

# Gunn Diodes

Discrete Frequency: Cathode Heatsink

## Features

- CW Designs to 500 mW
- Pulsed Designs to 10 W
- Frequency Coverage Specified from 5.9–95 GHz
- Low Phase Noise
- High Reliability

## Applications

- Motion Detectors
- Transmitters and Receivers
- Beacons
- Automotive Collision Avoidance Radars
- Radars
- Radiometers
- Instrumentation



## Description

MDT's GaAs Gunn diodes, epi-down (cathode heatsink), are fabricated from epitaxial layers grown at MDT by the Vapor Phase Epitaxy technique. The layers are processed at MDT using proprietary techniques resulting in low phase and  $1/f$  noise. MDT Gunn diodes are available in a variety of microwave ceramic packages are available for operation from 5–110 GHz.

## Gunn Diodes (Discrete Frequency: Cathode Heatsink)

### C Band Gunn Diodes (Specifications @ 25°C)

Part Number	Operating Frequency <sup>1</sup> (GHz)	Min. Power <sup>2</sup> (mW)	Typ. Operating Voltage (V)	Operating Current		Package Outline <sup>3</sup>
				Min. (mA)	Max. (mA)	
MG1001-11	5.9–8.2	50	12	200	400	M11
MG1002-11	5.9–8.2	100	12	300	600	M11
MG1003-15	5.9–8.2	250	12	600	1100	M15
MG1004-15	5.9–8.2	500	12	900	1300	M15

### X Band Gunn Diodes (Specifications @ 25°C)

Part Number	Operating Frequency <sup>1</sup> (GHz)	Min. Power <sup>2</sup> (mW)	Typ. Operating Voltage (V)	Operating Current		Package Outline <sup>3</sup>
				Min. (mA)	Max. (mA)	
MG1005-11	8.2–12.0	50	10	200	400	M11
MG1006-11	8.2–12.0	100	10	400	700	M11
MG1007-15	8.2–12.0	250	10	700	1200	M15
MG1008-15	8.2–12.0	500	10	1000	1600	M15

### Ku Band Gunn Diodes (Specifications @ 25°C)

Part Number	Operating Frequency <sup>1</sup> (GHz)	Min. Power <sup>2</sup> (mW)	Typ. Operating Voltage (V)	Operating Current		Package Outline <sup>3</sup>
				Min. (mA)	Max. (mA)	
MG1009-11	12.4–18.0	50	8	300	500	M11
MG1010-11	12.4–18.0	100	8	400	800	M11
MG1011-15	12.4–18.0	250	8	800	1200	M15
MG1012-15	12.4–18.0	500	8	1100	1700	M15

### K Band Gunn Diodes (Specifications @ 25°C)

Part Number	Operating Frequency <sup>1</sup> (GHz)	Min. Power <sup>2</sup> (mW)	Typ. Operating Voltage (V)	Operating Current		Package Outline <sup>3</sup>
				Min. (mA)	Max. (mA)	
MG1013-16	18.0–26.5	50	6	400	600	M16
MG1014-16	18.0–26.5	100	6	500	1000	M16
MG1015-16	18.0–26.5	200	6	800	1400	M16
MG1016-17	18.0–23.0	400	6	900	1700	M17

<sup>1</sup> MDT Gunn diodes are specified to operate within a narrow range of a customer-designated center frequency within the operating frequency range shown. Additional frequencies are available; Please contact MDT.

<sup>2</sup> Power is measured using an MDT critically coupled test cavity. For pulsed diodes, pulse width = 1 μs, duty factor = 1% typ.

<sup>3</sup> Polarity: anode is the cap and cathode is the heatsink.

## Gunn Diodes (Discrete Frequency: Cathode Heatsink)

### *Ka Band Gunn Diodes (Specifications @ 25°C)*

Part Number	Operating Frequency <sup>1</sup> (GHz)	Min. Power <sup>2</sup> (mW)	Typ. Operating Voltage (V)	Operating Current		Package Outline <sup>3</sup>
				Min. (mA)	Max. (mA)	
MG1017-16	26.5–40.0	50	4.5	300	700	M16
MG1018-16	26.5–40.0	100	4.5	600	1100	M16
MG1019-16	26.5–40.0	200	5.0	800	1400	M16
MG1020-16	26.5–40.0	250	5.5	800	1600	M16
MG1039-16	26.5–35.0	300	5.5	1000	1700	M16
MG1040-16	26.5–35.0	350	5.5	1000	1800	M16

### *U Band Gunn Diodes (Specifications @ 25°C)*

Part Number	Operating Frequency <sup>1</sup> (GHz)	Min. Power <sup>2</sup> (mW)	Typ. Operating Voltage (V)	Operating Current		Package Outline <sup>3</sup>
				Min. (mA)	Max. (mA)	
MG1021-16	40.0–60.0	50	4	400	800	M16
MG1022-16	40.0–60.0	100	4	700	1200	M16
MG1023-16	40.0–50.0	150	4	800	1600	M16

### *V and W Band Gunn Diodes (Specifications @ 25°C)*

Part Number	Operating Frequency <sup>1</sup> (GHz)	Min. Power <sup>2</sup> (mW)	Typ. Operating Voltage (V)	Operating Current		Package Outline <sup>3</sup>
				Min. (mA)	Max. (mA)	
MG1036-16	60.5–85.0	10	4.5	400	900	M16
MG1037-16	60.5–85.0	50	5	500	1100	M16
MG1024-16	85–95	10	4.5	450	1100	M16
MG1025-16	85–95	20	4.5	500	1000	M16
MG1038-16	85–95	50	5	450	1200	M16

### *High Power Pulsed Gunn Diodes (Specifications @ 25°C)*

Part Number	Operating Frequency <sup>1</sup> (GHz)	Min. Power <sup>2</sup> (mW)	Typ. Operating Voltage (V)	Typ. Operating Current (Amps.)	Package Outline <sup>3</sup>
MG1034-15	9.3	5	35	8	M15

### *Stacked Pulsed Gunn Diodes (Specifications @ 25°C)*

Part Number	Operating Frequency <sup>1</sup> (GHz)	Min. Power <sup>2</sup> (Watts)	Typ. Operating Voltage (V)	Typ. Operating Current (Amps)	Number of Stacks	Package Outline <sup>3</sup>
MG1060-15	9.3	10	70	6	2	M15

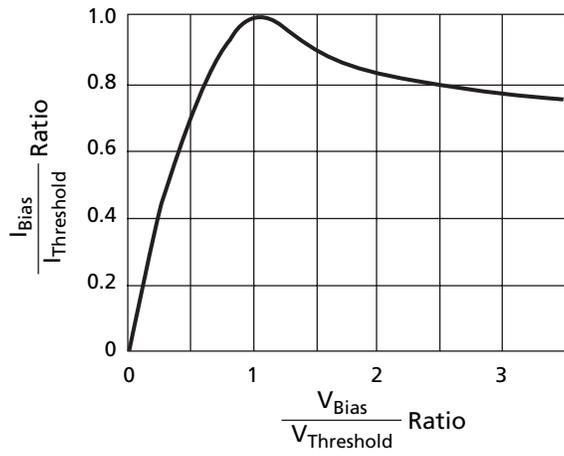
<sup>1</sup> MDT Gunn diodes are specified to operate within a narrow range of a customer-designated center frequency within the operating frequency range shown. Additional frequencies are available; Please contact MDT.

<sup>2</sup> Power is measured using an MDT critically coupled test cavity. For pulsed diodes, pulse width = 1 μs, duty factor = 1% typ.

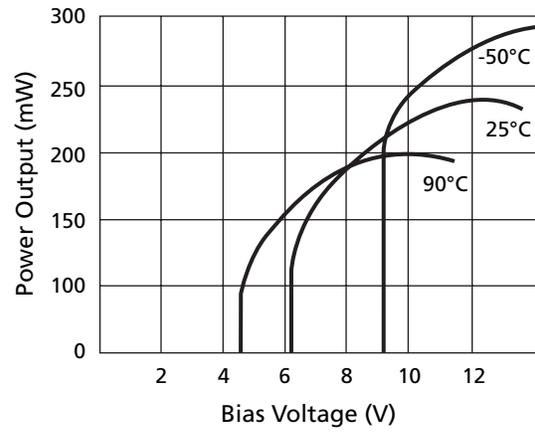
<sup>3</sup> Polarity: anode is the cap and cathode is the heatsink.

# Gunn Diodes (Discrete Frequency: Cathode Heatsink)

## Typical Characteristics



**$I_{Bias}$  Ratio vs.  $V_{Bias}$  Ratio**



**Power Output vs. Bias Voltage**