

# S21ME Series

## European Safety Standard Approved, Long Creepage Distance Type Phototriac Couplers

- \* Lead forming type (I type) of **S21ME** series is also available. (**S21ME3I/ S21ME4I/ S21ME3FI/ S21ME4FI**)
- \* Taping reel type (P type) of **S21ME** series is also available. (**S21ME3P/S21ME4P/S21ME3FP/S21ME4FP**)
- \* DIN-VDE0884 approved type is also available as an option.

### ■ Features

1. Long creepage distance type  
(Creepage distance : 8mm or more)
2. Internal insulation distance : 0.5mm or more
3. Description of approved safety standards  
(Lead forming type is also registered as **S21ME3/ S21ME4**)  
Recognized by UL 1577 (double protection included)  
file No. E64380

Approved by VDE, No. 68328

Approved by BSI ( BS415 : No. 6690, BS7002 : No. 7421 )

Approved by SEMKO

**S21ME3/ S21ME3F** No. 8705122

**S21ME4/ S21ME4F** No. 8705123

Approved by DEMKO, No. 84857

Approved by EI

**S21ME3/ S21ME3F** No. 099443-01

**S21ME4/ S21ME4F** No. 099444-01

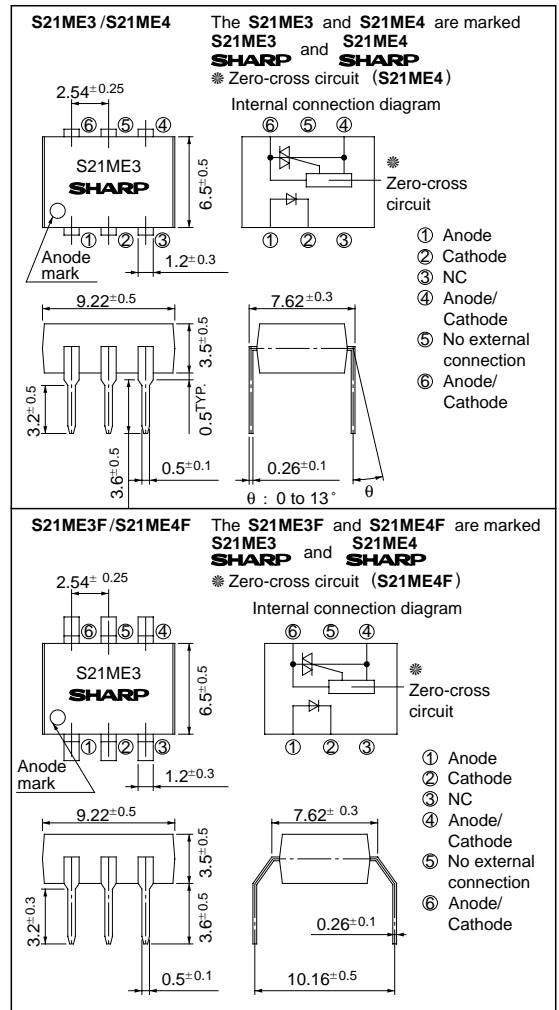
4. Low minimum trigger current  
(  $I_{FT}$  : MAX. 7mA )
5. Built-in zero-cross circuit  
( **S21ME4/ S21ME4F** )
6. Lead forming type/ **S21ME3F, S21ME4F**  
(Distance between lead pins : 10.16mm)
7. High repetitive peak OFF-state voltage  
(  $V_{DRM}$  : MIN. 600V )
8. High isolation voltage between input and output  
(  $V_{iso}$  : 5 000V<sub>rms</sub> )

### ■ Applications

1. For triggering medium/high power triac

### ■ Outline Dimensions

(Unit : mm)



### ■ 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>	100	mA <sub>rms</sub>
	*1Peak one cycle surge current	I <sub>surge</sub>	1.2	A
	Repetitive peak OFF-state voltage	V <sub>DRM</sub>	600	V
	*2Isolation voltage	V <sub>iso</sub>	5 000	V <sub>rms</sub>
Operating temperature		T <sub>opr</sub>	- 30 to + 100	°C
Storage temperature		T <sub>stg</sub>	- 55 to + 125	°C
*3Soldering temperature		T <sub>sol</sub>	260	°C

\*1 50Hz, sine wave

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

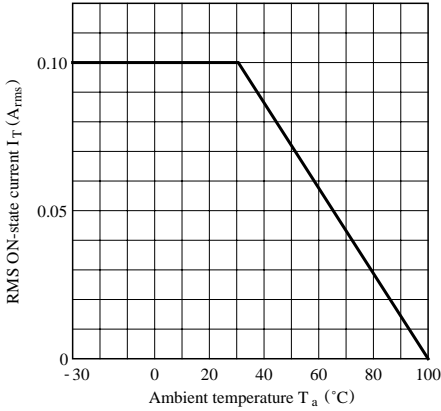
\*3 For 10 seconds

### ■ Electro-optical Characteristics

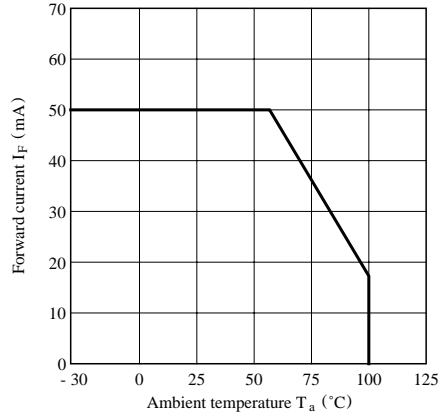
(Ta = 25°C)

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 <sup>-5</sup>	A	
Output	Repetitive peak OFF-state current	I <sub>DRM</sub>	V <sub>DRM</sub> = Rated	-	-	10 <sup>-6</sup>	A	
	ON-state voltage	V <sub>T</sub>	I <sub>T</sub> = 100mA	-	1.7	3.0	V	
	Holding current	I <sub>H</sub>	V <sub>D</sub> = 6V	0.05	-	3.5	mA	
	Critical rate of rise of OFF-state voltage	S21ME3 S21ME3F S21ME4 S21ME4F	dV/dt	V <sub>DRM</sub> = 1/√2 • Rated	500	-	-	V/μs
					100	-	-	
Zero-cross voltage	S21ME4 S21ME4F	V <sub>OX</sub>	Resistance load, I <sub>F</sub> = 15mA	-	-	35	V	
Transfer characteristics	Minimum trigger current	I <sub>FT</sub>	V <sub>D</sub> = 6V, R <sub>L</sub> = 100Ω	-	-	7.0	mA	
	Isolation resistance	R <sub>ISO</sub>	DC500V, 40 to 60% RH	5 x 10 <sup>10</sup>	10 <sup>11</sup>	-	Ω	
	Turn-on time	S21ME3 S21ME3F S21ME4 S21ME4F	t <sub>on</sub>	V <sub>D</sub> = 6V, R <sub>L</sub> = 100Ω, I <sub>F</sub> = 20mA	-	40	100	μs
				f = 50Hz	-	-	1/2	cycle
Turn-off time	S21ME4 S21ME4F	t <sub>off</sub>	f = 50Hz	-	-	1/2	cycle	

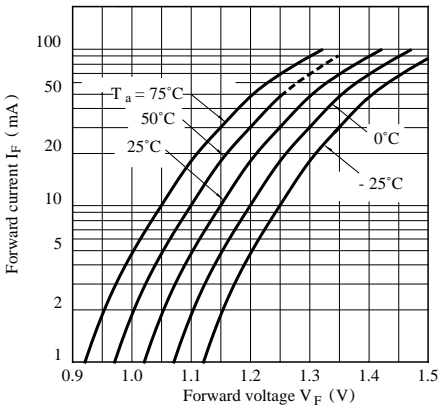
**Fig. 1 RMS ON-state Current vs. Ambient Temperature**



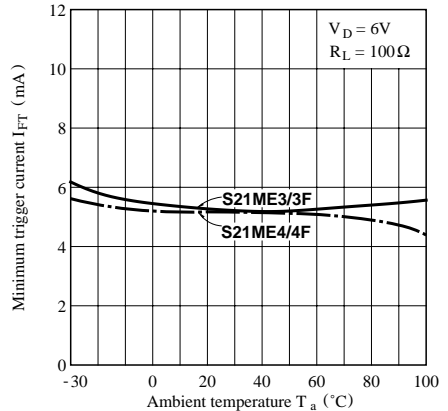
**Fig. 2 Forward Current vs. Ambient Temperature**



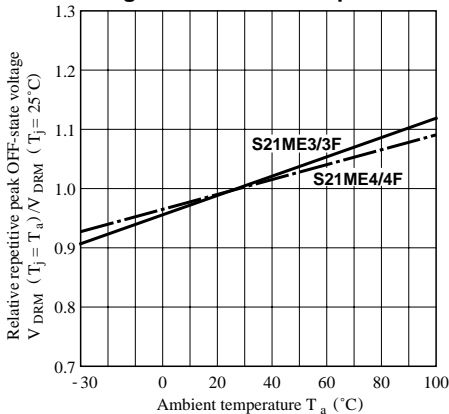
**Fig. 3 Forward Current vs. Forward Voltage**



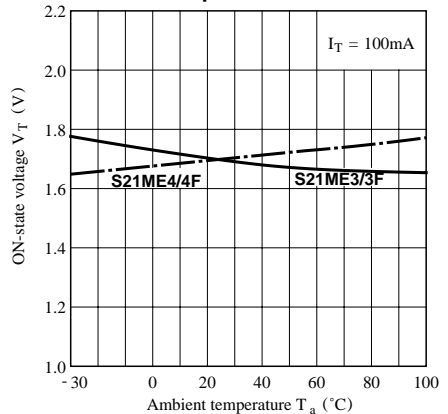
**Fig. 4 Minimum Trigger Current vs. Ambient Temperature**



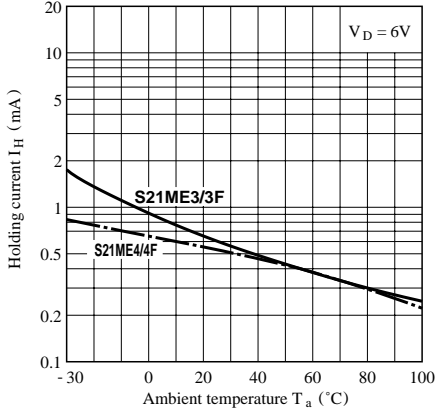
**Fig. 5 Relative Repetitive Peak OFF-state Voltage vs. Ambient Temperature**



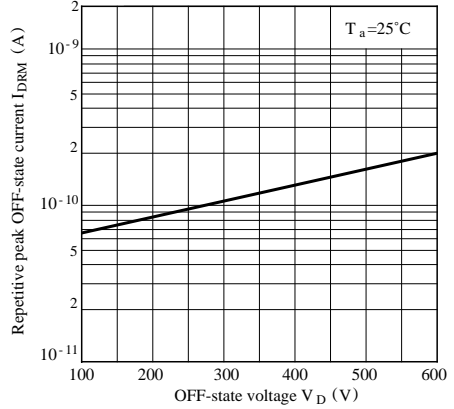
**Fig. 6 ON-state Voltage vs. Ambient Temperature**



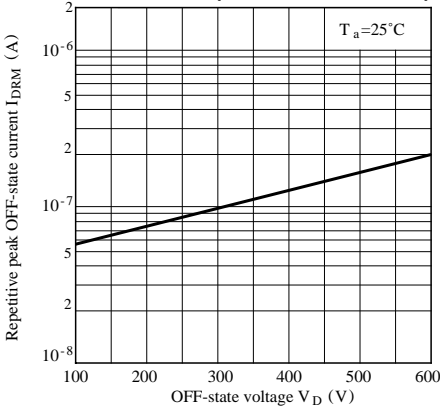
**Fig. 7 Holding Current vs. Ambient Temperature**



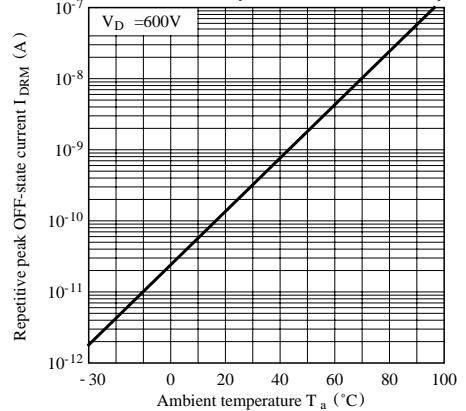
**Fig. 8-a Repetitive Peak OFF-state Current vs. OFF-state Voltage (S21ME3/S21ME3F)**



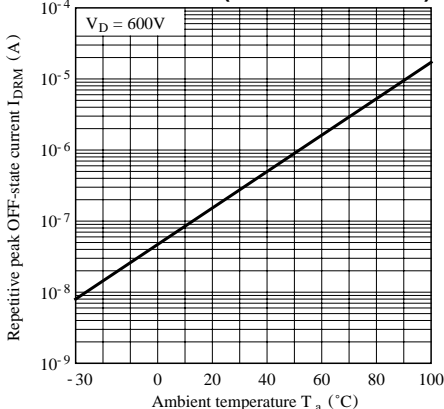
**Fig. 8-b Repetitive Peak OFF-state Current vs. OFF-state Voltage (S21ME4/S21ME4F)**



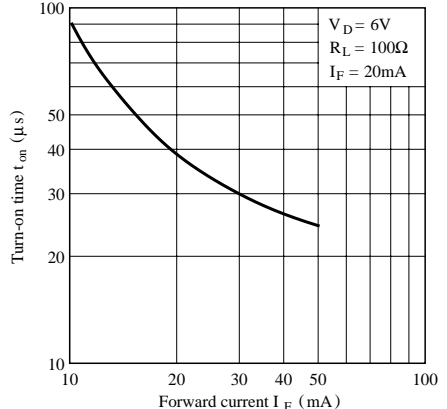
**Fig. 9-a Repetitive Peak OFF-state Current vs. Ambient Temperature (S21ME3/S21ME3F)**



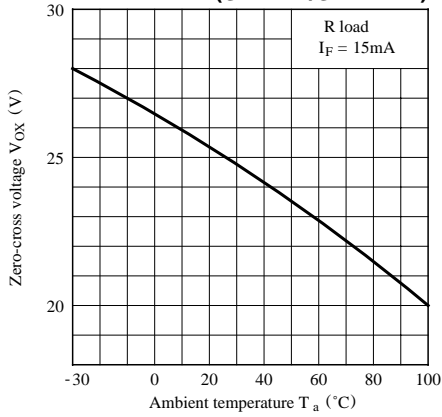
**Fig. 9-b Repetitive Peak OFF-state Current vs. Ambient Temperature (S21ME4/S21ME4F)**



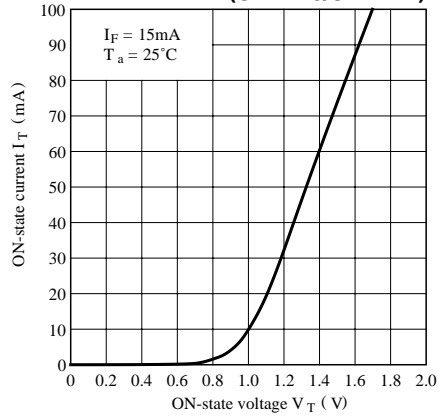
**Fig.10 Turn-on Time vs. Forward Current (S21ME3/S21ME3F)**



**Fig.11 Zero-cross Voltage vs. Ambient Temperature**  
(S21ME4/S21ME4F)



**Fig.12 ON-state Current vs. ON-state Voltage**  
(S21ME3/S21ME4)



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

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