



Product Family: [Gull Wing Delay Line - Differential](#)

Part Number Series: [GL2 Series](#)

	<p>Construction:</p> <ul style="list-style-type: none"> • High Purity Alumina Substrate • Stripline construction • Gull wing, SOIC package • Available in RoHS and non-RoHS versions. RoHS version utilizes exemption 7a. 	<p>Features:</p> <ul style="list-style-type: none"> • Differential (2 delay elements) • Time delays of 0.1ns to 4.5ns • Tolerances as tight as $\pm 0.05\text{ns}$ • 50Ω impedance • High volume production suitable for commercial and special applications
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Description:

These surface mount differential delay lines offer excellent performance and small size. The shielded stripline construction is ideal for high frequency and tight tolerance timing and deskew applications. The performance of these equally distributed capacitance delay lines is significantly better than lumped element delay lines and the physical size is much smaller than delays obtained by using cable.

Product Dimensions, Schematic and Marking:

<p>Dimensions: inches</p> <p>0.533 max.</p> <p>0.238 max. 0.329 max.</p> <p>0.074 ± 0.010 0.050 ± 0.005 0.045 ± 0.010</p> <p>coplanarity 0.004</p> <p>0.022 max. 0.016 max. 0.018 typ.</p>	<table border="1"> <thead> <tr> <th>Time Delay</th> <th>"H" dimension</th> </tr> </thead> <tbody> <tr> <td>0.100ns ~ 1.000ns (LS)</td> <td>0.093 max.</td> </tr> <tr> <td>1.100ns ~ 4.500ns (MS)</td> <td>0.191 max.</td> </tr> </tbody> </table>	Time Delay	"H" dimension	0.100ns ~ 1.000ns (LS)	0.093 max.	1.100ns ~ 4.500ns (MS)	0.191 max.	<p>Schematic:</p> <p>Notes:</p> <ul style="list-style-type: none"> - Part is symmetrical (orientation can be reversed) - Pins 2 and 7 are input/output for one signal - Pins 10 and 15 are input/output for other signal - All other pins are ground
Time Delay	"H" dimension							
0.100ns ~ 1.000ns (LS)	0.093 max.							
1.100ns ~ 4.500ns (MS)	0.191 max.							
<p>Marking:</p> <p>Product marking will be composed of the following:</p> <ul style="list-style-type: none"> • Pin 1 end identifier • Characters "LS" or "MS". Td dependant. • 3-digit time delay code as explained in part numbering section • Character "D" • TFT "Don't Stop" logo • 1-digit manufacturing code 								

GL1 Series Part Numbering: Ex: GL2L5MS150D-C

Product Designator	Number of Elements	Impedance Code	Package Code and Height	Time Delay	Delay Type	T&R Packaging Quantity	RoHS Indicator
GL	2L = 2	5 = 50 Ω	LS = 0.093" MS = 0.191"	Three numeric characters representing nanoseconds x 100 (i.e. 150=1.50ns)	D = Differential	-T# where # stands for tape qty x 100 (100~700 available)	-C = RoHS (leave blank for leaded)

Examples:

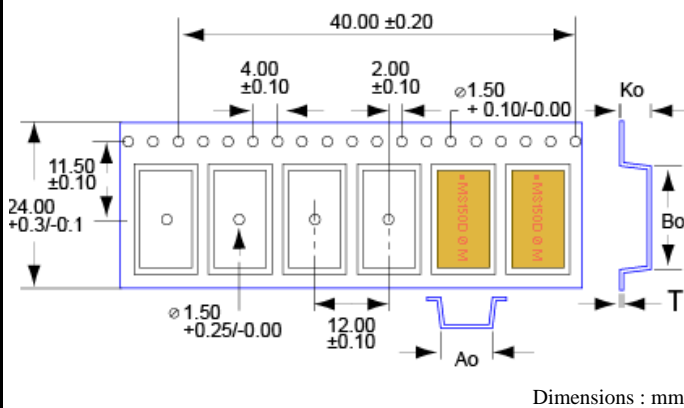
Part Number	Product Height	Time Delay	T&R Qty	RoHS
GL2L5MS150D-T1-C	0.191"	1.50ns	100 pcs/reel	Yes
GL2L5LS030D-T4	0.093"	0.30ns	400 pcs/reel	No
GL2L5MS450D-T5-C	0.191"	4.50ns	500 pcs/reel	Yes

Electrical Specifications:

Time Delay -->	0.1ns ~ 1.0ns (LS)	1.1ns ~ 4.5ns (MS)
Product Height	0.093"	0.191"
Time delay increments	0.1ns steps	0.1ns steps (1.1ns to 3.0ns) 0.5ns steps (3.5ns to 4.5ns)
Time delay tolerance	±0.05ns	±0.05ns (1.1ns to 2.9ns) -0.05ns/+0.10ns (3.0ns) ±0.10ns (3.5ns to 4.5ns)
Impedance	50Ω ±10%	
DC Resistance	1.0 Ω max.	1.0 Ω/ns max.
Rated Current	100 mA	
Temp. coef. of time delay	150 ppm/°C	
Insulation Resistance	100 Vdc (1 minute minimum)	
Isolation Resistance (Sgn-Gnd)	100MΩ minimum @ 50 Vdc	
Operating Temp. Range	-40°C ~ +85°C	
Storage Temp. Range	-55°C ~ +125°C	
Packaging	100 ~ 700 pcs in increments of 100 pcs	

Packaging:

Tape Drawing:



Packaging Specification	General Guidelines & Recommendations	
General Notes	All dimensions are in mm. Not drawn to scale	
Drawing Dimensional Call-outs	GL2L5LS***D	GL2L5MS***D
	Ao = 8.510 ± 0.100 mm	Ao = 8.430 ± 0.100 mm
	Bo = 14.200 ± 0.100 mm	Bo = 13.72 ± 0.100 mm
	Ko = 3.000 ± 0.100 mm	Ko = 5.310 ± 0.100 mm
	T = 0.343 ± 0.013 mm	T = 0.356 ± 0.013 mm
Packaging Materials	"LS" Carrier tape part #: US044441. "MS" Carrier tape part #: US042911. Cover tape part #: Vendor determined. Reel size: Quantity dependent	
Packaging Requirements	All taping done in accordance with EIA 481 standards. Pieces taped with the marking facing up and showing through the cover tape.	
Labeling Requirements	Labels will contain the TFT part number and quantity of pieces taped.	