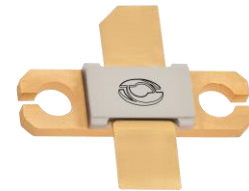


## GENERAL DESCRIPTION

The 3942GN-120V is an internally matched, COMMON SOURCE, class AB, GaN on SiC HEMT transistor capable of providing over 14 dB gain, 120 Watts of pulsed RF output power at 200uS pulse width, 10% duty factor across the 3900 to 4200 MHz band. This hermetically sealed transistor is designed for C-Band Radar applications. It utilizes gold metallization and eutectic attach to provide highest reliability and superior ruggedness.

Market Application – 3942GN-120V is designed for C-Band Pulsed Radar

## CASE OUTLINE 55-QP Common Source



## ABSOLUTE MAXIMUM RATINGS

### Maximum Power Dissipation

Device Dissipation @ 25°C      270 W

### Maximum Voltage and Current

Drain-Source Voltage ( $V_{DSS}$ )      125 V  
Gate-Source Voltage ( $V_{GS}$ )      -8 to +0 V

### Maximum Temperatures

Storage Temperature ( $T_{STG}$ )      -55 to +125° C  
Operating Junction Temperature      +250 °C

## ELECTRICAL CHARACTERISTICS @ 25°C

Symbol	Characteristics	Test Conditions	Min	Typ	Max	Units
Pout	Output Power	Freq=3900,4100,4200 MHz	120			W
Gp	Power Gain	Freq=3900,4100,4200 MHz		15.2		dB
$\eta_d$	Drain Efficiency	Freq=3900,4100,4200 MHz	50	62		%
Dr	Droop	Freq=3900,4100,4200 MHz		.15	.5	dB
VSWR-T	Load Mismatch Tolerance	Pout=120W, Freq= 4200MHz			3:1	
$\Theta_{jc}$	Thermal Resistance	Pulse Width=200uS, Duty=10%			.92	°C/W

- Bias Condition: Vdd=+50V, Idq=30mA constant current ( $V_{GS} = -2.0 \sim -4.5V$  typical)

## FUNCTIONAL CHARACTERISTICS @ 25°C

$I_{D(Off)}$	Drain leakage current	$V_{GS} = -8V, V_D = 125V$			12	mA
$I_{G(Off)}$	Gate leakage current	$V_{GS} = -8V, V_D = 0V$			4	mA
$BV_{DSS}$	Drain-source breakdown voltage	$V_{GS} = -8V, I_D = 12mA$	125			V

**Export Classification: ECCN 3A001.b.3.a.4**

For the most current data, consult MICROSEMI's website: [www.MICROSEMI.com](http://www.MICROSEMI.com)

Specifications are subject to change, consult the Santa Clara factory at (408) 986-8031 for the latest information.

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## 3942GN-120V

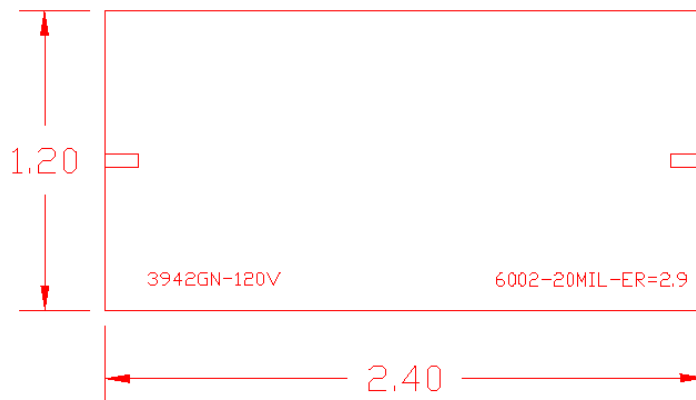
120 Watts - 50 Volts, 200uS, 10%  
C-Band Radar 3900 - 4200 MHz

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### TYPICAL BROAD BAND PERFORMANCE DATA

Frequency	Pin (W)	Pout (W)	Id (A)	RL (dB)	Nd (%)	G (dB)	Droop (dB)
3900 MHz	4	133	.48	-11.5	59	15.2	.15
4100 MHz	4	132	.44	-8.0	62	15.2	.15
4200 MHz	4	148	.46	-8.6	68	15.7	.10

### CIRCUIT LAYOUT

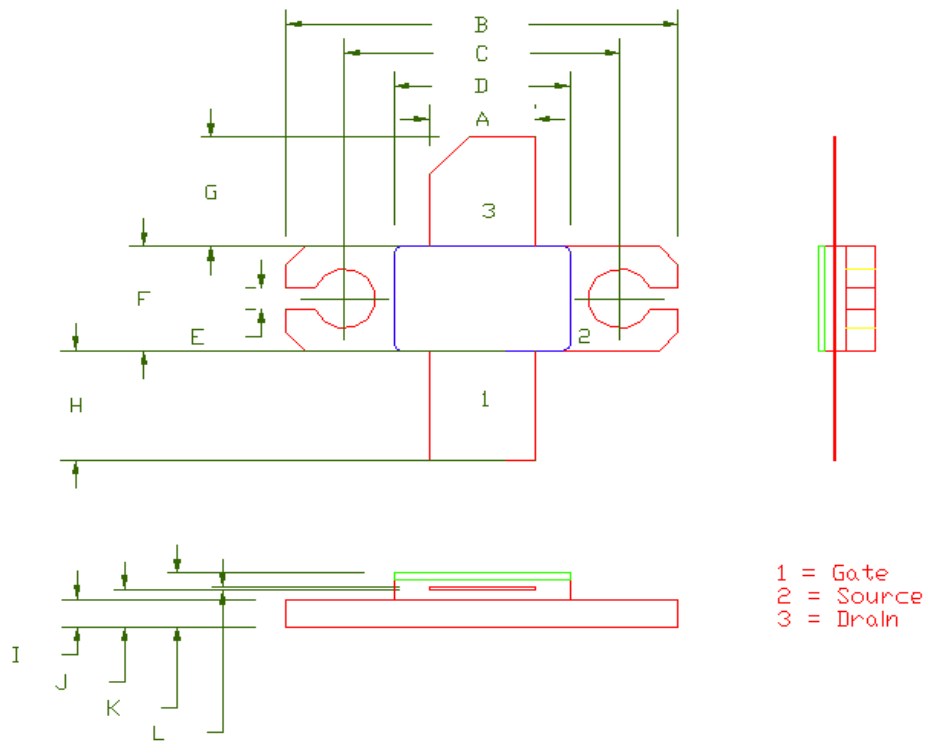


**Please contact Microsemi Corporation for more detail**

# 3942GN-120V

120 Watts - 50 Volts, 200uS, 10%  
C-Band Radar 3900 - 4200 MHz

## 55-QP PACKAGE DIMENSION



Dimension	Min (mil)	Min (mm)	Max (mil)	Max (mm)
A	213	5.41	217	5.51
B	798	20.26	802	20.37
C	560	14.22	564	14.32
D	258	6.55	362	9.19
E	43	1.09	47	1.19
F	226	5.74	230	5.84
G	235	5.96	239	6.07
H	235	5.96	239	6.07
I	60	1.52	62	1.57
J	81	2.06	82	2.08
K	116	2.94	118	2.99
L	4	.102	6	.152

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# 3942GN-120V

120 Watts - 50 Volts, 200uS, 10%  
C-Band Radar 3900 - 4200 MHz

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#### **Revision History**

<b>Revision Level / Date</b>	<b>Para. Affected</b>	<b>Description</b>
01 / April 2014	-	Initial Preliminary Release

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