

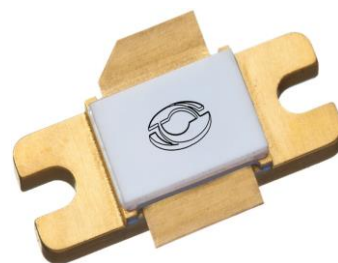
0912GN-500LV

500 Watts • 50 Volts • 450 μ s, 35%
960 - 1215 MHz Broad Band Data Link

GENERAL DESCRIPTION

The 0912GN-500LV is an internally matched, COMMON SOURCE, class AB GaN on SiC HEMT transistor capable of providing over 16dB gain, 500 Watts of pulsed RF output power at 450 μ s pulse width, 35% duty factor across the 960 to 1215 MHz band. The transistor has internal pre-match for optimal performance. This hermetically sealed transistor can be used for Broadband Data Link applications. It utilizes gold metallization and eutectic attach to provide highest reliability and superior ruggedness.

CASE OUTLINE 55-KR Common Source



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation

Device Dissipation @ 25°C

Maximum Voltage and Current

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

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

Maximum Temperatures

Storage Temperature (T_{STG}) -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 | Freq=960,1090,1215 MHz | 500 | 550 | | W |
| G_P | Power Gain | Pin=12.5W, Freq=960,1090,1215MHz | 16 | 16.5 | | dB |
| η_D | Drain Efficiency | Pin=12.5W, Freq=960,1090,1215MHz | 60 | 63 | | % |
| Dr | Droop | Pin=12.5W, Freq=960,1090,1215MHz | | | 0.5 | dB |
| VSWR-T | Load Mismatch Tolerance | Pin=12.5W, Freq=1215MHz | | | 3:1 | |
| Θ_{JC} | Thermal Resistance | Pulse Width=450uS, Duty=35% | | | 0.35 | °C/W |

- Bias Condition: $V_{dd}=+50V$, $I_{dq}=100mA$ average current ($V_{gs}= -2.0 \sim -4.5V$) with constant gate bias

FUNCTIONAL CHARACTERISTICS @ 25°C

| | | | | | | |
|--------------|-----------------------|-------------------------------|--|--|----|----|
| $I_{D(Off)}$ | Drain leakage current | $V_{gs} = -8V$, $V_D = 150V$ | | | 64 | mA |
| $I_{G(Off)}$ | Gate leakage current | $V_{gs} = -8V$, $V_D = 0V$ | | | 22 | mA |

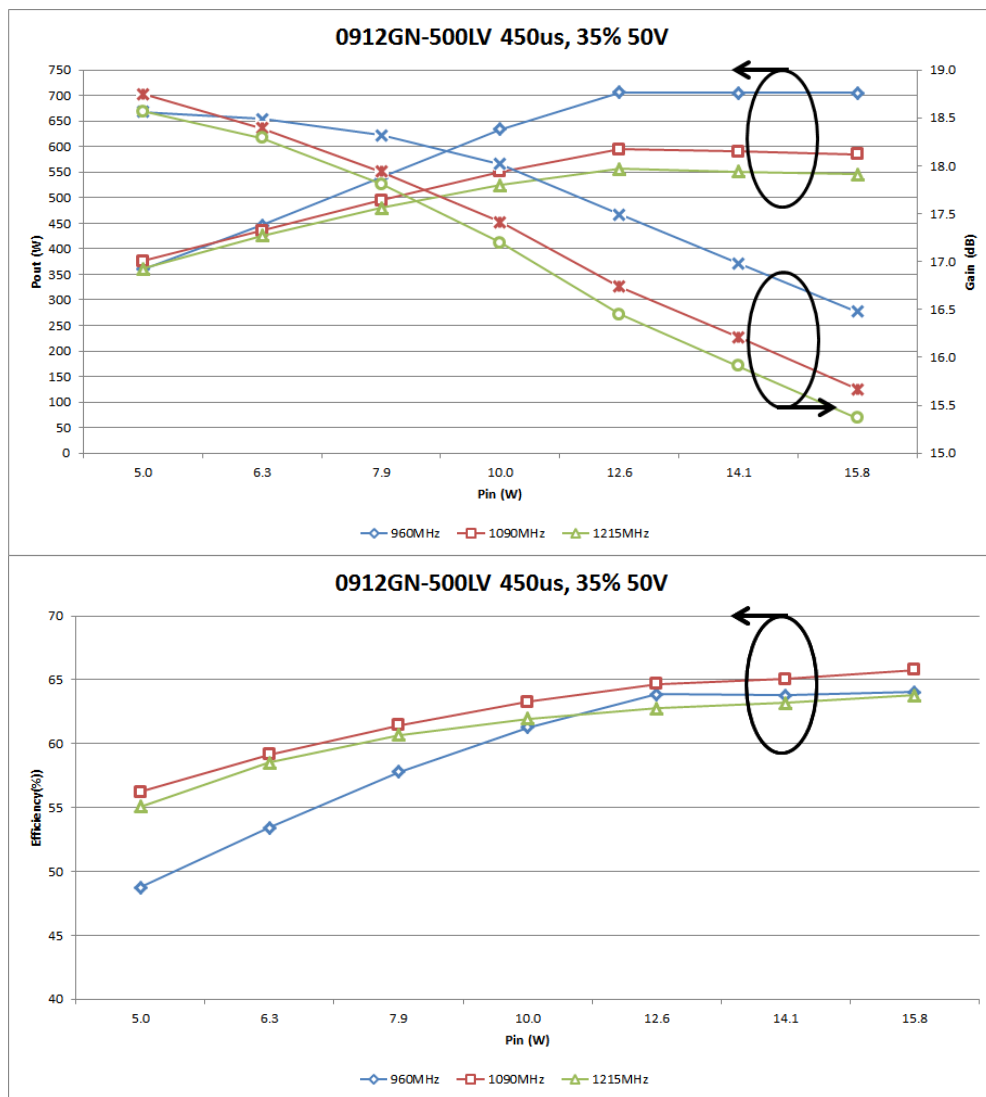
Export Classification: EAR-99

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TYPICAL BROAD BAND PERFORMANCE DATA

| Frequency | P _{IN} (W) | P _{OUT} (W) | I _D (A) | RL (dB) | η_D (%) | G _P (dB) | Drop (dB) |
|-----------|---------------------|----------------------|--------------------|---------|--------------|---------------------|-----------|
| 960 MHz | 12.5 | 706 | 7.73 | -7 | 64 | 17.5 | 0.41 |
| 1090 MHz | 12.5 | 594 | 6.43 | -6.5 | 65 | 16.7 | 0.29 |
| 1215 MHz | 12.5 | 556 | 6.2 | -10 | 63 | 16.5 | 0.24 |



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TYPICAL BROAD BAND PULSED DATA LINK PERFORMANCE

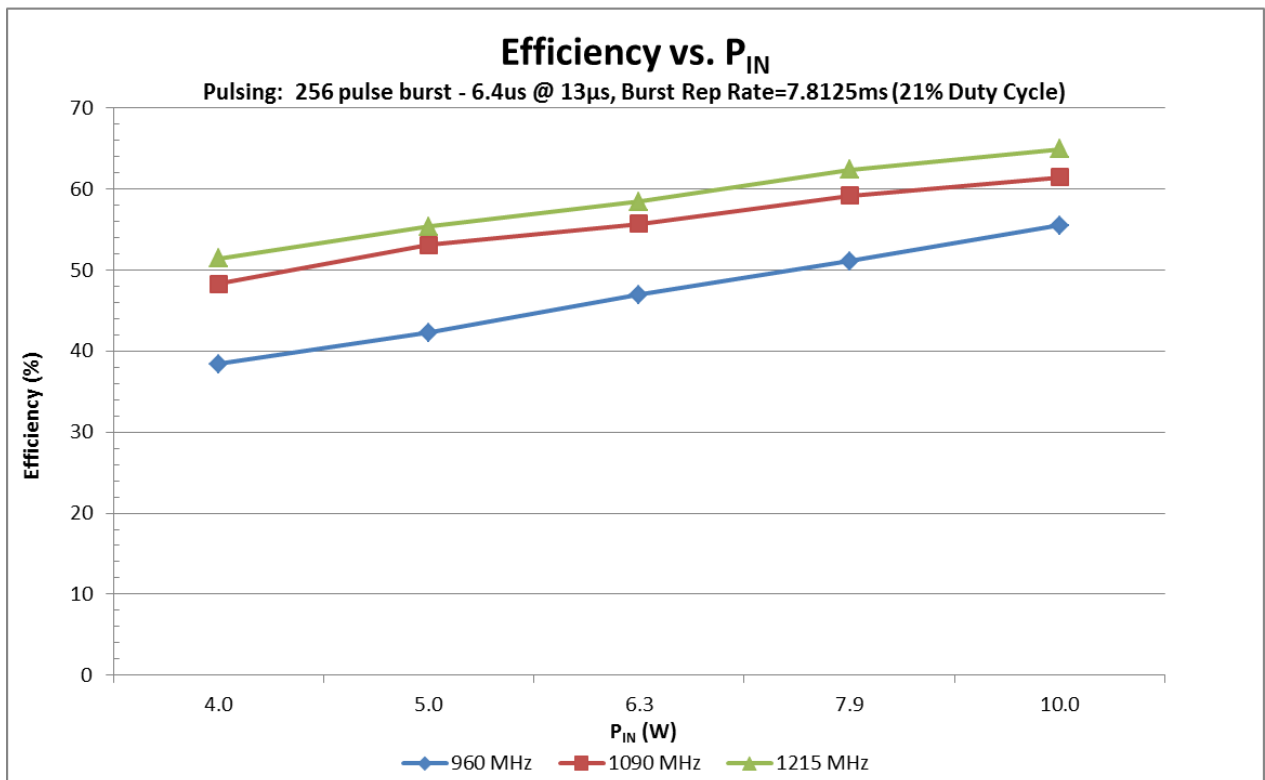
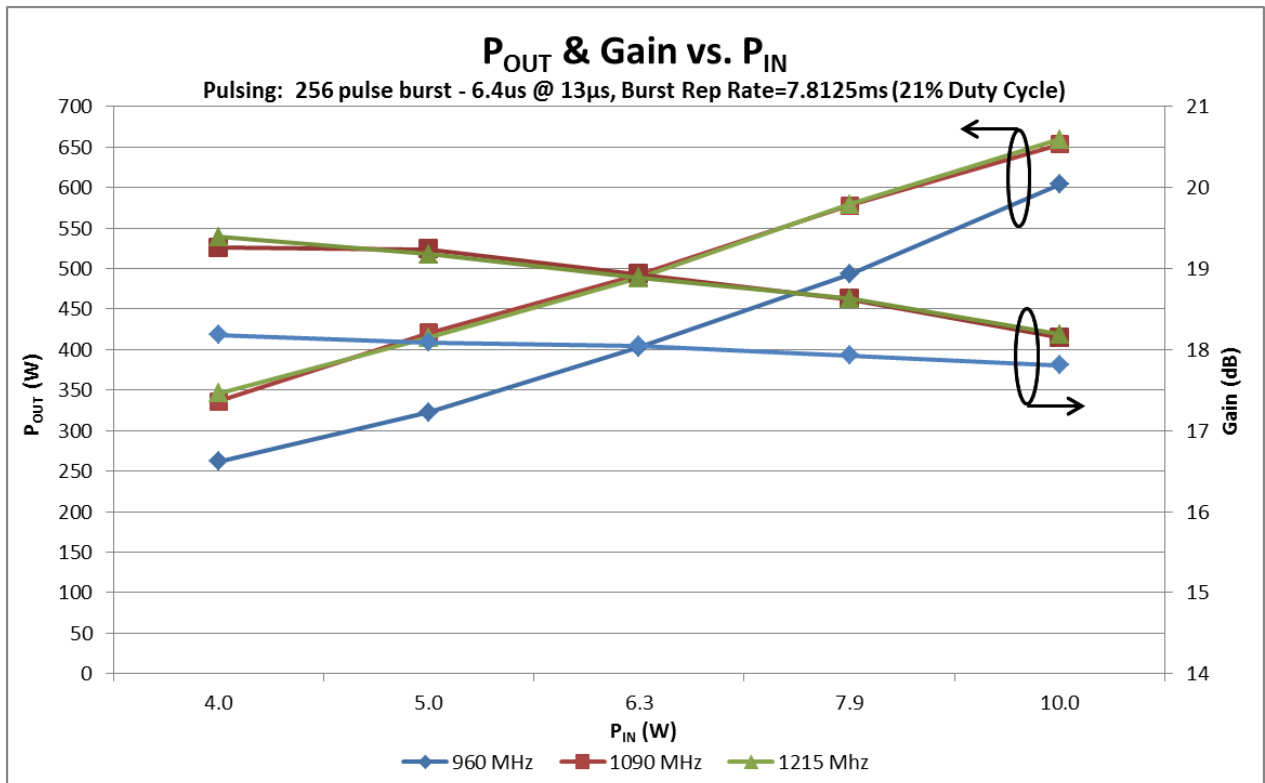
| Freq | P _{IN} (W) | P1* | | | | | P256* | | Droop |
|---|---------------------|----------------------|---------------------|----------|---------------------|---------|----------------------|---------------------|-------|
| | | P _{OUT} (W) | G _P (dB) | IRL (dB) | I _D (mA) | Eff (%) | P _{OUT} (W) | G _P (dB) | |
| Pulsing: 256 pulse burst - 6.4 μ s @ 13 μ s, Burst Rep Rate=7.8125ms (21% Duty Cycle) | | | | | | | | | |
| 960 MHz | 10.0 | 604 | 17.8 | -7.0 | 4650 | 55.5 | 550 | 17.4 | 0.41 |
| 1090 MHz | 10.0 | 653 | 18.2 | -9.2 | 4540 | 61.5 | 607 | 17.8 | 0.32 |
| 1215 MHz | 10.0 | 659 | 18.2 | -7.7 | 4340 | 65.0 | 618 | 17.9 | 0.28 |
| Pulsing: 444 pulse burst - 6.4 μ s @ 13 μ s, Burst Rep Rate=5777.4ms (49% Duty Cycle) | | | | | | | | | |
| 960 MHz | 10.0 | 579 | 17.6 | -7.0 | 4580 | 53.5 | 532 | 17.3 | 0.37 |
| 1090 MHz | 10.0 | 640 | 18.1 | -9.2 | 4510 | 60.0 | 601 | 17.8 | 0.27 |
| 1215 MHz | 10.0 | 646 | 18.1 | -7.7 | 4330 | 63.1 | 614 | 17.9 | 0.22 |

V_{DD} = 50V, V_{GS} = -3.61V, I_{DQ} = 100mA

*pulse power measured at pulse center, 3.2 μ s from rising edge

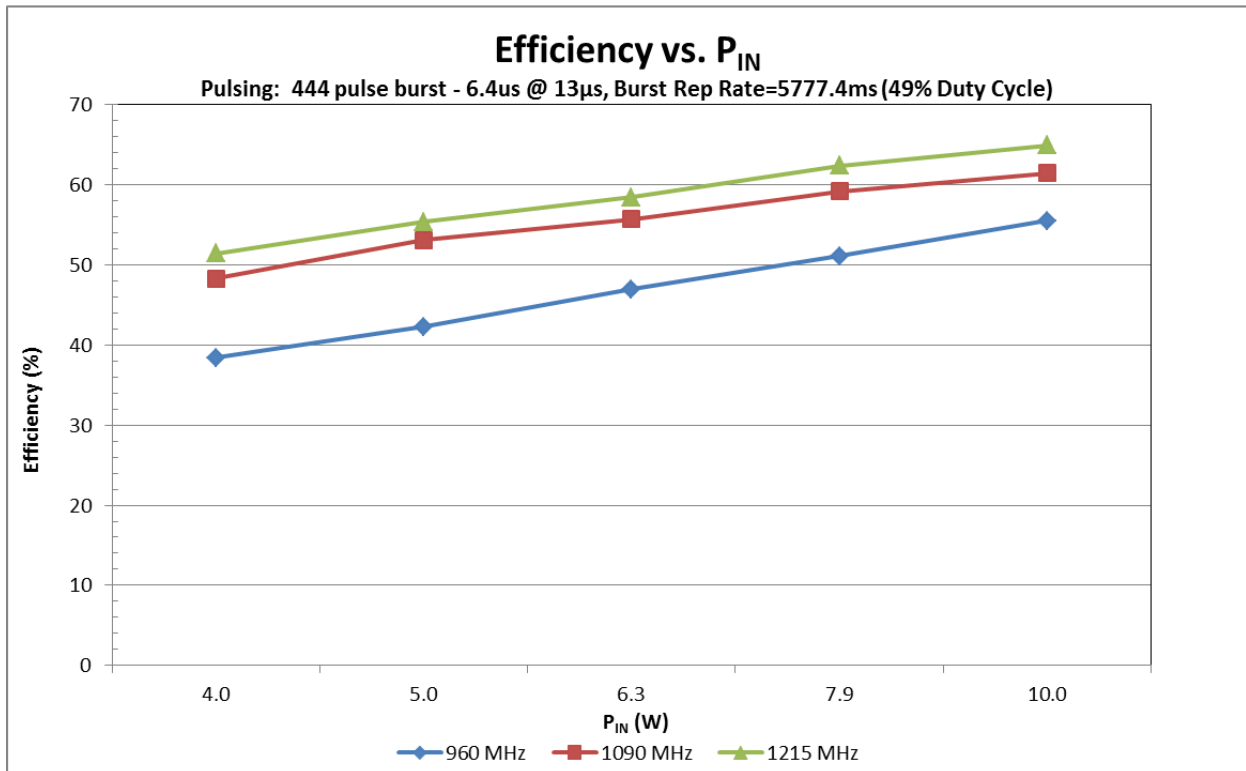
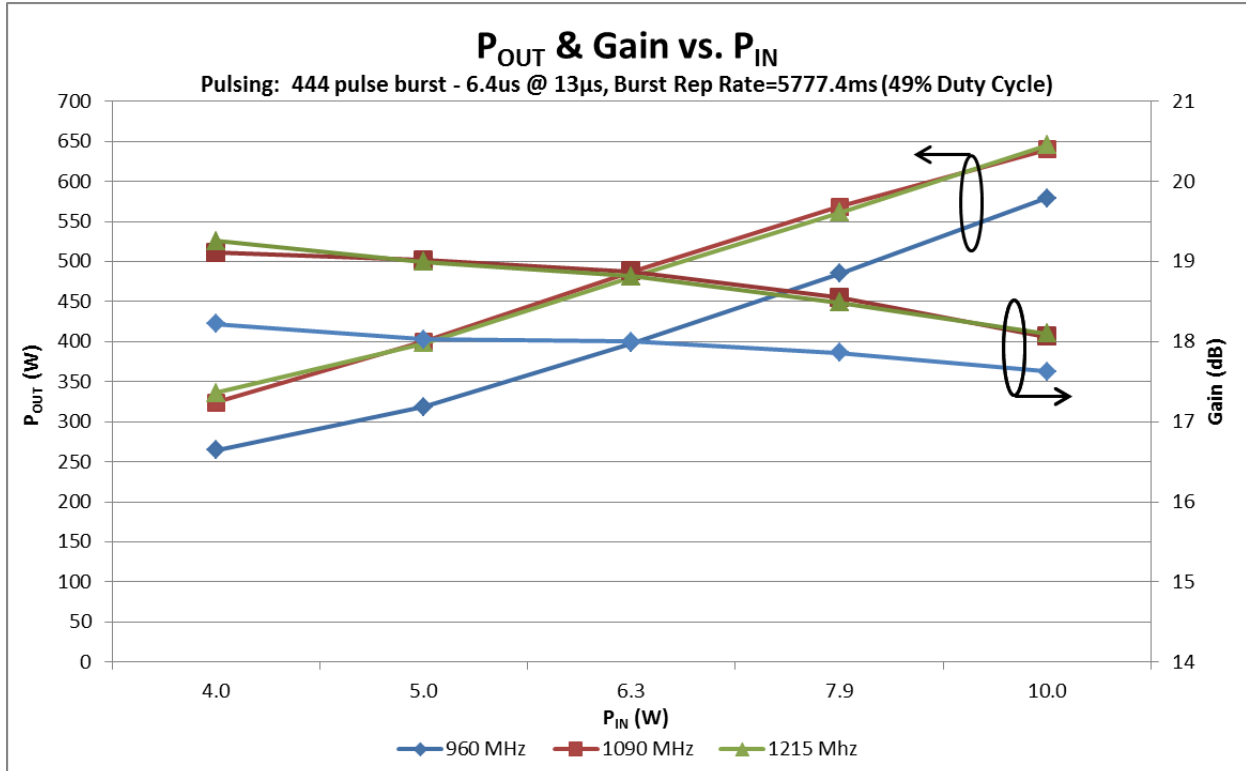
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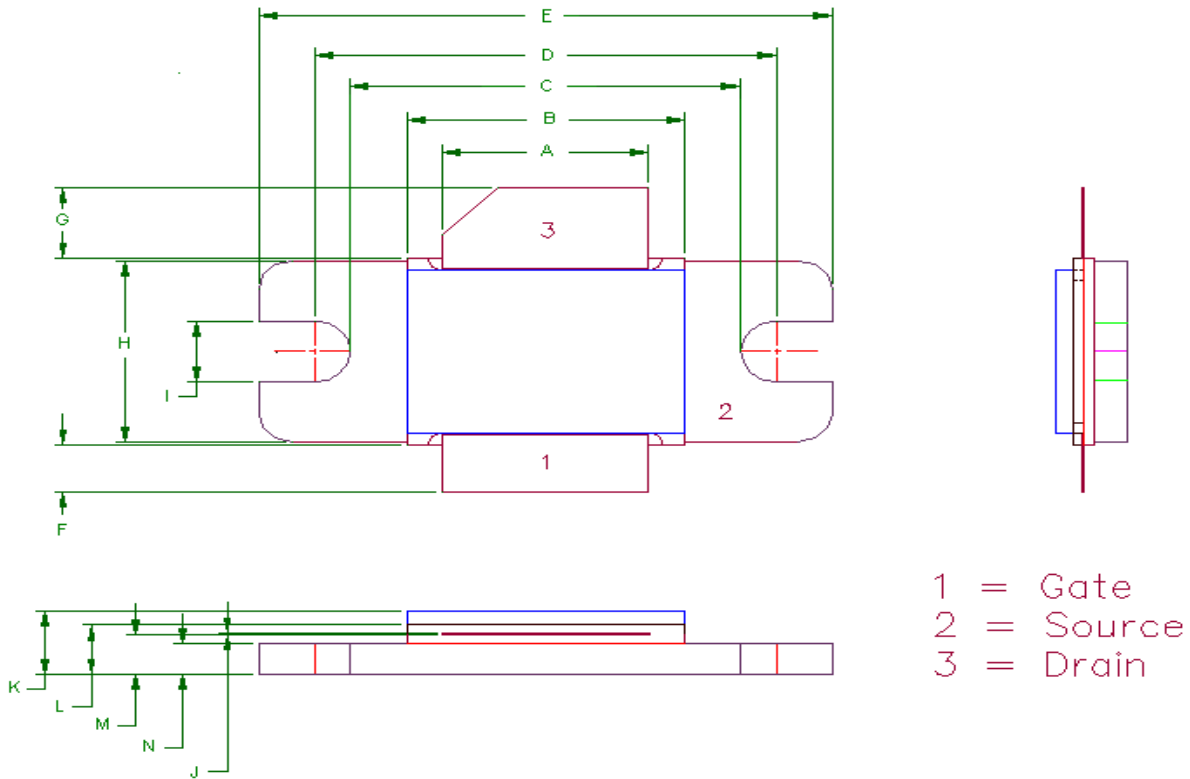


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55-KR PACKAGE DIMENSION



| Dimension | Min (mil) | Min (mm) | Max (mil) | Max (mm) |
|-----------|-----------|----------|-----------|----------|
| A | 370 | 9.40 | 372 | 9.44 |
| B | 498 | 12.65 | 500 | 12.7 |
| C | 700 | 17.78 | 702 | 17.83 |
| D | 830 | 21.08 | 832 | 21.13 |
| E | 1030 | 26.16 | 1032 | 26.21 |
| F | 101 | 2.56 | 102 | 2.59 |
| G | 151 | 3.84 | 152 | 3.86 |
| H | 385 | 9.78 | 387 | 9.83 |
| I | 130 | 3.30 | 132 | 3.35 |
| J | 003 | .076 | 004 | 0.10 |
| K | 135 | 3.43 | 137 | 3.48 |
| L | 105 | 2.67 | 107 | 2.72 |
| M | 085 | 2.16 | 86 | 2.18 |
| N | 065 | 1.65 | 66 | 1.68 |



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Revision History

| Revision Level / Date | Para. Affected | Description |
|-----------------------|----------------|--|
| 01 / June 2013 | - | Initial Preliminary Release |
| 02 / October 2016 | - | Reformatted, added data link data & charts |

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