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S22MD1V/S22MD3

Photothyristor Coupler

※ Lead forming type (I type) and taping reel type (P type) of **S22MD1V** are also available (**S22MD1VI/S22MD1P**)
※※ TÜV (DIN-VDE0884) approved type is also available as an option.

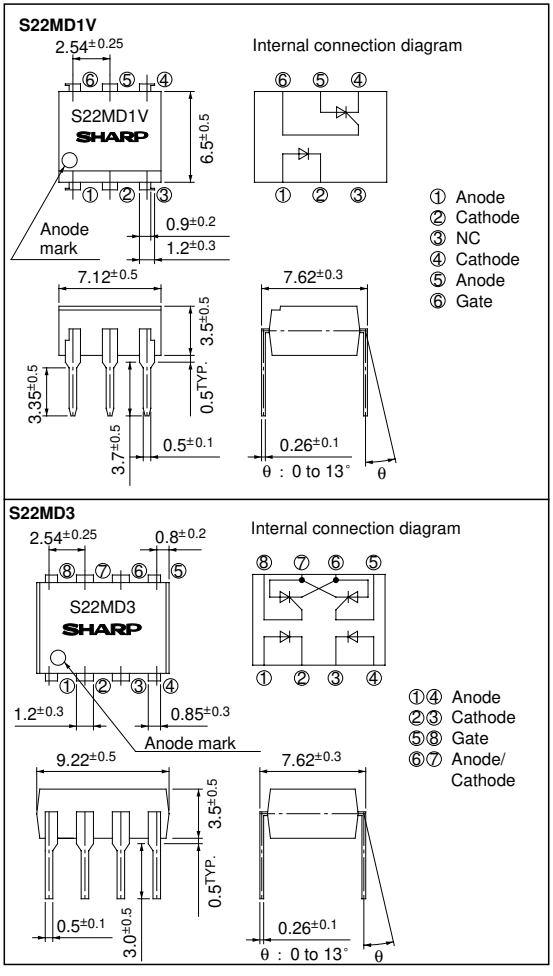
■ Features

1. High repetitive peak OFF-state voltage
   (V_{DRM} : MIN. 600V)
2. Low trigger current
   (I_{FT} : MAX. 10mA at $R_G = 20k\Omega$)
3. High isolation voltage between input and output
   S22MD1V ••• V_{iso} : 5 000V_{rms}
   S22MD3V ••• V_{iso} : 2 500V_{rms}
※ **S22MD1V** and **S22MD3** are for 200V line.
4. Recognized by UL, file NO. 64380

■ Applications

1. ON-OFF operation for a low power load
2. For triggering high power thyristor and triac

■ Outline Dimensions (Unit : mm)



■ Absolute Maximum Ratings

(Ta = 25°C)

Parameter		Symbol	Rating		Unit
			S22MD1V	S22MD3	
Input	Forward current	I_F	50		mA
	Reverse voltage	V_R	6		V
Output	RMS ON-state current	I_T	200		mA_{rms}
	*1Peak one cycle surge current	I_{surge}	2		A
	*2Repetitive peak OFF-state voltage	V_{DRM}	600		V
	*2Repetitive peak reverse voltage	V_{RRM}	600	-	V
*3Isolation voltage		V_{iso}	5 000	2 500	V_{rms}
Operating temperature		T_{opr}	-30 to +100	-30 to +100	°C
Storage temperature		T_{stg}	-55 to +125	-40 to +125	°C
*4Soldering temperature		T_{sol}	260		°C

*1 50H z, sine wave
*2 R_G = 20kΩ
*3 40 to 60% RH, AC for 1 minute
*4 For 10 seconds

■ Electro-optical Characteristics

(Ta= 25°C)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage		V_F	I_F = 30mA	-	1.2	1.4	V
	Reverse current		I_R	V_R = 3V	-	-	10^{-5}	A
Output	Repetitive peak OFF-state current		I_{DRM}	V_{DRM} = Rated, R_G = 20kΩ	-	-	10^{-6}	A
	*5Repetitive peak reverse current		I_{RRM}	V_{RRM} = Rated, R_G = 20kΩ	-	-	10^{-6}	A
	ON-state voltage		V_T	I_T = 200mA	-	1.0	1.4	V
	Holding current		I_H	V_D = 6V, R_G = 20kΩ	-	0.2	1	mA
	Critical rate of rise of OFF-state voltage	S22MD1V	dV/dt	$V_{DRM} = 1/\sqrt{2}$ Rated, R_G = 20kΩ	5	-	-	V/μs
		S22MD3			3	-	-	
Transfer characteristics	Minimum trigger current		I_{FT}	V_D = 6V, R_L = 100Ω, R_G = 20kΩ	-	-	10	mA
	Isolation resistance		R_{ISO}	DC500V, 40 to 60% RH	5 x 10^{10}	10^{11}	-	Ω
	Turn-on time		t_{on}	V_D = 6V, R_G = 20kΩ, R_L = 100Ω, I_F = 30mA	–	20	50	μs

*5 Applies only to **S22MD1V**

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

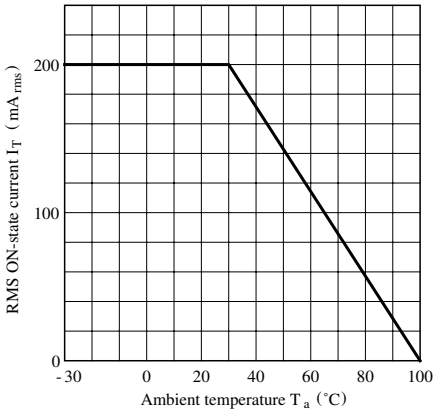


Fig. 2 Forward Current vs. Ambient Temperature

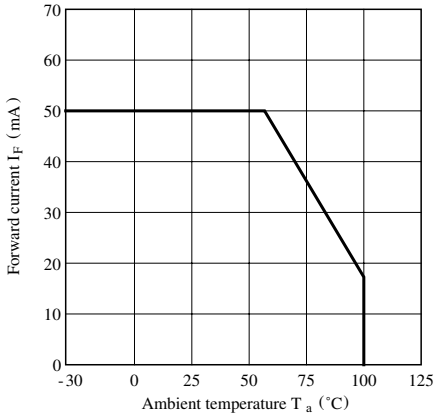


Fig. 3 Forward Current vs. Forward Voltage

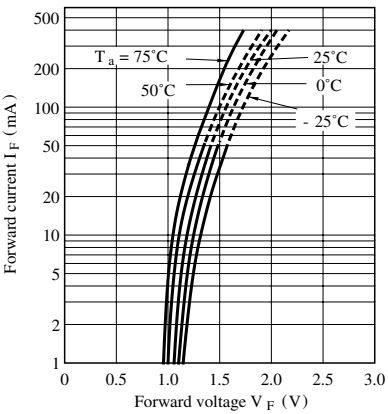


Fig. 4 Minimum Trigger Current vs. Ambient Temperature

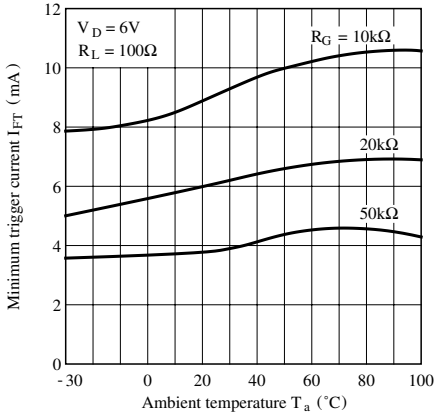


Fig. 5 Minimum Trigger Current vs. Gate Resistance

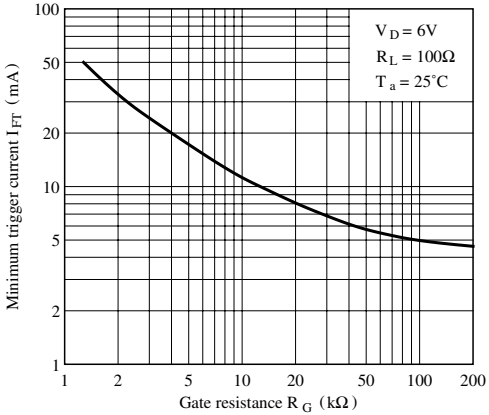


Fig. 6 Break Over Voltage vs. Ambient Temperature

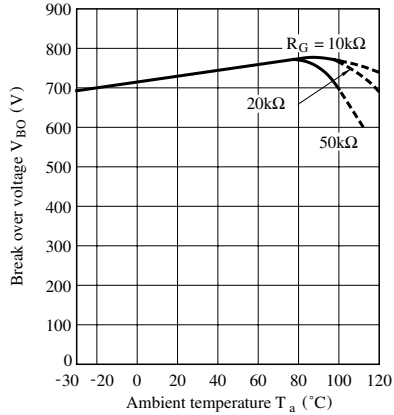


Fig. 7 Critical Rate of Rise of OFF-state Voltage vs. Ambient Temperature

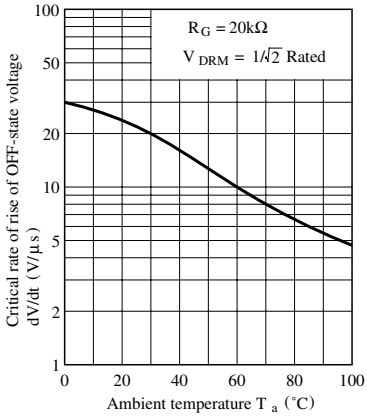


Fig. 8 Holding Current vs. Ambient Temperature

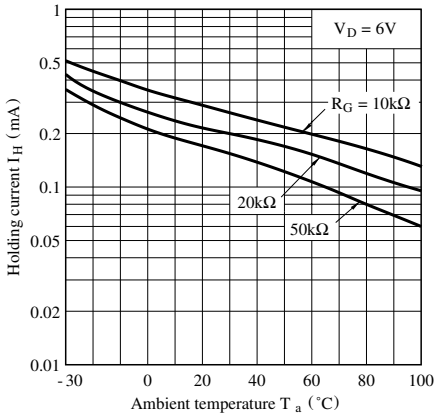
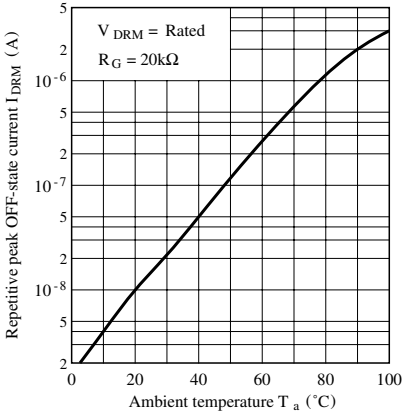


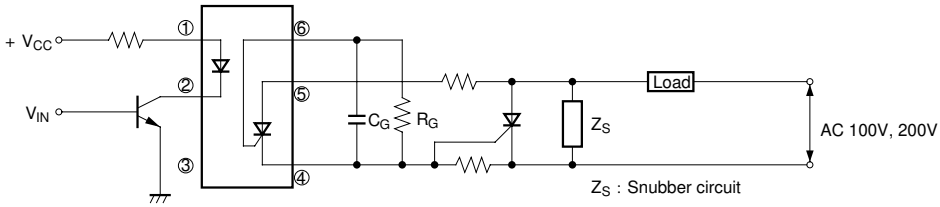
Fig. 9 Repetitive Peak OFF-state Current vs. Ambient Temperature



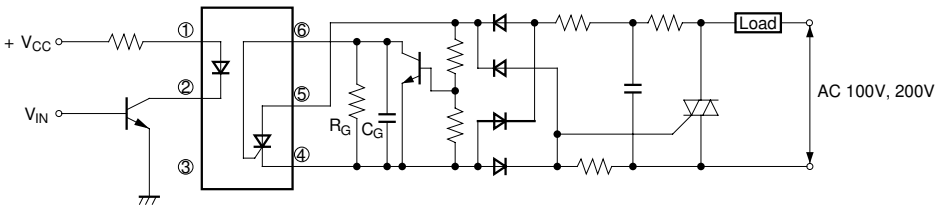
■ Basic Operation Circuit

● **S22MD1V**

Medium/High Power Thyristor Drive Circuit

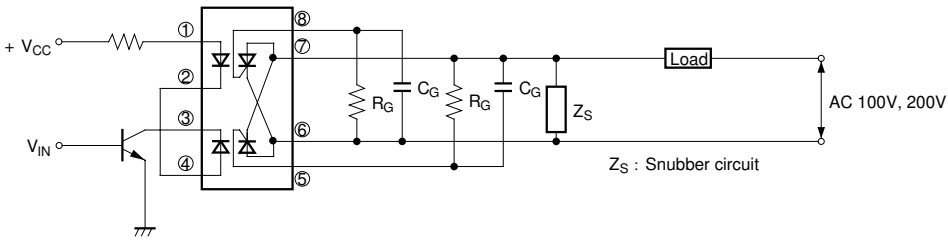


Medium/High Power Triac Drive Circuit（Zero-cross Operation）

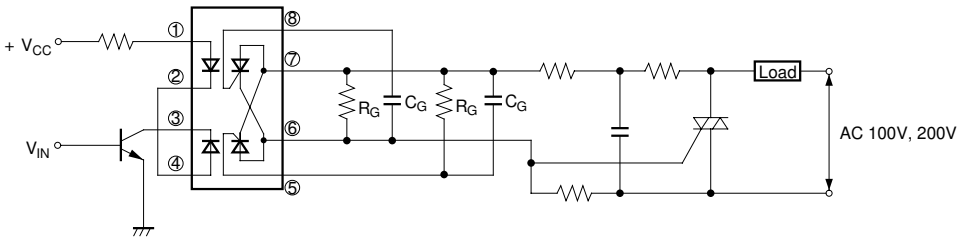


● **S22MD3**

Low Power Load Drive Circuit



Medium/High Power Triac Drive Circuit



- Please refer to the chapter "Precautions for Use" (Page 78 to 93).

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