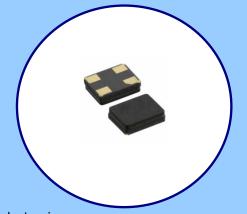


MODEL GA324

CRYSTAL - AUTOMOTIVE ELECTRONICS

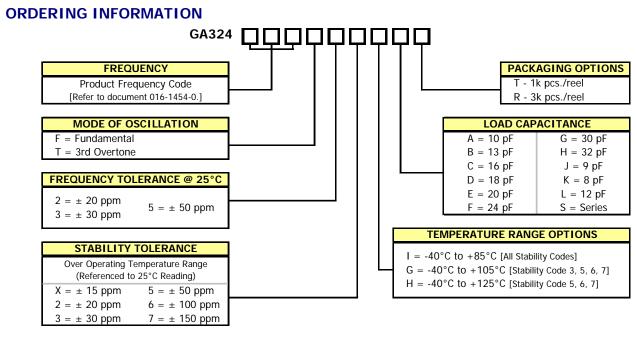
FEATURES

- AEC-Q200 Compliant
- Standard 3.2mm x 2.5mm Glass Seal Package
- Fundamental Design
- Frequency Range 12 40 MHz Fundamental, 36 120 MHz 3rd Overtone
- Frequency Tolerance; ±20 ppm, ±30 ppm and ± 50 ppm
- Frequency Stability, reference Ordering Information
- Operating Temperature, -40°C to +125°C standard
- Tape & Reel Packaging Standard, EIA-481
- RoHS Compliant in Accordance with EU Directive 2011/65/EU
 - Lead-Free Termination Finish
- Exemption 7(c)-I, Electrical and electronic components containing lead [Pb] in glass



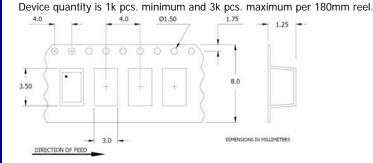
APPLICATIONS

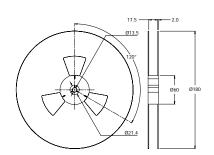
Model GA324 is a low cost crystal specifically developed for use in automotive electronics.



Not all performance combinations and frequencies may be available. Contact your local CTS Representative or CTS Customer Service for availability.

PACKAGING INFORMATION [Reference]





DOCUMENT NO. 008-0418-0

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REV. A



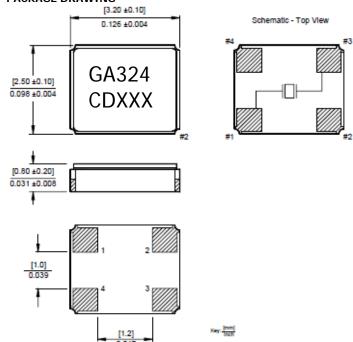
ELECTRICAL CHARACTERISTICS

	PARAMETER	VALUE								
	Operating Mode	Fundame	ntal	3 rd Overtone						
	Frequency Range	12.0 MHz to 4	0.0 MHz	36.0 MHz to 12	36.0 MHz to 120.0 MHz					
	Crystal Cut	AT-Cut								
ELECTRICAL PARAMETERS	Frequency Tolerance @ 25°C	±20 ppm, ±30 ppm, ±50 ppm								
	Frequency Stability Tolerance ¹	±15 ppm, ±20 ppm, ±30 ppm, ±50 ppm, ±100 ppm, ±150 ppm								
	[Operating Temperature Range, Referenced to 25°C Reading]	±30 ρριτί, ±100 ρριτί								
	Operating Temperature Range ¹	$ -40^{\circ}\text{C to} + 85^{\circ}\text{C} \text{[All Stability Codes]} \\ -40^{\circ}\text{C to} + 105^{\circ}\text{C} \text{[Stability Code 3, 5, 6, 7]} \\ -40^{\circ}\text{C to} + 125^{\circ}\text{C} \text{[Stability Code 5, 6, 7]} $								
	Equivalent Series Resistance	12.000 MHz - 13.999 MHz 14.000 MHz - 15.999 MHz 16.000 MHz - 18.999 MHz 19.000 MHz - 29.999 MHz 30.000 MHz - 40.000 MHz	150 Ohms maximum 120 Ohms maximum 100 Ohms maximum 80 Ohms maximum 60 Ohms maximum	36.000 MHz - 53.999 MHz 54.000 MHz - 120.000 MHz	180 Ohms maximum 120 Ohms maximum					
	Load Capacitance or Resonance Mode [See Ordering Information for More Options]	8pF, 12pF standard								
	Shunt Capacitance (C ₀)	3.0 pF typical, 5.0 pF maximum								
	Drive Level	10 μW typical, 100 μW maximum								
	Aging @ +25°C	±5 ppm/yr maximum								
	Insulation Resistance [@ DC 100V]	500M Ohms minimum								
	Storage Temperature Range		o +125°C							
	Reflow Condition, per JEDEC J-STD-020	+260°C maximum, 10 Seconds maximum								

¹ See Ordering Information.

MECHANICAL SPECIFICATIONS

PACKAGE DRAWING



MARKING INFORMATION

- 1. GA324 CTS Model Series.
- 2. C CTS.
- 3. D Date code. See Table I for codes.
- 4. XXX Frequency code. [Reference CTS document 016-1450-0, Frequency Code Tables.]

NOTES

- Complete CTS part number, frequency value, date code and manufacturing site code information must appear on reel and carton labels.
- 2. Termination pads [e4] barrier plating is nickel [Ni] with gold [Au] flash plate.
- 3. Reflow conditions per JEDEC J-STD-020; 260°C maximum, 10 seconds

SUGGESTED SOLDER PAD GEOMETRY

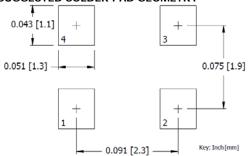


TABLE I - DATE CODE

	MONTH YEAR				JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
2001	2005	2009	2013	2017	Α	В	С	D	E	F	G	Н	J	K	L	М
2002	2006	2010	2014	2018	N	Р	Q	R	S	Т	U	V	W	Х	Υ	Z
2003	2007	2011	2015	2019	а	b	С	d	е	f	g	h	j	k	- 1	m
2004	2008	2012	2016	2020	n	р	q	r	S	t	u	٧	W	Х	у	Z