

S12MD2 Series

High Noise-reduction, High Density Mounting Type Photothyristor Coupler

■ Features

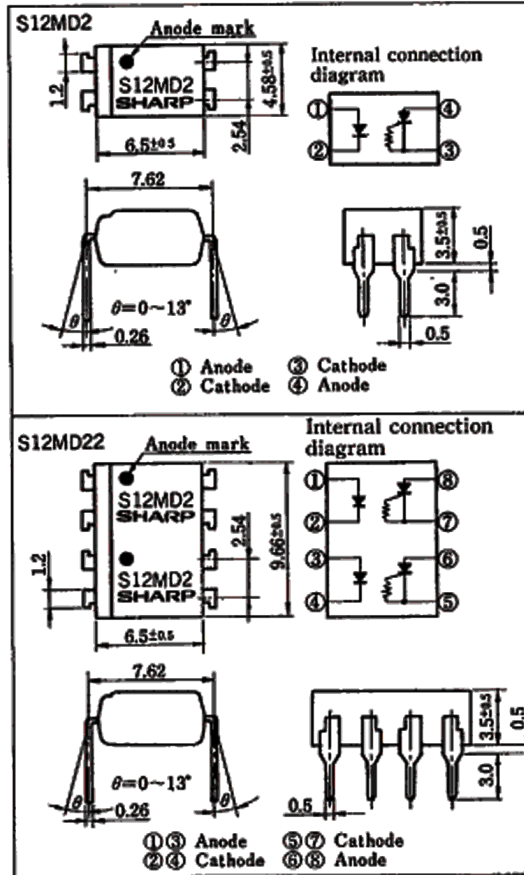
1. High critical rate of rise of off-state voltage
(dv/dt : MIN. 100V/ μ s)
2. Compact dual-in-line package
(Volume comparison : About 1/2 as large as Sharp 6-pin type S12MD1V)
3. Low trigger current (I_{FT} : MAX. 10mA)
4. High repetitive peak off-state voltage
(V_{DRM} : MIN. 400V)
5. UL recognized, file No. E64380

■ Applications

1. Cross-point relay for home telephone exchangers
2. Programmable controllers, Numerical control machines
3. For triggering high power thyristor

■ Outline Dimensions

(Unit:mm)



■ Absolute Maximum Ratings

($T_a = 25^\circ\text{C}$)

Parameter		symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Reverse voltage	V_R	6	V
Output	RMS on-state current	I_T	200	mArms
	*1 Peak one cycle surge current	I_{surge}	1.2	A
	Repetitive peak off-state voltage	V_{DRM}	400	V
	Repetitive peak reverse voltage	V_{RRM}	400	V
	*2 Isolation voltage	V_{iso}	1,500	Vrms
Operating temperature		T_{opr}	$-30 \sim +100$	$^\circ\text{C}$
Storage temperature		T_{stg}	$-55 \sim +125$	$^\circ\text{C}$
*3 Soldering temperature		T_{sol}	260	$^\circ\text{C}$

*1 50Hz, sine wave

*2 RH=40~60%, AC for 1 minute

*3 For 10 seconds

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■ Electro-optical Characteristics

($T_a=25^\circ\text{C}$)

	Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V_F	$I_F=20\text{mA}$	—	1.2	1.4	V
	Reverse current	I_R	$V_R=4\text{V}$	—	—	10^{-6}	A
	Repetitive peak off-state current	I_{DRM}	$V_{DRM}=\text{Rated}$	—	—	10^{-6}	A
Output	Repetitive peak Reverse current	I_{RRM}	$V_{RRM}=\text{Rated}$	—	—	10^{-6}	A
	On-state voltage	V_T	$I_T=200\text{mA}$	—	1.0	1.4	V
	Holding current	I_H	$V_D=6\text{V}$	0.1	0.5	1.0	mA
Transfer characteristics	Critical rate of rise of off-state voltage	dv/dt	$V_{DRM}=1/\sqrt{2}$ Rated	100	—	—	V/ μs
	Minimum trigger current	I_{FT}	$V_D=6\text{V}, R_L=100\Omega$	—	6.0	10	mA
	Isolation resistance	R_{ISO}	DC500V, RH=40~60%	5×10^{10}	10^{11}	—	Ω
	Turn-on time	t_{on}	$V_D=6\text{V}, I_F=30\text{mA}, R_L=100\Omega$	—	20	50	μs

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

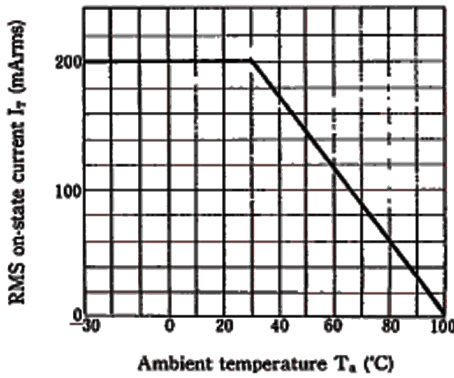
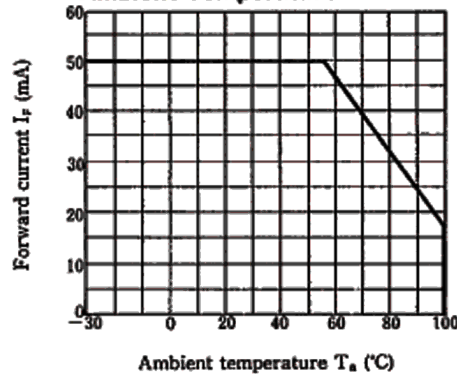


Fig. 2 Forward Current vs. Ambient Temperature



6

Fig. 3 Forward Current vs. Forward Voltage

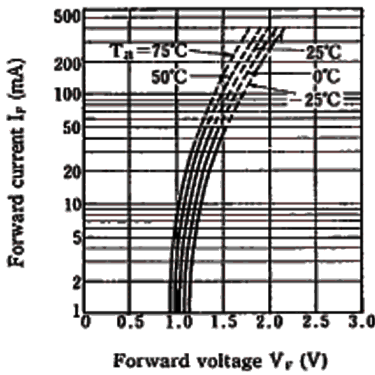
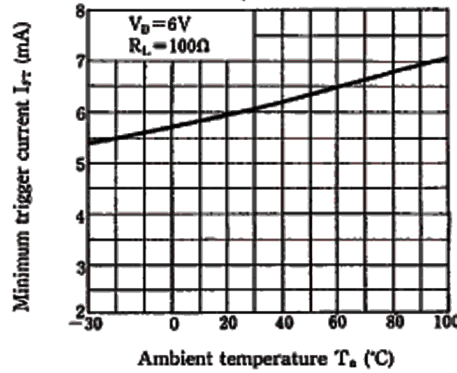


Fig. 4 Minimum Trigger Current vs. Ambient Temperature



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Fig. 5 Relative Repetitive Peak Off-state Voltage vs. Ambient Temperature

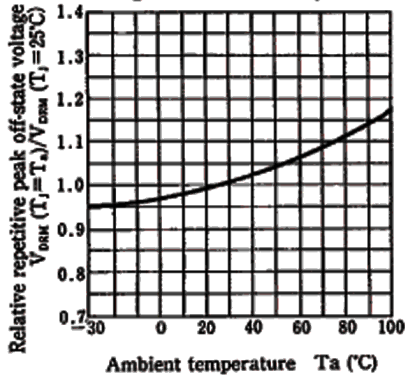


Fig. 6 Relative Repetitive Peak Reverse Voltage vs. Ambient Temperature

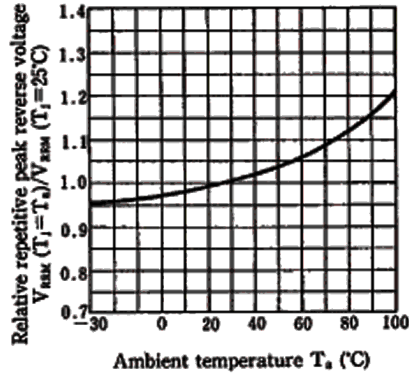


Fig. 7 Repetitive Peak Off-state Current vs. Ambient Temperature

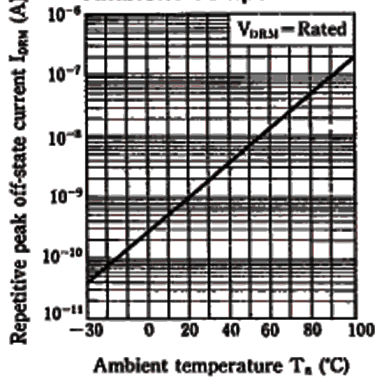


Fig. 8 Repetitive Peak Reverse Current vs. Ambient Temperature

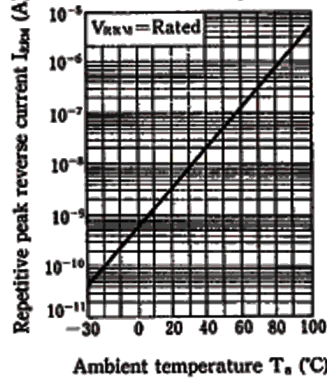


Fig. 9 On-state Voltage vs. Ambient Temperature

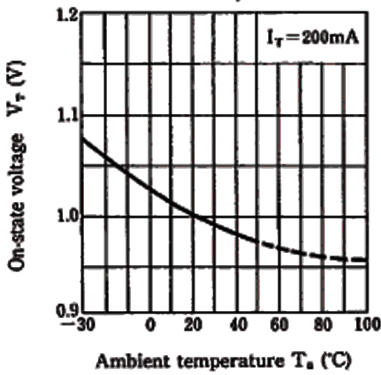


Fig. 10 Holding Current vs. Ambient Temperature

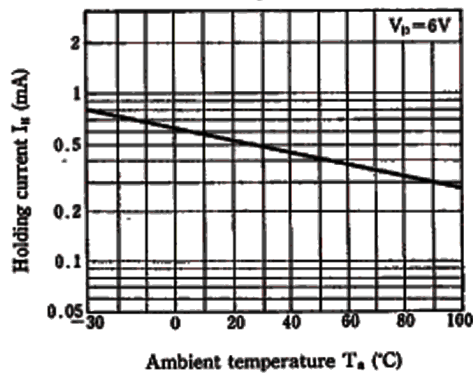


Fig. 11 On-state Current vs. On-state Voltage

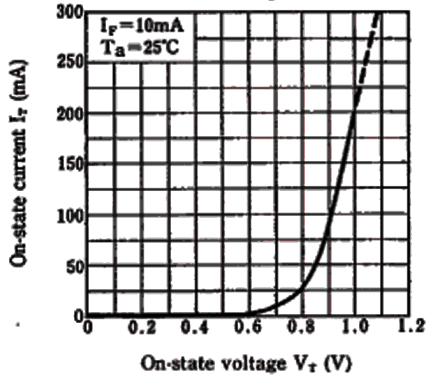
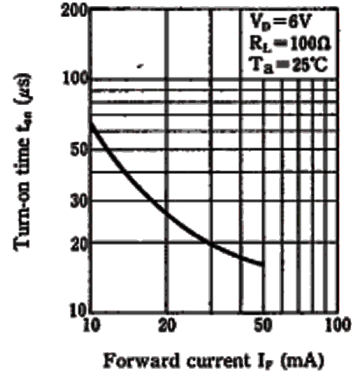
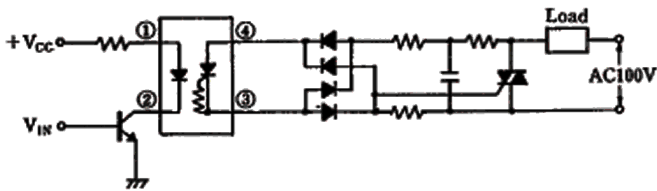


Fig. 12 Turn-on Time vs. Forward Current



■ **Basic Operation Circuit**

Triac Drive Circuit



6