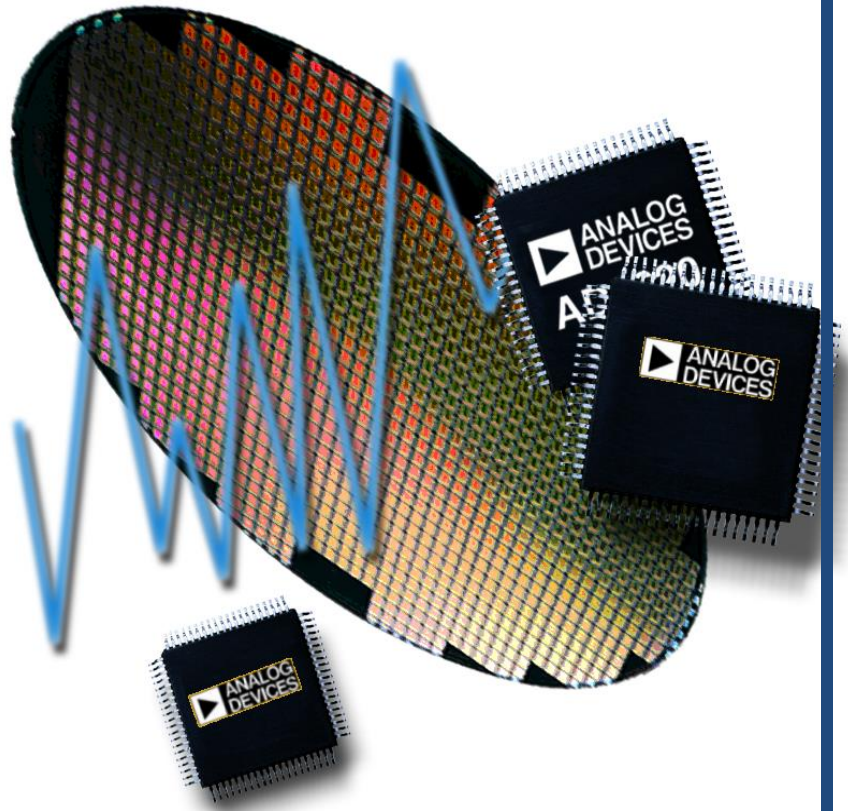


# Analog Devices Welcomes Hittite Microwave Corporation

NO CONTENT ON THE ATTACHED DOCUMENT HAS CHANGED





# ***Reliability Report***

<b>Report Title:</b>	<b>Qualification Test Report</b>
<b>Report Type:</b>	<b>See Attached</b>
<b>Date:</b>	<b>See Attached</b>

# QUALIFICATION TEST REPORT

**Part Type:** Plastic Encapsulated  
**Package Family** QFN

**QTR:** 05006  
**Rev:** 02

HMC215LP4E	Mixer, High IP3, Double-Balanced	HMC415LP3E	Amplifier, Medium Power
HMC232LP4E	Switch, SPDT, High Isolation	HMC416LPE4	VCO w/ Buffer
HMC241LP4E	Switch, SP4T	HMC424LP3E	Attenuator, 6-Bit Digital
HMC263LP4E	Amplifier, Low Noise	HMC425LP3E	Attenuator, 6-Bit Digital
HMC271ALP4E	Attenuator, 5-Bit Digital	HMC427LP3E	Switch, Transfer
HMC276LP4E	Switch, Matrix	HMC429LP4E	VCO w/ Buffer
HMC305ALP4E	Attenuator, 5-Bit Digital	HMC430LP4E	VCO w/ Buffer
HMC311LP3E	Amplifier, HBT Gain Block	HMC431LP4E	VCO w/ Buffer
HMC321LP4E	Switch, SP8T	HMC441LP3E	Amplifier, Medium Power
HMC322LP4E	Switch, SP8T	HMC443LP4E	Frequency Multiplier, Active x2
HMC334LP4E	Mixer, Downconverter	HMC444LP4E	Frequency Multiplier, Active x8
HMC340LP5E	I/Q Mixer / IRM	HMC445LP4E	Frequency Multiplier, Active x16
HMC344LP3E	Switch, SP4T	HMC451LP3E	Amplifier, Medium Power
HMC345LP3E	Switch, SP4T	HMC455LP3E	Amplifier, High IP3 ½W
HMC346LP3E	Attenuator, Analog VVA	HMC461LP3E	Amplifier, Power 1W
HMC347LP3E	Switch, SPDT Hi Isolation	HMC462LP5E	Amplifier, Wideband Self-Biased
HMC348LP3E	Switch, SPDT CATV	HMC463LP5E	Amplifier, Wideband Self-Biased
HMC349LP4CE	Switch, Hi Isolation	HMC464LP5E	Amplifier, Wideband
HMC356LP3E	Amplifier, Low Noise	HMC465LP5E	Amplifier, Wideband
HMC368LP4E	Multiplier, Active x2	HMC466LP4E	VCO w/ Buffer
HMC369LP3E	Multiplier, Active x2	HMC467LP3E	Attenuator, 2-Bit Digital
HMC370LP4E	Multiplier, Active x4	HMC468LP3E	Attenuator, 3-Bit Digital
HMC372LP3E	Amplifier, Low Noise	HMC470LP3E	Attenuator, 5-Bit Digital
HMC373LP3E	Amplifier, Low Noise	HMC472LP3E	Attenuator, 6-Bit Digital
HMC375LP3E	Amplifier, Low Noise	HMC486LP5E	Amplifier, Power 2W
HMC376LP3E	Amplifier, Low Noise	HMC487LP5E	Amplifier, Power 2W
HMC381LP6E	High IP3, Dual Downconverter	HMC489LP5E	Amplifier, Power 1W
HMC382LP3E	Amplifier, Low Noise	HMC490LP5E	Amplifier, Medium Power
HMC384LP4E	VCO w/ Buffer	HMC491LP3E	Amplifier, Low Noise
HMC385LP4E	VCO w/ Buffer	HMC492LP3E	Frequency Divider, ÷2
HMC386LP4E	VCO w/ Buffer	HMC493LP3E	Frequency Divider, ÷4
HMC388LP4E	VCO w/ Buffer	HMC494LP3E	Frequency Divider, ÷8
HMC389LP4E	VCO w/ Buffer	HMC495LP3E	Modulators, Direct Quadrature
HMC390LP4E	VCO w/ Buffer	HMC496LP3E	Modulators, Direct Quadrature
HMC391LP4E	VCO w/ Buffer	HMC497LP4E	Modulators, Direct Quadrature
HMC394LP4E	Frequency Divider, 5-Bit Counter	HMC500LP3E	Modulator, Vector
HMC408LP3E	Amplifier, Power 1W	HMC504LP4E	VCO w/ Buffer
HMC409LP4E	Amplifier, Power 1W	HMC505LP4E	VCO w/ Buffer

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# QUALIFICATION TEST REPORT

**Part Type:** Plastic Encapsulated  
**Package Family** QFN

**QTR:** 05006  
**Rev:** 02

HMC506LP4E	VCO with Fo/2	HMC596LP4E	Switch, 4x2 Matrix
HMC507LP5E	VCO with Fo/2	HMC597LP4E	I/Q Demodulator
HMC508LP5E	VCO with Fo/2	HMC600LP4E	Logarithmic Detector/Controller
HMC509LP5E	VCO with Fo/2	HMC601LP4E	Logarithmic Detector/Controller
HMC510LP5E	VCO with Fo/2 and $\div 4$	HMC602LP4E	Logarithmic Detector/Controller
HMC511LP5E	VCO with Fo/2	HMC604LP3E	Amplifier, Low Noise
HMC512LP5E	VCO with Fo/2 and $\div 4$	HMC605LP3E	Amplifier, Low Noise
HMC513LP5E	VCO with Fo/2 and $\div 4$	HMC611LP4E	Logarithmic Detector/Controller
HMC514LP5E	VCO with Fo/2 and $\div 4$	HMC615LP4E	Mixer, Sub-Harmonic
HMC515LP5E	VCO with Fo/2 and $\div 4$	HMC616LP3E	Amplifier, Low Noise
HMC529LP5E	VCO with Fo/2 and $\div 4$	HMC617LP3E	Amplifier, Low Noise
HMC530LP5E	VCO with Fo/2 and $\div 4$	HMC618LP3E	Amplifier, Low Noise
HMC531LP5E	VCO with Fo/2 and $\div 4$	HMC619LP5E	Amplifier, Wideband (Distributed)
HMC532LP4E	VCO w/ Buffer	HMC621LP4E	Mixers, Downconverter RFICs
HMC533LP4E	VCO with $\div 16$	HMC623LP4E	Mixers, Downconverter RFICs
HMC534LP5E	VCO with Fo/2 and $\div 4$	HMC624LP4E	Attenuator, 6-Bit Digital
HMC535LP4E	Phase Locked Oscillator	HMC625LP5E	VGA, 6-Bit Digital
HMC536LP2E	Switch, SPDT T/R	HMC625HFLP5E	VGA, 6-Bit Digital
HMC538LP4E	Phase Shifter, Analog	HMC626LP5E	VGA, 6-Bit Digital
HMC539LP3E	Attenuator, 5-Bit Digital	HMC627LP5E	VGA, 6-Bit Digital
HMC540LP3E	Attenuator, 4-Bit Digital	HMC630LP3E	Modulator, Vector
HMC541LP3E	Attenuator, 1-Bit Digital	HMC631LP3E	Modulator, Vector
HMC542ALP4E	Attenuator, 6-Bit Digital	HMC632LP5E	VCO with Fo/2 and $\div 4$
HMC546LP2E	Switch, SPDT, 10W Failsafe	HMC637LP5E	Amplifier, Wideband (Distributed)
HMC547LP3E	Switch, SDT High Isolation	HMC641LP4E	Switch, SP4T
HMC548LP3E	Amplifier, Low Noise	HMC646LP2E	Switch, SPDT 40W Failsafe
HMC551LP4E	Mixer, High IP3, Double-Balanced	HMC647LP6E	Phase Shifter, 6-Bit Digital
HMC552LP4E	Mixer, High IP3, Double-Balanced	HMC648LP6E	Phase Shifter, 6-Bit Digital
HMC561LP3E	Frequency Multiplier, Active x2	HMC649LP6E	Phase Shifter, 6-Bit Digital
HMC566LP4E	Amplifier, Low Noise	HMC652LP2E	Attenuator, Passive
HMC575LP4E	Frequency Multiplier, Active x2	HMC653LP2E	Attenuator, Passive
HMC581LP6E	High IP3, Dual Downconverter	HMC654LP2E	Attenuator, Passive
HMC582LP5E	VCO with Fo/2 and $\div 4$	HMC655LP2E	Attenuator, Passive
HMC583LP5E	VCO with Fo/2 and $\div 4$	HMC656LP2E	Attenuator, Passive
HMC584LP5E	VCO with Fo/2 and $\div 4$	HMC657LP2E	Attenuator, Passive
HMC590LP5E	Amplifier, Power 1W	HMC658LP2E	Attenuator, Passive
HMC591LP5E	Amplifier, Power 2W	HMC662LP3E	Power Detector, Log Amplifier
HMC593LP3E	Amplifier, Low Noise w/ Bypass	HMC665LP4E	Mixers, Double Balanced

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# QUALIFICATION TEST REPORT

**Part Type:** Plastic Encapsulated  
**Package Family** QFN

**QTR:** 05006  
**Rev:** 02

HMC666LP4E	Mixers, High IP3	HMC734LP5E	VCO with Fo/2 & Divide-by-4
HMC668LP3E	Amplifiers, Low Noise	HMC720LP3E	1:2 Fanout Buffer
HMC669LP3E	Amplifiers, Low Noise	HMC721LP3E	XOR / XNOR
HMC674LP3E	Latched Comparator-RSPECL	HMC722LP3E	AND / NAND / OR / NOR
HMC675LP3E	Latched Comparator-RSCML	HMC723LP3E	D-Type Flip Flop
HMC676LP3E	Latched Comparator-RSECL	HMC735LP5E	VCO with Fo/2 & Divide-by-4
HMC677LP5E	High Speed Logic, Digital	HMC736LP4E	VCO with Fo/2
HMC680LP4E	Variable Gain Amplifier, Digital	HMC737LP4E	VCO with Fo/2
HMC681LP5E	Variable Gain Amplifier, Digital	HMC738LP4E	VCO with Fo/2 & Divide-by-16
HMC682LP6CE	Mixers, Downconverter RFIC	HMC739LP4E	VCO with Fo/2 & Divide-by-16
HMC683LP6CE	Mixers, Downconverter RFIC	HMC742LP5E	VGA, 6-Bit Digital
HMC684LP4E	Mixer, Downconverter	HMC742HFLP5E	VGA, 6-Bit Digital
HMC685LP4E	Mixer, Downconverter	HMC743LP6CE	VGA, 6-Bit Digital
HMC686LP4E	Mixers, High IP3	HMC750LP4E	Amplifier, Limiting Amplifier
HMC687LP4E	Mixers, High IP3	HMC753LP4E	Amplifier, Low Noise
HMC688LP4E	Mixers, High IP3	HMC755LP4E	Amplifier, Linear & Power
HMC689LP4E	Mixers, High IP3	HMC757LP4E	Amplifier, Linear & Power
HMC694LP4E	Variable Gain Amplifier, Analog	HMC758LP3E	Amplifier, Low Noise
HMC695LP4E	Freq. Multiplier, Active x4	HMC759LP3E	Attenuators, Digital
HMC697LP4E	Modulator, Direct Quadrature	HMC764LP6CE	PLL w/Integrated VCO, Microwave VCOs
HMC698LP5E	PLL, Integer N	HMC765LP6CE	PLL w/Integrated VCO, Microwave VCOs
HMC699LP5E	PLL, Integer N	HMC770LP4BE	50 / 75 Ohm Differential Amplifier
HMC700LP4E	PLL, Fractional-N Synthesizer IC	HMC783LP6CE	PLL w/Integrated VCO, Microwave VCOs
HMC701LP6CE	PLL, Fractional-N Synthesizer IC	HMC785LP4E	Mixers, High IP3
HMC702LP6CE	PLL, Fractional-N Synthesizer IC	HMC786LP4E	Mixers, High IP3
HMC703LP4E	PLL, Fractional-N w/ Sweeper	HMC788LP2E	Amplifier, Gain Blocks & Drivers
HMC704LP4E	PLL, Fractional-N	HMC792LP4E	Attenuator, Digital
HMC705LP4E	Freq. Divider, Programmable	HMC794LP3E	Freq. Dividers & Detectors, Programmable Divider
HMC707LP5E	Variable Gain Amplifier, Digital	HMC795LP5E	Direct Modulator with VGA
HMC708LP5E	Variable Gain Amplifier, Digital	HMC797LP5E	Amplifier, Wideband Distributed
HMC712LP3CE	Attenuator, Analog VVA	HMC799LP3E	Transimpedance Amplifier
HMC713MS8E	Power Detector, Log Amplifier	HMC800LP3E	Attenuator, Digital
HMC713LP3E	Power Detector, Log Detector	HMC801LP3E	Attenuator, Digital
HMC715LP3E	Amplifier, Low Noise	HMC802LP3E	Attenuator, Digital
HMC716LP3E	Amplifier, Low Noise		
HMC717LP3E	Amplifier, Low Noise		
HMC718LP4E	Amplifier, Low Noise		
HMC719LP4E	Amplifier, Low Noise		

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# QUALIFICATION TEST REPORT

**Part Type:** Plastic Encapsulated  
**Package Family** QFN

**QTR:** 05006  
**Rev:** 02

HMC807LP6CE	PLL w/Integrated VCO, Microwave VCOs	HMC892LP5E	Filter - Tunable, Band Pass
HMC816LP4E	Amplifier, Low Noise	HMC893LP5E	Filter - Tunable, Band Pass
HMC817LP4E	Amplifier, Low Noise	HMC894LP5E	Filter - Tunable, Band Pass
HMC818LP4E	Amplifier, Low Noise	HMC897LP4E	Filter - Tunable, Band Pass
HMC820LP6CE	PLL with Integrated VCO, RF VCOs	HMC899LP4E	Filter - Tunable, Band Pass
HMC821LP6CE	PLL with Integrated VCO, RF VCOs	HMC900LP5E	IF/Baseband Processing, Dual Baseband Low Pass Filter
HMC822LP6CE	PLL with Integrated VCO, RF VCOs	HMC902LP3E	Amplifier, Low Noise
HMC824LP6CE	PLL with Integrated VCO, RF VCOs	HMC903LP3E	Amplifier, Low Noise
HMC826LP6CE	PLL with Integrated VCO, RF VCOs	HMC905LP3E	Programmable Freq. Divider
HMC828LP6CE	PLL with Integrated VCO, RF VCOs	HMC907LP5E	Amplifier, Wideband (Distributed)
HMC830LP6GE	PLL with Integrated VCO, Wideband	HMC909LP4E	RMS Power Detector
HMC831LP6CE	PLL with Integrated VCO, RF VCOs	HMC914LP4E	Limiting Amplifier
HMC836LP6CE	PLL with Integrated VCO, RF VCOs	HMC915LP4E	Mixers, High IP3
HMC837LP6CE	PLL with Integrated VCO, RF VCOs	HMC916LP3E	Frequency Multiplier, Active
HMC838LP6CE	PLL with Integrated VCO, RF VCOs	HMC917LP3E	Frequency Multiplier, Active
HMC839LP6CE	PLL with Integrated VCO, RF VCOs	HMC920LP5E	Active Bias Controller
HMC840LP6CE	PLL with Integrated VCO, RF VCOs	HMC921LP4E	Amplifiers, Linear & Power
HMC849LP4CE	Switches, SPDT	HMC922LP4E	Switches, SPDT
HMC860LP3E	Power Conditioning, Voltage Regulator	HMC926LP5E	Digital VGA
HMC862LP3E	Programmable Divider	HMC928LP5E	Phase Shifter, Analog
HMC863LP4E	Amplifiers, Linear & Power	HMC929LP4E	Phase Shifter, Analog
HMC881LP5E	Filter - Tunable, Low Pass	HMC931LP4E	Phase Shifter, Analog
HMC882LP5E	Filter - Tunable, Low Pass	HMC932LP4E	Phase Shifter, Analog
HMC890LP5E	Filter - Tunable, Band Pass	HMC933LP4E	Phase Shifter, Analog
HMC891LP5E	Filter - Tunable, Band Pass	HMC935LP5E	Phase Shifter, Analog
		HMC936LP6E	Phase Shifter, Digital
		HMC942LP4E	Frequency Multiplier, Active
		HMC943LP5E	Amplifiers, Linear & Power
		HMC948LP3E	Power Detectors, Log Detector
		HMC951LP4E	Mixers, I/Q Upconverter
		HMC960LP4E	IF/Baseband Processing, Dual Digital VGA w/ Driver
		HMC965LP5E	Amplifiers, Linear & Power
		HMC966LP4E	Mixers, Downconverter RFIC
		HMC967LP4E	Mixers, Downconverter RFIC
		HMC972LP5E	Variable Gain Amplifier, Analog
		HMC973LP3E	Attenuator, Analog

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# QUALIFICATION TEST REPORT

**Part Type:** Plastic Encapsulated  
**Package Family** QFN

**QTR:** 05006  
**Rev:** 02

HMC976LP3E	DC Power Conditioning, Linear Voltage Regulator
HMC977LP4E	I/Q Downconverter / Receiver
HMC981LP3E	DC Power Management, Active Bias Controller
HMC996LP4E	Variable Gain Amplifier
HMC1010LP4E	RMS Power Detector
HMC1020LP4E	RMS Power Detector
HMC1021LP4E	RMS Power Detector
HMC1030LP5E	Dual RMS Power Detector
HMC1097LP4E	Modulators, Wideband Direct Quadrature
	Obsolete Products
HMC340LP5E	I/Q Mixer / IRM

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## 1.0 Introduction

This qualification procedure was designed to satisfy the package reliability requirements for a plastic Quad-Flat No-lead (QFN) surface mount package. The testing was designed to simulate the worst-case environments the product may experience during assembly, test and

life in the end user application. The device was electrically tested to the appropriate catalog specifications. The HMC311LP3 and HMC347LP3 were selected to qualify the QFN package family.

The qualification plan has three subgroups:

1. Temperature Cycling
2. Autoclave
3. THB

## 1.1 General Description

The QFN package uses a copper lead frame. The lead frame is spot plated with silver to enable gold wire bonding. The MMIC device is epoxy attached to the paddle using silver filled epoxy. The MMIC contains gold bond pads. The interconnection is performed using 1 mil gold ball bonds. The part is encapsulated using Sumitomo EME series encapsulating compound. The terminals and ground paddle are finished with 85/15 SnPb or Matte Sn.

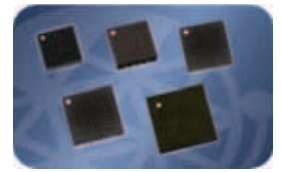


Photo 1  
Typical QFN Packages

The HMC311LP3 is a GaAs InGaP Heterojunction Bipolar Transistor (HBT) Gain Block MMIC SMT DC to 6 GHz amplifier. This 3x3mm QFN packaged amplifier can be used as either a cascadable 50 Ohm gain stage or to drive the LO of HMC mixers with up to +17 dBm output power. The HMC311LP3 offers 14.5 dB of gain and an output IP3 of +30 dBm while requiring only 56 mA from a +5V supply. The Darlington feedback pair used results in reduced sensitivity to normal process variations and yields excellent gain stability over temperature while requiring a minimal number of external bias components.

The HMC347LP3 is a broadband high isolation non-reflective GaAs MESFET SPDT switch in a low cost leadless QFN surface mount plastic package. Covering DC to 14 GHz, the switch offers high isolation and low insertion loss. The switch features >50 dB isolation up to 3 GHz and >40 dB isolation up to 13 GHz. The switch operates using complementary negative control voltage logic lines of -5/0V and requires no bias supply.

## 2.0 Summary of Results

All testing has been completed. There were no failures in any subgroup. The device meets the requirements for a reliable Quad Flat No-lead Plastic encapsulated package.

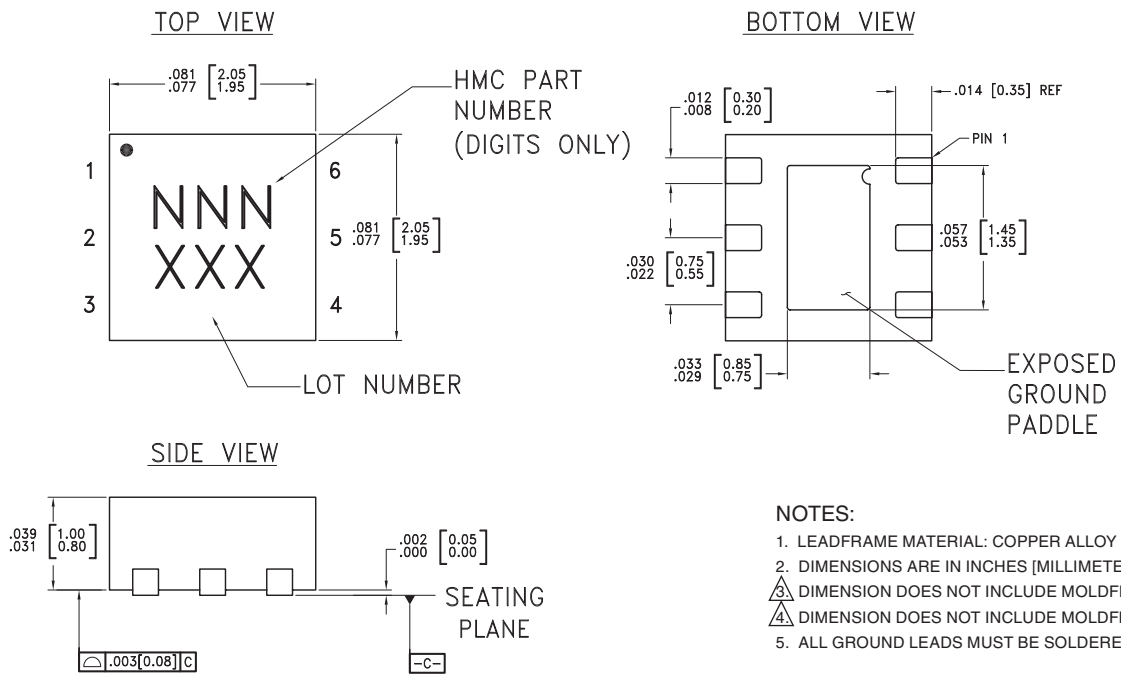
PARA	TEST	QTY IN	QTY OUT	PASS / FAIL	NOTES
3.1	Sample Selection	90 45	90 45	Pass / No Failures	HMC311LP3 HMC347LP3
3.2	Initial Electrical Characterization (+25)	90 45	90 45	Pass / No Failures	HMC311LP3 HMC347LP3
3.3	Temperature Cycling Exposure	45	45	Complete	HMC311LP3
3.4	Electrical Test	45	45	Pass / No Failures	
3.5	Autoclave Exposure	45	45	Complete	HMC311LP3
3.6	Electrical Test	45	45	Pass / No Failures	
3.7	85/85 THB Exposure	45	45	Pass / No Failures	HMC347LP3
3.8	Electrical Test	45	45	Pass / No Failures	



### 3.0 Test Procedure

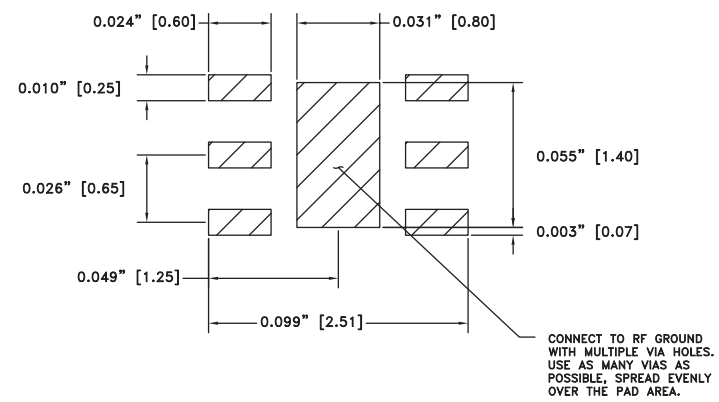
- 3.1 Sample Selection: Using parts from stock that met acceptance test requirements, 90 HMC311LP3 and 45 HMC347LP3 parts were obtained from stock and divided into 3 subgroups:
1. (45) Temperature Cycling
  2. (45) Autoclave
  3. (45) Temperature Humidity Bias
- 3.2 Pre-Test Screening: Baseline electrical test was performed on all the parts from 3.1 at +25°C per the device ATP. The test read and recorded 100% of the data. There were no failures in this initial test.
- 3.3 Temperature Cycling: Temperature cycling exposure was performed on 45 parts from subgroup 1 per JESD22-AI04-A condition B (-65 to +150) for a minimum of 500 cycles. This test was performed by Assurance Technology Corp. in Chelmsford, MA.
- 3.4 Electrical Test: Electrical test was performed on 45 parts from 3.3 at +25°C per the device ATP. The test read and recorded 100% of the data. There were no failures in this subgroup.
- 3.5 Autoclave: Autoclave exposure was performed on 45 parts from subgroup 2 per JESD22-AI02-B condition C (+121°C, 100% RH, 15 PSI) for a minimum of 96 hours.
- 3.6 Electrical Test: Electrical test was performed on 45 parts from 3.5 at +25°C per the device ATP. Electrical testing was performed no sooner than 2 hours and no later than 48 hours after exposure. The test read and recorded 100% of the data.
- 3.7 Temp/Humidity/Bias Test (THB): Temperature/Humidity/Bias exposure was performed on 45 parts from subgroup 3 (+85°C, 85% RH, 5v) for a minimum of 1000 hours.
- 3.8 Electrical Test: Electrical test was performed on 45 parts from 3.7 at +25°C per the device ATP. Electrical testing was performed no sooner than 2 hours and no later than 48 hours after exposure. The test read and recorded 100% of the data. There were no failures in this subgroup.

### LP2 - Package Dimensions



- NOTES:**
1. LEADFRAME MATERIAL: COPPER ALLOY
  2. DIMENSIONS ARE IN INCHES [MILLIMETERS]
  3. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.15mm PER SIDE.
  4. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.25mm PER SIDE.
  5. ALL GROUND LEADS MUST BE SOLDERED TO PCB RF GROUND.

### Suggested Land Pattern

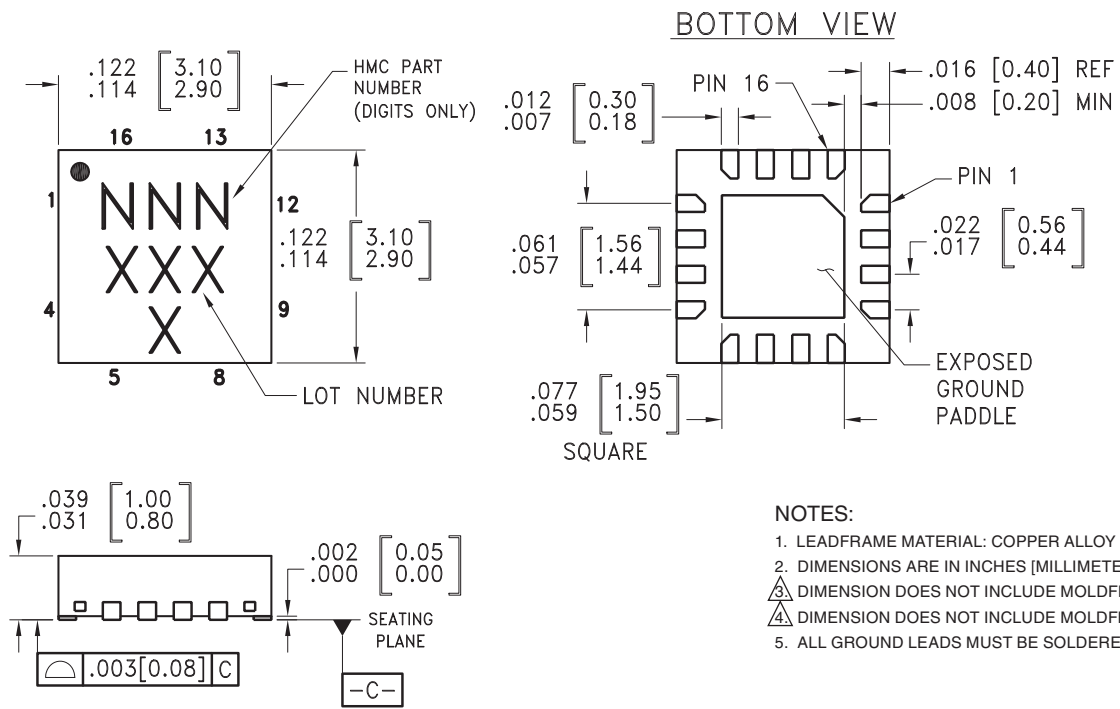


### Package Information

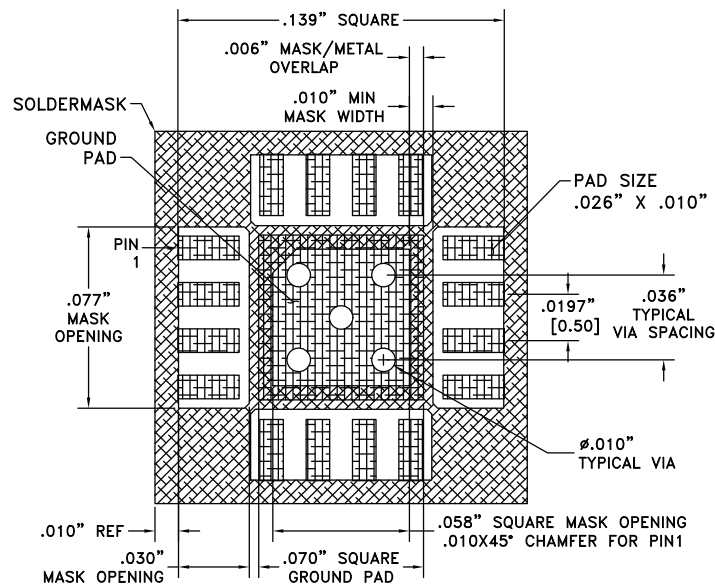
Part Number Suffix	Package Body Material	Lead Finish	MSL Rating	Package Marking <sup>[3][4]</sup>
LP2	RoHS Compliant Mold Compound	Sn/Pb Solder	MSL1 <sup>[1]</sup>	NNN XXX
LP2E	RoHS Compliant Mold Compound	100% matte Sn	MSL1 <sup>[2]</sup>	NNN XXX

[1] Max peak reflow temperature of 235 °C [3] 4-Digit lot number XXXX  
 [2] Max peak reflow temperature of 260 °C [4] 3-Digit part number NNN

### LP3 - Package Dimensions



### Suggested Land Pattern



### Package Information

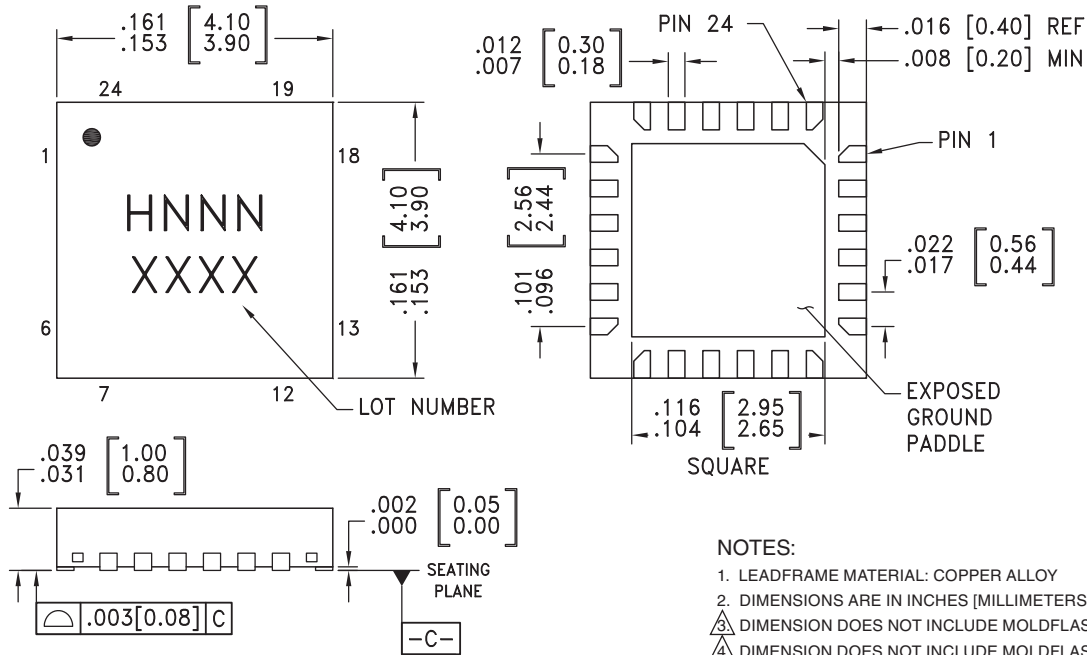
Part Number Suffix	Package Body Material	Lead Finish	MSL Rating	Package Marking <sup>[3][4]</sup>
LP3	RoHS Compliant Mold Compound	Sn/Pb Solder	MSL1 <sup>[1]</sup>	NNN XXXX
LP3E	RoHS Compliant Mold Compound	100% matte Sn	MSL1 <sup>[2]</sup>	NNN XXXX

[1] Max peak reflow temperature of 235 °C  
 [2] Max peak reflow temperature of 260 °C

[3] 4-Digit lot number XXXX  
 [4] 3-Digit part number NNN

### LP4 - Package Dimensions

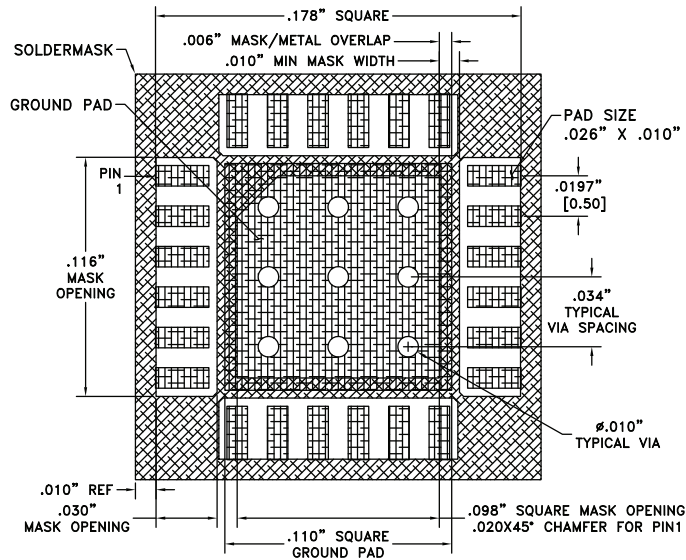
#### BOTTOM VIEW



**NOTES:**

1. LEADFRAME MATERIAL: COPPER ALLOY
2. DIMENSIONS ARE IN INCHES [MILLIMETERS]
3. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.15mm PER SIDE.
4. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.25mm PER SIDE.
5. ALL GROUND LEADS MUST BE SOLDERED TO PCB RF GROUND.

#### Suggested Land Pattern

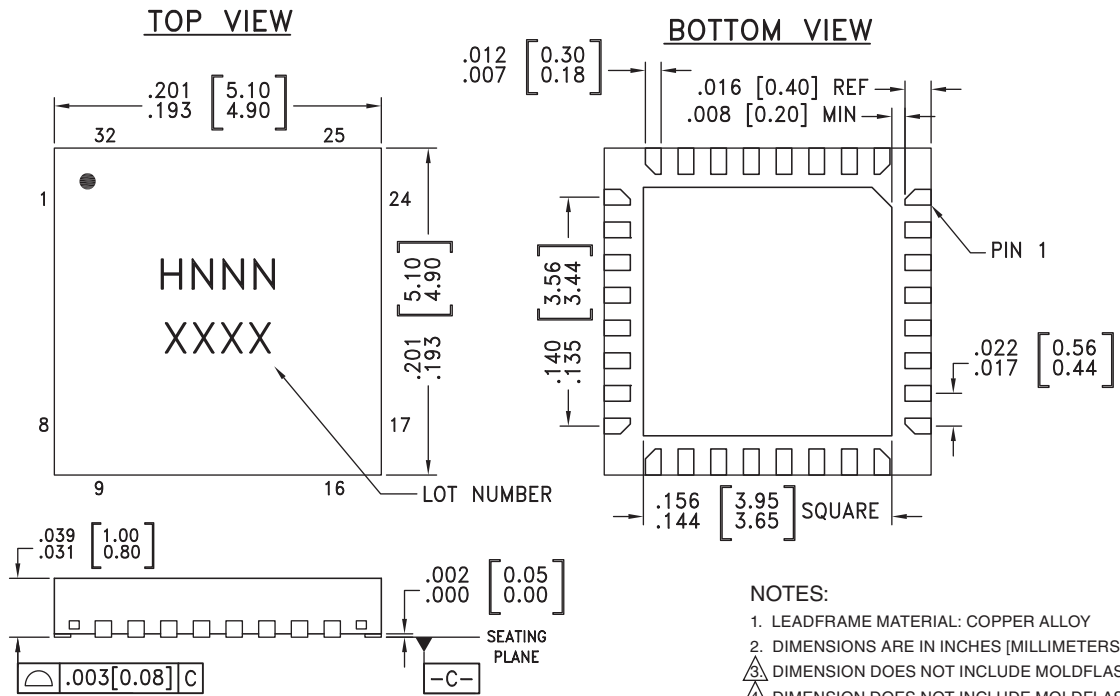


### Package Information

Part Number Suffix	Package Body Material	Lead Finish	MSL Rating	Package Marking <sup>[3][4]</sup>
LP4	RoHS Compliant Mold Compound	Sn/Pb Solder	MSL1 <sup>[1]</sup>	HNNN XXXX
LP4E	RoHS Compliant Mold Compound	100% matte Sn	MSL1 <sup>[2]</sup>	HNNN XXXX

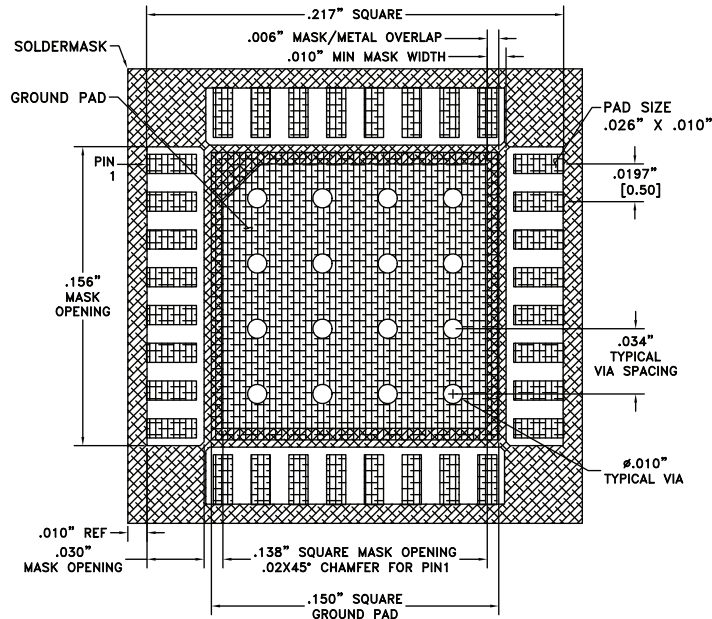
[1] Max peak reflow temperature of 235 °C [3] 4-Digit lot number XXXX  
 [2] Max peak reflow temperature of 260 °C [4] 3-Digit part number NNN

### LP5 - Package Dimensions



- NOTES:**
1. LEADFRAME MATERIAL: COPPER ALLOY
  2. DIMENSIONS ARE IN INCHES [MILLIMETERS]
  3. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.15mm PER SIDE.
  4. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.25mm PER SIDE.
  5. ALL GROUND LEADS MUST BE SOLDERED TO PCB RF GROUND.

### Suggested Land Pattern

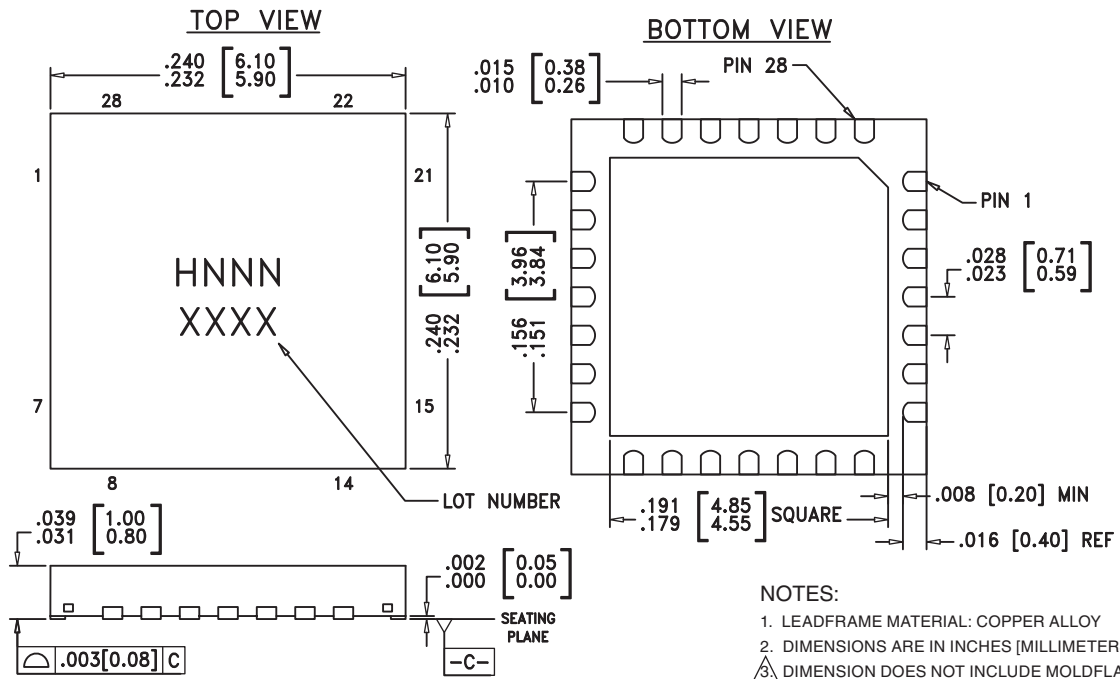


### Package Information

Part Number Suffix	Package Body Material	Lead Finish	MSL Rating	Package Marking <sup>[3][4]</sup>
LP4	RoHS Compliant Mold Compound	Sn/Pb Solder	MSL1 <sup>[1]</sup>	HNNN XXXX
LP4E	RoHS Compliant Mold Compound	100% matte Sn	MSL1 <sup>[2]</sup>	HNNN XXXX

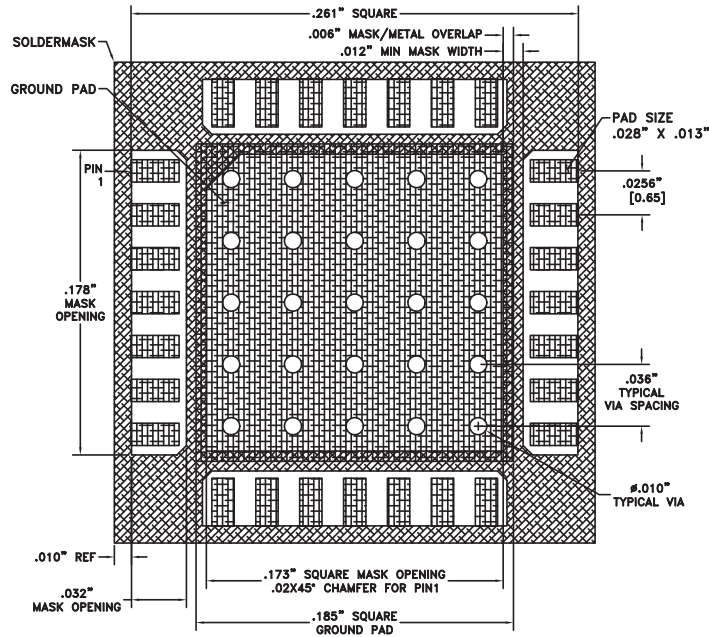
[1] Max peak reflow temperature of 235 °C [3] 4-Digit lot number XXXX  
 [2] Max peak reflow temperature of 260 °C [4] 3-Digit part number NNN

### LP6 - Package Dimensions



- NOTES:**
1. LEADFRAME MATERIAL: COPPER ALLOY
  2. DIMENSIONS ARE IN INCHES [MILLIMETERS]
  3. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.15mm PER SIDE.
  4. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.25mm PER SIDE.
  5. ALL GROUND LEADS MUST BE SOLDERED TO PCB RF GROUND.

### Suggested Land Pattern



### Package Information

Part Number Suffix	Package Body Material	Lead Finish	MSL Rating	Package Marking <sup>[3][4]</sup>
LP6	RoHS Compliant Mold Compound	Sn/Pb Solder	MSL1 <sup>[1]</sup>	HNNN XXXX
LP6E	RoHS Compliant Mold Compound	100% matte Sn	MSL1 <sup>[2]</sup>	HNNN XXXX

[1] Max peak reflow temperature of 235 °C [2] Max peak reflow temperature of 260 °C [3] 4-Digit lot number XXXX [4] 3-Digit part number NNN