SIEMENS

LH1533
Dual 1 Form A
High-Voltage Solid State Relays

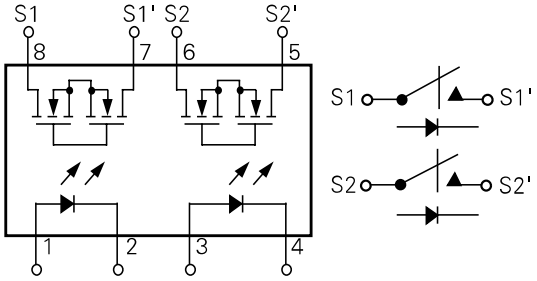
FEATURES
- Load voltage, 350 V
- Load current 70 mA
- TR_{ON}, typical at 100 mA
- 3750 Vrms I/O isolation
- Current-limit protection
- High-surge capability
- Linear, ac/dc or dc operation
- Clean, bounce-free switching
- Low power consumption
- High-reliability monolithic receptor
- Surface-mountable

APPLICATIONS
- General telecom switching
  - On/off-hook
  - Dial pulse
  - Ground start
  - Ground fault protection
- Instrumentation
- Industrial controls
- Peripherals

DESCRIPTION
The LH1533 (Dual 1 Form A) relays are SPST normally open switches that can replace electromechanical relays in many 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 BICMOS technology, is comprised of a photodiode array, switch control circuitry, and MOSFET switches. In addition, the relay employs current-limiting circuitry enabling it to pass FCC 68.302 and other regulatory voltage surge requirements when overvoltage protection is provided.

The LH1533 (Dual 1 Form A) relay is packaged in an 8-pin DIP (LH1533AB) or in a surface-mount, option 9 (LH1533AAC). The surface-mount devices are available in sticks or on tape and reel.

Figure 1. Functional Diagram



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 condition in excess of those given in the operational sections of the data sheet. Exposure to Absolute Maximum Ratings for extended periods can adversely affect the device reliability.

Parameter	Symbol	Value	Unit
Ambient Operating Temperature Range	T_A	–40 to +85	°C
Storage Temperature Range	T_{stg}	–40 to +150	°C
Pin Soldering Temperature (t=10 s max.)	T_S	260	°C
Input/Output Isolation Test Voltage (t=1 sec)	V_{ISO}	5300	Vrms
LED Input Ratings:			
Continuous Forward Current	I_F	50	mA
Reverse Voltage (I_R≤10 µA)	V_R	5	V
Output Ratings:			
dc or Peak ac Load Voltage (I_L≤50 µA)	V_L	350	V
Continuous dc Load Current			
LH1533 (One Pole Operating)	I_L	90	mA
LH1533 (Two Poles Operating)	I_L	70	mA
Power Dissipation			
LH1533	P_{DISS}	600	mW

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 Condition	Min	Typ	Max	Unit
LED Forward Current for Switch Turn-on	I_{Fon}	I_L=100 mA, t=10 ms	–	–	2.5	mA
LED Forward Current for Switch Turn-off	I_{Foff}	V_L=±300 V	0.01	–	–	mA
LED Forward Voltage	V_F	I_F=5 mA	0.9	1.2	1.4	V
ON-resistance	R_{ON}	I_F=5 mA, I_L=±90 mA	25	37	50	Ω
Current Limit	I_{LMT}	I_F=5 mA, t=5 ms, V_L=13 V	150	200	270	mA
Output Off-state Leakage Current	–	I_F=0 mA, V_L=±350 V	–	–	1.0	µA
Turn-on Time	t_{on}	I_F=5 mA, I_L=50 mA	–	–	3.0	ms
Turn-off Time	t_{off}	I_F=5 mA, I_L=50 mA	–	–	3.0	ms