



3 dB NF, 20 dBm P1dB, 30 MHz to 20 GHz, Low Noise Broadband Amplifier, 15 dB Gain, SMA

## TECHNICAL DATA SHEET

PE15A3254

PE15A3254 is a broadband GaAs PHEMT MMIC-based coaxial Low Noise Amplifier, operating in the 30 MHz to 20.0 GHz frequency range. The amplifier offers 3dB typical Noise Figure, 20 dBm of P1dB and 15dB small signal gain, with gain flatness of  $\pm 2.5$  dB. This amplifier requires only a single positive DC supply with internal voltage regulation, is unconditionally stable, operates over the temperature range of  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ , and characterized by a light weight (11 g) and small size (1.08"x0.53"x0.29"). The rugged package is designed to meet series of MIL-STD-202F environmental conditions including humidity, shock, vibration, and temperature cycle, and features field removable SMA connectors for drop mounting onto a PWB.

### Features

- 0.03 to 20 GHz Frequency Range
- P1dB: 20 dBm
- Small Signal Gain: 15 dB
- Gain Flatness:  $\pm 2.5$  dB
- Noise Figure: 3 dB
- Output IP3: +29 dBm
- 50 Ohm Input and Output Matched
- $-20$  to  $+70^{\circ}\text{C}$  Operating Temperature
- Unconditionally Stable
- Single DC Positive Supply
- Built-in DC Voltage Regulator
- Small Size & Light Weight
- Field Replaceable SMA Connectors

### Applications

- Laboratory Applications
- R&D Labs
- Radar Systems
- Electronic Warfare
- Telecom Infrastructure
- Test Instrumentation
- Military & Space
- Communication Systems
- Satellite Communications
- Wireless Communications
- Unmanned Systems
- Microwave Radio Systems
- Power Amplifier
- Low Noise Amplifier
- General Purpose Amplification
- RF Front Ends

### Electrical Specifications (TA= $25^{\circ}\text{C}$ )

Description	Minimum	Typical	Maximum	Units
Frequency Range	0.03		20	GHz
Gain		15		dB
Gain Flatness		$\pm 2.5$		dB
Output at 1 dB Compression Point		+20		dBm
Output 3 <sup>rd</sup> Intercept Point		+29		dBm
Noise Figure		3		dB
Operating DC Voltage 1	12		15	Volts
Operating DC Current		180		mA
Operating Temperature Range (OTR)	-20		+70	$^{\circ}\text{C}$

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### Absolute Maximum Rating

Parameter	Rating	Units
Source Voltage	+15	Volts
RF input Power	+23	dBm
Operating Temperature (base-plate)	-20 to +70	°C
Storage Temperature	-55 to +125	°C



ESD Sensitive Material,  
Transport material in  
Approved ESD bags.  
Handle only in approved  
ESD Workstation.

### Mechanical Specifications

**Size** \*Excluding Connectors\*

Length	1.08 in [27.43 mm]
Width	0.36 in [9.14 mm]
Height	0.18 in [4.57 mm]
Weight	0.0368 lbs [16.69 g]
Connector Option	Field Replaceable
Input Connector	SMA Female
Output Connector	SMA Female

### Environmental Specifications

#### Temperature

Operating Range	-20 to +70 deg C
Storage Range	-55 to +125 deg C

Humidity

Shock

Altitude

Temperature Cycling

MIL-STD-202F, METHOD 103B COND B.  
MIL-STD-202F, METHOD 213B COND B.  
MIL-STD-202F, METHOD 105C COND B.  
MIL-STD-202F, METHOD 107D COND A.

**Compliance Certifications** (see [product page](#) for current document)

### Plotted and Other Data

Notes:

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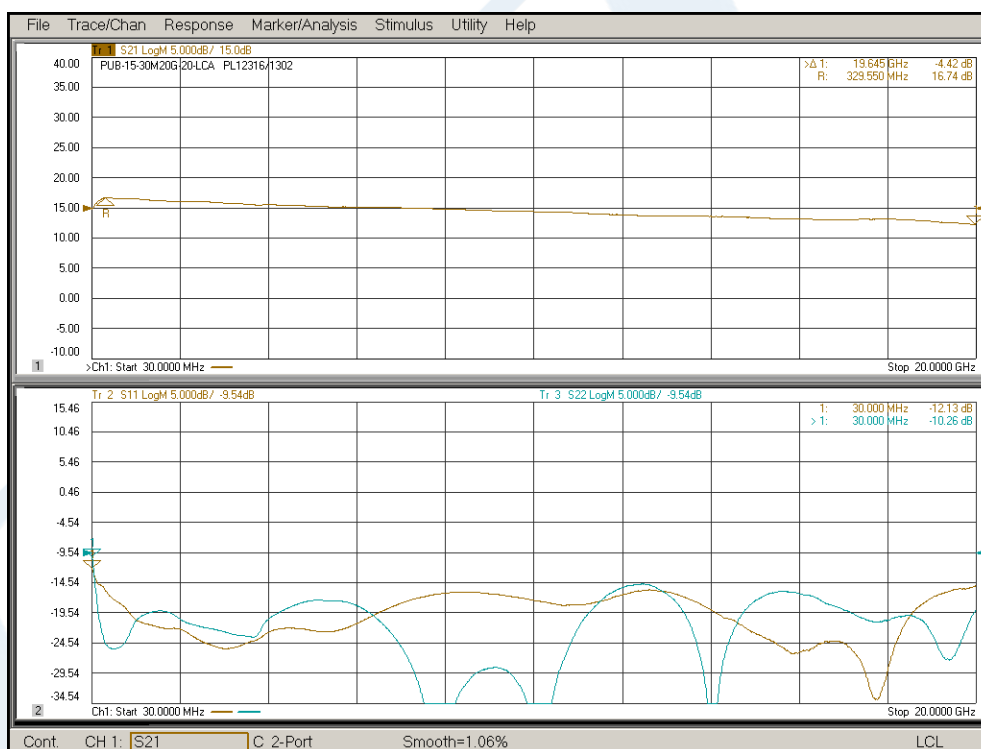
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### Typical Performance Data

#### Gain & Return Loss



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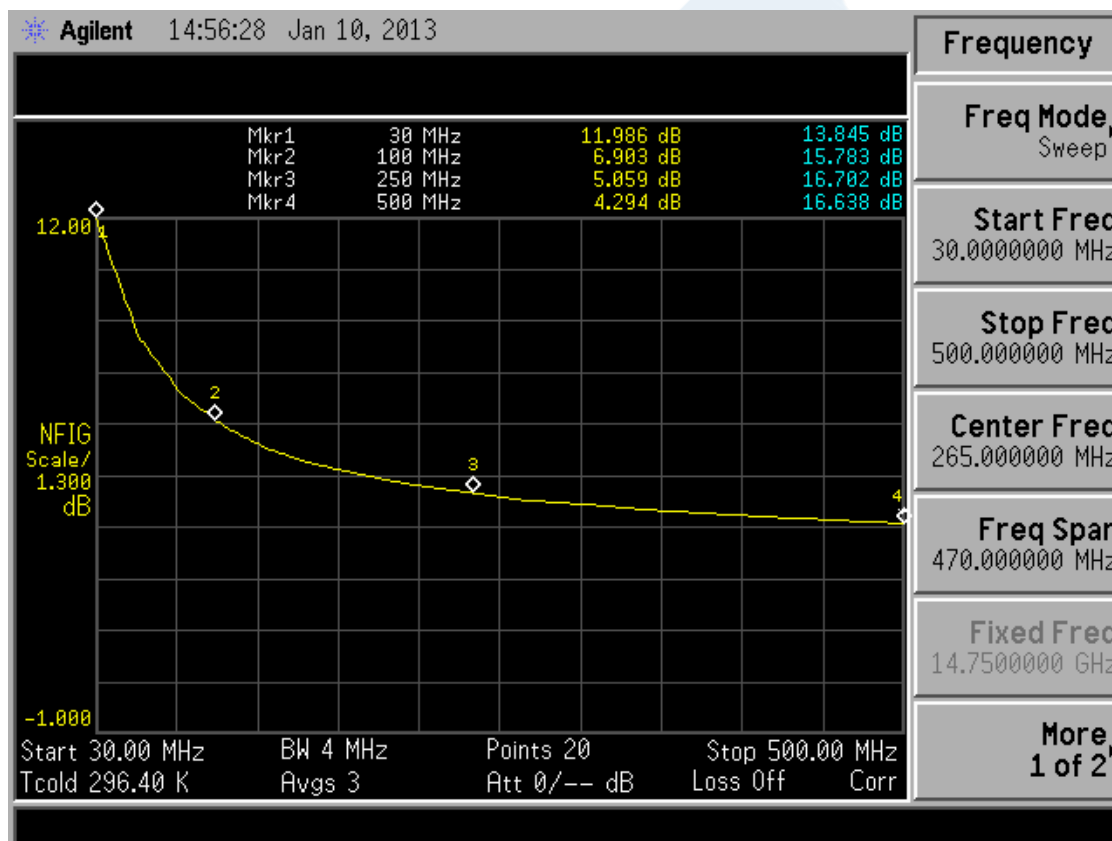


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### Low Frequency Noise Figure Plot (30 to 500MHz)



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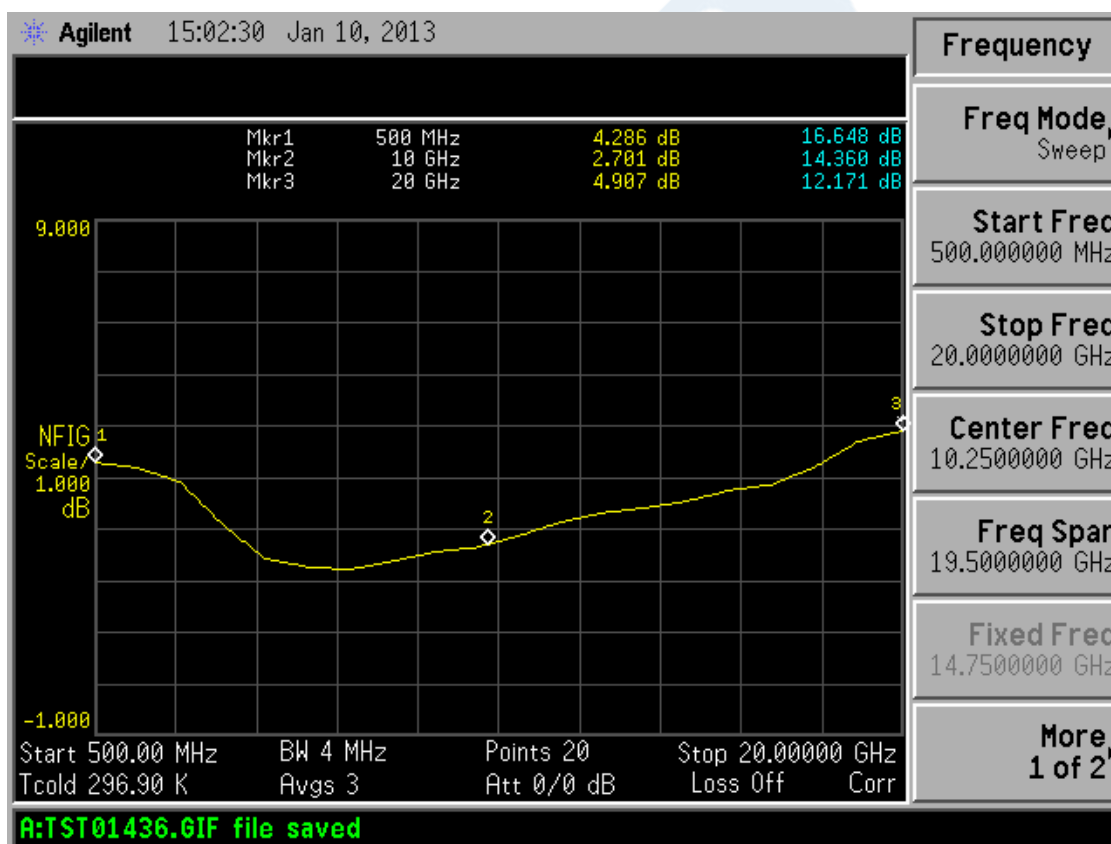


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### Noise Figure Plot (500MHz to 20GHz)



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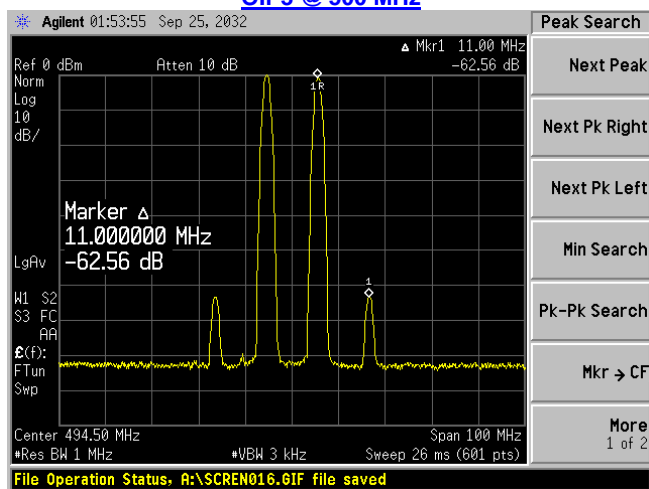


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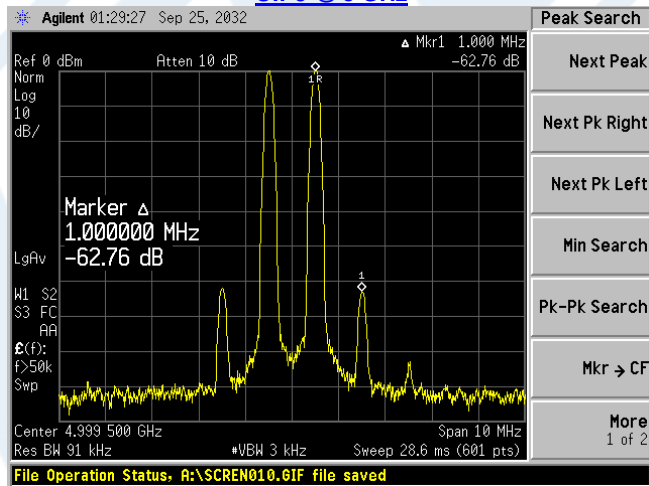
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### OIP3 @ 500 MHz



$$\begin{aligned} \text{OIP3} &= \text{Pout} + \text{dBc}/2 \\ +31.28\text{dBm} &= 0 + (62.56/2) \end{aligned}$$

### OIP3 @ 5 GHz



$$\begin{aligned} \text{OIP3} &= \text{Pout} + \text{dBc}/2 \\ +31.38\text{dBm} &= 0 + (62.76/2) \end{aligned}$$

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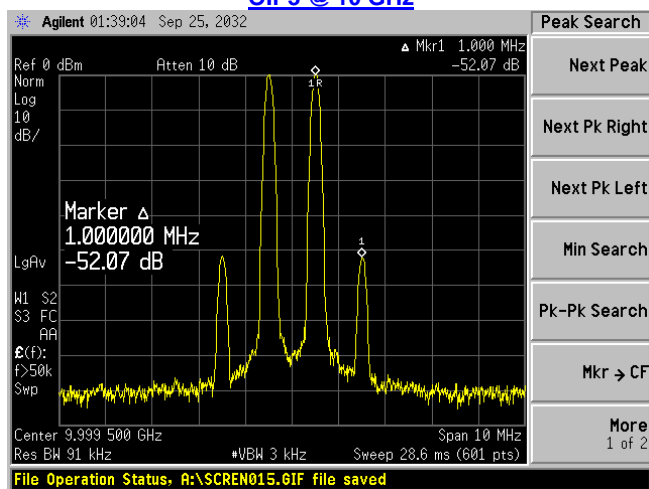


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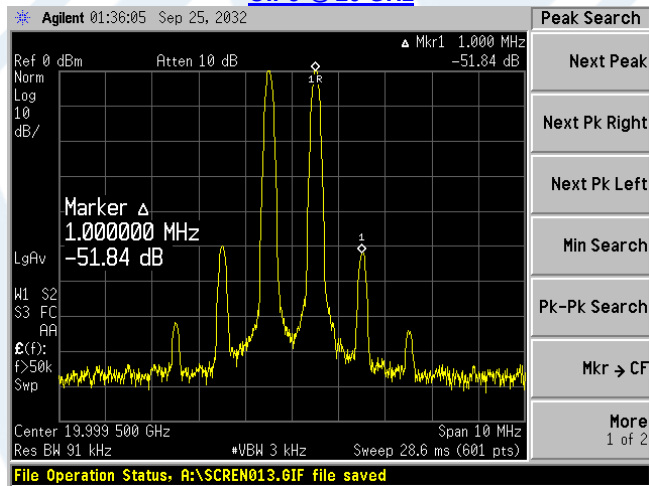
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### OIP3 @ 10 GHz



$$\begin{aligned} \text{OIP3} &= \text{Pout} + \text{dBc}/2 \\ +26.03\text{dBm} &= 0 + (52.07/2) \end{aligned}$$

### OIP3 @ 20 GHz



$$\begin{aligned} \text{OIP3} &= \text{Pout} + \text{dBc}/2 \\ +25.92\text{dBm} &= 0 + (51.84/2) \end{aligned}$$

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3 dB NF, 20 dBm P1dB, 30 MHz to 20 GHz, Low Noise Broadband Amplifier, 15 dB Gain, SMA from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

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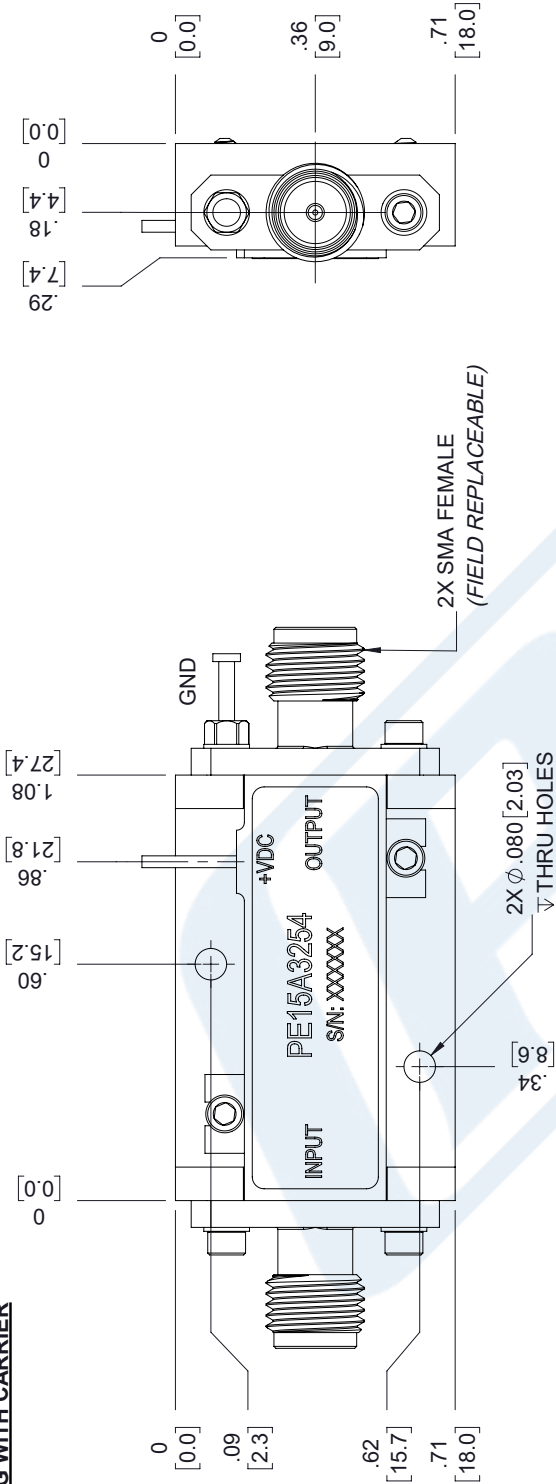


# PE15A3254 CAD Drawing

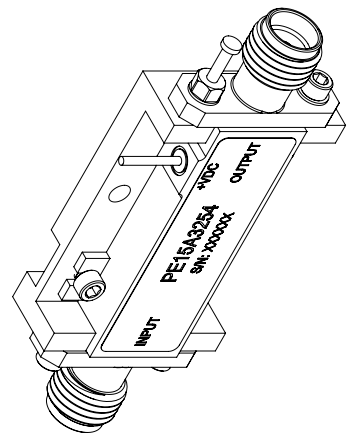
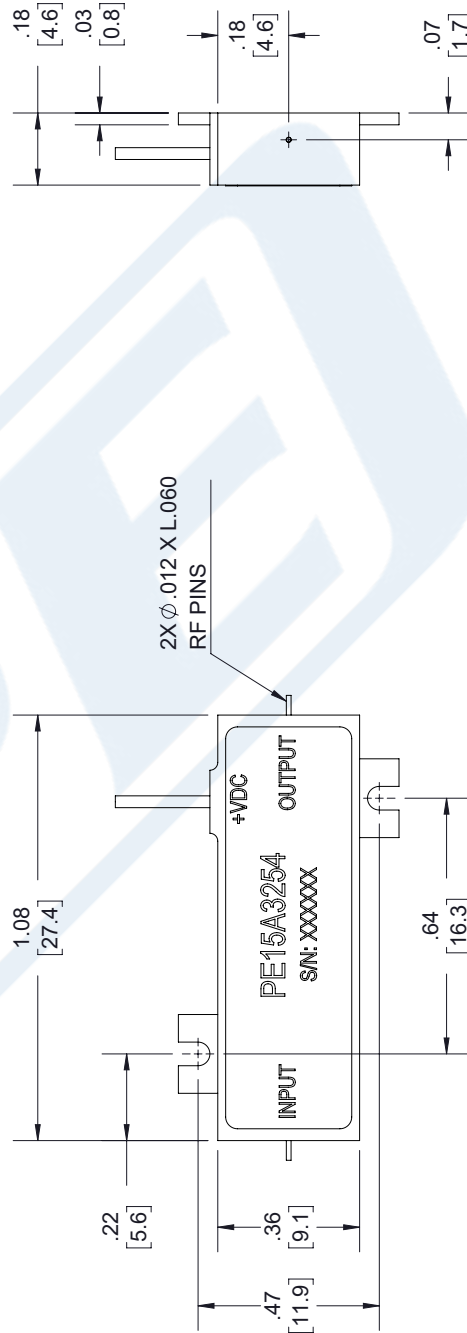
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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	11/06/19	T.GALLA

## AMPLIFIER HOUSING WITH CARRIER



## AMPLIFIER HOUSING WITHOUT CARRIER



UNLESS OTHERWISE SPECIFIED LEADING DIMENSIONS ARE INCHES DIMENSIONS IN [ ] ARE MILLIMETERS	
TOLERANCES:	FRACTIONS
.X = ± .2	[.508]
.XX = ± .02	[.51]
.XXX = ± .005	[.13]
CABLE LENGTH (L) TOLERANCES:	ANGLES ± 1°
L ≤ 12 [305] = ± 1 [25] / -0	
12 [305] < L ≤ 60 [1524] = +2 [51] / -0	
60 [1524] < L ≤ 120 [3048] = +4 [102] / -0	
120 [3048] < L ≤ 300 [7620] = +6 [152] / -0	
300 [7620] < L = +5% / -0	
ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.	

THIRD-ANGLE PROJECTION	
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SHEET 1	OF 1
SCALE	N/A
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DRAWN BY	K.DANG
PART NUMBER	PE15A3254
REV	A



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