

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	V
	*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

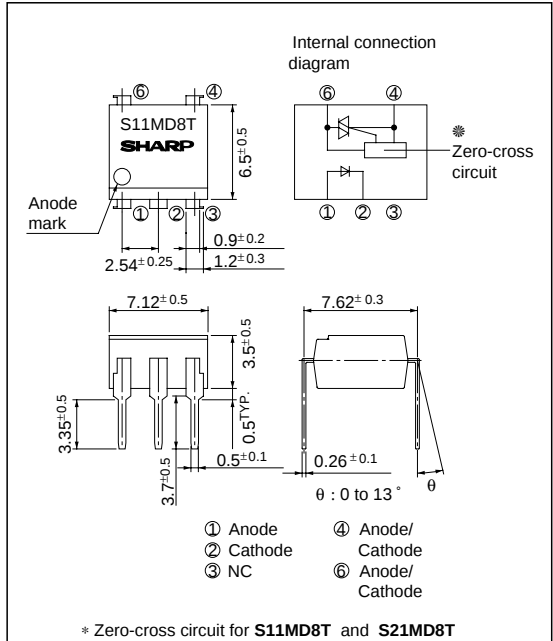
*1 50Hz Sine wave

*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 = 20mA	-	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	-	-	10 ⁻⁶	A
	ON-state voltage	S11MD7T/S21MD7T S11MD9T/S21MD9T	V _T	I _T = 0.1A	-	1.5	2.5	V
		S11MD8T/S21MD8T			-	1.7	2.5	
	Holding current		I _H	V _D = 6V	0.1	0.5	3.5	mA
	Critical rate of rise of OFF-state voltage		dV/dt	V _{DRM} = 1/√2 • Rated	100	-	-	V/μs
	Zere-cross voltage	S11MD8T/S21MD8T	V _{OX}	Resistance load, I _F = 10mA	-	-	35	V
Transfer charac- teristics	Minimum trigger current	S11MD7T/S21MD7T S11MD8T/S21MD8T	I _{FT}	V _D = 6V, R _L = 100Ω	-	-	5	mA
		S11MD9T/S21MD9T			-	-	7	
	Isolation resistance		R _{ISO}	DC500V, 40 to 60% RH	5 x 10 ¹⁰	10 ¹¹	-	Ω
	Turn-on time	S11MD7T	t _{on}	V _D = 6V, R _L = 100Ω I _F = 20mA	-	70	100	μs
		S11MD9T/S21MD7T/ S21MD9T			-	60	100	
S11MD8T/S21MD8T		-			20	50		

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

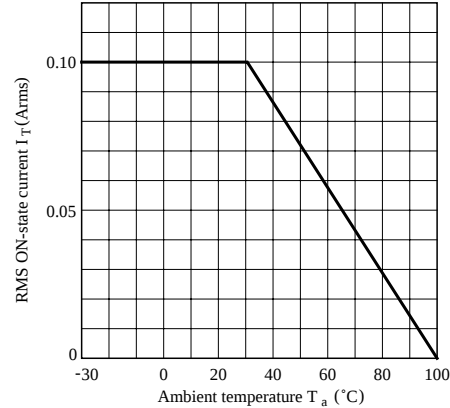


Fig. 2 Forward Current vs. Ambient Temperature

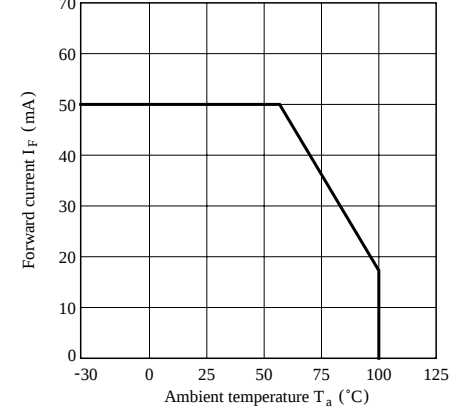


Fig. 3 Forward Current vs. Forward Voltage

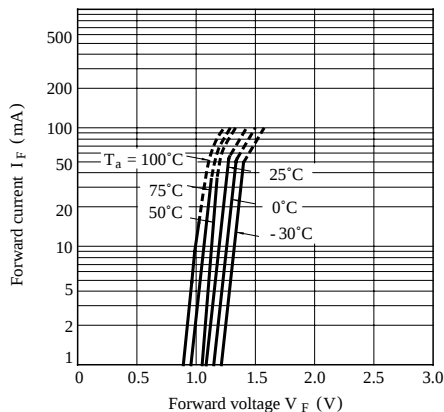


Fig. 4 Minimum Trigger Current vs. Ambient Temperature

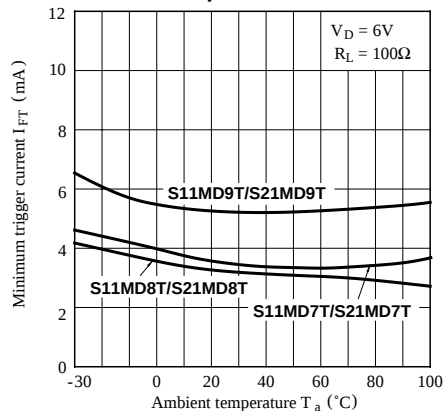


Fig. 5 Relative Repetitive Peak OFF-State Voltage vs. Ambient Temperature

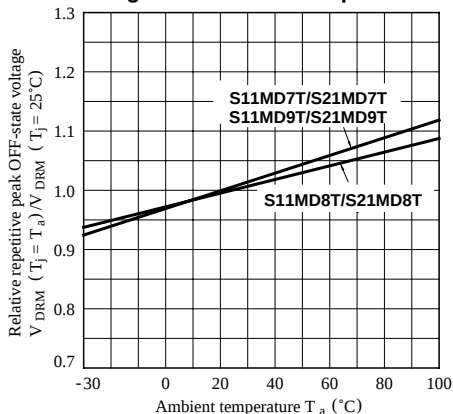


Fig. 6 ON-state Voltage vs. Ambient Temperature

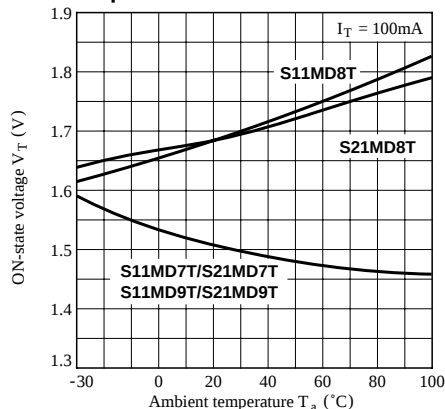


Fig. 7 Holding Current vs. Ambient Temperature

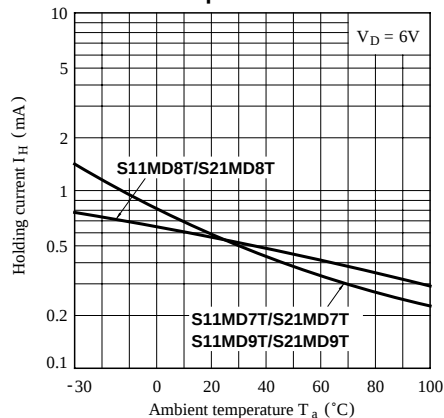


Fig. 8-a Repetitive Peak OFF-state Current vs. OFF-state Voltage (S11MD7T/S11MD9T)

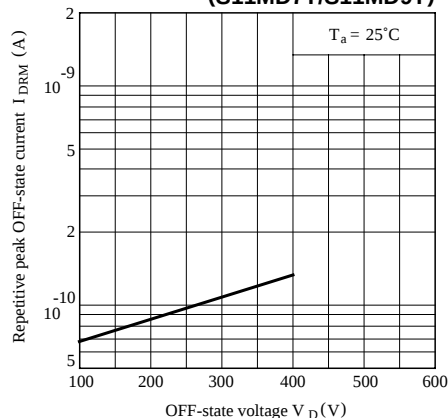


Fig. 8-b Repetitive Peak OFF-state Current vs. OFF-state Voltage (S11MD8T/S21MD8T)

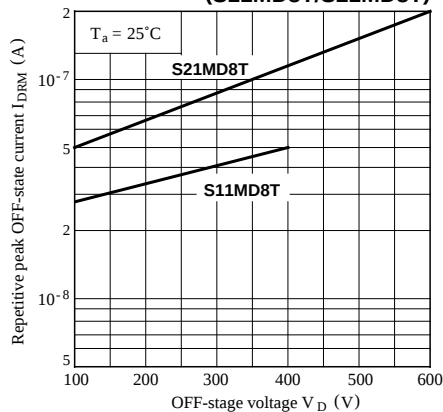


Fig. 8-c Repetitive Peak OFF-state Current vs. OFF-state Voltage (S21MD7T/S21MD9T)

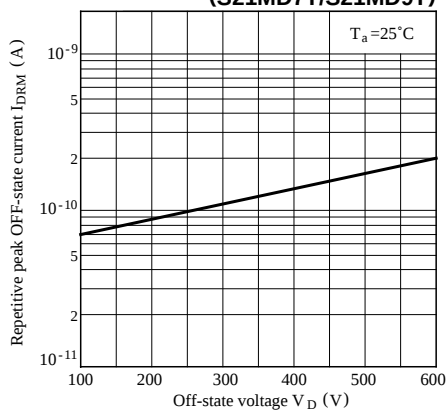


Fig. 9-a Repetitive Peak OFF-state Current vs. Ambient Temperature (S11MD7T/S11MD9T/S21MD7T/S21MD9T)

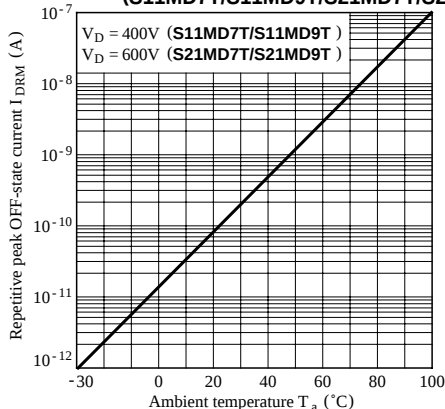


Fig. 9-b Repetitive Peak OFF-state Current vs. Ambient Temperature (S11MD8T/S21MD8T)

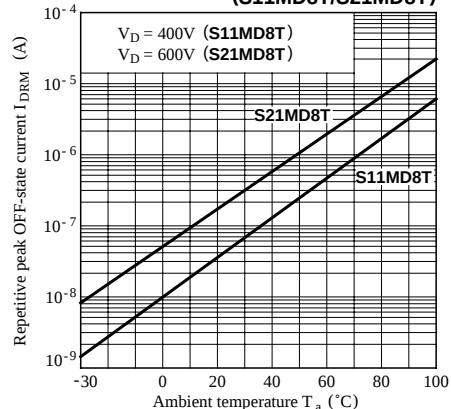


Fig.10 Zero-cross Voltage vs. Ambient Temperature (S11MD8T/S21MD8T)

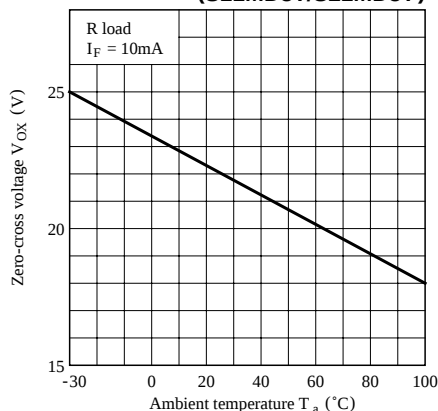
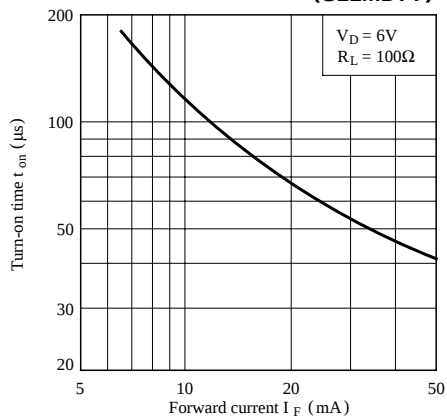
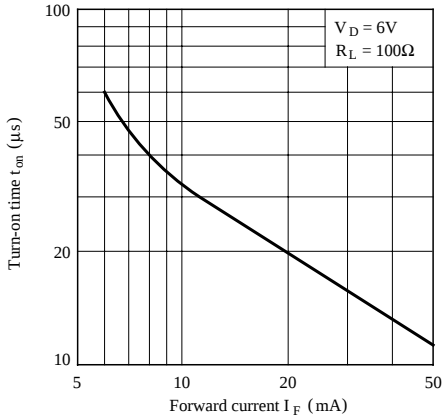


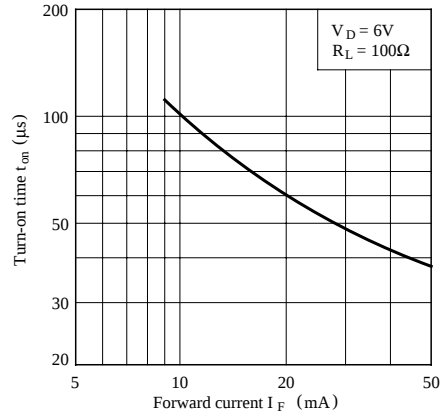
Fig.11-a Turn-on Time vs. Forward Current (S11MD7T)



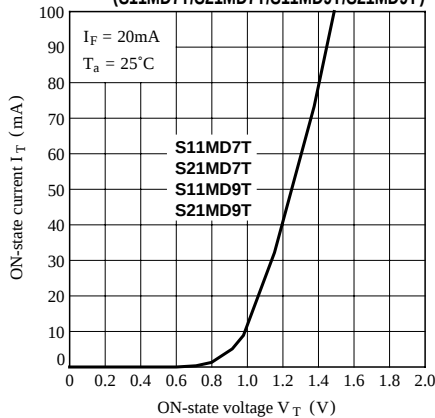
**Fig.11-b Turn-on Time vs. Forward Current
(S11MD8T/S21MD8T)**



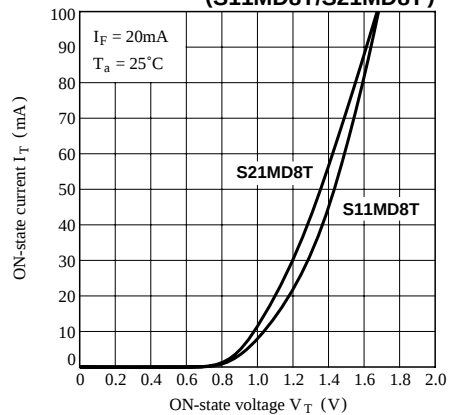
**Fig.11-c Turn-on Time vs. Forward Current
(S11MD9T/S21MD7T/S21MD9T)**



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

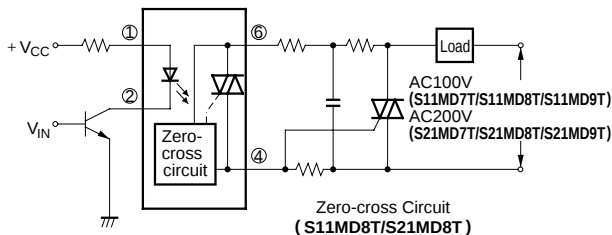


**Fig.12-b ON-state Current vs.
ON-state Voltage
(S11MD8T/S21MD8T)**



Basic Operation Circuit

S11MD7T/S11MD8T/S11MD9T
S21MD7T/S21MD8T/S21MD9T



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