

# SSR Relay NO-1A

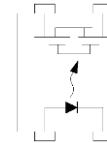
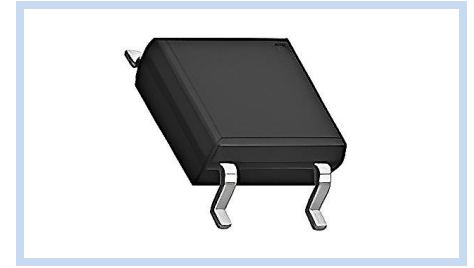
## AC/DC 60V 1.3A SOP-4

SSR1A1I1A3S4

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### FEATURE

- Normally Open (1-Form-A) Solid State Relay
- AC/DC Output Load Compatible
- Isolation Voltage: 1500 Vrms
- Application: Telecommunications, Measuring and Testing Equipment, Industrial Control, Security Systems
- In Accordance with Safety Class UL 1577 Standard



### MAXIMUM RATINGS

| Parameter                    | Symbol     | Value    | Unit      |
|------------------------------|------------|----------|-----------|
| Input Continuous LED Current | $I_F$      | 50       | mA        |
| Input Peak LED Current       | $I_{FP}$   | 1        | A         |
| Input LED Reverse Voltage    | $V_R$      | 5        | V         |
| Input Power Dissipation      | $P_{In}$   | 75       | mW        |
| Output Load Voltage          | $V_L$      | 60       | V         |
| Output Load Current          | $I_L$      | 1.3      | A         |
| Output Peak Load Current     | $I_{Peak}$ | 4.0      | A         |
| Output Power Dissipation     | $P_{Out}$  | 380      | mW        |
| Total Power Dissipation      | $P_T$      | 450      | mW        |
| Isolation Voltage            | $V_{ISO}$  | 1500     | $V_{RMS}$ |
| Operating Temperature Range  | $T_{Opr}$  | -40~+85  | °C        |
| Storage Temperature Range    | $T_{Stg}$  | -40~+100 | °C        |
| Soldering Temperature        | $T_{SOL}$  | 260      | °C        |

### ELECTRICAL CHARACTERISTICS

| Input Characteristics             | Conditions  | Symbol       | Min       | Typ. | Max | Unit     |
|-----------------------------------|---|--------------|-----------|------|-----|----------|
| LED Forward Voltage               | $I_F=10mA$  | $V_F$        | --        | 1.2  | 1.4 | V        |
| Operation LED Current             | --  | $I_{F(On)}$  | --        | 0.5  | 3.0 | mA       |
| Recovery LED Current              | --  | $I_{F(Off)}$ | 0.1       | 0.35 | --  | mA       |
| Recovery LED Voltage              | --  | $V_{F(Off)}$ | 0.7       | --   | --  | V        |
| Output Characteristics            | Conditions  | Symbol       | Min       | Typ. | Max | Unit     |
| On-Resistance                     | $I_F=5mA, I_L=100mA$ ,<br>Time to flow is within 1sec | $R_{(On)}$   | --        | 0.13 | 0.5 | $\Omega$ |
| Off-State Leakage Current         | $V_L=Rating$  | $I_{Leak}$   | --        | --   | 1   | $\mu A$  |
| Output Capacitance                | $V_L=0V, f=1MHz$                                      | $C_{Out}$    | --        | 150  | --  | pF       |
| Coupled Characteristics           | Conditions  | Symbol       | Min       | Typ. | Max | Unit     |
| Turn-On Time                      | $I_F=5mA, I_L=100mA$                                  | $t_{on}$     | --        | 1.0  | 1.3 | ms       |
| Turn-Off Time                     |   | $t_{off}$    | --        | 0.6  | 0.8 |          |
| Input-Output Isolation Resistance | $V_{IO}=500V_{DC}$                                    | $R_{IO}$     | $10^{10}$ | --   | --  | $\Omega$ |
| Input-Output Capacitance          | $f=1MHz$  | $C_{IO}$     | --        | 0.8  | 1.5 | pF       |

Note:  $T_A=25^\circ C$  unless otherwise noted.

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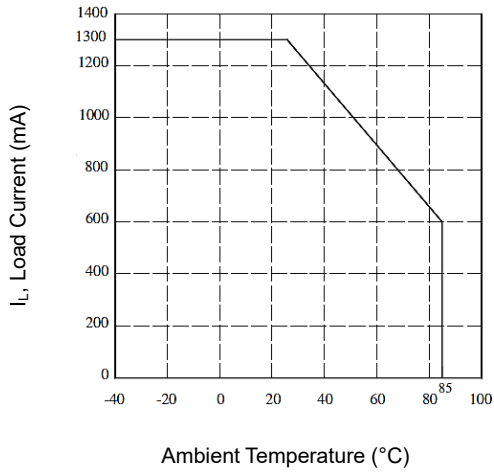
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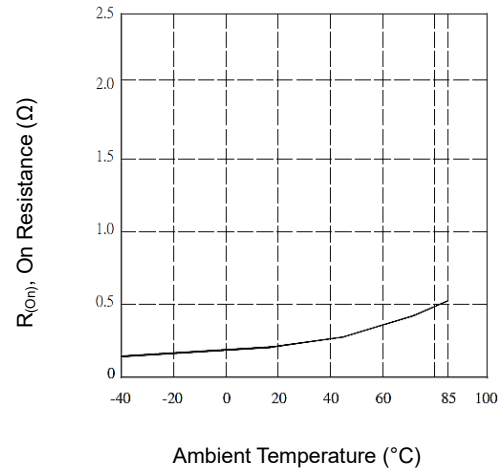
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### CHARACTERISTIC CURVES

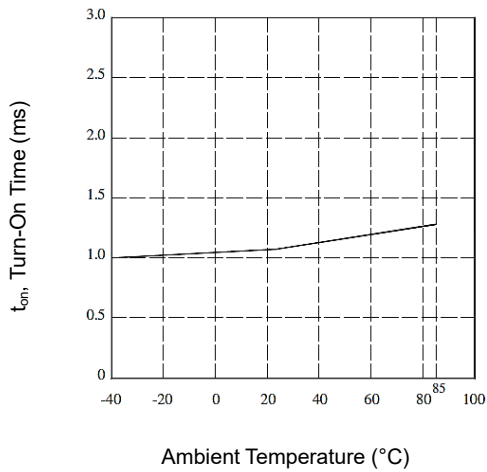
Load Current vs. Temperature



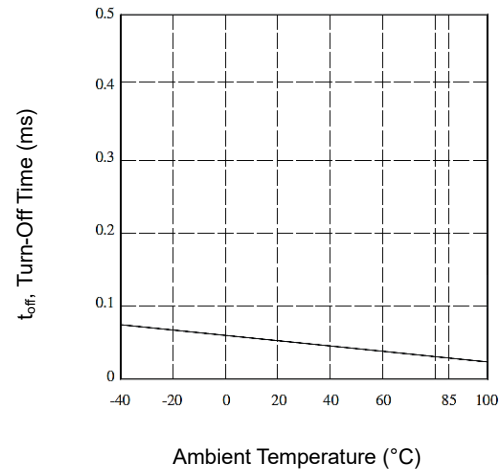
On Resistance vs. Temperature



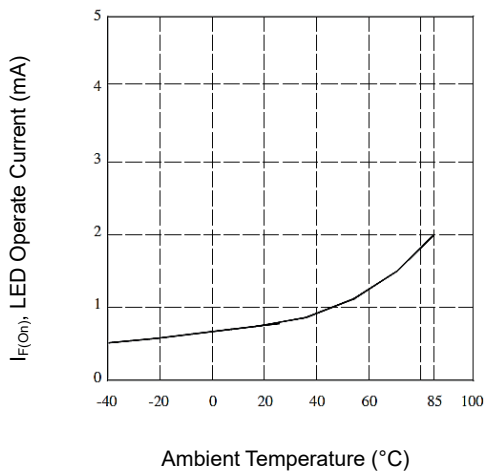
Turn-On Time vs. Temperature



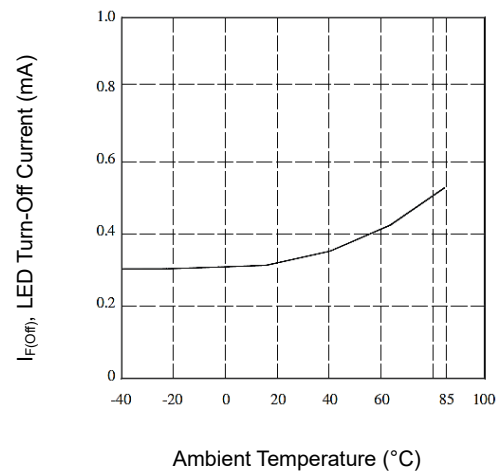
Turn-Off Time vs. Temperature



LED Operate Current vs. Temperature

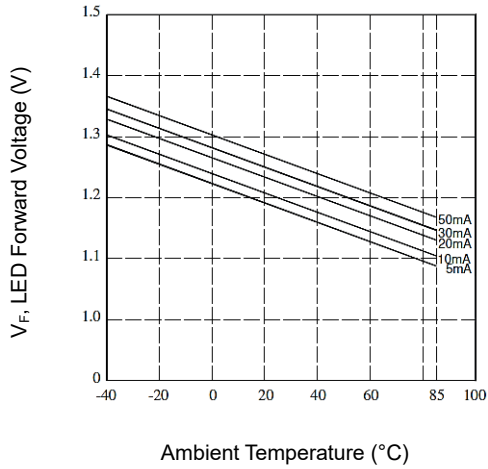


LED Turn-Off Current vs. Temperature

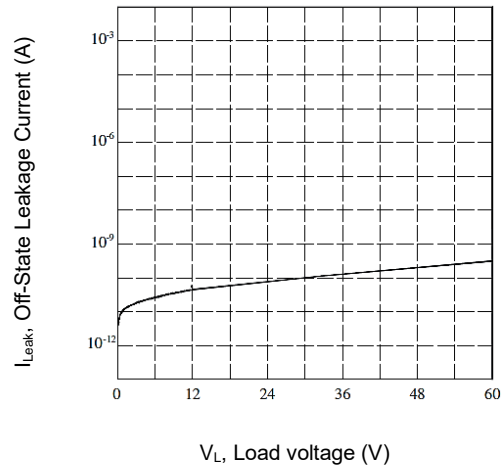


**CHARACTERISTIC CURVES**

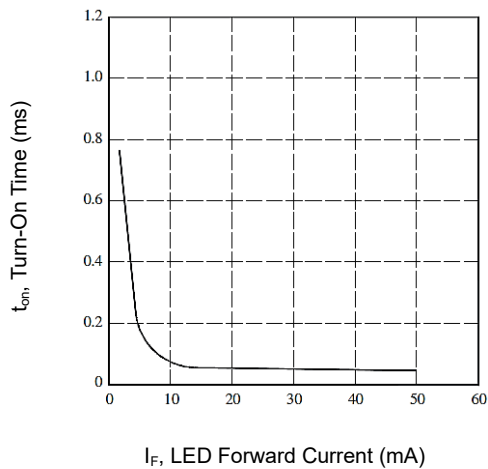
**LED Forward Voltage vs. Temperature**



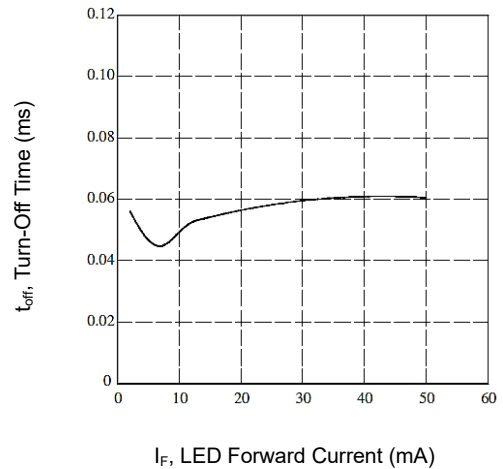
**Off-State Leakage Current vs. Load Voltage**



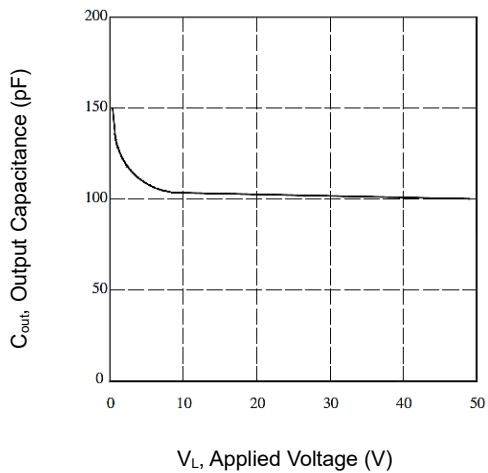
**LED Forward Current vs. Turn-On Time**



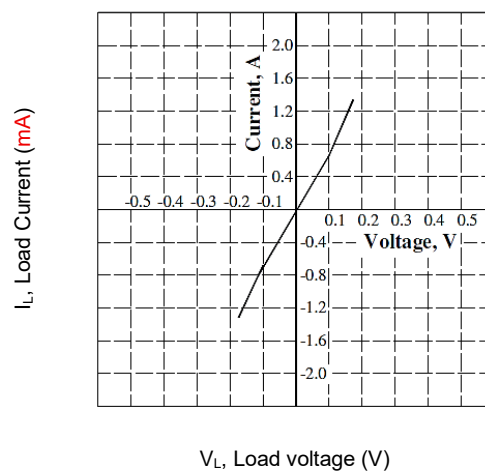
**LED Forward Current vs. Turn-Off Time**



**Applied Voltage vs. Output Capacitance**



**V-I Characteristics of Output MOS**



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**DIMENSIONS**

| Item | Min (mm) | Max (mm) |
|------|----------|----------|
| A1   | 0.00     | 0.20     |
| A2   | 1.80     | 2.20     |
| b    | 0.30     | 0.50     |
| D    | 4.10     | 4.50     |
| E    | 6.40     | 7.20     |
| E1   | 4.20     | 4.60     |
| e    | 2.54     |          |
| L    | 0.46     | 0.86     |
| X    | 0.80     |          |
| X1   | 2.54     |          |
| Y    | 1.20     |          |
| Y1   | 7.20     |          |
| z    | 0.93     |          |

Note:

1.LED Anode; 2.LED Cathode; 3,4.Drain (MOSFET)

