

# S12ME1/S12ME1F

## European Safety Standard Approved, Long Creepage Distance Type Photothyristor Coupler

※ Lead forming type (I type) and taping reel type (P type) of S12ME1/S12ME1F are also available. (S12ME1I/S12ME1FI, S12ME1P/S12ME1PF)  
 ※ DIN-VDE0884 approved type is also available as an option.

### ■ Features

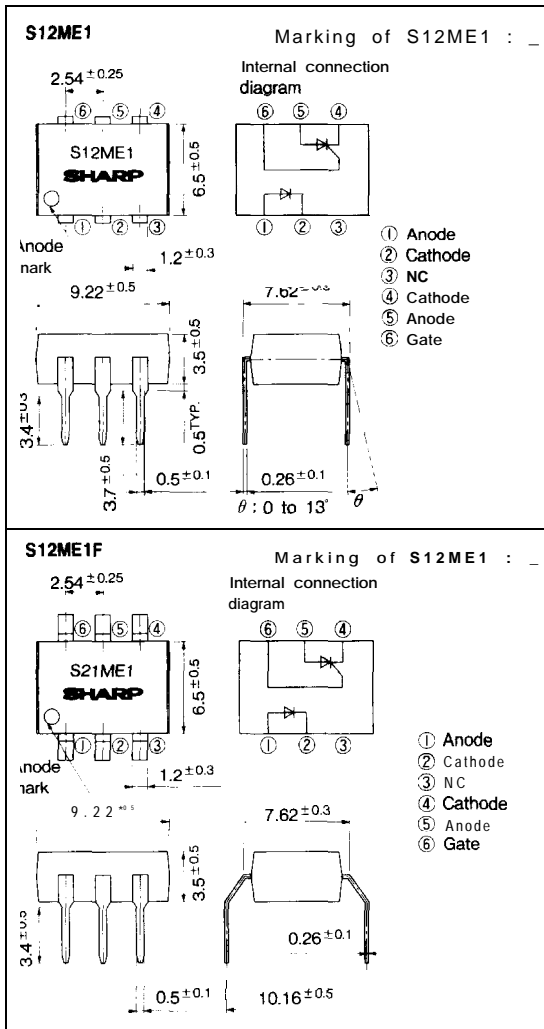
1. Internal insulation distance : 0.4mm or more
2. Creepage distance : 8mm or more  
 Space distance : 5mm or more (S12ME1 )  
 8mm or more (S12ME1F)
3. Recognized by UL file No. E64380  
 Approved by BSI (BS415:NO.7088, BS7002:NO.7410)
4. In compliance with International Standard for office and data processing equipment (IEC950)

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1. ON-OFF operation for low power load
2. For triggering medium or high power" thyristor and triac
3. Over voltage detection of switching power supplies

### ■ Outline Dimensions

(Unit : mm)



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Photothyristor Couplers

## Absolute Maximum Ratings

(Ta = 25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I <sub>F</sub>	50	mA
	Reverse voltage	V <sub>R</sub>	6	v
output	RMS ON-state current	I <sub>T</sub>	0.2	Arms
	*1 Peak one cycle surge current	I <sub>surge</sub>	2	A
	*2 Repetitive Desk OFF-state voltage	V <sub>DRM</sub>	400	v
	* Repetitive peak OFF-state reverse voltage	V <sub>RRM</sub>	400	v
	*3 Isolation voltage	v <sub>iso</sub>	4 000	V <sub>rms</sub>
Operating temperature		T <sub>opr</sub>	- 30 to + 100	°C
Storage temperature		T <sub>stv</sub>	-55 to +125	°C
'soldering temperature		T <sub>sol</sub>	260	°C

\*150Hz sine wave

\*2R<sub>G</sub> = 20k Ω

\*340 to 60% RH, AC for 1 minute, f = 60Hz

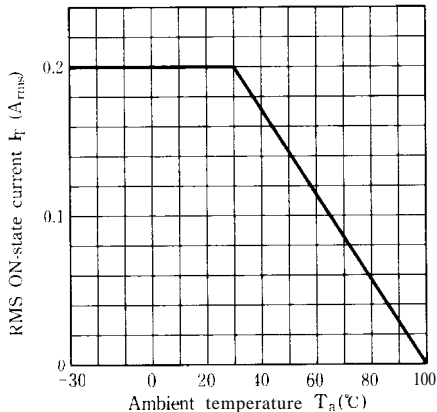
\*4 For 10 seconds

## Electro-optical Characteristics

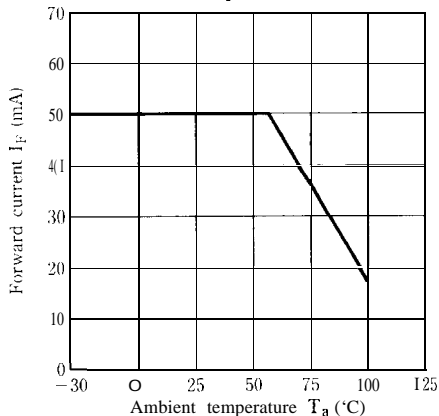
(Ta = 25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX	Unit
Input	Forward voltage	V <sub>F</sub>	I <sub>F</sub> = 20mA	—	1.2	1.4	v
	Reverse current	I <sub>R</sub>	V <sub>R</sub> = 3V		—	10	μA
output	Repetitive peak OFF-state current	I <sub>DRM</sub>	V <sub>DRM</sub> = Rated, R <sub>G</sub> = 20k Ω	—	—	1	μA
	Repetitive peak OFF-state reverse voltage	I <sub>RRM</sub>	V <sub>DRM</sub> = Rated, R <sub>G</sub> = 20k Ω	—		1	μA
	ON-state voltage	V <sub>T</sub>	I <sub>T</sub> = 0.2A		1.0	1.4	v
	Holding current	I <sub>H</sub>	V <sub>D</sub> = 6V, R <sub>G</sub> = 20k Ω		—	1.0	mA
	Critical rate of rise of OFF-state voltage	dV/dt	V <sub>DRM</sub> = 1/√2 · Rated, R <sub>G</sub> = 20k Ω	3		—	V/μs
Transfer characteristics	Minimum trigger current	I <sub>FT</sub>	V <sub>D</sub> = 6V, R <sub>L</sub> = 100Ω, R <sub>G</sub> = 20k Ω	—		10	mA
	Isolation resistance	R <sub>ISO</sub>	DC500V, 40 to 60% RH	5 × 10 <sup>10</sup>	10 <sup>11</sup>	—	Ω
	Turn-on time	t <sub>on</sub>	V <sub>D</sub> = 6V, R <sub>L</sub> = 100Ω, I <sub>F</sub> = 20mA R <sub>G</sub> = 20k Ω	—		50	μs

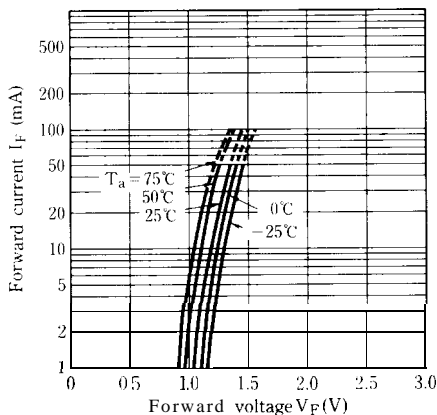
**Fig. 1 RMS ON-state Current vs. Ambient Temperature**



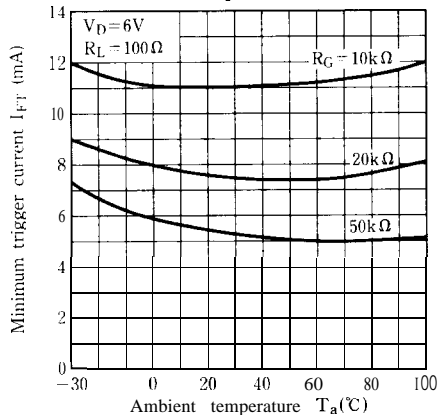
**Fig. 2 Forward Current vs. Ambient Temperature**



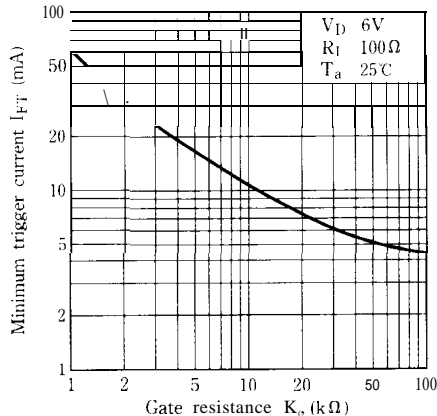
**Fig. 3 Forward Current vs. Forward Voltage**



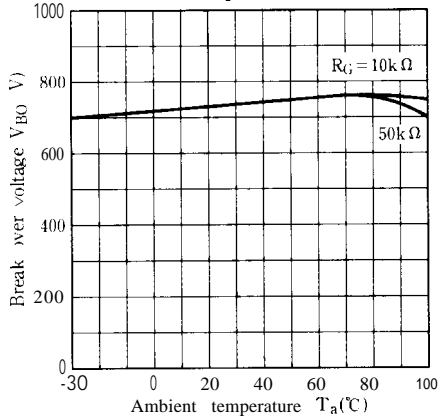
**Fig. 4 Minimum Trigger Current vs. Ambient Temperature**



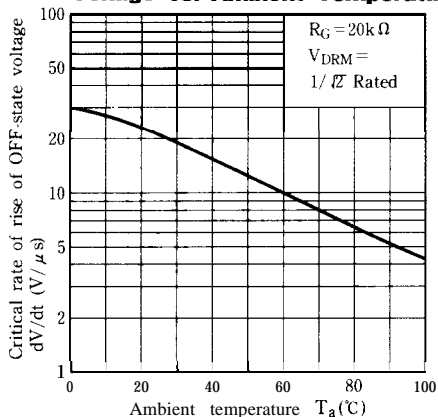
**Fig. 5 Minimum Trigger Current vs. Gate Resistance**



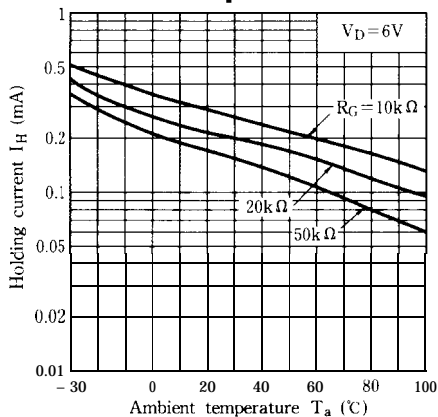
**Fig. 6 Break Over Voltage vs. Ambient Temperature**



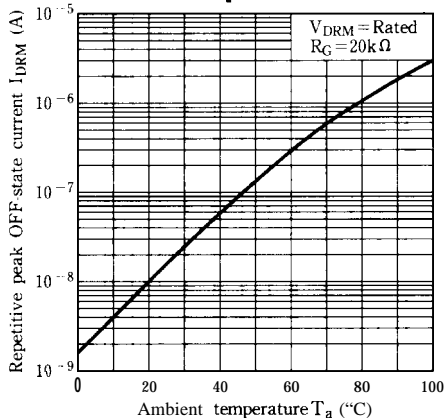
**Fig. 7 Critical Rate of Rise of OFF-state Voltage vs. Ambient Temperature**



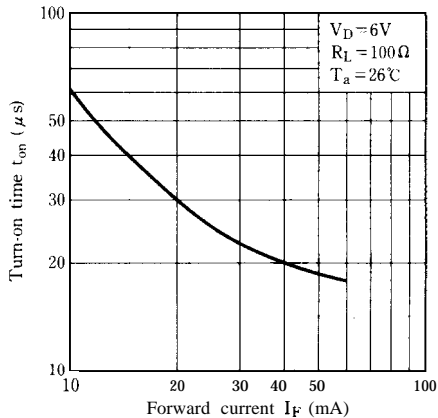
**Fig. 8 Holding Current vs. Ambient Temperature**



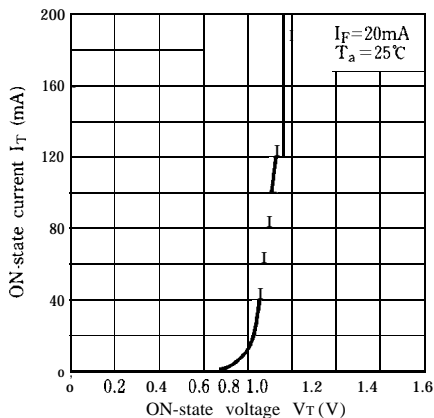
**Fig. 9 Repetitive Peak OFF-state Current vs. Ambient temperature**



**Fig.10 Turn-on Time vs. Forward Current**

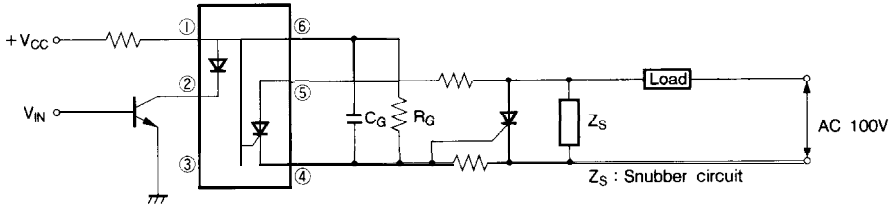


**Fig.11 ON-state Current vs. ON-state Voltage**

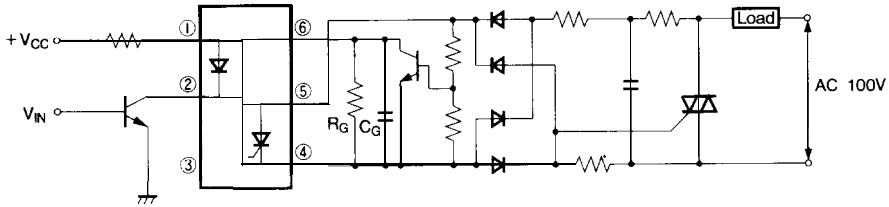


■ Basic Operation Circuit

Medium/High Power Thyristor Drive Circuit



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



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