

SIEMENS

LH1505, LH1520 LH1522, LH1524

Dual 1 Form A

Absolute Maximum Ratings $T_A=25^\circ\text{C}$

Stresses in excess of the Absolute Maximum Ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the

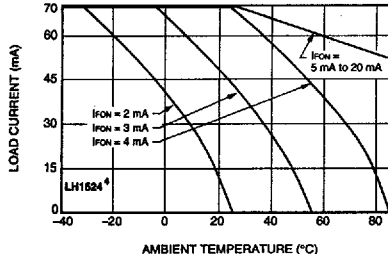
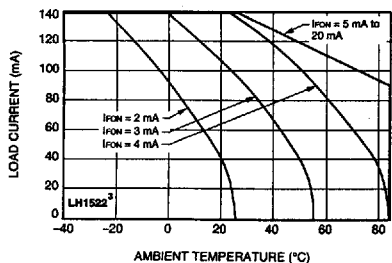
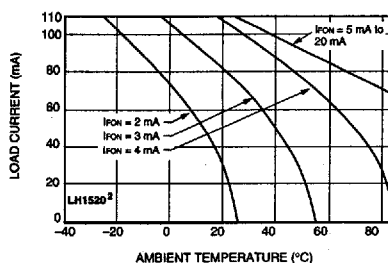
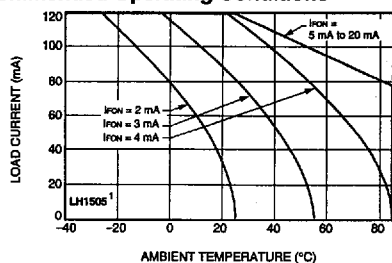
device is not implied at these or any other conditions in excess of those given in the operational sections of this document. Exposure to Absolute Maximum Ratings for extended periods of time can adversely affect reliability.

Parameter	Symbol	Test Conditions	LH1505	LH1520	LH1522	LH1524	Units
Ambient Operating Temperature Range	T_A	—	-40 to +85	-40 to +85	-40 to +85	-40 to +85	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	—	-40 to +150	-40 to +150	-40 to +150	-40 to +150	$^\circ\text{C}$
Pin Soldering Temperature	T_S	$t=10\text{ s max}$	260	260	260	260	$^\circ\text{C}$
Input/Output Isolation Test Voltage	V_{ISO}	$t=1\text{ s}$ $I_{\text{ISO}}=10\text{ }\mu\text{A max}$	5300	5300	5300	5300	V_{rms}
Pole-to-Pole Isolation Voltage (S_1 to S_2)†	—	Dry air, dust free, at sea level	1600	1600	1600	1600	V
LED Continuous Forward Current	I_F	—	50	50	50	50	mA
LED Reverse Voltage	V_R	$I_R \leq 10\text{ }\mu\text{A}$	8	8	8	8	V
dc or Peak ac Load Voltage	V_L	$I_L \leq 50\text{ }\mu\text{A}$	250	350	200	400	V
Continuous dc Load Current: One pole operating	I_L	—	130	150	200	95	mA
Two poles operating			120	110	140	70	mA
Peak Load Current	I_P	$t=100\text{ ms}$ (single shot)	*	*	*	*	mA
Output Power Dissipation (continuous)	P_{DISS}	—	600	600	600	600	mW

* Refer to Current-Limit Performance Application Note for a discussion on relay operation during transient currents.

† Breakdown occurs between the output pins external to the package

Recommended Operating Conditions



Electrical Characteristics T_A=25°C

Minimum and maximum values are testing requirements. Typical values are characteristics of the device

and are the result of engineering evaluations. Typical values are for information purposes only and are not part of the testing requirements.

	Parameter	Symbol	Test Conditions	Values	LH1505	LH1520	LH1522	LH1524	Units		
INPUT	LED Forward Current for Switch Turn-on	I _{Fon}	I _L =100 mA t=10 ms	Min	—	—	—	—	mA		
				Typ	1.0	1.0	1.0	0.5	mA		
				Max	2.0	2.0	2.0	2.0	mA		
	LED Forward Current for Switch Turn-off	I _{Foff}	—	Min	0.2	0.2	0.2	0.1	mA		
				Typ	0.9	1.1	1.1	0.4	mA		
				Max	—	—	—	—	mA		
	LED Forward Voltage	V _F	I _F =10 mA	V _L	±	200	300	150	350	V	
				Min	1.15	1.15	1.15	1.15	V		
				Typ	1.26	1.26	1.26	1.26	V		
			Max	1.45	1.45	1.45	1.45	V			
			ON-resistance	R _{ON}	I _F =5 mA I _L =50 mA	Min	10	12	6	12*	Ω
						Typ	15	20	10	23*	Ω
Max	20	25				15	34*	Ω			
OFF-resistance	R _{OFF}	I _F =0 mA V _L =±100 V	Min	0.5	0.5	0.5	0.5	GΩ			
			Typ	5000	5000	5000	5000	GΩ			
			Max	—	—	—	—	GΩ			
ON-state Voltage	—	I _L =1 mA	Min	—	—	—	1.2	V			
			Typ	—	—	—	1.4	V			
			Max	—	—	—	1.8	V			
		I _L =90 mA t=10 ms	Min	—	—	—	3.0	V			
			Typ	—	—	—	3.6	V			
			Max	—	—	—	5.0	V			
Current Limit	I _{LMT}	I _F =5 mA t=5 ms	Min	170	230	300	150	mA			
			Typ	200	270	360	210	mA			
			Max	280	370	460	270	mA			
		V _L	±	6	6	5	11	V			
			Off-state Leakage Current	—	I _F =0 mA V _L =±100 V	Min	—	—	—	—	nA
						Typ	0.02	0.02	0.02	0.02	nA
Max	200	200				200	200	nA			
		I _F =0 mA	Min	—	—	—	—	μA			
			Typ	—	—	—	—	μA			
			Max	1.0	1.0	1.0	1.0	μA			
		V _L	±	250	350	200	400	V			
			Output Capacitance	—	I _F =0 mA V _L =1 V	Min	—	—	—	—	pF
						Typ	55	55	60	2.5	pF
Max	—	—				—	—	pF			
		I _F =0 mA V _L =50 V	Min	—	—	—	—	pF			
			Typ	10	10	15	2.0	pF			
			Max	—	—	—	—	pF			
Pole-to-pole Capacitance (S1 to S2)	—	I _F =5 mA	Min	—	—	—	—	pF			
			Typ	0.5	0.5	0.5	0.5	pF			
			Max	—	—	—	—	pF			
Switch Offset	—	I _F =5 mA	Min	—	—	—	—	μV			
			Typ	0.15	0.15	0.15	—	μV			
			Max	—	—	—	—	μV			
TRANSFER	Input/Output Capacitance	C _{ISO}	V _{ISO} =1 V	Min	—	—	—	—	pF		
				Typ	1.1	1.1	1.1	1.1	pF		
				Max	—	—	—	—	pF		
	Turn-on Time	t _{on}	I _F =5 mA I _L =50 mA	Min	—	—	—	—	ms		
				Typ	1.4†	1.4	1.0‡	1.6	ms		
				Max	4.0†	2.0	2.0‡	5.0	ms		
	Turn-off Time	t _{off}	I _F =5 mA I _L =50 mA	Min	—	—	—	—	ms		
				Typ	0.7†	0.7	0.7‡	2.0	ms		
				Max	4.0†	2.0	2.0‡	5.0	ms		

* R_{ON}=V(50 mA) – V(20 mA)/ 30 mA, †I_L=100 mA, ‡I_F=10 mA.

The following information refers to the SSR Recommended Operating Conditions on the previous page.

- 1) Both relays on with equal load currents. For single relay operation, refer to the LH1518 Recommended Operating Conditions graph.
- 2) Both relays on with equal load currents. For single relay operation, refer to the LH1500 Recommended Operating Conditions graph.
- 3) Both relays on with equal load currents. For single relay operation, refer to the LH1510 Recommended Operating Conditions graph.
- 4) Both relays on with equal load currents. For single relay operation, refer to the LH1504 Recommended Operating Conditions graph.

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The drawing illustrates the 1000 Series 10-pin DIP package in three views: top, side, and end. The top view shows a rectangular package with six pins on each long side, numbered 1 through 6. Dimensions include a width of .343 (8.70) inches and a pin pitch of .335 (8.50) inches. The side view shows a height of .256 (6.50) inches and a pin height of .150 (3.81) inches. The end view shows a width of .300 (7.62) inches and a pin width of .014 (.35) inches. A 4° lead angle is specified for the pins.

Top View Dimensions:

- Width: .343 (8.70)
- Pin Pitch: .335 (8.50)
- Pin 1 ID: Indicated by a circle and arrow pointing to pin 1.

Side View Dimensions:

- Height: .256 (6.50)
- Pin Height: .150 (3.81)
- Pin Spacing: .130 (3.30)
- Pin Thickness: .020 (.051) min.
- Pin Width: .035 (.90)
- Pin Spacing: .031 (.80)
- Pin Length: .100 (2.54) typ.

End View Dimensions:

- Width: .300 (7.62) typ.
- Lead Angle: 4° typ.
- Pin Width: .014 (.35)
- Pin Spacing: .010 (.25)
- Pin Width: .347 (8.82)
- Pin Spacing: .300 (7.62)
- Pin Width: .150 (3.81)
- Pin Spacing: .110 (2.79)

Technical drawing of a 16-pin D-subminiature connector. The drawing includes a top view, a side view, and a detail view of the pin. The top view shows a rectangular body with 16 pins arranged in two rows of 8. Dimensions include overall width of .268 (6.81) and .255 (6.48), overall height of .390 (9.91) and .379 (9.63), and pin pitch of .045 (1.14) and .031 (.79). The side view shows the profile of the connector with dimensions for the body height (.040 (1.02) and .031 (.79)), pin height (.050 (1.27) and .040 (1.02)), and pin diameter (.010 (2.54) and .008 (2.03)). A detail view of a pin shows a 3° to 7° chamfer. The drawing is labeled "Pin one I.D." and "Radius".