



**THE DATASHEET OF
MGV125-20**

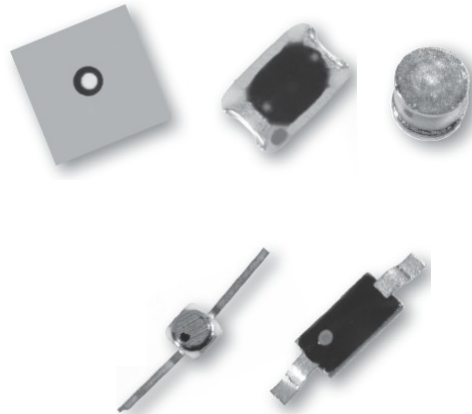


GaAs Hyperabrupt Varactor Diodes 1.25 Constant Gamma

Rev. V1

Features

- 0 to 22 V Tuning Voltage
- Tuning Ratios up to 10
- Screening Available per:
MIL-PRF-19500 and MIL-PRF-35834
- RoHS* Compliant
- Also Available in 0.75 and 1.0 Constant Gamma Families: MGV075-x and MGV100-x



Description

The MGV series of hyperabrupt varactor diodes feature passivated mesa construction for low leakage and excellent post tuning drift. Available in three constant gamma families of 0.75, 1.0 and 1.25.

These diodes will find application in tunable filters and oscillators up to 40 GHz. Optimum performance is obtained using die however packaged devices are available as well screened per MIL-PRF-19500 and MIL-PRF-38534.

Chip (C01A)

Electrical Specifications: $T_A = +25^\circ\text{C}$, $V_B = 22\text{ V min.}$, $I_R = 100\text{ nA max.}$

| Model | Total Capacitance (pF) | | | Tuning Ratio | | | Q |
|-----------|---------------------------|------|------|------------------------|------|------------------------|----------------------------|
| | $V_R = 4\text{ V, 1 MHz}$ | | | $V_R = 2\text{ to }12$ | | $V_R = 2\text{ to }20$ | $V_R = 4\text{ V, 50 MHz}$ |
| | Min. | Nom. | Max. | Min. | Typ. | Typ. | Min. |
| MGV125-08 | 0.25 | 0.30 | 0.35 | 4.0 | 5.0 | 10 | 4,000 |
| MGV125-09 | 0.35 | 0.40 | 0.45 | 4.0 | 5.0 | 10 | 4,000 |
| MGV125-20 | 0.45 | 0.50 | 0.55 | 4.0 | 5.0 | 10 | 4,000 |
| MGV125-21 | 0.63 | 0.70 | 0.77 | 4.0 | 5.0 | 10 | 4,000 |
| MGV125-22 | 0.90 | 1.00 | 1.10 | 4.0 | 5.0 | 10 | 3,000 |
| MGV125-23 | 1.08 | 1.20 | 1.32 | 4.0 | 5.0 | 10 | 3,000 |
| MGV125-24 | 1.35 | 1.50 | 1.65 | 4.0 | 5.0 | 10 | 3,000 |
| MGV125-25 | 1.63 | 1.70 | 1.87 | 4.0 | 5.0 | 10 | 3,000 |
| MGV125-26 | 1.80 | 2.00 | 2.20 | 4.0 | 5.0 | 10 | 3,000 |

* Restrictions on Hazardous Substances, European Union Directive 2011/65/EU.

GaAs Hyperabrupt Varactor Diodes 1.25 Constant Gamma

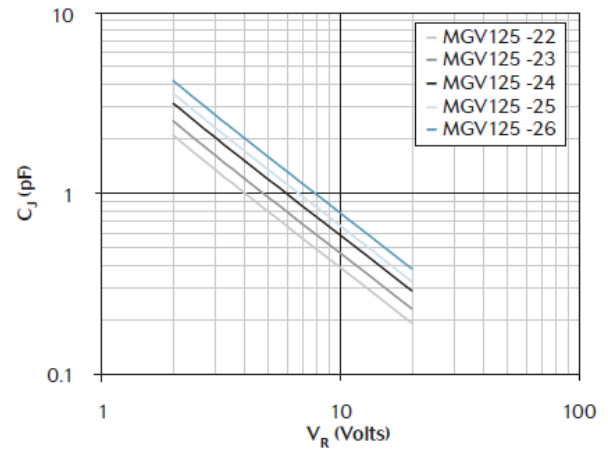
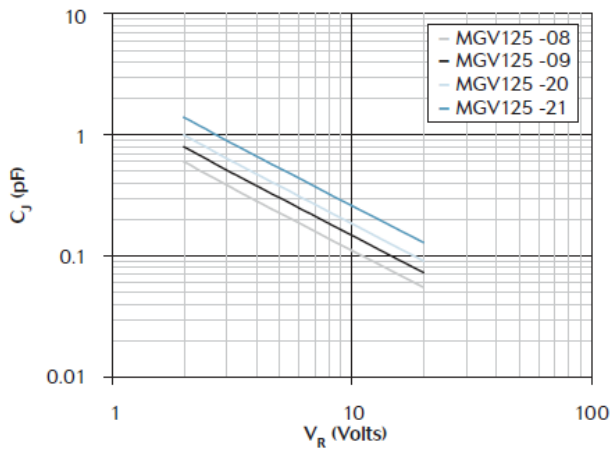
Rev. V1

Packaged (E28, 28X, H20, P55, 0805-2)

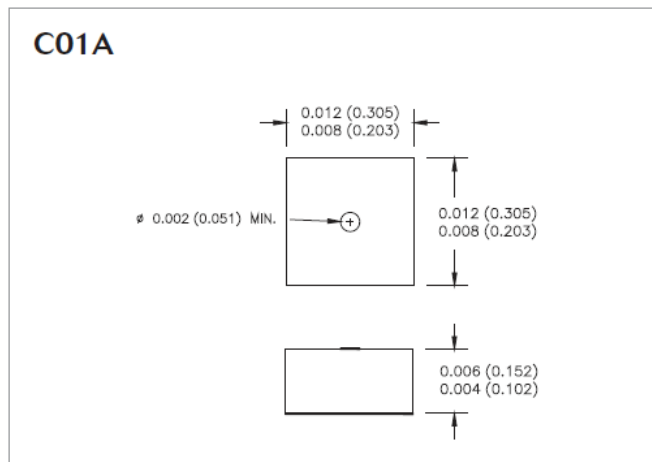
Electrical Specifications: $T_A = +25^\circ\text{C}$, $V_B = 22\text{ V min.}$, $I_R = 100\text{ nA max.}$

| Model | Total Capacitance (pF) | | | Tuning Ratio | | | Q |
|----------------------|-----------------------------------|------|------|-------------------------|------|-------------------------|------------------------------------|
| | $V_R = 4\text{ V, } 1\text{ MHz}$ | | | $V_R = 2\text{ to } 12$ | | $V_R = 2\text{ to } 20$ | $V_R = 4\text{ V, } 50\text{ MHz}$ |
| | Min. | Nom. | Max. | Min. | Typ. | Typ. | Min. |
| MGV125-08-E28 / 28 X | 0.32 | 0.38 | 0.44 | 2.5 | 3.9 | 6.5 | 4,000 |
| MGV125-08H20 | 0.41 | 0.48 | 0.56 | 0.7 | 2.4 | 4.1 | 4,000 |
| MGV125-08-P55 | 0.36 | 0.43 | 0.50 | 1.6 | 3.1 | 5.3 | 4,000 |
| MGV125-08-0805-2 | 0.30 | 0.36 | 0.42 | 2.9 | 4.1 | 7.0 | 4,000 |
| MGV125-09-E28 / 28 X | 0.42 | 0.48 | 0.54 | 2.9 | 4.1 | 7.0 | 4,000 |
| MGV125-09-H20 | 0.51 | 0.58 | 0.66 | 1.6 | 3.0 | 5.1 | 4,000 |
| MGV125-09-P55 | 0.46 | 0.53 | 0.60 | 2.3 | 3.6 | 6.0 | 4,000 |
| MGV125-09-0805-2 | 0.40 | 0.46 | 0.52 | 3.2 | 4.3 | 7.4 | 4,000 |
| MGV125-20-E28 / 28 X | 0.52 | 0.58 | 0.64 | 3.2 | 4.3 | 7.3 | 4,000 |
| MGV125-20-H20 | 0.61 | 0.68 | 0.76 | 2.2 | 3.4 | 5.8 | 4,000 |
| MGV125-20-P55 | 0.56 | 0.63 | 0.70 | 2.7 | 3.8 | 6.6 | 4,000 |
| MGV125-20-0805-2 | 0.50 | 0.56 | 0.62 | 3.4 | 4.5 | 7.7 | 4,000 |
| MGV125-21-E28 / 28 X | 0.70 | 0.78 | 0.86 | 3.4 | 4.5 | 7.9 | 4,000 |
| MGV125-21-H20 | 0.79 | 0.88 | 0.98 | 2.7 | 3.8 | 6.7 | 4,000 |
| MGV125-21-P55 | 0.74 | 0.83 | 0.92 | 3.1 | 4.2 | 7.3 | 4,000 |
| MGV125-21-0805-2 | 0.68 | 0.76 | 0.84 | 3.6 | 4.6 | 8.1 | 4,000 |
| MGV125-22-E28 / 28 X | 0.97 | 1.08 | 1.19 | 3.6 | 4.6 | 8.3 | 3,000 |
| MGV125-22-H20 | 1.06 | 1.18 | 1.31 | 3.1 | 4.2 | 7.5 | 3,000 |
| MGV125-22-P55 | 1.01 | 1.13 | 1.25 | 3.3 | 4.4 | 7.9 | 3,000 |
| MGV125-22-0805-2 | 0.95 | 1.06 | 1.17 | 3.7 | 4.7 | 8.5 | 3,000 |
| MGV125-23-E28 / 28 X | 1.15 | 1.28 | 1.41 | 3.7 | 4.7 | 8.9 | 3,000 |
| MGV125-23-H20 | 1.24 | 1.38 | 1.53 | 3.2 | 4.3 | 8.2 | 3,000 |
| MGV125-23-P55 | 1.19 | 1.33 | 1.47 | 3.4 | 4.5 | 8.6 | 3,000 |
| MGV125-23-0805-2 | 1.13 | 1.26 | 1.39 | 3.7 | 4.8 | 9.1 | 3,000 |
| MGV125-24-E28 / 28 X | 1.42 | 1.58 | 1.74 | 3.7 | 4.8 | 9.5 | 3,000 |
| MGV125-24-H20 | 1.51 | 1.68 | 1.86 | 3.4 | 4.5 | 8.9 | 3,000 |
| MGV125-24-P55 | 1.46 | 1.63 | 1.80 | 3.6 | 4.6 | 9.2 | 3,000 |
| MGV125-24-0805-2 | 1.40 | 1.56 | 1.72 | 3.8 | 4.8 | 9.6 | 3,000 |
| MGV125-25-E28 / 28 X | 1.70 | 1.78 | 1.96 | 3.8 | 4.8 | 9.6 | 3,000 |
| MGV125-25-H20 | 1.79 | 1.88 | 2.08 | 3.5 | 4.5 | 9.0 | 3,000 |
| MGV125-25-P55 | 1.74 | 1.83 | 2.02 | 3.6 | 4.7 | 9.3 | 3,000 |
| MGV125-25-0805-2 | 1.68 | 1.76 | 1.94 | 3.8 | 4.8 | 9.7 | 3,000 |
| MGV125-26-E28 / 28 X | 1.87 | 2.08 | 2.29 | 3.8 | 4.8 | 9.6 | 3,000 |
| MGV125-26-H20 | 1.96 | 2.18 | 2.41 | 3.5 | 4.6 | 9.2 | 3,000 |
| MGV125-26-P55 | 1.91 | 2.13 | 2.35 | 3.7 | 4.7 | 9.4 | 3,000 |
| MGV125-26-0805-2 | 1.85 | 2.06 | 2.27 | 3.8 | 4.9 | 9.7 | 3,000 |

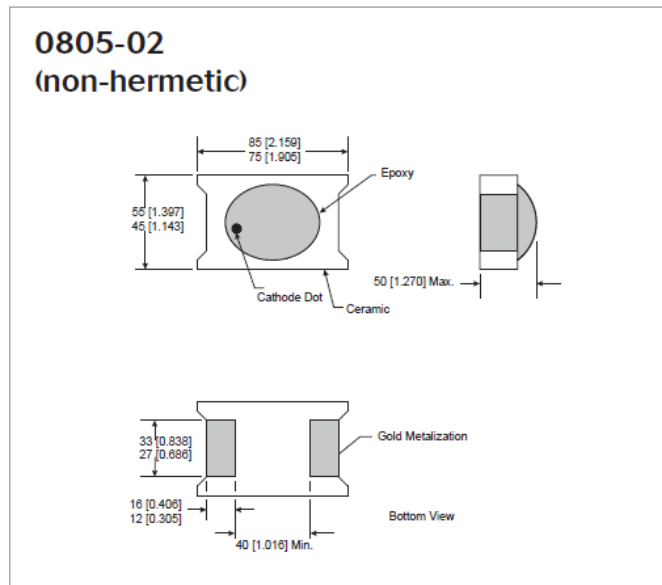
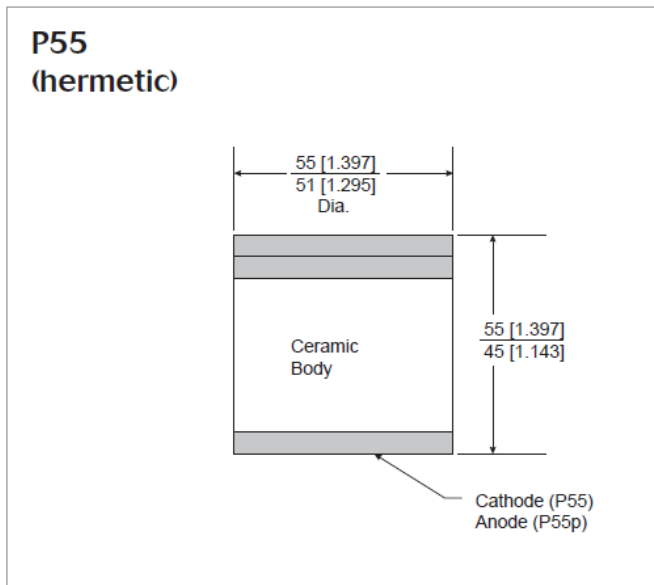
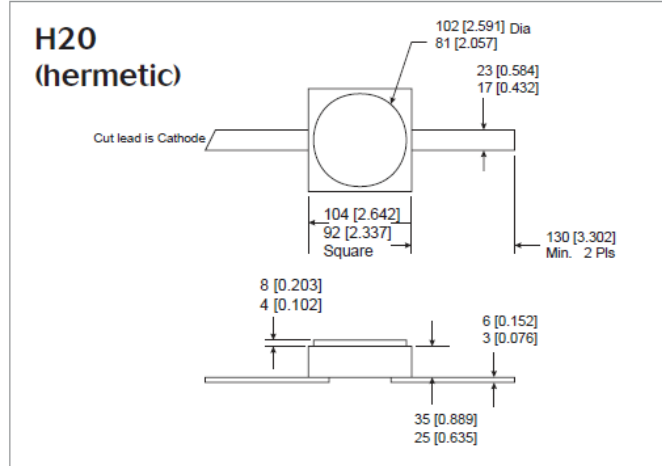
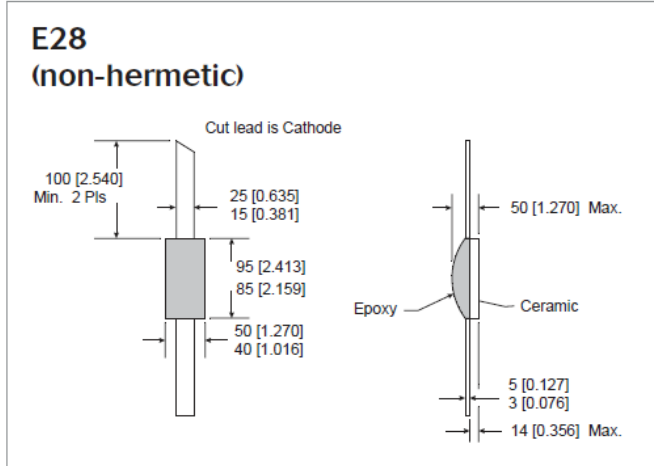
Typical Performance, Chips



Chip Outline Drawings



Packaged Outline Drawings



| Package Style | Capacitance @ 1 GHz | Inductance @ 1 GHz |
|---------------|---------------------|--------------------|
| E28 / 28X | 0.08 | 0.40 |
| H20 | 0.18 | 0.50 |
| P55 | 0.13 | 0.35 |
| 0805-2 | 0.06 | 0.40 |

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