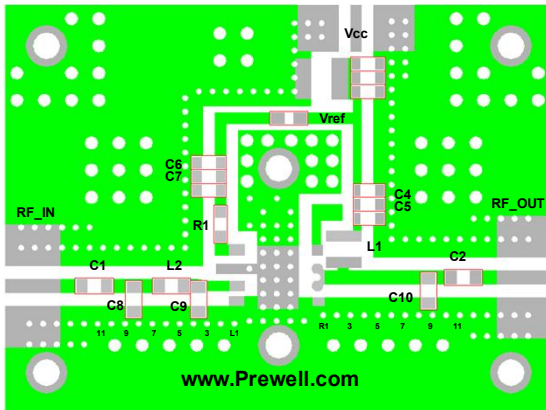
The PH635-S8 is a high performance InGaP HBT MMIC Amplifier and high linearity driver amplifier in a high quality SOIC-8 package. The device features excellent Input and output return loss, highly linear performance. The device can be easily matched to obtain optimum power and linearity. The product is targeted for use as driver amplifier for wireless infrastructure applications. The PH635-S8 operates from a single +5.5 voltage supply and have an internal active bias. All devices are 100% RF and DC tested

### Specifications

Symbol	Parameters	Units	Freq.	Min.	Typ.	Max.
S21	Gain	dB	900 MHz 1950 MHz 2140 MHz		17.0 12.8 11.5	
S11	Input Return Loss	dB	900 MHz 1950 MHz 2140 MHz		-10 -13 -13	
S22	Output Return Loss	dB	900 MHz 1950 MHz 2140 MHz		-11 -14 -13	
P1dB	Output Power @1dB compression	dBm	900 MHz 1950 MHz 2140 MHz		31.0 31.0 31.0	
OIP3	Output Third Order intercept	dBm	900 MHz 1950 MHz 2140 MHz		45.5 45.5 45.0	
NF	Noise Figure	dB	900 MHz 1950 MHz 2140 MHz		5.0 4.3 4.4	
V / I	Device voltage / current	V/mA			5.5/455	
Rth	Thermal Resistance	°C/W			16	

Test Conditions : T=25°C, Supply Voltage=+5.5V, 50ohm System, OIP3 measured with two tones at an output power of +16dBm/tones separated by 1MHz.

### 900 MHz Application Circuit

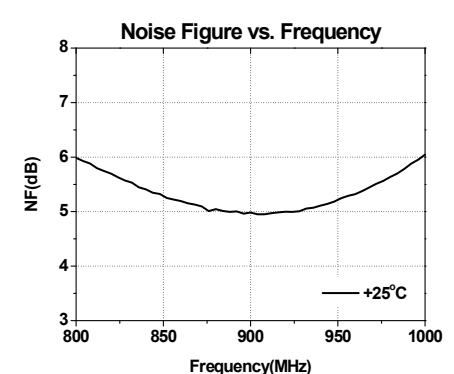
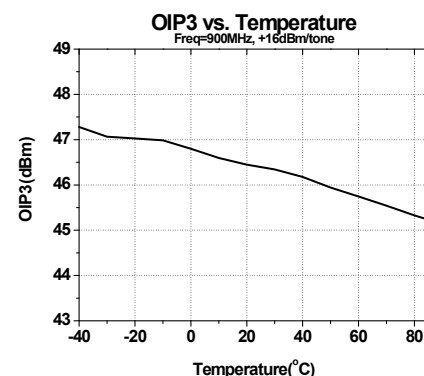
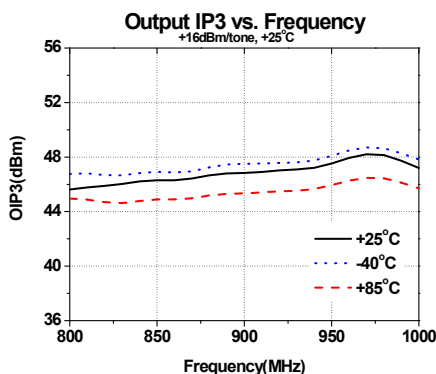
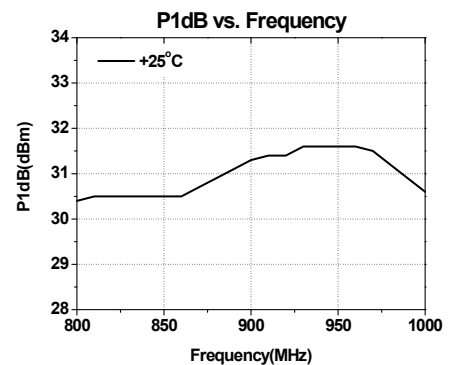
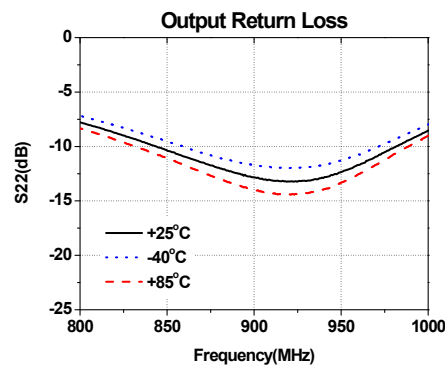
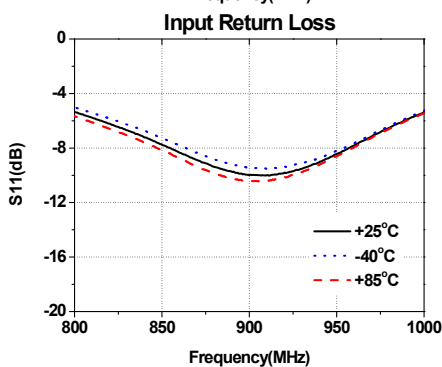
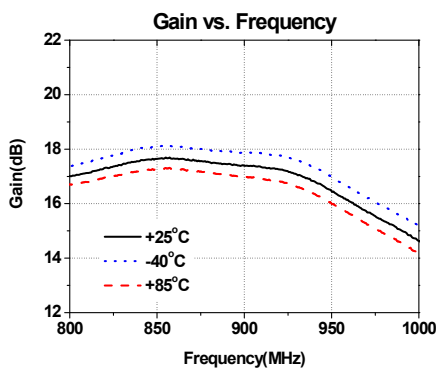


Test Board Information : FR4 PCB (Dielectric Constant = 4.6, thick = 0.8mm(32mil))

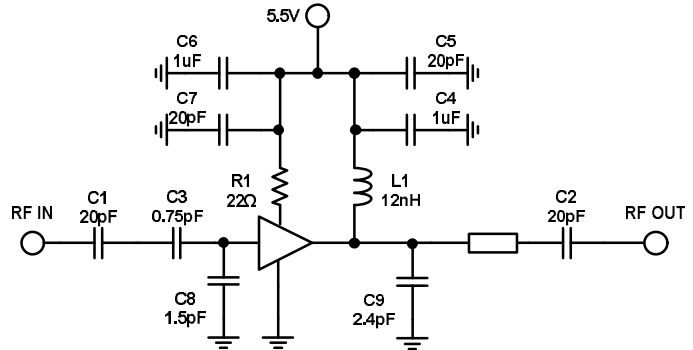
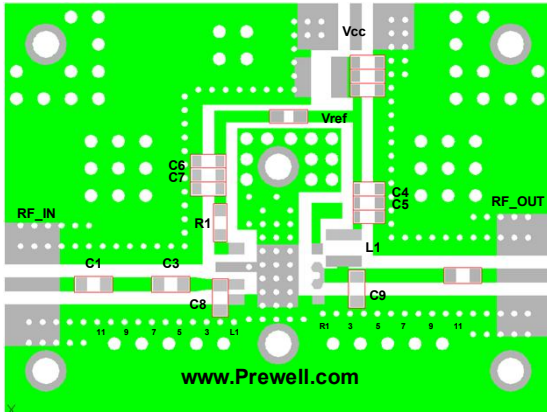
RF Microstrip Line Width = 1mm(39mil), Tuning Via Diameter ('R1','R2','R3', 'L1','L2',' L3',etc.) and Distance = 0.5mm(20mil)

All Passive Component Size is 1608(0603) and L1 is coil inductor

Frequency	900 MHz
S21 : Gain	17.2 dB
S11 : Input Return Loss	-10 dB
S22 : Output Return Loss	-12 dB
Output P1dB	+31.2 dBm
Output IP3 @16dBm	+46.5 dBm
Noise Figure	5.0 dB
Supply Voltage	5.5 V
Current	455 mA



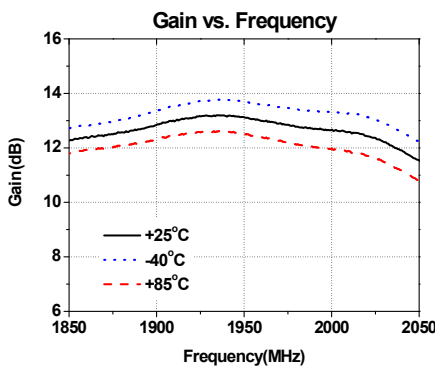
### 1950 MHz Application Circuit



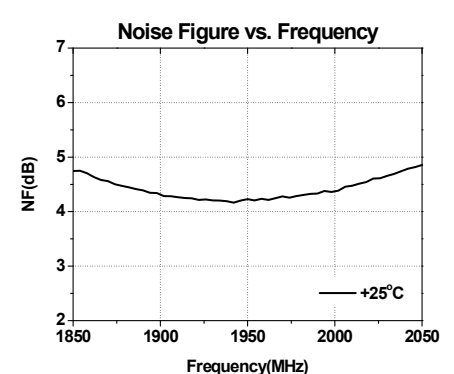
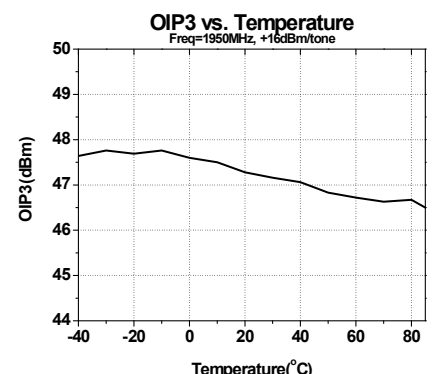
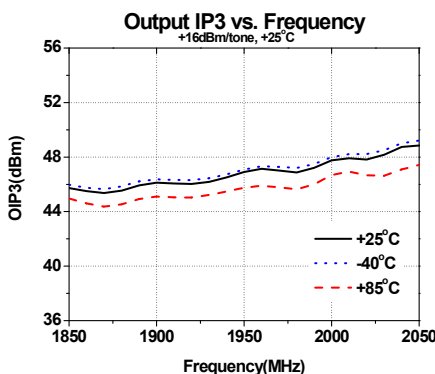
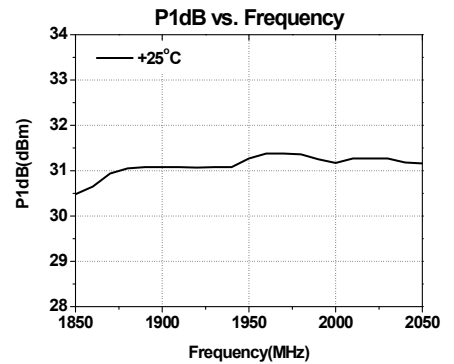
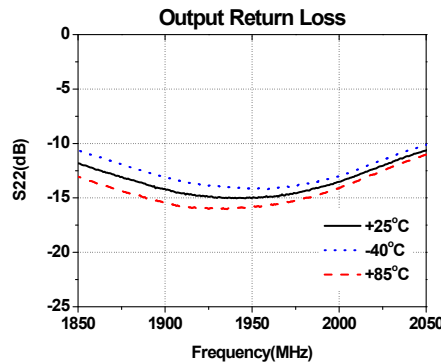
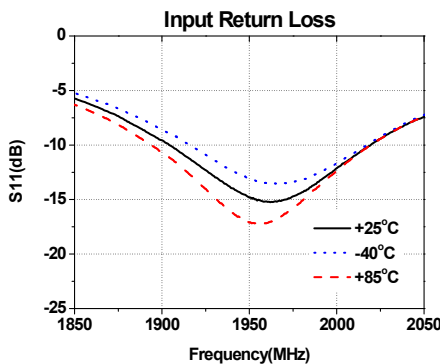
Test Board Information : FR4 PCB (Dielectric Constant = 4.6, thick = 0.8mm(32mil))

RF Microstrip Line Width = 1mm(39mil), Tuning Via Diameter ('R1','R2','R3', 'L1','L2', 'L3',etc.) and Distance = 0.5mm(20mil)

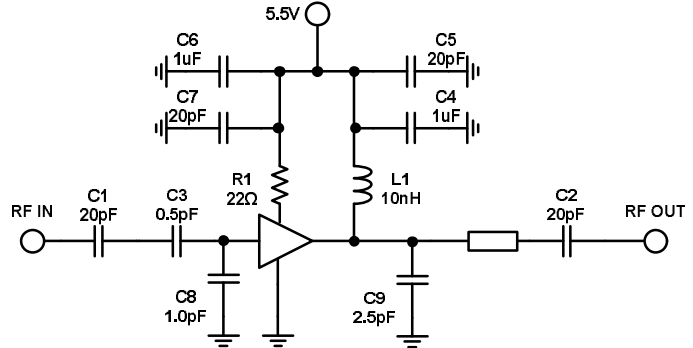
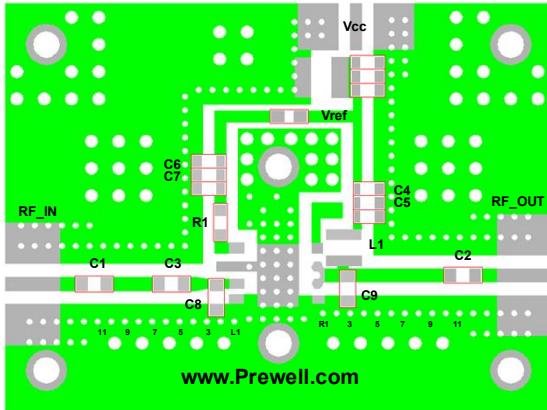
All Passive Component Size is 1608(0603) and L1 is coil inductor



Frequency	1950 MHz
S21 : Gain	13.0 dB
S11 : Input Return Loss	-14 dB
S22 : Output Return Loss	-14 dB
Output P1dB	+31.2 dBm
Output IP3 @16dBm	+46.5 dBm
Noise Figure	4.3 dB
Supply Voltage	5.5 V
Current	455 mA



### 2140 MHz Application Circuit

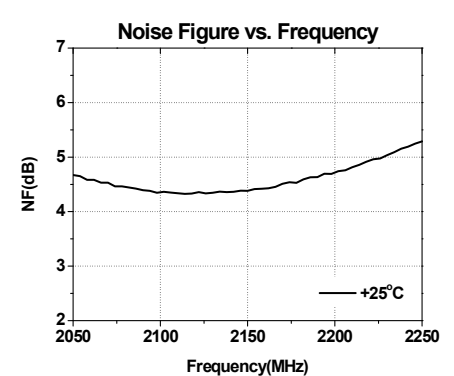
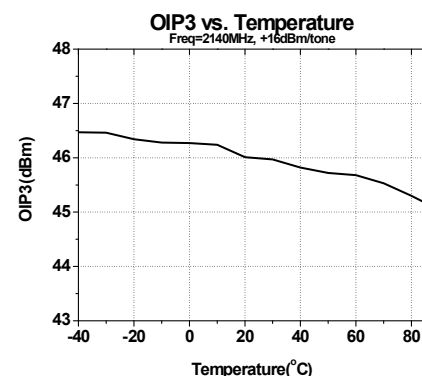
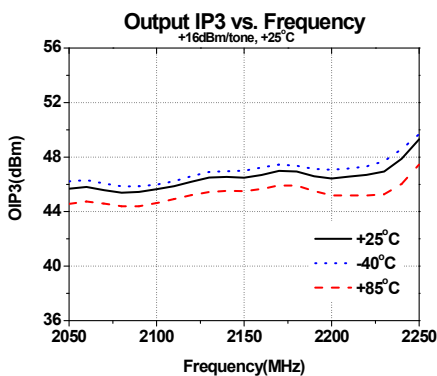
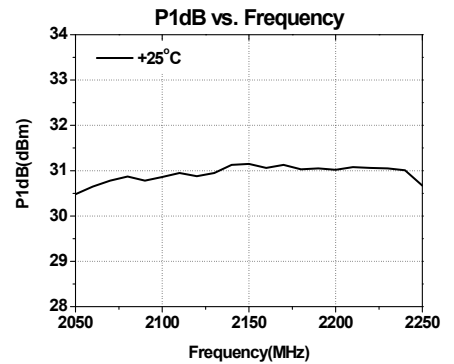
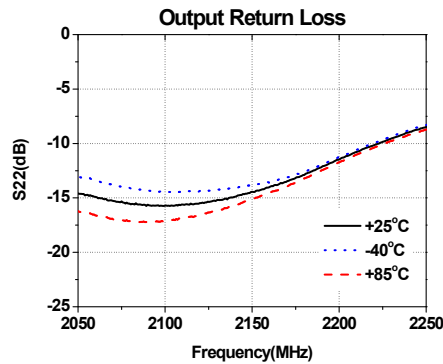
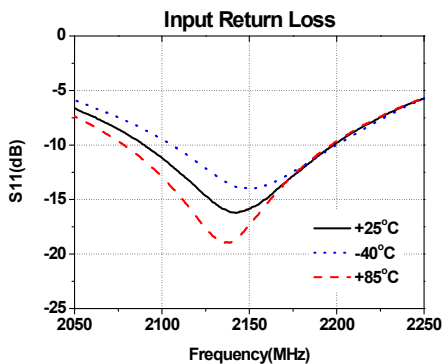
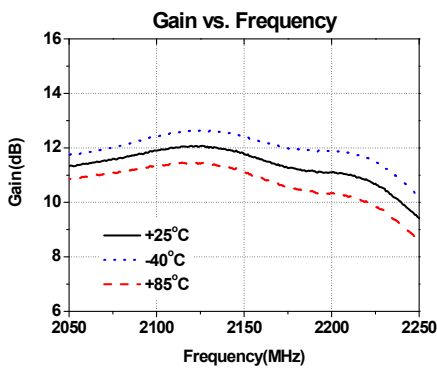


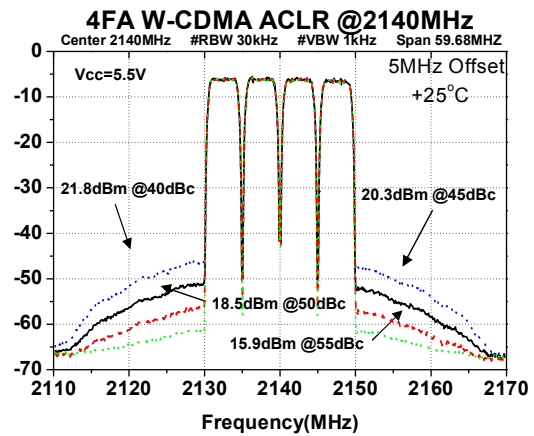
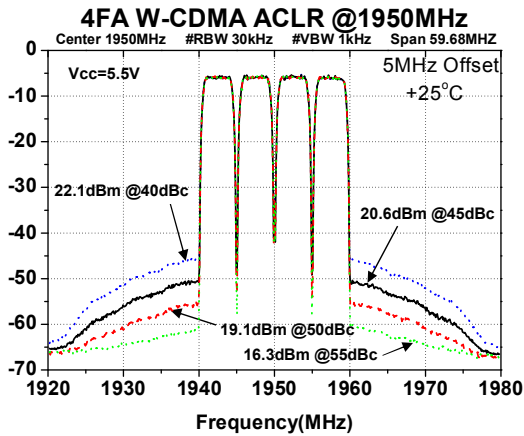
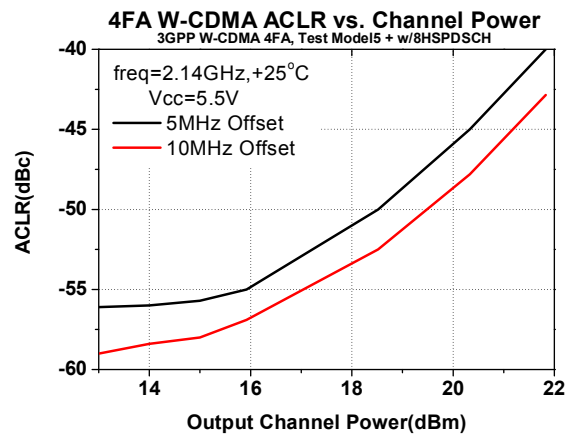
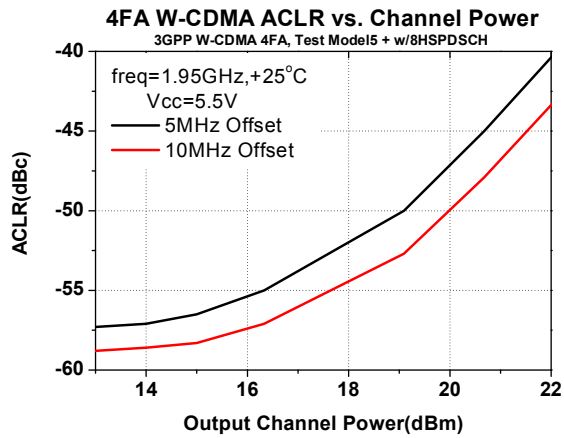
Test Board Information : FR4 PCB (Dielectric Constant = 4.6, thick = 0.8mm(32mil))

RF Microstrip Line Width = 1mm(39mil), Tuning Via Diameter ('R1','R2','R3', 'L1','L2',' L3',etc.) and Distance = 0.5mm(20mil)

All Passive Component Size is 1608(0603) and L1 is coil inductor

Frequency	2140 MHz
S21 : Gain	11.8 dB
S11 : Input Return Loss	-15 dB
S22 : Output Return Loss	-14 dB
Output P1dB	+31.1 dBm
Output IP3 @16dBm	+46.0 dBm
Noise Figure	4.4 dB
Supply Voltage	5.5 V
Current	460 mA





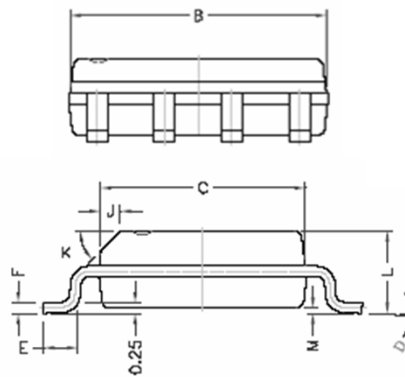
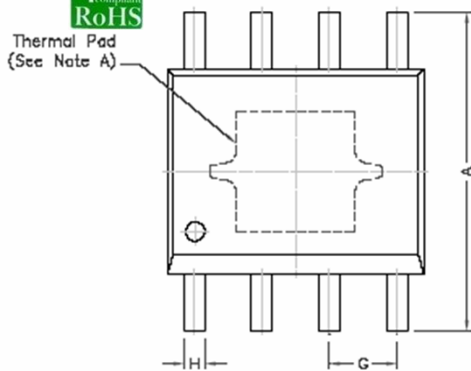
### Absolute Maximum Ratings

Parameter	Rating	Unit
Device Voltage	+6	V
Device Current	650	mA
RF Power Input	25	dBm
Storage Temperature	-55 to +125	°C
Ambient Operating Temperature	-40 to +85	°C
Junction Temperature	185	°C

Operation of this device above any of these parameters may cause permanent damage.



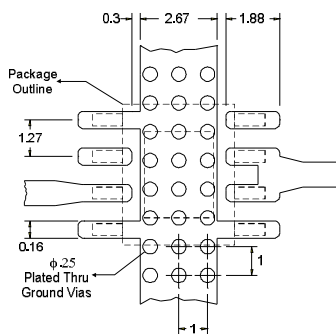
### Lead-free / RoHS Compliant / Green SOIC-8 Package Outline



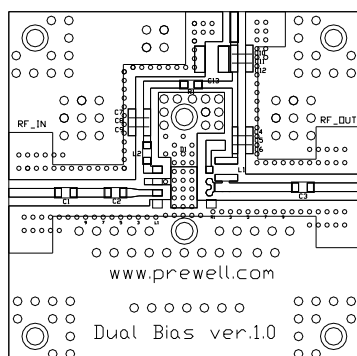
REF.	DIMENSIONS	
	Millimeters	
	Min.	Max.
A	5.80	6.20
B	4.80	5.00
C	3.80	4.00
D	ø	ø*
E	0.40	0.90
F	0.19	0.25
M	0	0.15
H	0.35	0.49
L	1.35	1.75
J	0.375 REF.	
K	45°	
G	1.27 TYP.	

NOTES:  
A: Thermal Pad Dimensions 25 ±0.1

### Land Pattern



### Evaluation Board Layout (4x4)



### ESD / MSL Ratings

- ESD sensitive device. Observe Handling Precautions.
- ESD Rating : Class 1C(Passes at 1000V min.) Human Body Model (HBM), JESD22-A114
- ESD Rating : Class IV (Passes at 1000V min.) Charged Device Model (CDM), JESD22-C101
- MSL (Moisture Sensitive Level) Rating : Level 3 at +260°C Convection reflow, J-STD-020

### Mounting Instructions

- Use a large ground pad area with many plated through-holes as shown.
- We recommend 1 oz copper minimum.
- Measurement for our data sheet was made on 0.8mm thick FR-4 Board.
- Add as much copper as possible to inner and outer layers near the part to ensure optimal thermal performance.
- RF trace width depends on the board material and construction.
- Add mounting screws near the part to fasten the board to a heatsink.

<http://www.prewell.com>