S16MD01/S16MD02 S26MD01/S26MD02

8-Pin DIP Type SSR for Low Power Control

■ Features

1. Compact 8-pin dual-in-line package type
2. RMS ON-state current I_T : 0.6Arms
3. Built-in zero-cross circuit
   (S16MD02 / S26MD02)
4. High repetitive peak OFF-state voltage
   S16MD01 / S16MD02 V_{DRM} : MIN. 400V
   S26MD01 / S26MD02 V_{DRM} : MIN. 600V
5. Isolation voltage between input and output
   (V_{iso} : 4,000Vrms)
6. Recognized by UL, file No. E94758
7. Approved by CSA No. LR63705

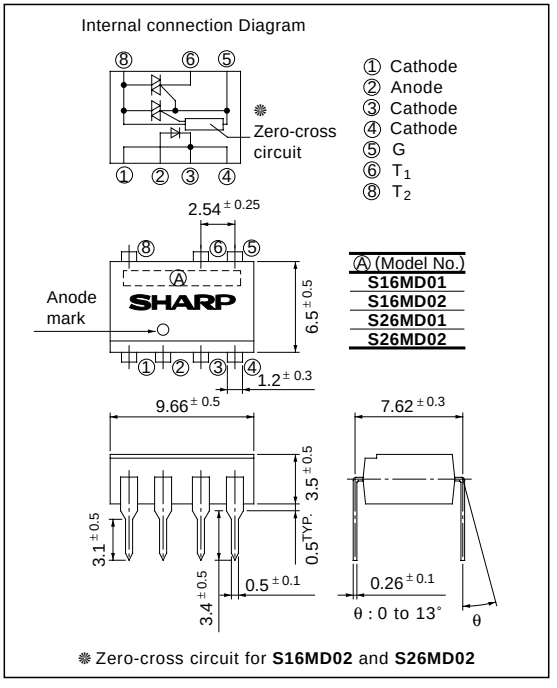
■ Applications

1. Oil fan heaters
2. Microwave ovens
3. Refrigerators

■ Model Line-ups

	For 100V lines	For 200V lines
No built-in zero-cross circuit	**S16MD01**	**S26MD01**
Built-in zero-cross circuit	**S16MD02**	**S26MD02**

■ Outline Dimensions (Unit : mm)



❋ Zero-cross circuit for **S16MD02** and **S26MD02**

Terminal ① , ③ and ④ are common ones of cathode.
To radiate the heat, solder all of the lead pins on the pattern of PWB.

■ Absolute Maximum Ratings (Ta = 25˚C)

Parameter			Symbol	Rating	Unit
Input	Forward current		I_F	50	mA
	Reverse voltage		V_R	6	V
Output	RMS ON-state current		I_T	0.6	A_{rms}
	*1 Peak one cycle surge current		I_{surge}	6	A
	Repetitive peak OFF-state voltage	**S16MD01 / S16MD02**	V_{DRM}	400	V
		S26MD01 / S26MD02		600	V
*2 Isolation voltage			V_{iso}	4 000	V_{rms}
Operating temperature			T_{opr}	- 25 to + 80	˚C
Storage temperature			T_{stg}	- 40 to + 125	˚C
*3 Soldering temperature			T_{sol}	260	˚C

*1 50Hz sine wave
*2 AC for 1 minute, 40 to 60% RH, f = 60Hz
*3 For 10 seconds

■ Electrical Characteristics

(Ta = 25˚C)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage		V_F	I_F = 20mA	-	1.2	1.4	V
	Reverse current		I_R	V_R = 3V	-	-	10	μA
Output	Repetitive peak OFF-state current		I_{DRM}	V_{DRM} = Rated	-	-	100	μA
	ON-state voltage		V_T	I_T = 0.6A	-	-	3.0	V
	Holding current		I_H	V_D = 6V	-	-	25	mA
	Critical rate of rise of OFF-state voltage		dV/dt	V_{DRM} = (1/$\sqrt{2}$)• Rated	100	-	-	V/μs
	Zero-cross voltage	**S16MD02 S26MD02**	Vox	Resistance load I_F = 15mA	-	-	35	V
Transfer characteristics	Minimum trigger current		I_{FT}	V_D = 6V, R_L = 100Ω	-	-	10	mA
	Isolation resistance		R_{ISO}	DC500V, 40 to 60 % RH	5 x 10^{10}	10^{11}	-	Ω
	Turn-on time	**S16MD01 S26MD01**	t_{on}	V_D = 6V, R_L = 100Ω I_F = 20mA	-	-	100	μs
		S16MD02 S26MD02			-	-	50	μs

Fig. 1 RMS ON-state Current vs. Ambient Temperature

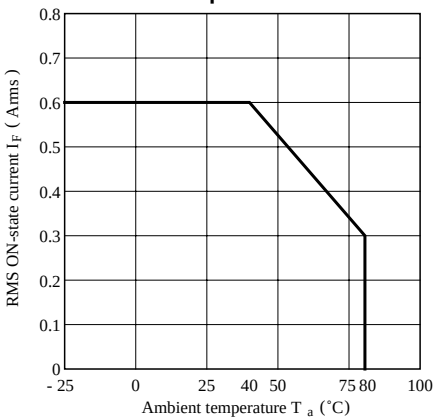


Fig. 2 Forward Current vs. Ambient Temperature

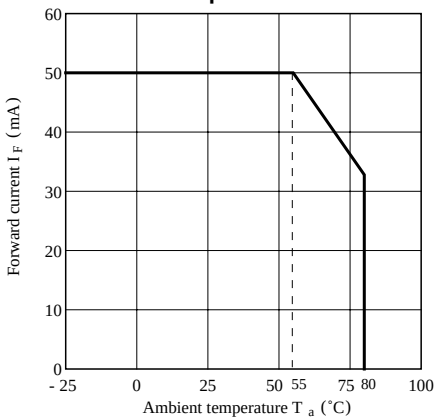


Fig. 3 Forward Current vs. Forward Voltage

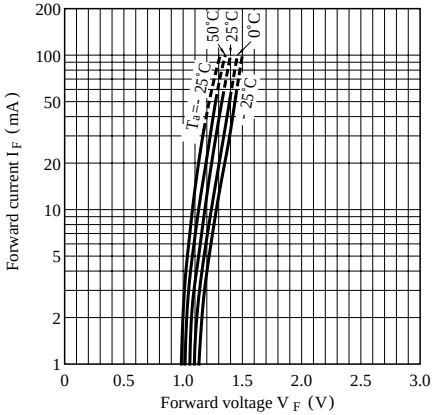


Fig. 4 Minimum Trigger Current vs. Ambient Temperature (S16MD01/S16MD02)

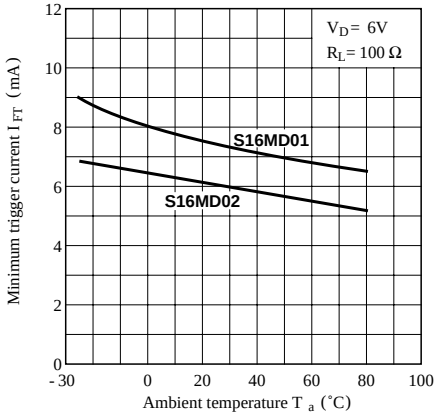


Fig. 5 Minimum Trigger Current vs. Ambient Temperature (S26MD01/ S26MD02)

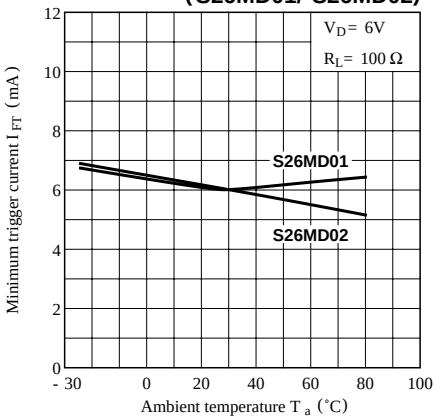


Fig. 6 ON-state Voltage vs. Ambient Temperature

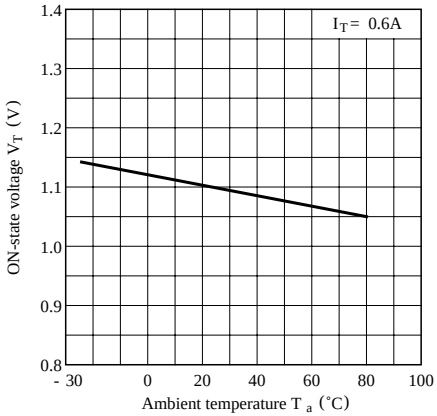


Fig. 7 Relative Holding Current vs. Ambient Temperature

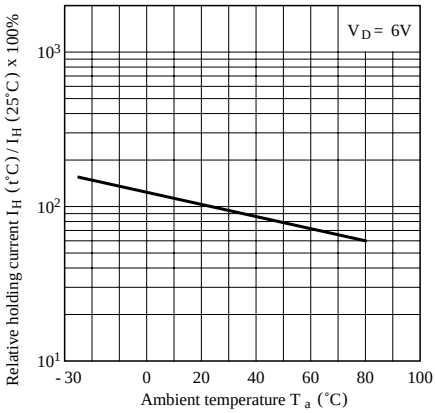


Fig. 8 ON-state Current vs. ON-state Voltage

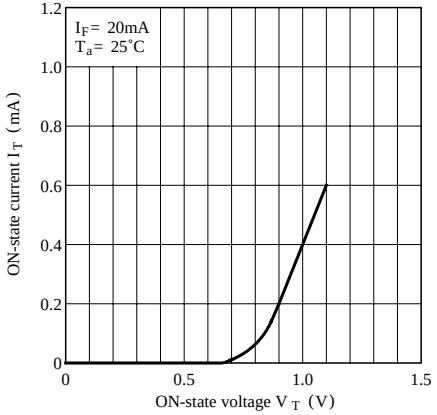


Fig. 9 Turn-on Time vs. Forward Current (S16MD01)

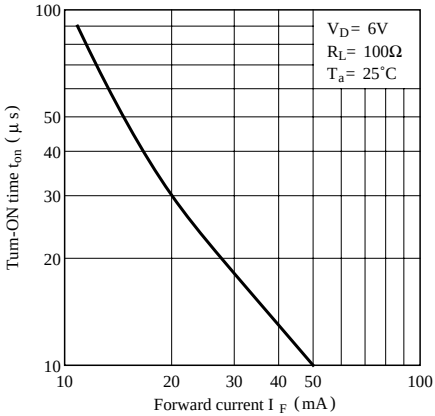


Fig.10 Turn-on Time vs. Forward Current (S26MD01)

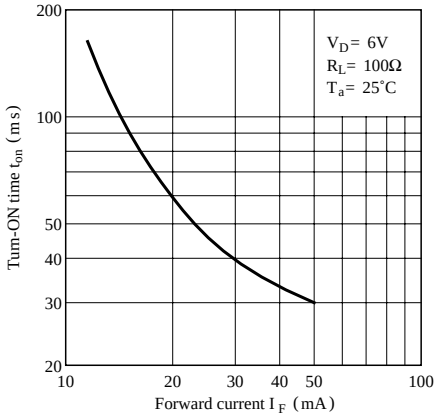


Fig.11 Turn-on Time vs. Forward Current (S16MD02/S26MD02)

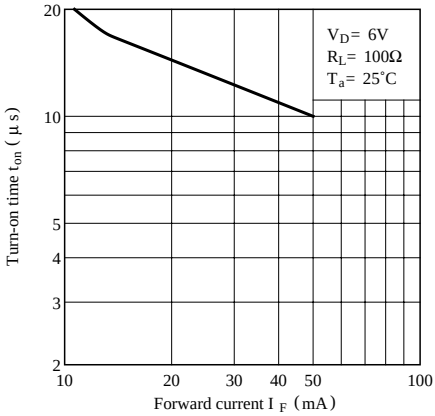
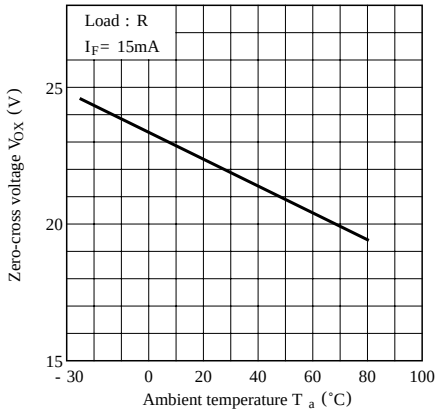
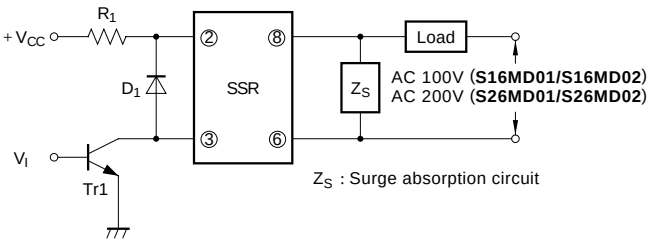
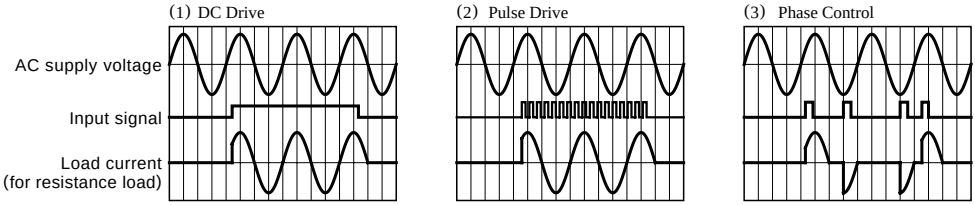


Fig.12 Zero-cross Voltage vs. Ambient Temperature (S16MD02/S26MD02)



■ Basic Operation Circuit





Notes 1) If large amount of surge is loaded onto V_{CC} or the driver circuit, add a diode D_1 between terminal 2 and 3 to prevent reverse bias from being applied to the infrared LED.

2) Be sure to install a surge absorption circuit.
An appropriate circuit must be chosen according to the load (for CR, choose its constant). This must be carefully done especially for an inductive load.

3) For phase control, adjust such that the load current immediately after the input signal is applied will be more than 30mA.

■ Precautions for Use

1) All pins must be soldered since they are also used as heat sinks (heat radiation fins). In designing, consider the heat radiation from the mounted SSR.

2) For higher radiation efficiency that allows wider thermal margin, secure a wider round pattern for Pin No.8 when designing mounting pattern. The rounded part of Pin No.5 (gate) must be as small as possible. Pulling the gate pattern around increases the change of being affected by external noise.

3) As for other general cautions, refer to the chapter"Precautions for Use"

NOTICE

- The circuit application examples in this publication are provided to explain representative applications of SHARP devices and are not intended to guarantee any circuit design or license any intellectual property rights. SHARP takes no responsibility for any problems related to any intellectual property right of a third party resulting from the use of SHARP's devices.
- Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device. SHARP reserves the right to make changes in the specifications, characteristics, data, materials, structure, and other contents described herein at any time without notice in order to improve design or reliability. Manufacturing locations are also subject to change without notice.
- Observe the following points when using any devices in this publication. SHARP takes no responsibility for damage caused by improper use of the devices which does not meet the conditions and absolute maximum ratings to be used specified in the relevant specification sheet nor meet the following conditions:

(i) The devices in this publication are designed for use in general electronic equipment designs such as:
— Personal computers
— Office automation equipment
— Telecommunication equipment [terminal]
— Test and measurement equipment
— Industrial control
— Audio visual equipment
— Consumer electronics

(ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:
— Transportation control and safety equipment (i.e., aircraft, trains, automobiles, etc.)
— Traffic signals
— Gas leakage sensor breakers
— Alarm equipment
— Various safety devices, etc.

(iii) SHARP devices shall not be used for or in connection with equipment that requires an extremely high level of reliability and safety such as:
— Space applications
— Telecommunication equipment [trunk lines]
— Nuclear power control equipment
— Medical and other life support equipment (e.g., scuba).

- Contact a SHARP representative in advance when intending to use SHARP devices for any "specific" applications other than those recommended by SHARP or when it is unclear which category mentioned above controls the intended use.
- If the SHARP devices listed in this publication fall within the scope of strategic products described in the Foreign Exchange and Foreign Trade Control Law of Japan, it is necessary to obtain approval to export such SHARP devices.
-
- Contact and consult with a SHARP representative if there are any questions about the contents of this publication.