

## Product Overview

The GC6000 series of RF/Microwave noise diodes represents the state of the art in noise device technology. By carefully controlling junction doping profiles and mesa geometry, these devices provide the broadest, most uniform noise response available. Outputs are true symmetrical Gaussian white noise with predictable thermal performance. Choose from dozens of case style, including glass, ceramic, and EPSM® (enhanced performance surface mount) for commercial pick and place assembly and die form for hybrid systems.

### Key Features

- Multi-octave bandwidth
- Wide bias window
- Uniform power output
- High reliability
- RoHS compliant<sup>1</sup>

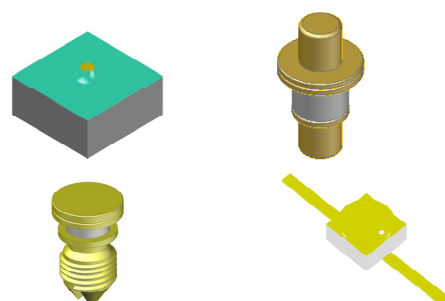
### Applications

- RF fuses
- Noise sources
- Noise figure calibration
- Spectrum analyzers
- Signal path fade test sets

### Performance Overview

Parameters	Conditions	Value	Units
$V_B$	$I_R = 1 \text{ mA}$	6–18	V
$C_J$	at -6V	0.5, 1.0, 1.5	pF
$T_L$		4, 7, 10	ns
Frequency Range		0.1–18	GHz

### Package Styles



### Note:

1. The GC6000 series of products are supplied with a RoHS compliant gold finish. Some packages can be supplied with a MIL grade Sn/Pb finish. Consult factory for details.

## Table of Contents

Product Overview.....	1
1. Electrical Specifications.....	3
1.1. Typical Electrical Specifications.....	3
1.2. Absolute Maximum Ratings.....	3
2. Outline Drawings.....	4
3. Ordering Information.....	8
4. Revision History.....	9
Microchip Information.....	10
The Microchip Website.....	10
Product Change Notification Service.....	10
Customer Support.....	10
Microchip Devices Code Protection Feature.....	10
Legal Notice.....	10
Trademarks.....	11
Quality Management System.....	12
Worldwide Sales and Service.....	13

# 1. Electrical Specifications

## 1.1 Typical Electrical Specifications

**Table 1-1.** Device’s Electrical Specifications at 25 °C

PN	$V_B$ at $I_R = 1 \text{ mA}$ (V)	$C_j^1$ at $-6V$ (pF) (Typ.)	$T_L$ (ns) (Typ.)	Frequency Range (GHz)	ENR (dB) (Min)
GC6001	6 – 10	0.5	4	0.1 – 18	25
GC6002	8–14	1.0	7	0.1 – 12	28
GC6003	12 – 18	1.5	10	0.1 – 8	31

**Note:**

- Junction capacitance is measured at 1 MHz.

## 1.2 Absolute Maximum Ratings

The following table shows the absolute maximum ratings at 25 °C unless otherwise specified.

**Table 1-2.** Absolute Maximum Ratings

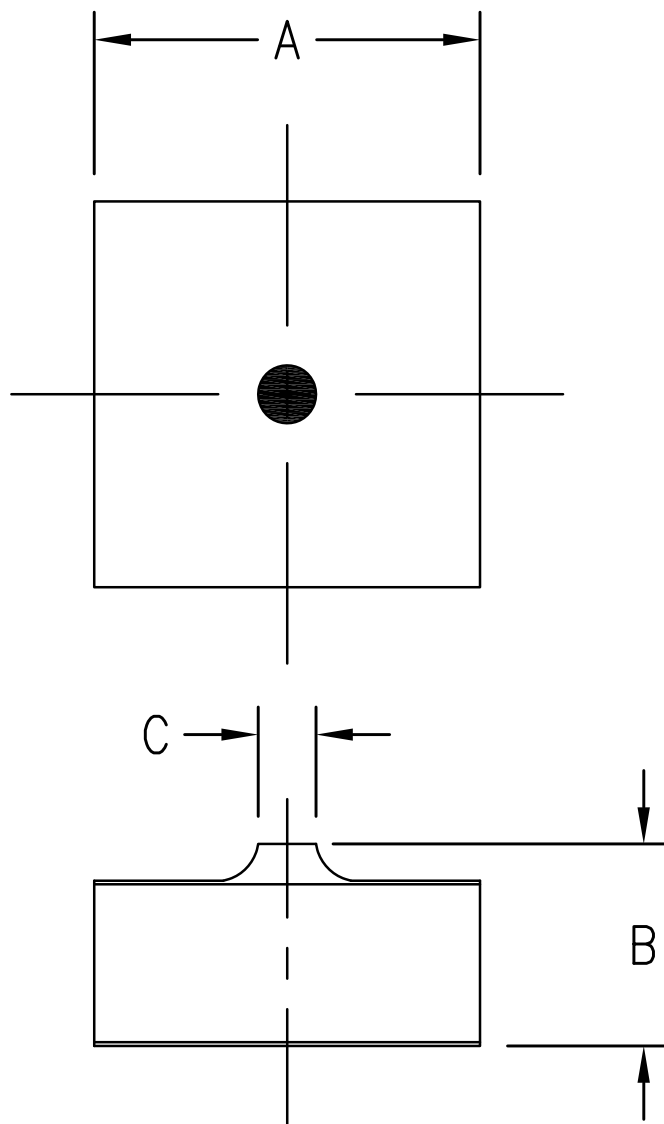
Ratings	Symbol	Value	Unit
Maximum leakage current at 80% of minimum rated $V_B$	$I_R$	0.5	$\mu\text{A}$
Operating temperature	$T_{OP}$	-55 to +150	$^{\circ}\text{C}$
Storage temperature	$T_{STG}$	-65 to +150	$^{\circ}\text{C}$



ESD Sensitive Device

## 2. Outline Drawings

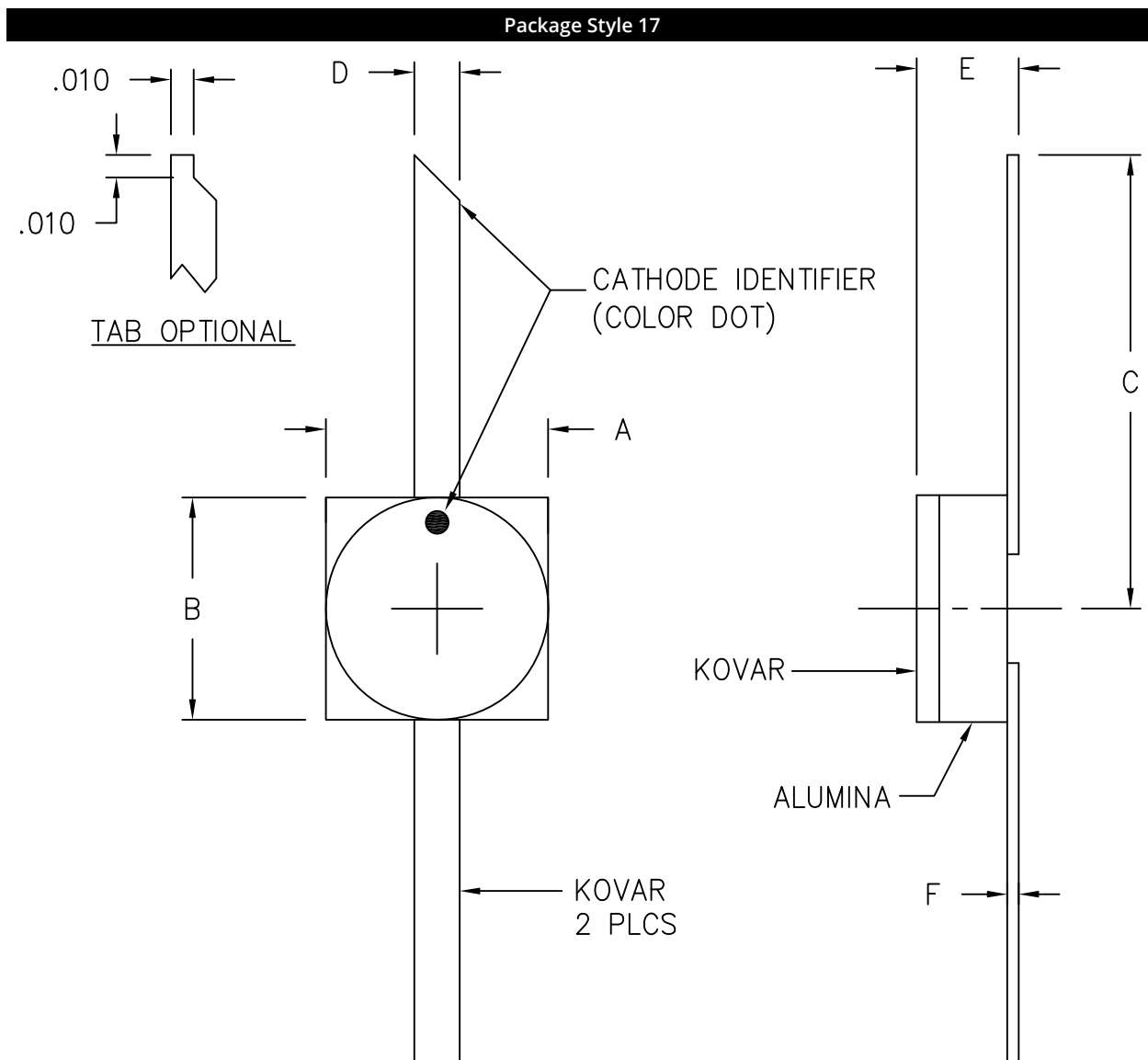
Package Style 00



DIM	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.015	0.050	0.381	1.270
B	-	0.005 TYP	-	0.127 TYP
C	See notes 1 and 2		-	-

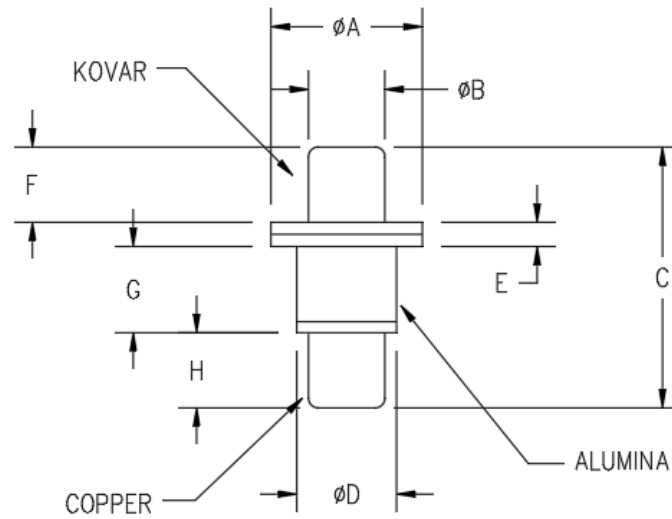
### Notes:

1. Top contact, chip size and chip thickness depends on diode parameters. Consult factory for details.
2. Top and bottom contacts gold.



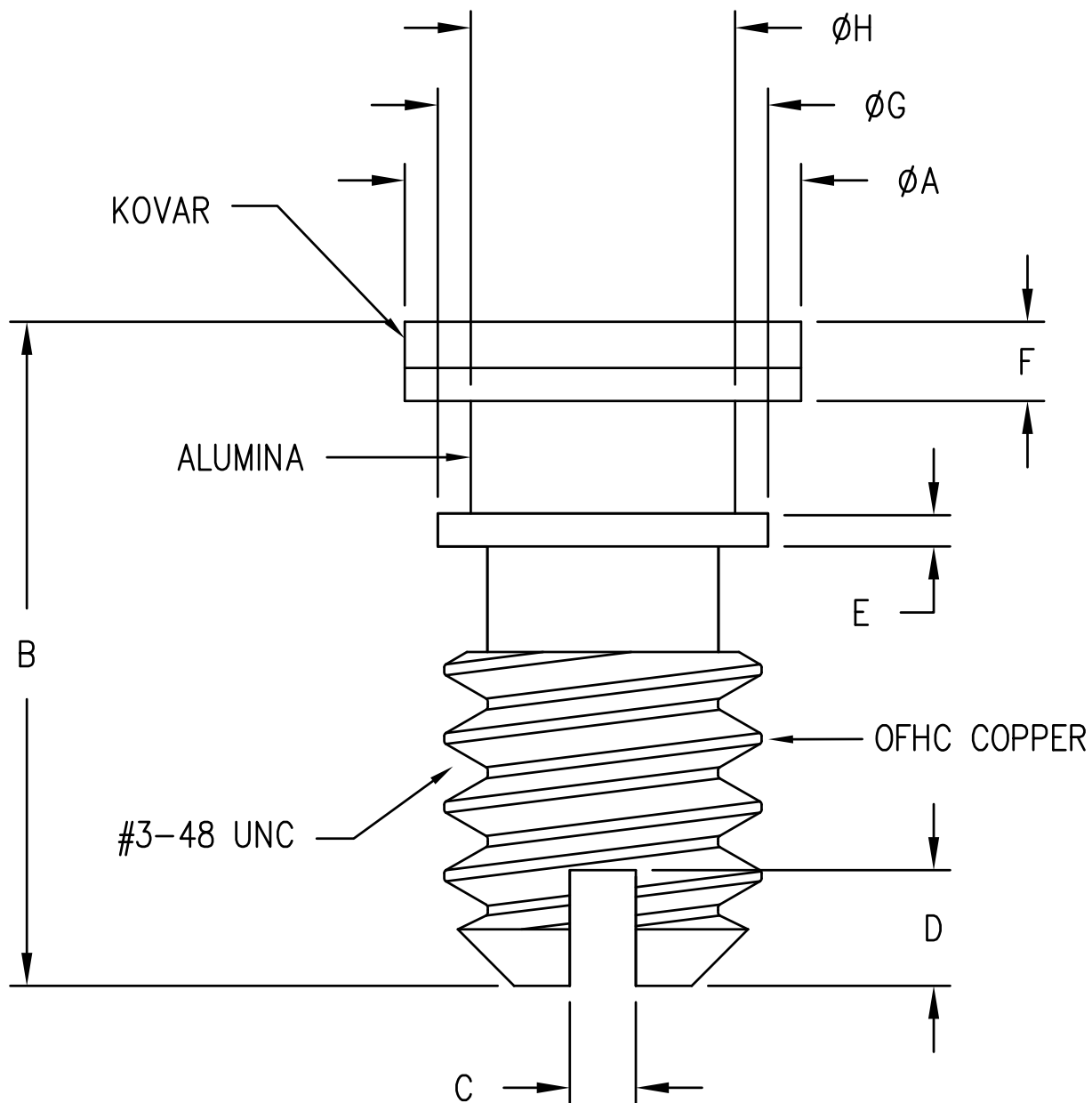
DIM	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.092	0.104	2.337	2.642
B	0.092	0.104	2.337	2.642
C	0.150	-	3.810	-
D	0.018	0.022	0.457	0.559
E	-	0.050	-	1.270
F	0.003	0.006	0.076	0.152
$C_p = 0.15 \text{ pF}$			$L_p = 0.60 \text{ nH}$	

Package Style 30



DIM	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.119	0.127	3.02	3.23
B	0.060	0.064	1.52	1.63
C	0.205	0.225	5.21	5.72
D	0.079	0.083	2.01	2.11
E	0.016	0.024	0.41	0.61
F	0.060	0.064	1.52	1.63
G	0.069	0.073	1.75	1.85
H	0.060	0.064	1.52	1.63
C <sub>p</sub> = 0.18 pF			L <sub>p</sub> = 0.42 nH	

Package Style 42



DIM	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.119	0.127	3.023	3.226
B	0.185	0.212	4.699	5.385
C	0.015	0.025	0.381	0.635
D	0.030	0.040	0.762	1.016
E	0.009	0.011	0.229	0.279
F	-	0.027	-	0.686
G	0.098	0.102	2.489	2.591
H	0.075	0.085	1.905	2.159
C <sub>p</sub> = 0.20 pF			L <sub>p</sub> = 0.40 nH	

### 3. Ordering Information

For additional ordering information, contact your Microchip sales representative.

Part Number <sup>1</sup>	Package Style
GC6001	-00, -17, -30, -42
GC6002	-00, -17, -30, -42
GC6003	-00, -17, -30, -42

**Note:**

1. For tape and reel add /TR at the end, for example, GC60\*\*-\*\*/TR.



## 4. Revision History

The revision history describes the changes that were implemented in the document. The changes are listed by revision, starting with the most current publication.

Revision	Date	Description
A	08/2023	Initial revision.

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