

S11MD7T/S11MD8T/S11MD9T S21MD7T/S21MD8T/S21MD9T

Low Input Driving Type Phototriac Coupler

- * Taping reel type of **S21MD8T** is also available (**S21MD8P**)
- * DIN-VDE0884 approved type is also available.

■ Features

- Low input driving current
(**S11MD7T / S11MD8T / S21MD7T / S21MD8T**)
 I_{FT} : MAX. 5mA
S11MD9T / S21MD9T I_{FT} : MAX.7mA)
- Pin No. 5 completely molded for external noise resistance
- Built-in zero-cross circuit (**S11MD8T/S21MD8T**)
- High repetitive peak OFF-state voltage
(**S11MD7T / S11MD8T / S11MD9T**)
 V_{DRM} : MIN. 400V
S21MD7T / S21MD8T / S21MD9T
 V_{DRM} : MIN. 600V
- Isolation voltage between input and output
(V_{iso} : 5 000V_{rms})
- Recognized by UL, file No.E64380

■ Model Line-ups

	100V line	200V line
No zero-cross circuit	S11MD7T/ S11MD9T	S21MD7T/ S21MD9T
Built-in zero-cross circuit	S11MD8T	S21MD8T

■ Applications

- For triggering medium/high power triacs

■ Absolute Maximum Ratings

(Ta = 25°C)

Parameter	Symbol	Rating		Unit
		S11MD7T/S11MD8T S11MD9T	S21MD7T/S21MD8T/ S21MD9T	
Input	Forward current	I_F	50	mA
	Reverse voltage	V_R	6	V
Output	RMS ON-state current	I_T	0.1	A _{rms}
	*1 Peak one cycle surge current	I_{surge}	1.2	A
	Repetitive peak OFF-state voltage	V_{DRM}	400	600
*2 Isolation voltage	V_{iso}		5 000	V _{rms}
Operating temperature	T_{opr}		- 30 to +100	°C
Storage temperature	T_{stg}		- 55 to +125	°C
*3 Soldering temperature	T_{sol}		260	°C

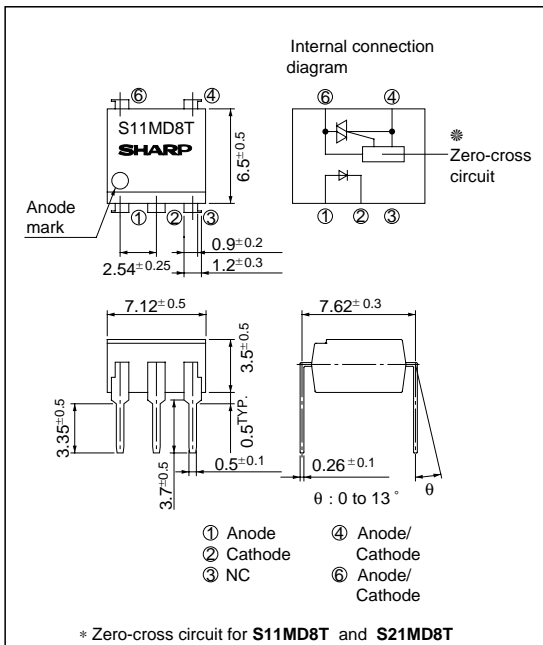
*1 50Hz Sine wave

*2 40 to 60% RH, AC for 1 minute, f = 60Hz

*3 For 10 seconds

■ Outline Dimensions

(Unit : mm)



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		
Repetitive peak OFF-state current		I_{DRM}	$V_{DRM} = \text{Rated}$	-	-	10^{-6}	A		
Output	ON-state voltage	S11MD7T/S21MD7T S11MD9T/S21MD9T	$I_T = 0.1\text{A}$	-	1.5	2.5	V		
		S11MD8T/S21MD8T		-	1.7	2.5			
		Holding current		I_H	$V_D = 6\text{V}$	0.1		0.5	3.5
	Critical rate of rise of OFF-state voltage		dV/dt	$V_{DRM} = 1/\sqrt{2} \cdot \text{Rated}$	100	-	-	V/ μs	
Zero-cross voltage		S11MD8T/S21MD8T	V_{OX}	Resistance load, $I_F = 10\text{mA}$		-	-	35	V
Transfer characteristics	Minimum trigger current	S11MD7T/S21MD7T S11MD8T/S21MD8T	I_{FT}	$V_D = 6\text{V}, R_L = 100\Omega$	-	-	5	mA	
		S11MD9T/S21MD9T			-	-	7		
		Isolation resistance			R_{ISO}	DC500V, 40 to 60% RH			5×10^{10}
	Turn-on time	S11MD7T	t_{on}	$V_D = 6\text{V}, R_L = 100\Omega$ $I_F = 20\text{mA}$	-	70	100	μs	
S11MD9T/S21MD7T/ S21MD9T		-			60	100			
S11MD8T/S21MD8T		-			20	50			

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

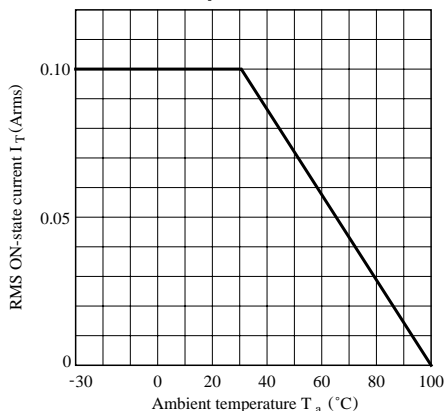


Fig. 2 Forward Current vs. Ambient Temperature

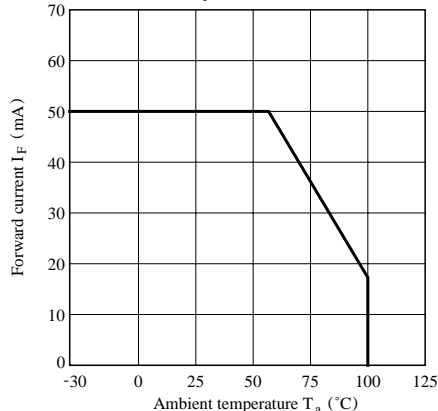


Fig. 3 Forward Current vs. Forward Voltage

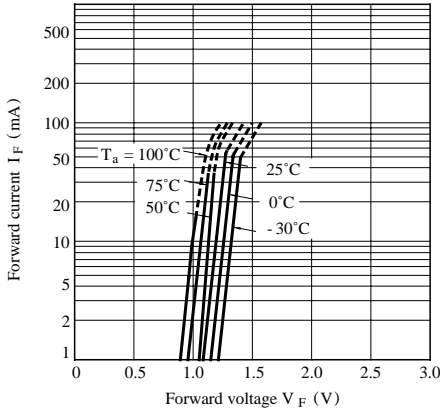


Fig. 4 Minimum Trigger Current vs. Ambient Temperature

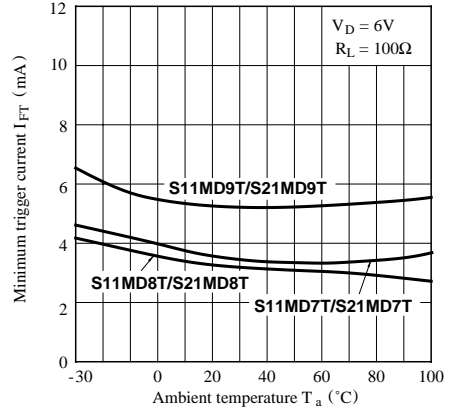


Fig. 5 Relative Repetitive Peak OFF-state Voltage vs. Ambient Temperature

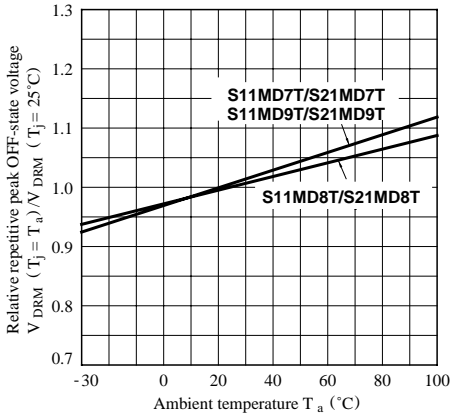


Fig. 6 ON-state Voltage vs. Ambient Temperature

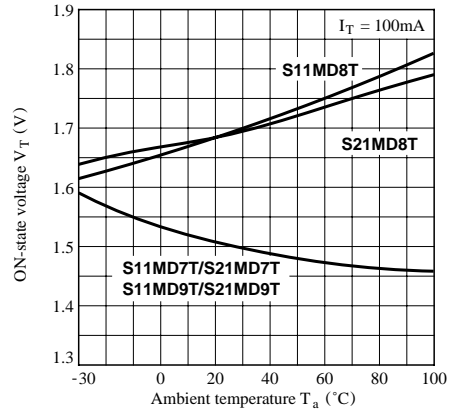


Fig. 7 Holding Current vs. Ambient Temperature

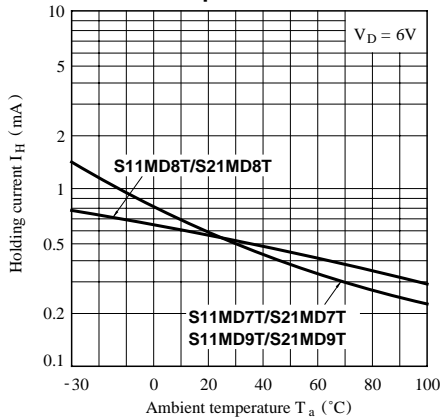


Fig. 8-a Repetitive Peak OFF-state Current vs. OFF-state Voltage (S11MD7T/S11MD9T)

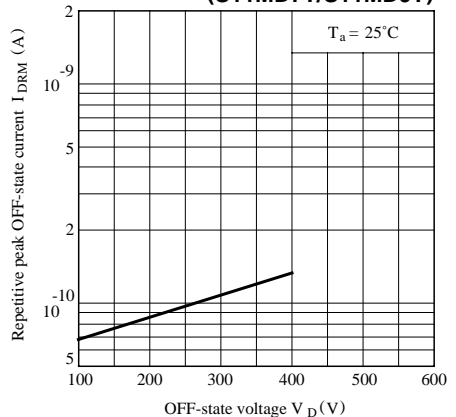


Fig. 8-b Repetitive Peak OFF-state Current vs. OFF-state Voltage (S11MD8T/S21MD8T)

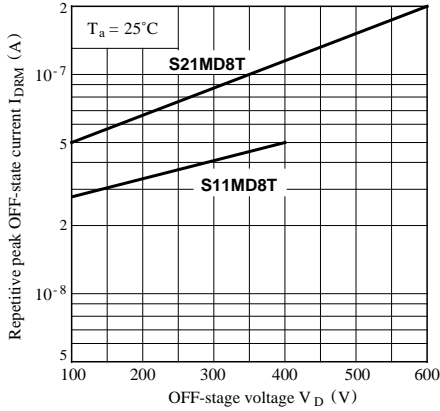


Fig. 8-c Repetitive Peak OFF-state Current vs. OFF-state Voltage (S21MD7T/S21MD9T)

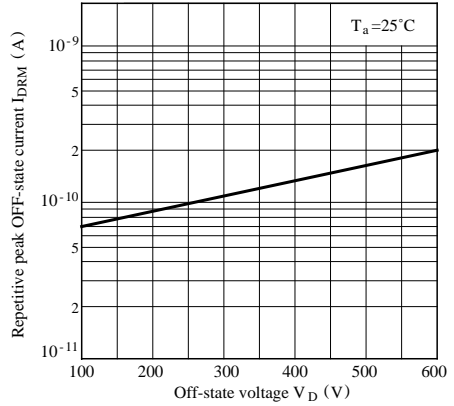


Fig. 9-a Repetitive Peak OFF-state Current vs. Ambient Temperature (S11MD7T/S11MD9T/S21MD7T/S21MD9T)

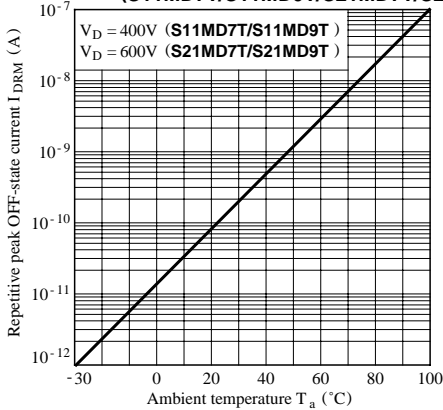


Fig. 9-b Repetitive Peak OFF-state Current vs. Ambient Temperature (S11MD8T/S21MD8T)

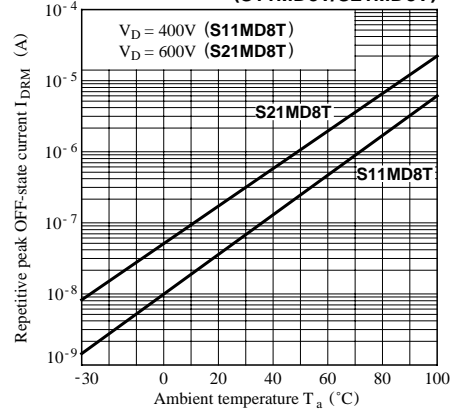


Fig.10 Zero-cross Voltage vs. Ambient Temperature (S11MD8T/S21MD8T)

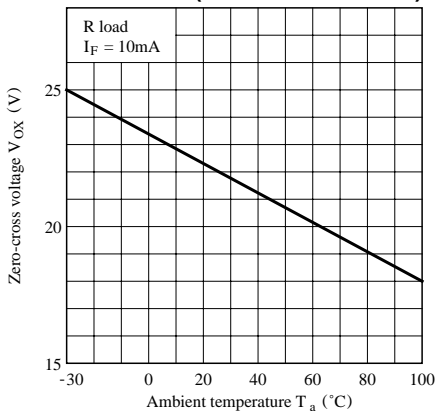


Fig.11-a Turn-on Time vs. Forward Current (S11MD7T)

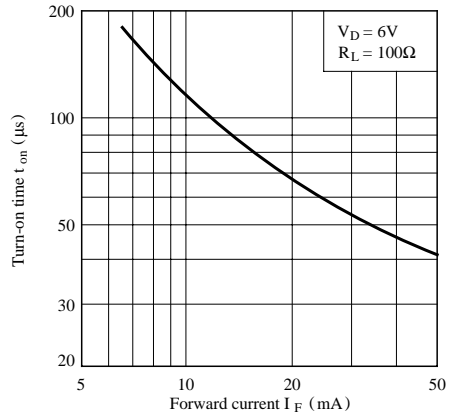


Fig.11-b Turn-on Time vs. Forward Current (S11MD8T/S21MD8T)

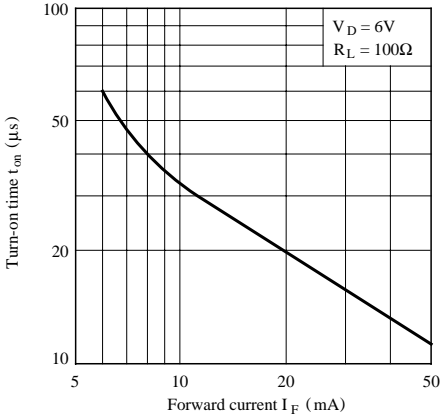


Fig.11-c Turn-on Time vs. Forward Current (S11MD9T/S21MD7T/S21MD9T)

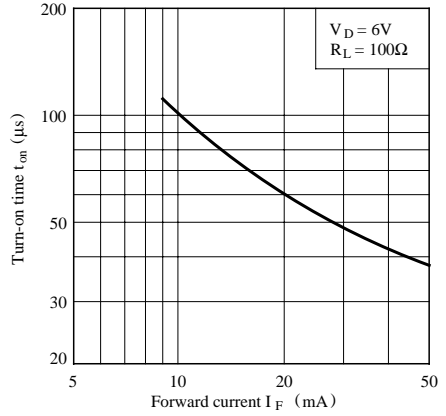


Fig.12-a ON-state Current vs. ON-state Voltage (S11MD7T/S21MD7T/S11MD9T/S21MD9T)

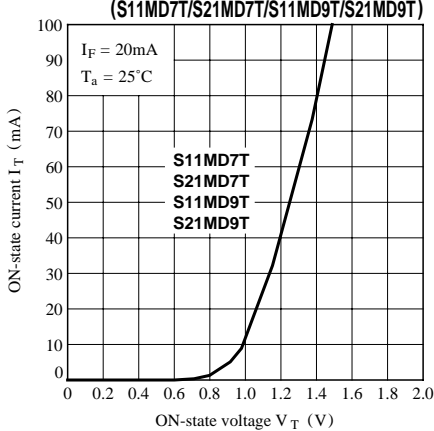
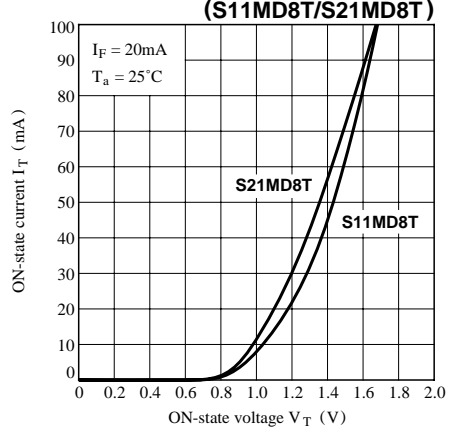
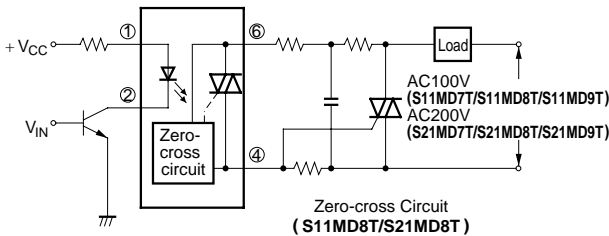


Fig.12-b ON-state Current vs. ON-state Voltage (S11MD8T/S21MD8T)



Basic Operation Circuit

**S11MD7T/S11MD8T/S11MD9T
S21MD7T/S21MD8T/S21MD9T**



● Please refer to the chapter “Precautions for Use.”