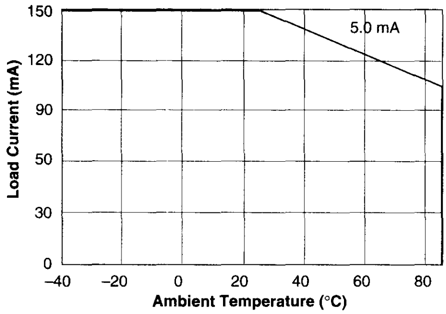
Recommended Operating Conditions



Both relays on with equal load currents.
For a single relay operation, refer to LH1511 Recommended Operating Conditions graph.

Absolute Maximum Ratings, T_A=25°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.

Ambient Temperature Range (T_A) .... –40 to +85°C
Storage Temperature Range (T_{stg}) .... –40 to +125°C
Pin Soldering Temperature (t=10 s max) (T_S) .... 260°C
Input/Output Isolation Voltage
(t=1.0 s, I_{ISO}=10 µA max) (V_{ISO}) .... 3750 V_{RMS}
Pole-to-Pole Isolation Voltage (S1 to S2)*
(dry air, dust free, at sea level) .... 1600 V
LED Continuous Forward Current (I_F) .... 50 mA
LED Reverse Voltage (I_R≤10 µA) (V_R) .... 5.0 V
DC or Peak AC Load Voltage (I_L≤50 µA) (V_L) .... 200 V
Continuous DC Load Current (I_L)
One Pole Operating .... 200 mA
Two Poles Operating .... 140 mA
Peak Load Current (t=100 ms) (single shot) (I_P) .... 400 mA
Output Power Dissipation (continuous) (P_{DISS}) .... 600 mW

* Breakdown occurs between the output pins external to the package.

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 only and are not part of the testing requirements.

Parameter	Sym.	Min.	Typ.	Max.	Units	Test Conditions
Input						
LED Forward Current, Switch Turn-on	I_{Fon}	0.2	0.9	—	mA	I_L=±200 mA, t=10 ms
LED Forward Current, Switch Turn-off	I_{Foff}	—	1.0	2.0	mA	V_L±150 V
LED Forward Voltage	V_F	1.15	1.22	1.45	V	I_F=10 mA
Output						
ON-resistance	R_{ON}	—	10	15	Ω	I_F=0 mA, I_L=50 mA
OFF-resistance	R_{OFF}	0.1	1.4	—	GΩ	I_F=5.00 mA, V_L=±100 V
Off-state Leakage Current	—	—	0.07	1.0	µA	I_F=5.0 mA, V_L=±200 V
Output Capacitance	—	—	50	—		I_F=5.0 mA, V_L=50 V
Transfer						
Input/Output Capacitance	C_{ISO}	—	3.0	—	pF	V_{ISO}=1.0 V
Turn-on Time	t_{on}	—	1.0	3.0	ms	I_F=10 mA, I_L=50 mA
Turn-off Time	t_{off}	—	1.2	3.0	ms	I_F=10 mA, I_L=50 mA

LH1525ACD/ACDTR

1 Form A SOP Solid-State Relay

FEATURES

- High-speed Operation
- 1500 V_{RMS} I/O Isolation
- Current-limit Protection
- High Surge Capability
- Load Voltage 400 V
- Linear, ac/dc Operation
- Clean, Bounce-free Switching
- Extremely Low Power Consumption
- High-reliability Monolithic Receptor
- Surface-mountable

AGENCY APPROVALS

- UL – File No. E52744
- CSA – Certification 093751
- FIMKO Approval

APPLICATIONS

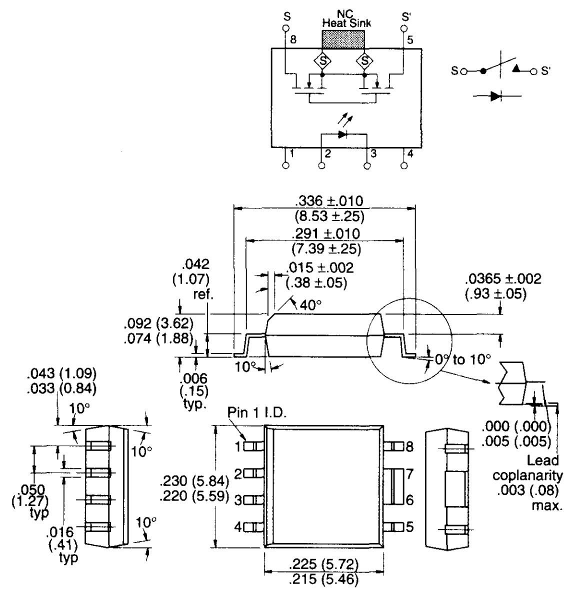
- PCMCIA Type 2 Cards
- Battery Powered Switch Applications
- General Telecom Switching
- Telephone Line Interface
  - On/off Hook
  - Ring Relay
  - Ground Start
- Programmable Controllers
- Instrumentation

DESCRIPTION

The LH1525 relay is an SPST normally open switch (1 Form A and Dual 1 Form A respectively) in small-outline packages (SOP). They require a minimal amount of LED drive current to operate, making them ideal for battery powered and power consumption sensitive applications.

The relays are constructed using a GaAlAs LED for actuation control and an integrated monolithic die for the switch output. The die, fabricated in a high-voltage dielectrically isolated BCDMOS technology, is comprised of a photodiode array, switch-control circuitry, and MOSFET switches. In addition, the relays employ current-limiting circuitry enabling it to pass FCC 68.302 and other regulatory surge requirements when overvoltage protection is provided.

Package Dimensions in Inches (mm)



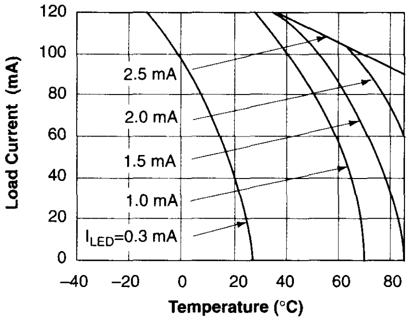
Part Identification

Part Number	Description
LH1525ACD	8-pin SOP, Tubes
LH1525ACDTR	8-pin SOP, Tape and Reel

RECOMMENDED OPERATING CONDITIONS

Parameter	Sym.	Min.	Typ.	Max.	Unit
LED Forward Current for Switch Turn-on (T_A=–40°C to +85°C)	I_{Fon}	1.5	—	20	mA

Recommended Operating Conditions



Absolute Maximum Ratings, T_A=25°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.

Ambient Operating Temperature Range, T_A....................–40° to +85°C
Storage Temperature Range, T_{stg}..................................–55° to +150°C
Pin Soldering Temperature, t=5.0 s max, T_S............................... 260°C
Input/Output Isolation Voltage, V_{ISO}.....................................1500 V_{RMS}
LED Input Ratings:
  Continuous Forward Current, I_F ....50 mA
  Reverse Voltage, V_R.. 5.0 V
Output Operation:
  dc or Peak ac Load Voltage, I_L≤50 µA, V_L................................. 400 V
Continuous dc Load Current:
  One pole operating, I_L ....110 mA
Power Dissipation, P_{DISS}.. 550 mW
Thermal Resistance, Junction to Ambient, $R_{\Theta JA}$ ....200 C/W

Solid State Relays 3

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	Min.	Typ.	Max.	Unit	Test Condition
LED Forward Current for Switch Turn-on	I_{Fon}	—	0.3	0.5	mA	I_L=100 mA, t=10 ms
LED Forward Current for Switch Turn-off	I_{Foff}	0.01	0.1	—	mA	V_L=±350 V, t=100 ms
LED Forward Voltage	V_F	0.80	1.15	1.40	V	I_F=1.5 mA
ON-resistance: Pin 5 (±) to 8 (±)	R_{ON}	17	25	36	Ω	I_F=1.5 mA, I_L=±50 mA
Current Limit	I_{LMT}	170	210	270	mA	I_F=1.5 mA, t=5.0 ms, V_L=7.0 V
Output Off-state Leakage Current	—	— —	0.04 —	200 1.0	nA µA	I_F=0 mA, V_L=±100 V V_L=±400 V
Turn-on Time	t_{on}	— —	1.0 0.5	— 1.0	ms ms	I_F=1.5 mA, I_L=50 mA I_F=5.0 mA, I_L=50 mA
Turn-off Time	t_{off}	— —	0.2 0.4	— 0.9	ms ms	I_F=1.5 mA, I_L=50 mA I_F=5.0 mA, I_L=50 mA