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GO1555 Voltage Controlled Oscillator

Key Features

- Generates 1.485GHz or 1.485/1.001GHz signal for Gennum ICs
- Low power — 20mW less than GO1525
- 50Ω output impedance
- Operates from a single 2.5V supply
- 8 pin tape on reel
- Pb-free and RoHS Compliant

Applications

Other Products:

- GS4915 ClockCleaner™

Deserializers:

- GS1559, GS1560A, GS1561, GS9060

Serializers:

- GS1531, GS1532, GS9062

Description

The GO1555 is a self contained, miniature Voltage Controlled Oscillator (VCO). It produces a clean 1.485GHz reference clock signal with low spurious noise content. It is designed to drive 50Ω strip lines.

The VCO requires a single 2.5V supply and draws a maximum of 8mA of current. It is packaged in a miniature 8-pin proprietary surface mount package and operates over the temperature range of -40°C to +85°C.

The GO1555 can be used in place of the older GO1525 VCO. Compared to the GO1525, the GO1555 saves space, consumes less power and achieves better jitter performance.

Note: Optimal performance of the GO1555 is achieved using slightly different loop bandwidth component values than those used with the GO1525.

This component and all homogeneous subcomponents are RoHS compliant.

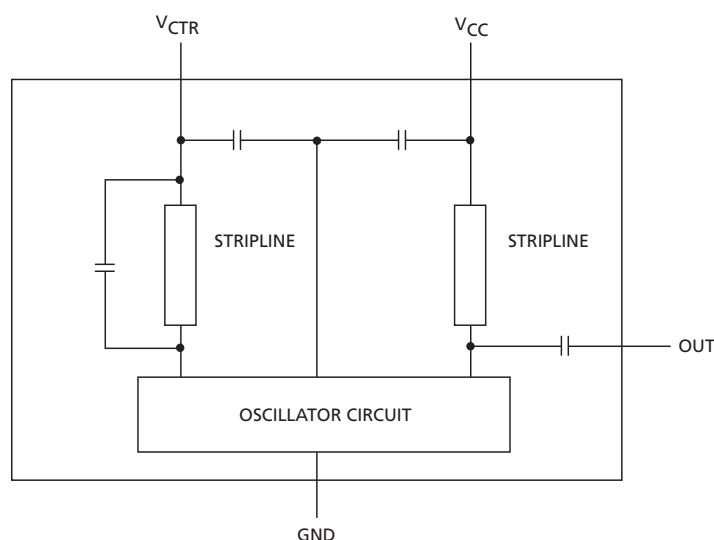


Figure A: GO1555 Functional Block Diagram

Revision History (Document # 40746)

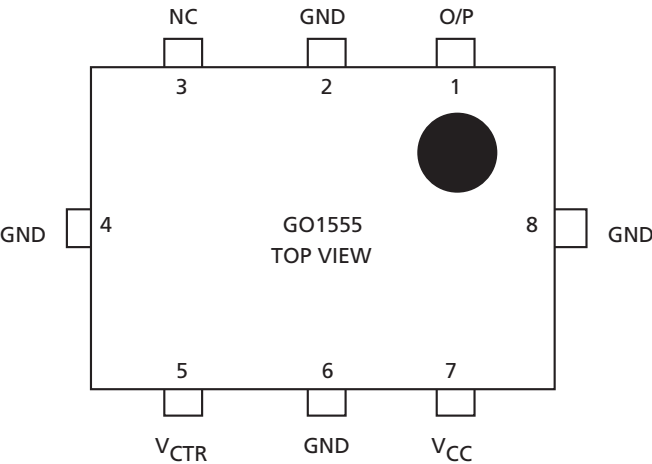
Version	ECR	PCN	Date	Changes/Modification
4	010542	000138	December 2012	Final updates to the Marking Diagram .
3	158797	–	November 2012	Internal Version Only: Updates to the Marking Diagram due to change in manufacturing location.
2	145427	–	May 2007	Added comment about gold plated terminals in 5.1 Package Dimensions .
1	142967	–	November 2006	Converting to Data Sheet. Added section 5.3 Tape and Reel Specification . Modified minimum output signal level to -10.5dBm in Electrical Characteristics .
0	141912	–	September 2006	New Document.

Contents

Key Features	1
Applications	1
Description	1
Revision History (Document # 40746)	2
1. Pin Out	3
1.1 Pin Assignment	3
1.2 Pin Descriptions	3
2. Electrical Characteristics	4
3. Soldering Recommendations	5
3.1 Reflow Conditions	6
3.2 Soldering Flux	6
3.3 Rework or Repair	6
3.4 Endurance To Warp	6
4. Handling Recommendations	7
4.1 Cleaning	7
4.2 Storage	7
4.3 Transport	7
4.4 ESD Warning	7
5. Package & Ordering Information	8
5.1 Package Dimensions	8
5.2 Packaging Data	8
5.3 Tape and Reel Specification	9
5.4 PCB Footprint	11
5.5 Marking Diagram	11
5.6 Ordering Information	11

1. Pin Out

1.1 Pin Assignment



NOTE: Pin numbers are arbitrary.
There are no pin markings on the device itself

1.2 Pin Descriptions

Table 1-1: Pin Descriptions

Pin Number	Name	Type	Description
2, 4, 6, 8	GND	Power	Most negative power supply connections.
5	V _{CTR}	Input	Control voltage for the VCO.
7	V _{CC}	Power	Most positive power supply connection.
1	O/P	Output	VCO signal output.
3	NC	–	No connection.

2. Electrical Characteristics

Table 2-1: Electrical Characteristics

$V_{CC} = +2.5V \pm 0.25V$, Temperature = $-40^{\circ}C$ to $+85^{\circ}C$, unless otherwise shown

Parameter	Symbol	Conditions	Min	Typ	Max	Units	Notes
Supply Voltage	V_{CC}	–	2.25	2.5	2.75	V	–
Supply Current	I_S	–	–	–	8	mA	–
Control Voltage Range	V_{CTR}	–	1.0	1.25	1.5	V	–
Control Voltage Sensitivity	df/dV	$V_{CTR} = 1.0V - 1.5V$	35.5	–	48.5	MHz/V	–
Operating Frequency Range	f_{VCO}	$V_{CTR} = 1.0V$	–	–	1483.5	MHz	–
		$V_{CTR} = 1.5V$	1485.0	–	–	MHz	
Output Signal Level	V_{OUT}	–	-10.5	–	-3	dBm	–
Pushing Figure	–	$V_{CC} = 2.5V \pm 0.25V$, ref: $V_{CC} = 2.5V$	-1.5	–	+1.5	MHz	–
Pulling Figure	–	VSWR = 2.0 for all phase, ref: 50W	-3	–	+3	MHz	–
Temperature Stability	T_{COEF}	$-40^{\circ}C$ to $+85^{\circ}C$, ref. = $25^{\circ}C$	-3	–	4	MHz	–
Spurious Response	–	–	–	–	-10	dBc	–
Output Impedance	Z_O	–	–	50	–	Ω	–

3. Soldering Recommendations

The device is manufactured with Matte-Sn terminations and is compatible with both standard eutectic and Pb-free solder reflow profiles. The recommended standard eutectic reflow profile is shown in Figure 3-1. The maximum recommended Pb-free reflow profile is shown in Figure 3-2.

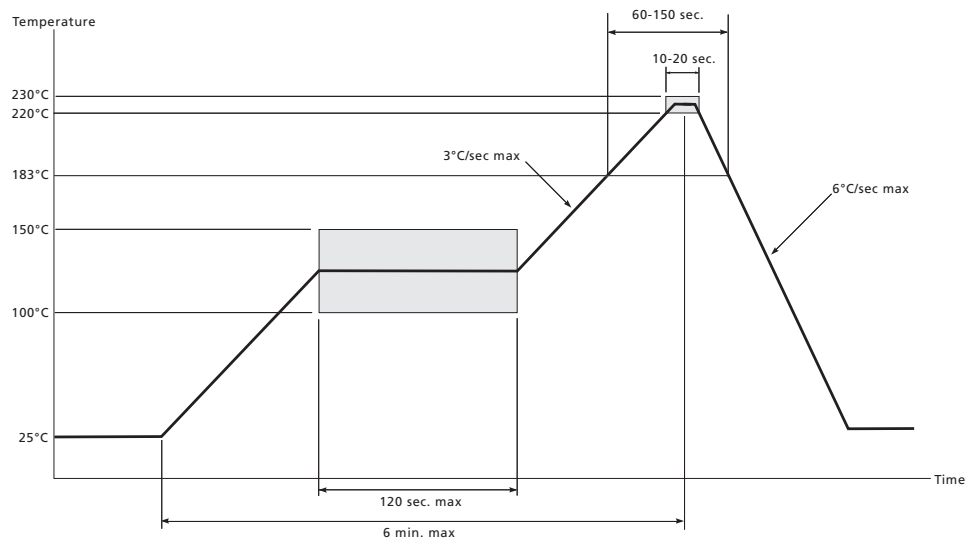


Figure 3-1: Standard Eutectic Solder Reflow Profile

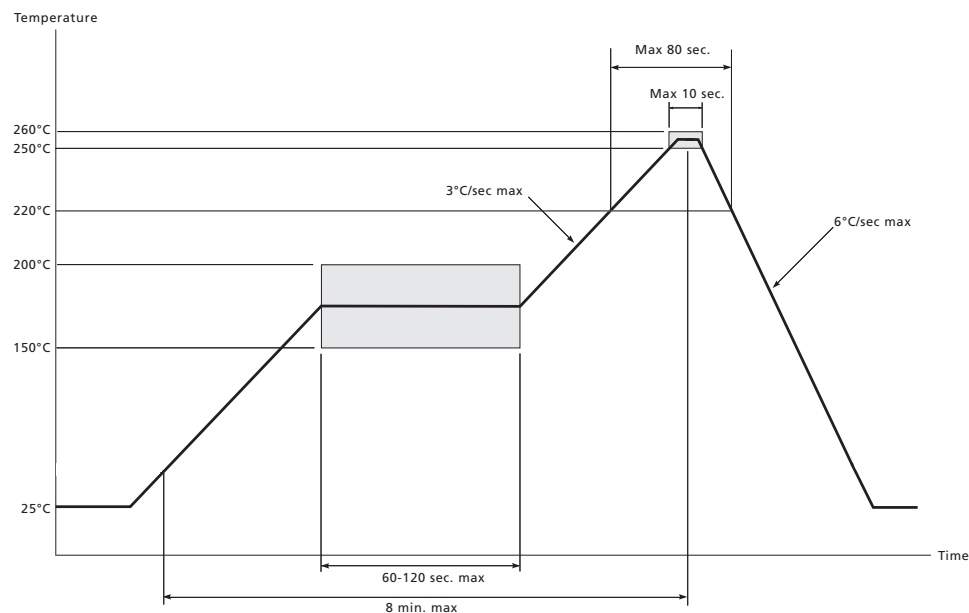


Figure 3-2: Maximum Pb-free Solder Reflow Profile (Preferred)

3.1 Reflow Conditions

The device will meet the data sheet specifications after completing the reflow process according to the profile shown in [Figure 3-1](#) or [Figure 3-2](#). Recommended soldering conditions are as follows:

Preheating	150±10°C, 60 to 120 sec.
Soldering	Peak 260°C
	Over 220°C within 80 sec.

3.2 Soldering Flux

Do not use cleaning type flux. Washing the devices after using cleaning type flux may damage inner parts and affect performance.

3.3 Rework or Repair

Rework or repair must only be done once. Do not reflow the device more than twice; once for initial soldering and once for remounting after rework.

Do not vibrate the VCO during reflow soldering.

3.4 Endurance To Warp

When the device is soldered on a printed circuit board (dimension: 100mm x 100mm; thickness: 1.6mm) and the PCB is warped as shown in [Figure 3-3](#), the device will not be cracked or damaged.

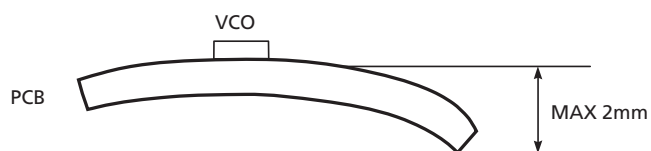


Figure 3-3: PCB Warp

4. Handling Recommendations

4.1 Cleaning

There are two options for cleaning the devices.

Option 1:

1. Clean but do not use solvent cleaners.
2. Thoroughly dry assemblies afterwards.

Option 2:

1. Mount device after board is cleaned.

4.2 Storage

Store the devices out of direct sunlight, at a stable temperature and humidity. Avoid extreme temperatures, high humidity and wide temperature fluctuations. Condensation on the devices may result in reduced quality and lowered solderability.

Avoid dust, sea breezes and corrosive gases (Cl_2 , NH_3 , SO_2 , NO_x , etc.).

Use within 6 months after delivery. If the devices are stored for more than one year, solderability may be degraded.

4.3 Transport

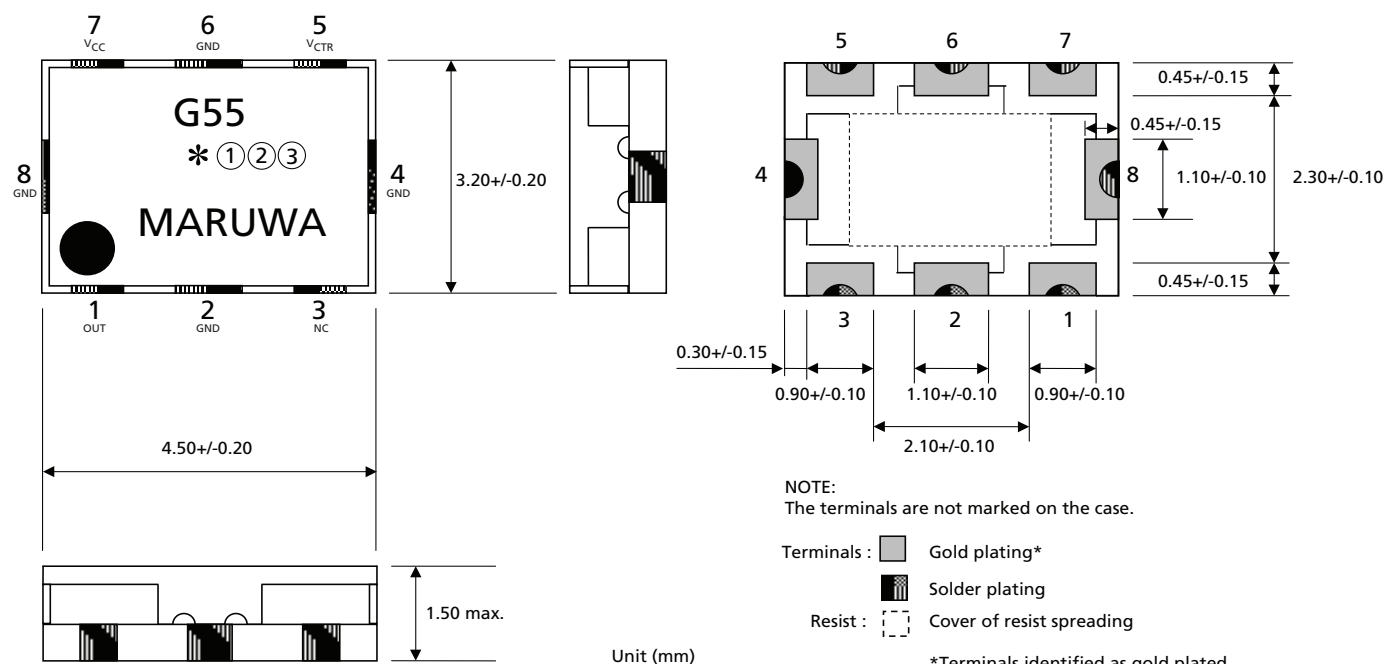
Package the devices for transportation to avoid mechanical vibration or shock.

4.4 ESD Warning

Avoid poor ground connections and electrostatic discharge or induction in production.

5. Package & Ordering Information

5.1 Package Dimensions



5.2 Packaging Data

Parameter	Value
Package Type	8L Proprietary Surface Mount
Package Drawing Reference	40567 rev.0
Pb-free and RoHS Compliant	Yes

5.3 Tape and Reel Specification

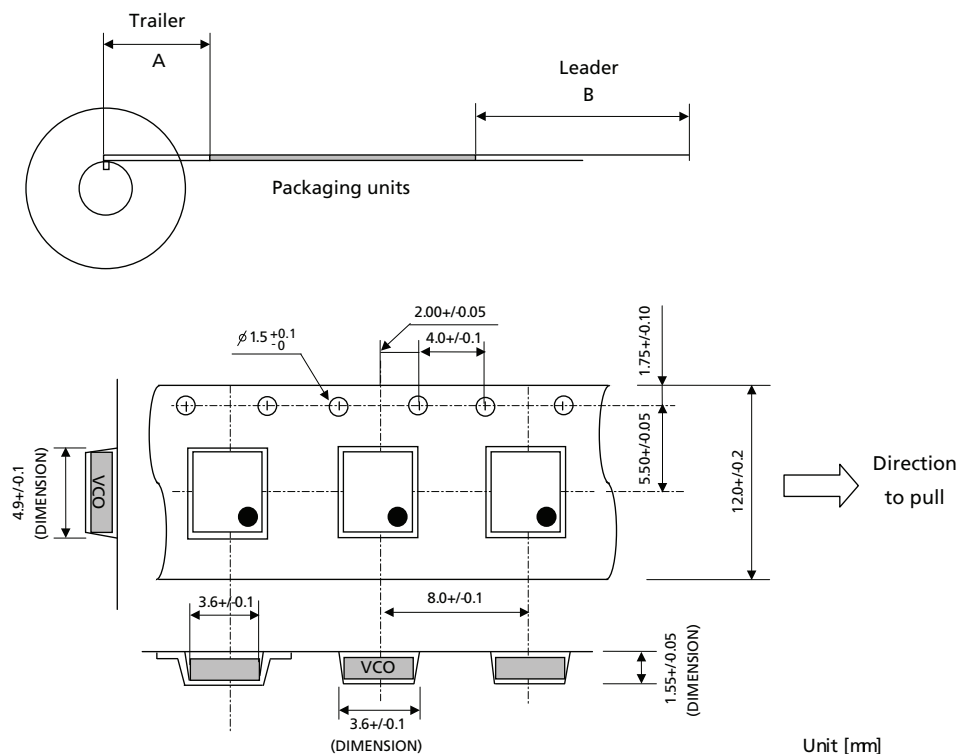
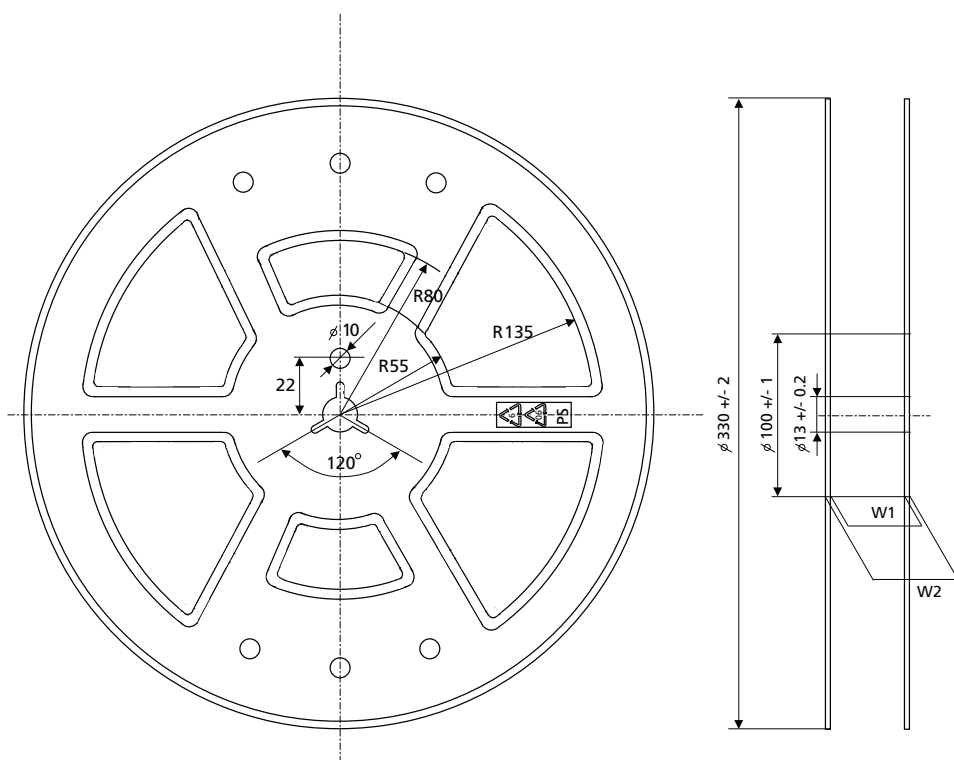


Figure 5-1: Tape Specification

The dimensions of A (trailer of tape) include the one inserted in the reel core.

Table 5-1: Tape Dimensions

Trailer	A	Empty cavities	$\geq 40\text{mm}$
Leader	B	Empty cavities, Cover tape leader	$\geq 400\text{mm}$
Packaging Units	3000pcs		
Partial absence in carrier tape	More than two successive empty cavities will not occur.		
Minimum order quantity	3000pcs / Reel		

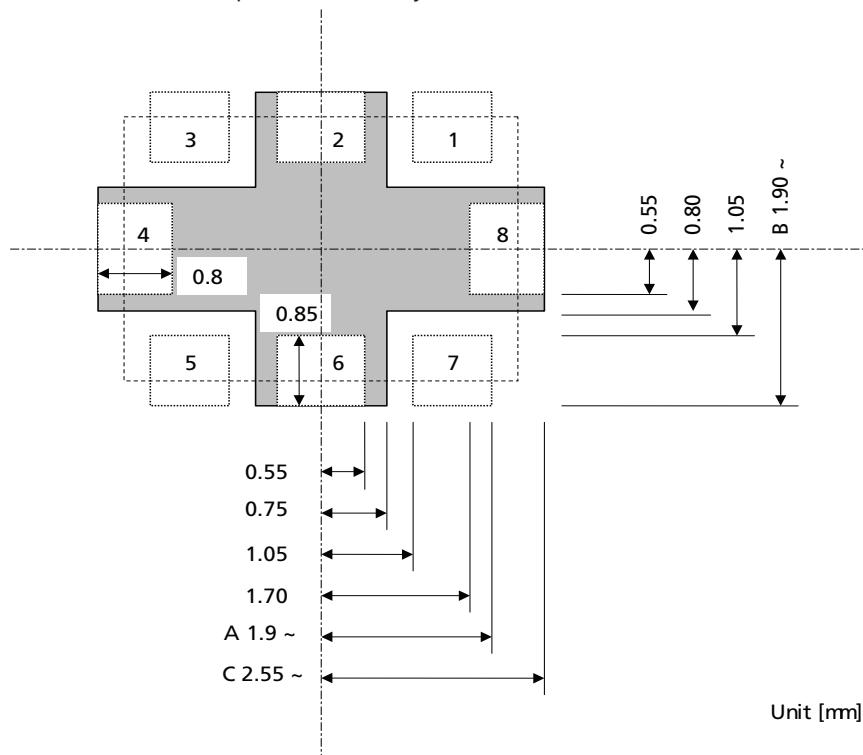


Reel Internal : W1 13.5 +/- 0.5
 Reel External : W2 17.5 +/- 1.0
 Unit : mm

Figure 5-2: Reel Specification

5.4 PCB Footprint

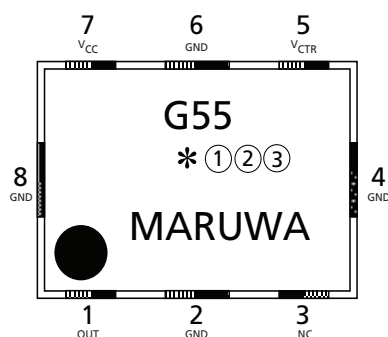
Recommended Footprint for PCB Layout



NOTE:

Please make the GND pattern under the VCO and coat the painted part with solder resist.
Please decide the dimensions of A, B and C as per the mounting accuracy of the chip mounter.

5.5 Marking Diagram



Date Code

1 : Last digit of the year

2,3: Week No.

5.6 Ordering Information

Part Number	Package	Pb-free	Temperature Range
GO1555-IXTE3	8-pin tape on reel	Yes	-40°C to +85°C



DOCUMENT IDENTIFICATION
FINAL DATA SHEET

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