S12MD1V/S12MD3 Photothyristor Coupler

※ Lead forming type (I type) and taping reel type (F' type) of **S12MD1V** are also available. (**S12MD1VI/S12MD1**P) (Page 656)

■ Features

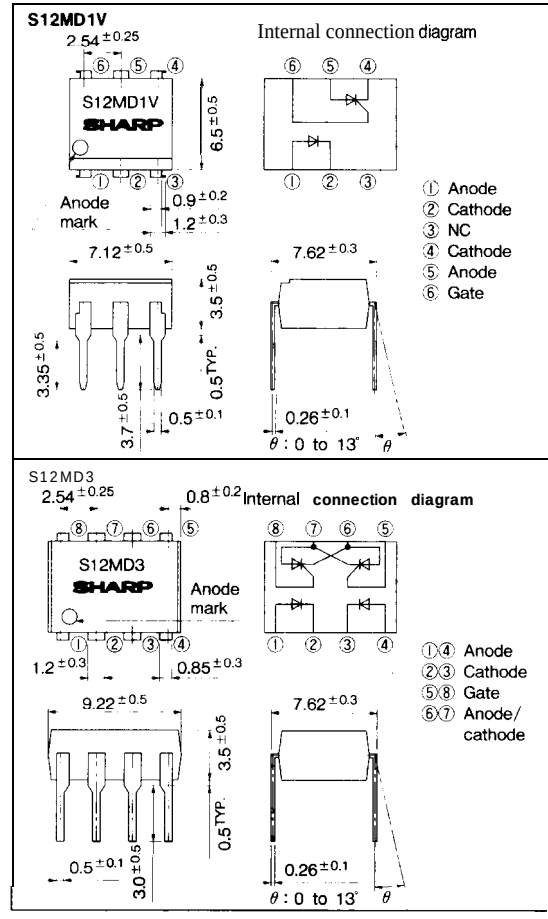
1. High RMS ON-state current (I_T: MAX. 200mA$_{rms}$)
2. High repetitive peak OFF-state voltage (V_{DRM}: MIN. 400V)
3. Trigger current I_{FT}: MAX. 15mA at R_G= 20kΩ
4. For half-wave control...S12MD1 V
   For full-wave control··· S12MD3
5. Recognized by UL, file No. E64380

※ S12MD1V and S12MD3 are for 100V line

■ A m -

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℃)

			M	M	
output	*1 peak one cycle surge current	I_{surge}	2		A
	*2 Repetitive peak OFF-state voltage	V_{DRM}	400		V
	*2 Repetitive peak reverse voltage	V_{RRM}	400	=	V
	*3 Isolation voltage	V_{ISO}	5 000	1 500	V_{rms}
	Operating temperature	T_{opr}	−30 to +100		℃
	Storage temperature	T_{stg}	−40 to +125		℃
	*4 Soldering temperature	T_{sol}	260		℃

*1 50 Hz, sine wave
*2 R_G=20k Ω
*3 40 to 60% RH, AC for 1 minute
*4 For 10 seconds

■ Electro-optical Characteristics (Ta=25℃)

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=20k Ω	−	−	10^{-6}	A
	*5 Repetitive peak reverse current	I_{RRM}	V_{RRM} = Rated, R_G=20k Ω	−	−	10^{-6}	A
	ON-state voltage	V_T	I_T=200mA		1.0	1.4	V
	Holding current	I_H	VO=6V, R_G=20k Ω	−	0.3	1	mA
	Critical rate of rise of OFF-state voltage	dV/dt	V_{DRM}=1/√2 Rated, R_G=20kΩ	3			V/μs
Transfer-characteristics	Minimum trigger current	I_{FT}	V_D=6V, R_L=100Ω, R_G=20kΩ	−	−	15	mA
	Isolation resistance	R_{ISO}	DC500V, 40 to 60% RH	5×10^{10}	10^{11}	−	Ω
	Turn-on time	t_{on}	V_D=6V, I_F=30mA, R_G=20kΩ, R_L=100Ω		10	60	μs

*5 Applies only to **S12MD1V**

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

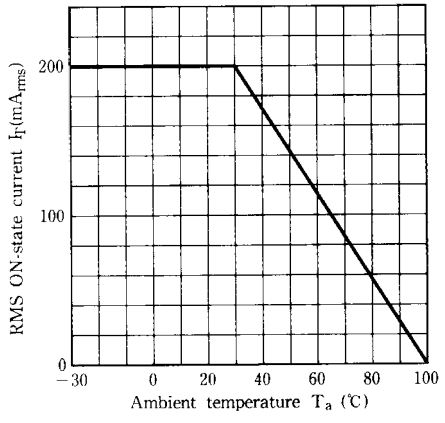


Fig. 2 Forward Current vs. Ambient Temperature

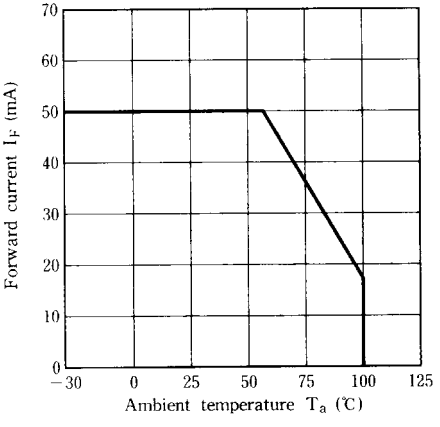


Fig. 3 Forward Current vs. Forward Voltage

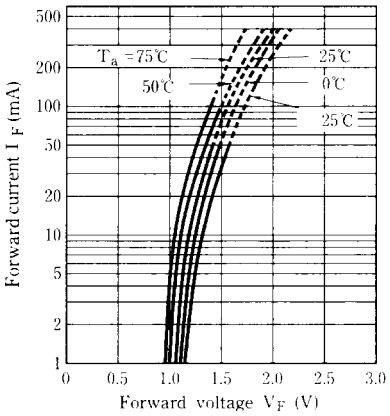


Fig. 4 Minimum Trigger Current vs. Ambient Temperature

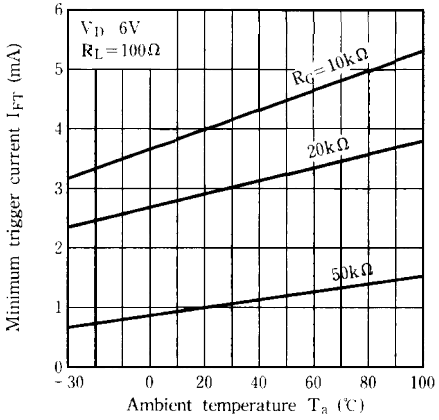


Fig. 5 Minimum Trigger Current vs. Gate Resistance

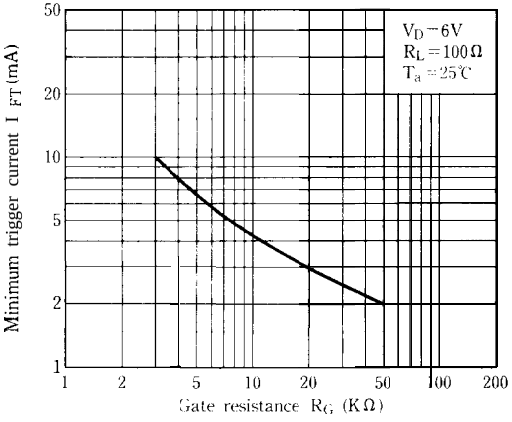


Fig. 6 Break Over Voltage vs. Ambient Temperature

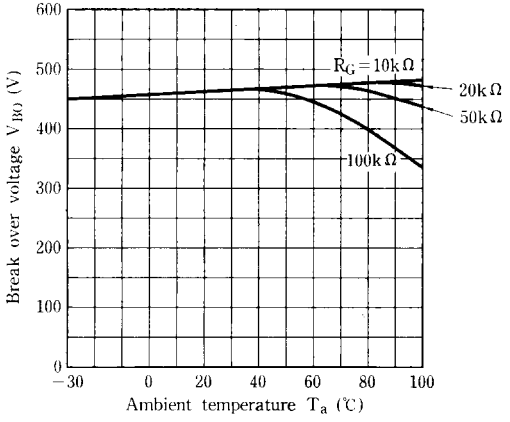


Fig. 7 Critical Rate of Rise of OFF-state Voltage vs. Ambient Temperature

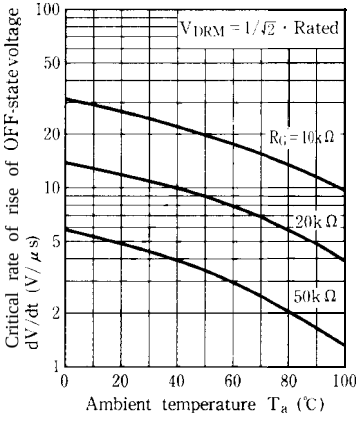


Fig. 8 Holding Current vs. Ambient Temperature

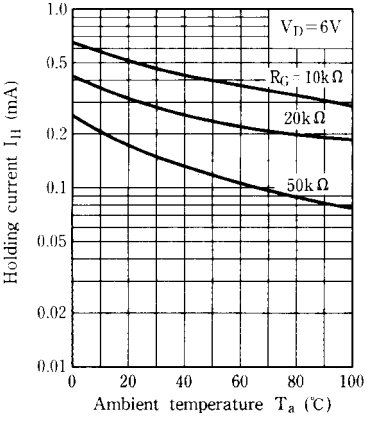
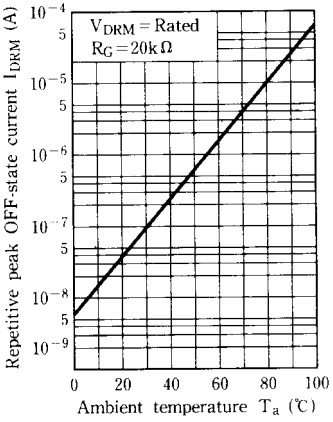


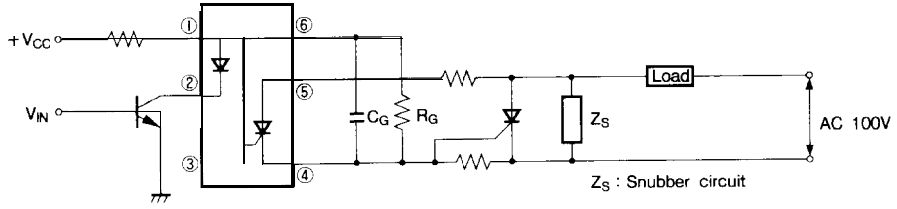
Fig. 9 Repetitive Peak OFF-state Current vs. Ambient Temperature



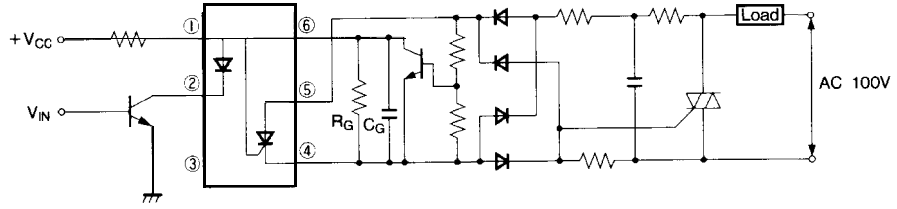
■ Basic Operation Circuit

●S12MD1V

Medium/High Power Thyristor Drive Circuit

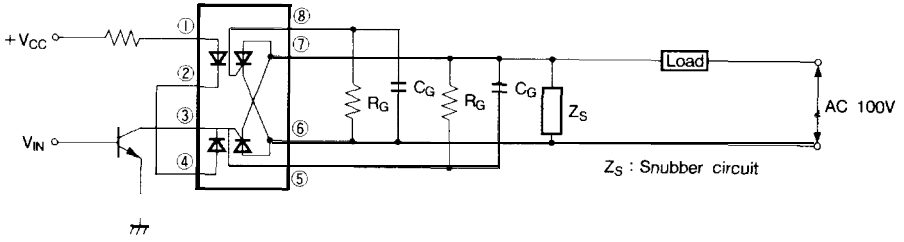


Medium/High Power Triac Drive Circuit (Zero-cross Operation)

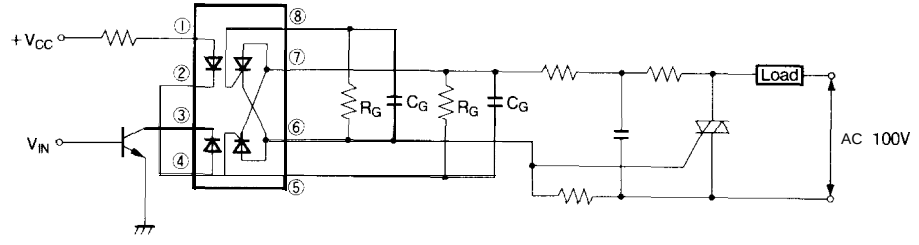


●S12MD3

Low Power Load Drive Circuit



Medium/High Power Triac Drive Circuit



. Please refer to the chapter “Precautions for Use” (Page 78 to 93),