

# S21MD10T

## High Speed, High Sensitivity Type Phototriac Coupler

※TUV (DIN -VDE0884) approved type is also available as an option.

### ■ Features

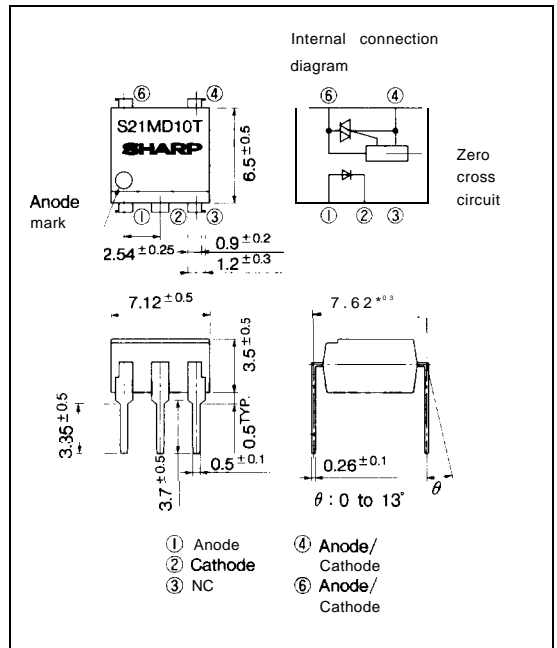
1. High sensitivity ( $I_{FT}$ : MAX. 5mA)
2. High speed (Turn-on time : MAX. 20  $\mu$ s)
3. Long dielectric distance between AC lines (3.9mm)
4. High isolation voltage between input and output ( $V_{iso}$ : 5 000 Vrms)
5. Recognized by UL, file No. E64380

### ■ Applications

1. For triggering medium/high power triac

### ■ 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	$I_T$	0.1	Arms
	*1 peak one cycle surge current	$I_{surge}$	1.2	A
	Repetitive peak OFF-state voltage	$V_{DRM}$	600	v
*Isolation voltage		$V_{iso}$	5000	Vrms
Operating temperature		$T_{opr}$	-30 to +100	°C
Storage temperature		$T_{stg}$	-55 to +125	°C
*Soldering temperature		$T_{sol}$	260	°C

\*1 50Hz sine wave

\*2 40 to 60%RH, AC for 1 minute,  $f=60\text{Hz}$

\*3 For 10 seconds

■ Electro-optical Characteristics

(Ta = 25°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	$I_R$	$V_R = 3\text{V}$	—	—	$10^{-5}$	A
output	Repetitive peak OFF-state current	$I_{DRM}$	$V_{DRM} = \text{Rated}$	—	—	$10^{-6}$	A
	ON-state voltage	$V_T$	$I_T = 0.1\text{A}$	—	2.0	3.0	v
	Holding current	$I_H$	$V_D = 6\text{V}$	0.1	0.5	3.5	mA
	Critical rate of rise of OFF-state voltage	$dV/dt$	$V_{DRM} = (1/\sqrt{2}) \cdot \text{Rated}$	160	—	—	V/ $\mu\text{s}$
	Zero-cross voltage	$V_{OX}$	Resistance load : $I_F = 10\text{mA}$	—	—	35	v
Transfer charac-terisitics	Minimum trigger current	$I_{FT}$	$V_D = 6\text{V}, R_L = 100\Omega$	—	—	5	mA
	Isolation resistance	$R_{ISO}$	DC500V, 40 to 60%RH	$5 \times 10^{10}$	$10^{11}$	—	$\Omega$
	Turn-on time	$t_{on}$	$V_D = 6\text{V}, R_L = 100\Omega, I_F = 20\text{mA}$	—	—	20	us

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

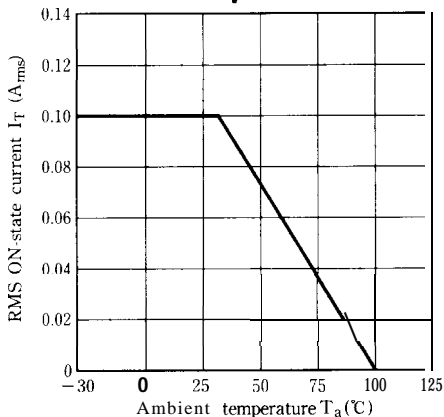


Fig. 2 Forward Current vs. Ambient Temperature

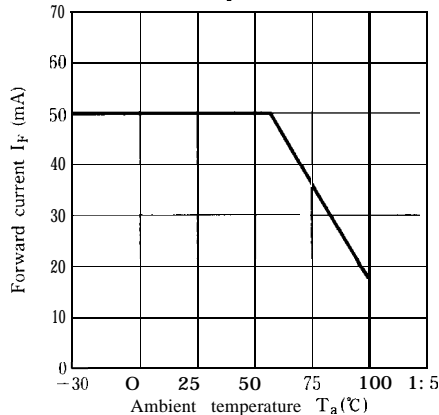


Fig. 3 Forward Current vs. Forward Voltage

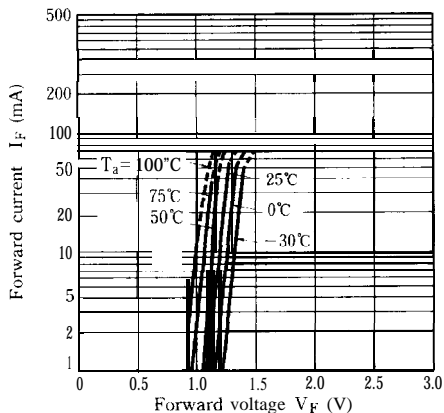
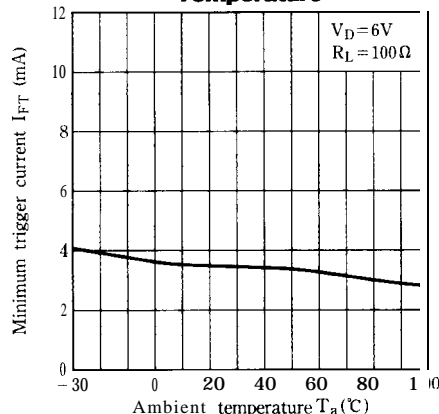
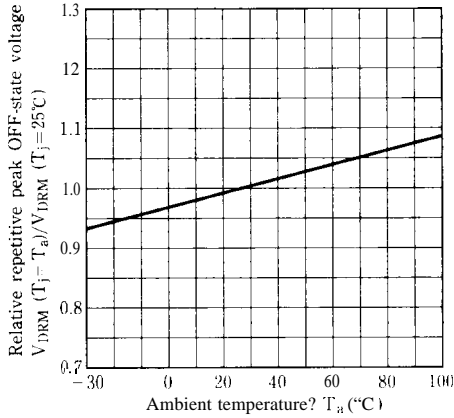


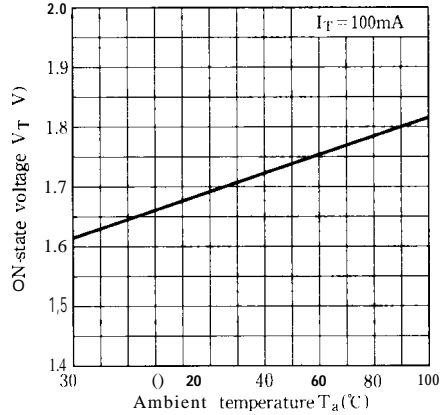
Fig. 4 Minimum Trigger Current vs. Ambient Temperature



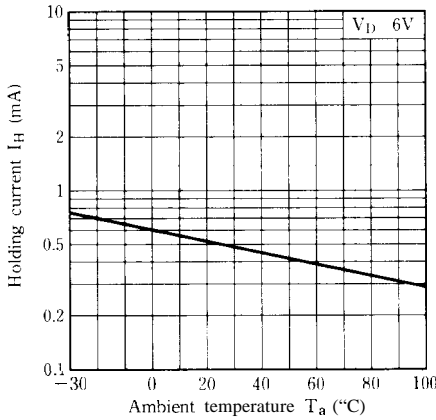
**Fig. 5 Relative Repetitive Peak OFF-state Voltage vs. Ambient Temperature**



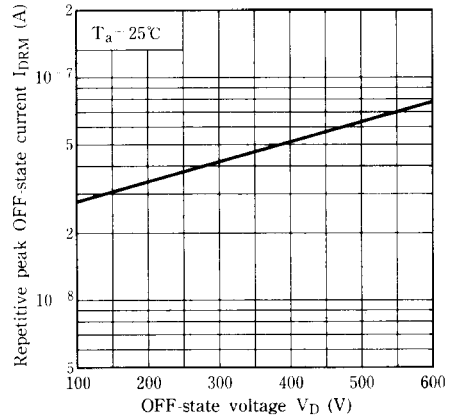
**Fig. 6 ON-state Voltage vs. Ambient Temperature**



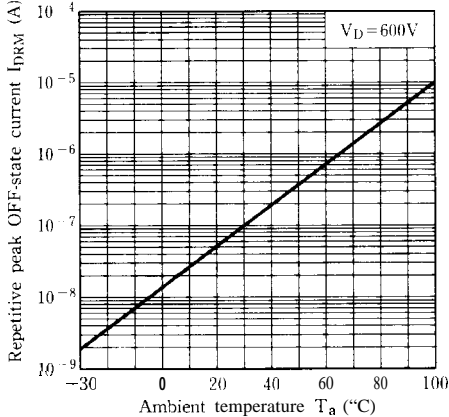
**Fig. 7 Holding Current vs. Ambient Temperature**



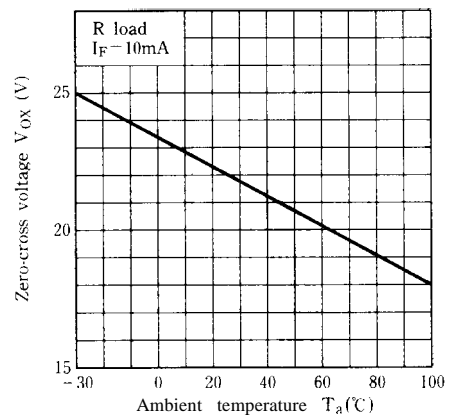
**Fig. 8 Repetitive Peak OFF-State Current vs. OFF-State Voltage**



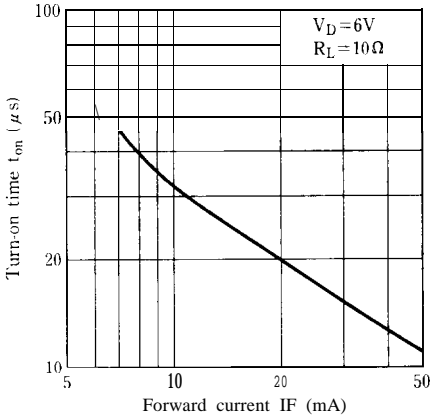
**Fig. 9 Repetitive Peak OFF-state Current vs. Ambient Temperature**



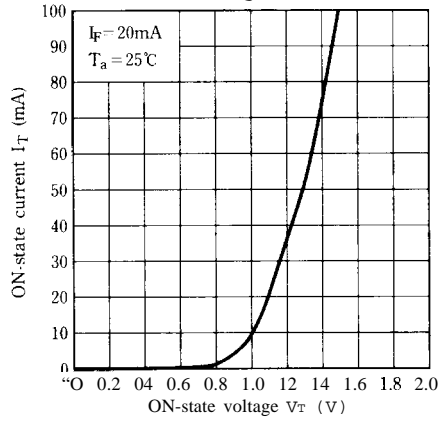
**Fig.10 Zero-cross voltage vs. Ambient Temperature**



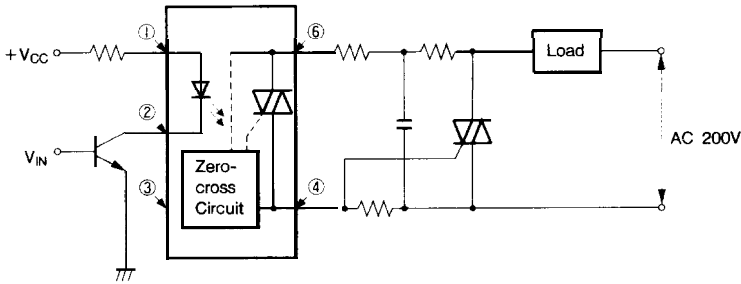
**Fig.11 Turn-on Time vs. Forward Current**



**Fig.1 2 ON-state Current vs. ON-state Voltage**



**Basic Operation Circuit**



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