1214GN-50E/EL/EP

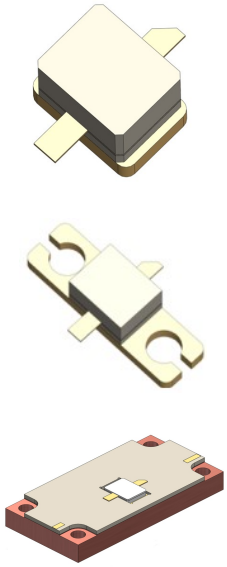
50 Watts • 50 Volts • 300us, 10%

1200-1400 MHz

E Series Earless/Eared GaN Transistor – Key Features

- 1200-1400MHz, 50W Output Power at 300µS, 10% pulsing
- 50V Bias Voltage, Common Source, Class AB
- >60% Typical Efficiency Across the Frequency Band
- Extremely Compact Size
- Over 16dB typical Power Gain
- Excellent Gain Flatness
- Radar, L-Band Avionics, Communications, and Industrial applications
- All gold metallization and eutectic die attach for highest reliability
- 50Ω in/out lumped element very small footprint plug & play pallets available

CASE OUTLINE
55-QQP/QQ/Pallet
Common Source



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation

Device Dissipation @ 25°C 100 W

Maximum Voltage and Current

Drain-Source Voltage (V_{DSS}) 150 V

Gate-Source Voltage (V_{GS}) -8 to +0 V

Maximum Temperatures

Storage Temperature (TSTG) -55 to +125° C

Operating Junction Temperature +200 °C

ELECTRICAL CHARACTERISTICS @ 25°C

Symbol	Characteristics	Test Conditions	Min	Typ	Max	Units
P_{OUT}	Output Power	P_{IN}=1.6W, Freq=1200,1300,1400MHz	50	58		W
G_P	Power Gain	P_{IN}=1.6W, Freq=1200,1300,1400MHz	15.2	15.9		dB
η_D	Drain Efficiency	P_{IN}=1.6W, Freq=1200,1300,1400MHz	55	60		%
Dr	Droop	P_{IN}=1.6W, Freq=1200,1300,1400MHz		0.2	0.6	dB
VSWR-T	Load Mismatch Tolerance	Po=50W, Freq=1300MHz, 300µs-10%			5:1	

- Bias Condition: Vdd=+50V, Idq=20mA constant current (Vgs= -2.0 ~ -4.5V typical)

FUNCTIONAL CHARACTERISTICS @ 25°C

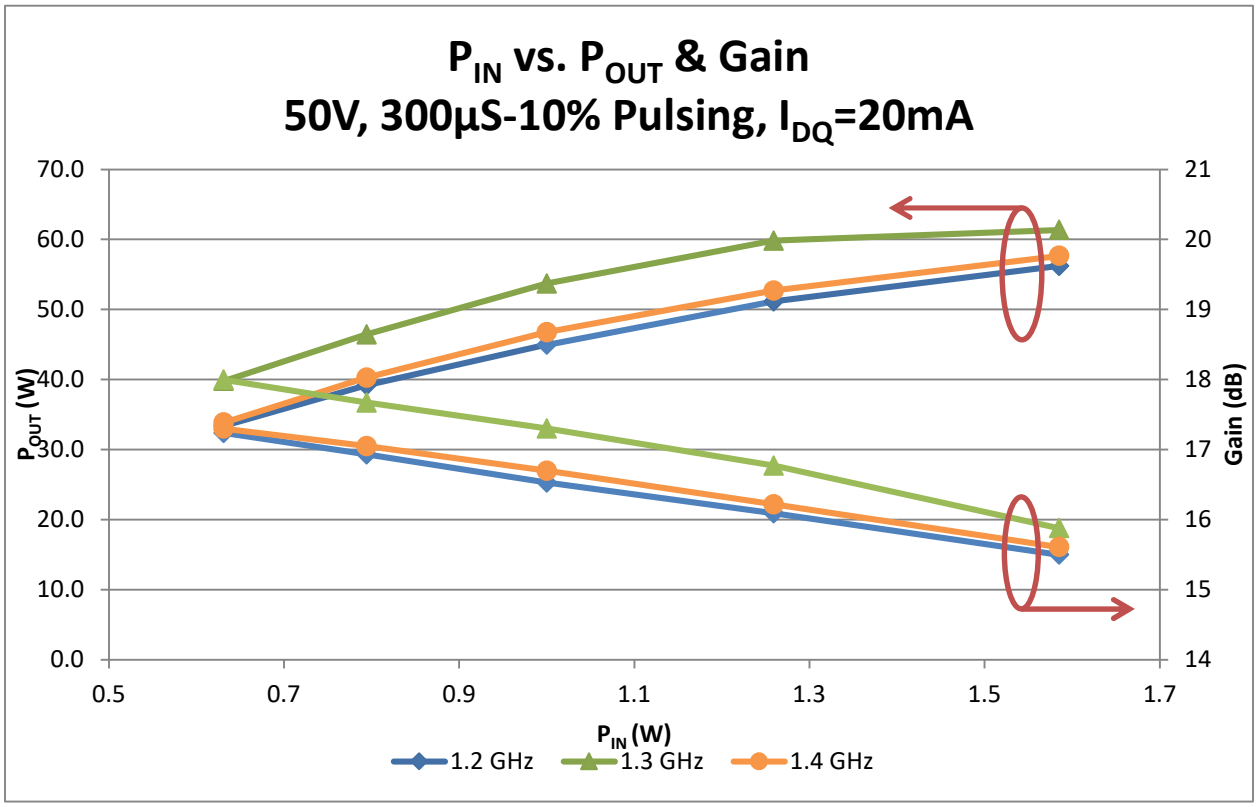
$I_{D(Off)}$	Drain leakage current	V_{GS} = -8V, V_D = 150V			4	mA
$I_{G(Off)}$	Gate leakage current	V_{GS} = -8V, V_D = 0V			0.5	mA

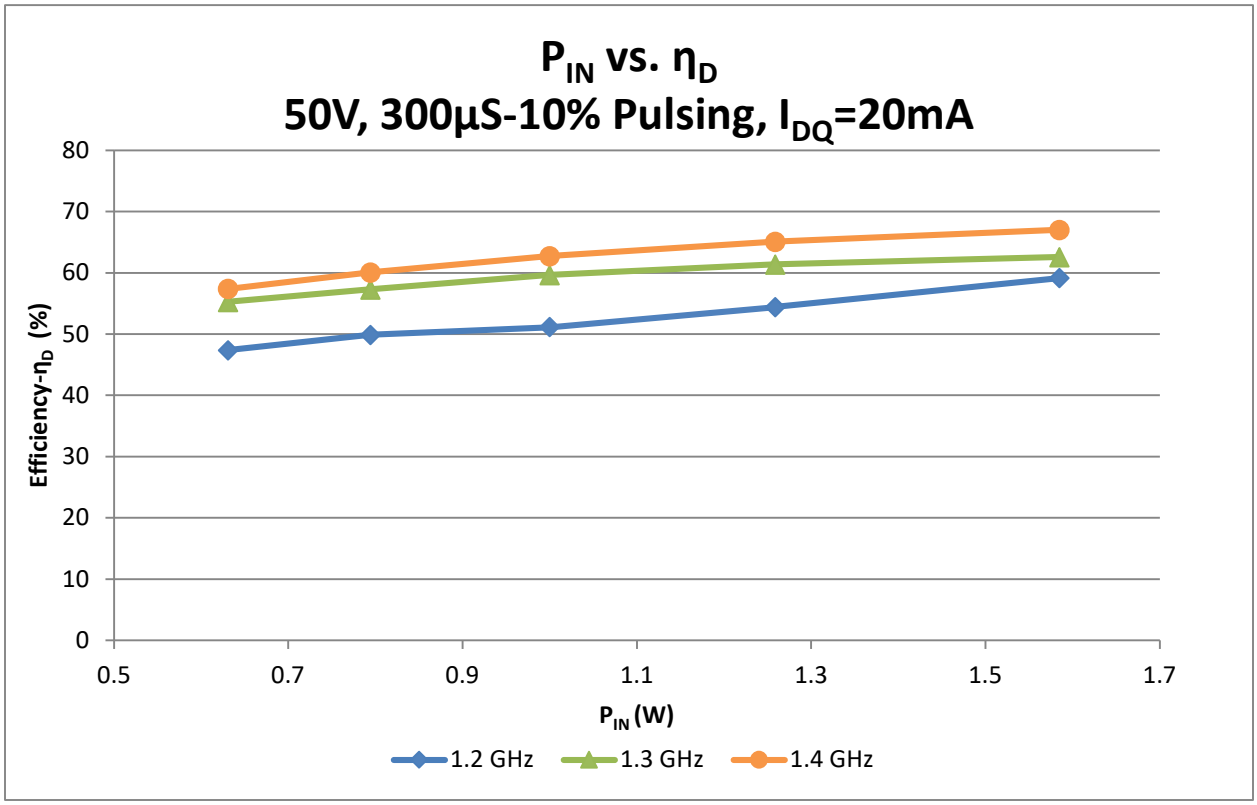
Export Classification: EAR-99

*Specifications are subject to change. Consult **www.microsemi.com** for local sales and technical support contacts.*

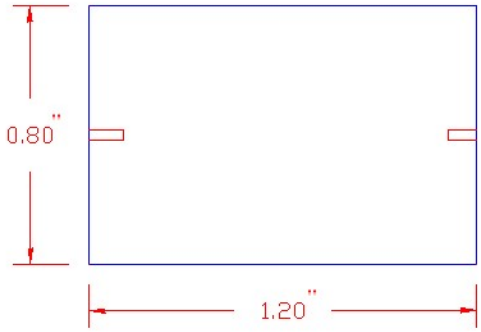
Typical Data

50V, 300µS-10% Pulsing, IDQ=20mA									
Freq (GHz)	P_{IN} (dBm)	P_{IN} (W)	P_{OUT} (dBm)	P_{OUT} (W)	Gain (dB)	IRL (dB)	I_D (A)	Droop (dB)	Eff. - η_D (%)
1.2	32	1.6	47.5	56.2	15.5	-8	0.21	0.3	59%
1.3	32	1.6	47.9	61.4	15.9	-18	0.216	0.25	63%
1.4	32	1.6	47.6	57.7	15.6	-7.6	0.192	0.2	67%




P_{IN} vs. η_D
50V, 300µS-10% Pulsing, I_{DQ}=20mA
Efficiency-η_D (%)
80
70
60
50
40
30
20
10
0
0.5
0.7
0.9
1.1
1.3
1.5
1.7
P_{IN} (W)
1.2 GHz
1.3 GHz
1.4 GHz

1214GN-50E/EL Test Fixture Overall Dimension



(Dimensions shown are in inches)

Evaluation Test Fixture available upon request

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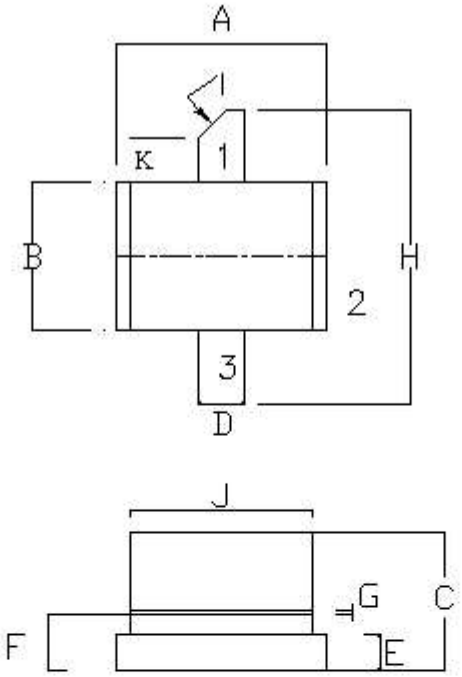
55-QQP PACKAGE DIMENSION



Dim	Millimeter	Tol	Inches	Tol
A	5.84	.25	.230	.010
B	4.06	.25	.160	.010
C	3.17	.05	.125	.002
D	1.27	.13	.050	.005
E	1.02	.13	.040	.005
F	1.57	.13	.062	.005
G	.130	.02	.005	.001
H	8.12	.25	.320	.010
I	45°	5°	45°	5°
J	5.08	.25	.200	.010
K	1.40	.13	.055	.005

PIN 1: DRAIN
PIN 2: SOURCE
PIN 3: GATE

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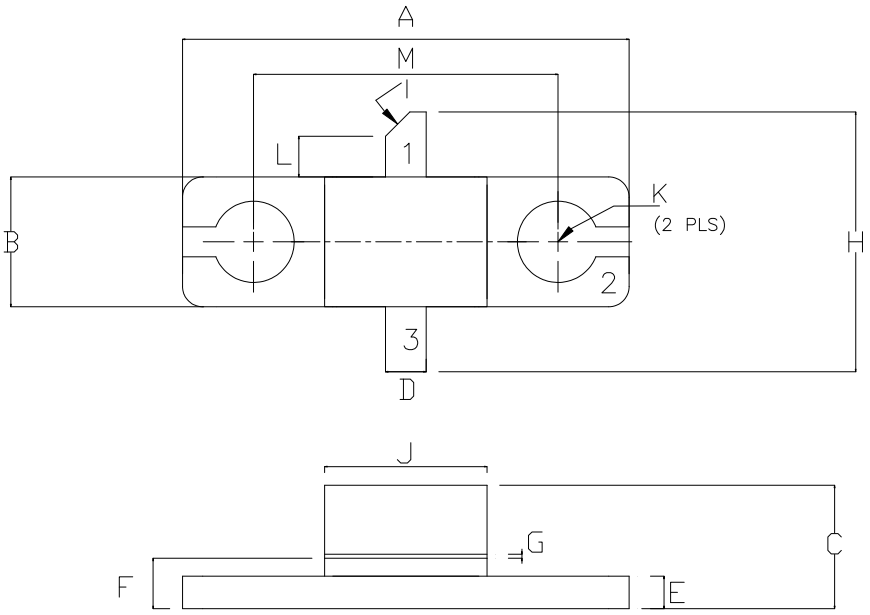
55-QQ PACKAGE DIMENSION



Dim	Millimeter	Tol	Inches	Tol
A	13.970	0.250	0.550	0.010
B	4.570	0.250	0.160	0.010
C	3.860	0.330	0.152	0.013
D	1.270	0.130	0.050	0.005
E	1.020	0.130	0.040	0.005
F	1.700	0.130	0.067	0.005
G	0.130	0.025	0.005	0.001
H	8.130	0.250	0.320	0.010
I	45°	5°	45°	5°
J	5.080	0.250	0.200	0.010
K	2.54 DIA	0.130	.100 DIA	0.005
L	1.270	0.130	0.050	0.005
M	9.530	0.130	0.375	0.005

PIN 1: DRAIN
PIN 2: SOURCE
PIN 3: GATE

1214GN-50E/EL/EP

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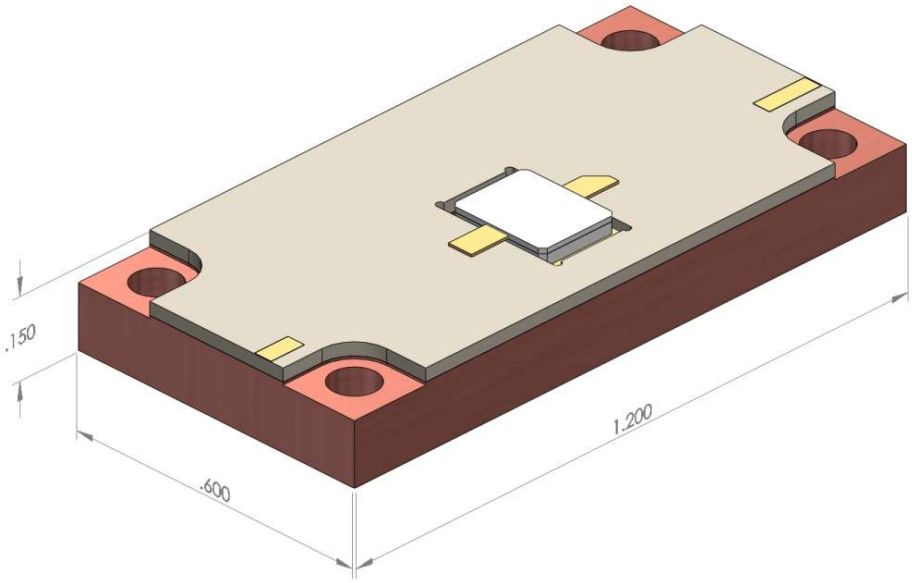
90-1214GN-50EP OVERALL PALLET DIMENSION



Dimension 1.2” X.6”X.15”

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Revision History

Revision Level / Date	Para. Affected	Description
0.1 / 22 August 2016	-	Initial Preliminary Release