

Photo DMOS-FET Relay

Description

The **LT314** is a miniature 2-Form A solid state relay in a 8 pin SOP package that employs optically coupled MOSFET technology to provide 1500V of input to output isolation. The Input of optical coupler been controlled by a highly efficient GaAlAs infrared LED and MOS FETs on the output side.

Features

- SOP package 8 Pin type in miniature design (4.4×9.4×2.0mm / .173×.37×.083inch)
- Low driver power requirements (TTL/CMOS Compatible)
- High reliability
- Arc-Free with no snubbing circuits
- 1500Vrms Input/Output isolation
- Tape & Reel version available

Applications

- Telecommunications (PC, Electronic notepad)
- Measuring and Testing equipment
- Industrial control
- Security equipments
- High speed inspection machine
- Data communication equipment
- Factory automotive equipments

Photo DMOS-FET Relay Specifications

Part Name: LT314

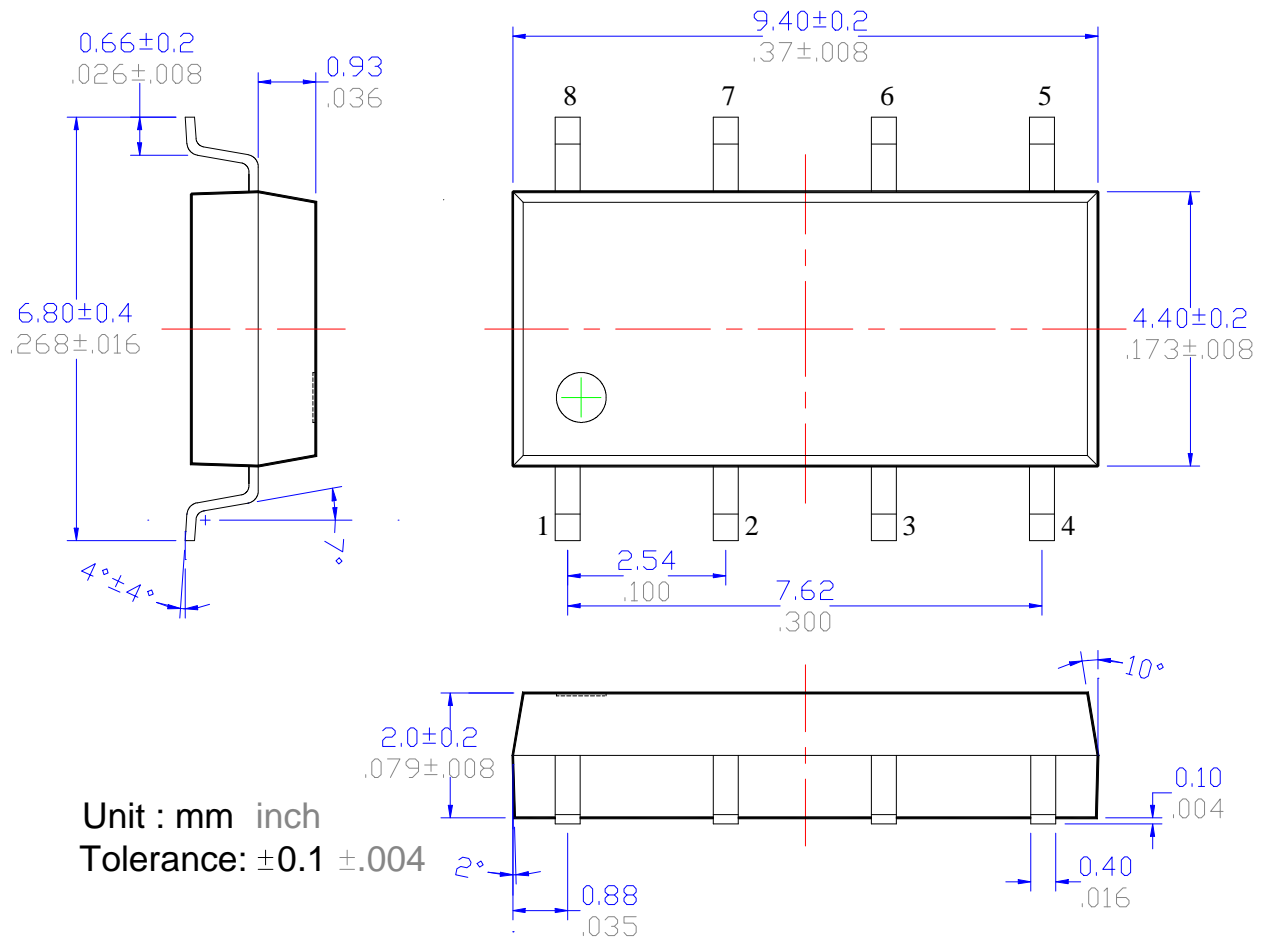
(Load voltage: 80V / Load current: 120mA)

Absolute Maximum Ratings (Ambient Temperature: 25°C)

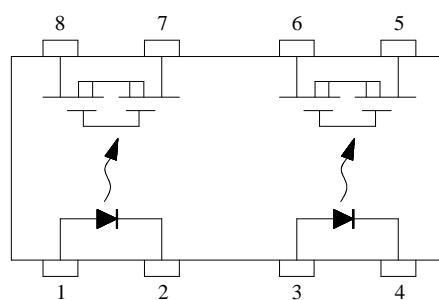
| Item | | Symbol | Value | Units | Note |
|---------------------------|--------------------------|-------------------|-------------|------------------|---------------------|
| Input | Continuous LED Current | I _F | 50 | mA | |
| | Peak LED Current | I _{FP} | 1000 | mA | f=100Hz, duty=1% |
| | LED Reverse Voltage | V _R | 5 | V | |
| | Input Power Dissipation | P _{In} | 75 | mW | |
| Output | Load Voltage | V _L | 80 | V(AC peak or DC) | |
| | Load Current | I _L | 120 | mA | |
| | Peak Load Current | I _{Peak} | 0.6 | A | 100ms(1 pulse) |
| | Output Power Dissipation | P _{out} | 200 | mW | |
| Total Power Dissipation | | P _T | 250 | mW | |
| I/O Breakdown Voltage | | V _{I/O} | 1500 | V _{rm} | RH=60%, 1min |
| Operating Temperature | | T _{Opr} | -40 to +85 | °C | |
| Storage Temperature | | T _{Stg} | -40 to +100 | °C | |
| Pin Soldering Temperature | | T _{Sol} | 260 | °C | 10 sec max. |

Electrical Specifications (Ambient Temperature: 25°C)

| Item | | Symbol | MIN. | TYP. | MAX. | Units | Conditions |
|------------------|---------------------------|--------------------|-----------------|------|------|-------|---|
| Input | LED Forward Voltage | V _F | | 1.2 | 1.4 | V | I _F =10mA |
| | Operation LED Current | I _{F On} | | 0.5 | 3.0 | mA | |
| | Recovery LED Current | I _{F Off} | | 0.35 | 0.5 | mA | |
| | Recovery LED Voltage | V _{F Off} | 0.5 | | | V | |
| Output | On-Resistance | R _{On} | | 8 | 12 | Ω | I _F =5mA, I _L =100mA, Time to flow is within 1 sec. |
| | Off-State Leakage Current | I _{Leak} | | | 1 | μA | V _L =Rating |
| | Output Capacitance | C _{Out} | | 17 | | pF | V _L =0, f=1MHz |
| Transmis sion | Turn-On Time | T _{On} | | 0.15 | 0.5 | ms | I _F =5mA, I _L =100mA |
| | Turn-Off Time | T _{Off} | | 0.05 | 0.2 | ms | |
| Coupled | I/O Isolation Resistance | R _{I/O} | 10 ⁹ | | | Ω | DC500V |
| | I/O Capacitance | C _{I/O} | | 0.8 | 1.5 | pF | f=1MHz |

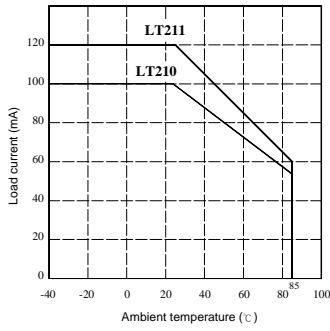


Schematic

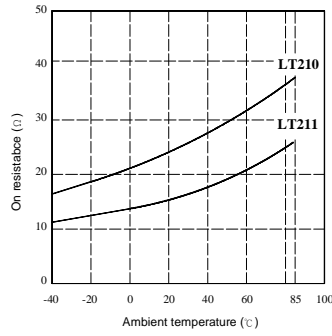


- 1,3. LED Anode
- 2,4. LED Cathode
- 5,6,7,8. MOS FET

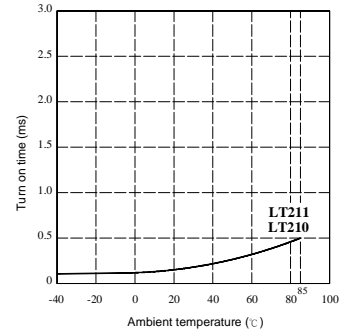
Load current Vs. Ambient temperature



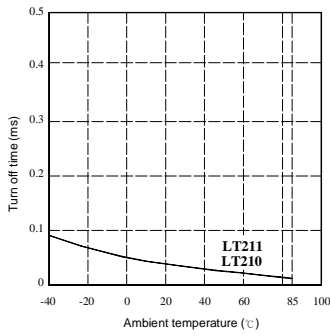
On resistance Vs. Ambient temperature



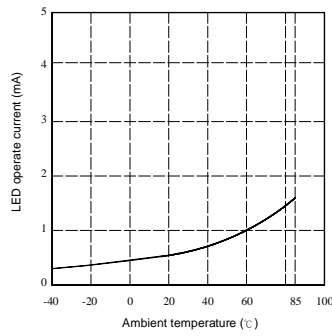
Turn on time Vs. Ambient temperature



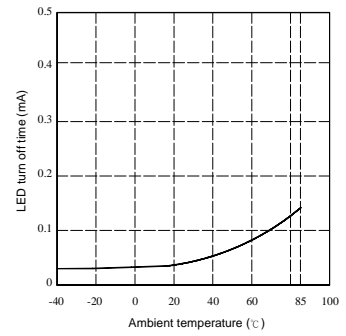
Turn off time Vs. Ambient temperature



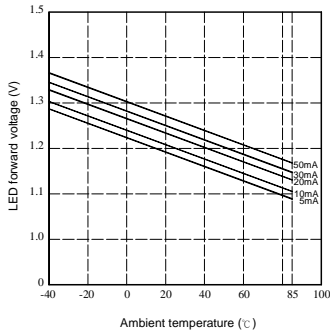
LED operate current Vs. Ambient temperature



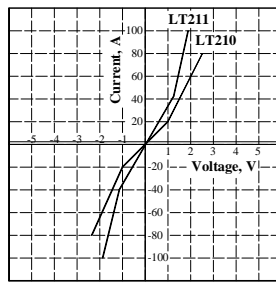
LED turn off current Vs. Ambient temperature



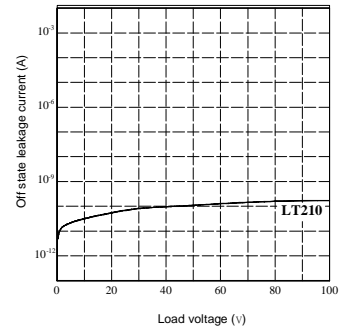
LED forward voltage Vs. Ambient temperature



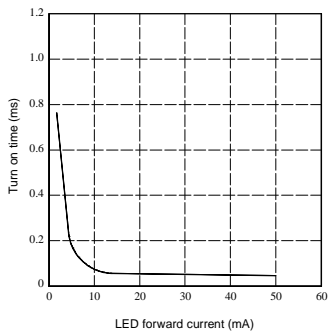
Voltage Vs. current characteristics of output at MOS portion



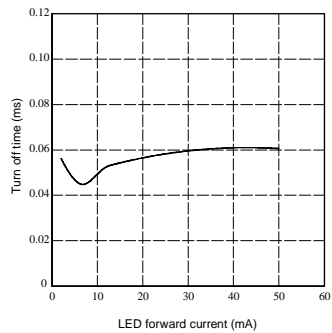
Off state leakage current



LED forward current Vs. turn on time characteristics



LED forward current Vs. turn off time characteristics



Applied voltage Vs. output capacitance characteristics

