

# S202SE1/S202SE2

# S216SE1/S216SE2

## ■ Features

- Comforms to European Safety Standard (EN60950)  
(Need of the insulation sheet when mounting external heat sink)  
Internal insulation distance : 0.4mm or more  
Creepage distance : 5mm or more  
Space distance : 4mm or more
- RMS ON-state current  
**S202SE1 / S202SE2** : 8Arms at  $T_c \leq 80^\circ\text{C}$   
(with heat sink)  
**S216SE1 / S216SE2** : 16Arms at  $T_c \leq 60^\circ\text{C}$   
(with heat sink)
- Isolation voltage between input and output ( $V_{iso}$  : 3 000V<sub>rms</sub>)
- Approved by TÜV, No. R9051479
- Recognized by UL, No. E94758  
**(S202SE1 / S202SE2)**  
Approved by CSA, No. LR63705  
**(S202SE1, S202SE2)**

## ■ Applications

- Copiers
- Laser beam printers

## ■ Line-up

	RMS ON-state current	
	MAX. 8Arms	MAX. 16Arms
No built-in Zero-cross circuit	<b>S202SE1</b>	<b>S216SE1</b>
Built-in Zero-cross circuit	<b>S202SE2</b>	<b>S216SE2</b>

## ■ Absolute Maximum Ratings

Parameter	Symbol	Rating		Unit	
		S202SE1/S202SE2	S216SE1/S216SE2		
Input	Forward current	$I_F$	50	mA	
	Reverse voltage	$V_R$	6	V	
	RMS ON-state current	$I_T$	*48	*516	A <sub>rms</sub>
Output	*1 Peak one cycle surge current	$I_{surge}$	80	160	A
	Repetitive peak OFF-state voltage	$V_{DRM}$	600		V
	Non-repetitive peak OFF-state voltage	$V_{DSM}$	600		V
	Critical rate of rise of ON-state current	$dI_T/dt$	50		A/ $\mu$ s
	Operating frequency	$f$	45 to 65		Hz
	*2 Isolation voltage	$V_{iso}$	3,000		V <sub>rms</sub>
	Operating temperature	$T_{opr}$	- 25 to + 100		°C
	Storage temperature	$T_{stg}$	- 30 to + 125		°C
	*3 Soldering temperature	$T_{sol}$	260		°C

\*1 60Hz sine wave,  $T_j = 25^\circ\text{C}$  start

\*2 AC 60Hz for 1 minute, 40 to 60% RH, Apply voltages between input and output by the dielectric withstand voltage tester with zero-cross circuit.(Input and output shall be shorted respectively).

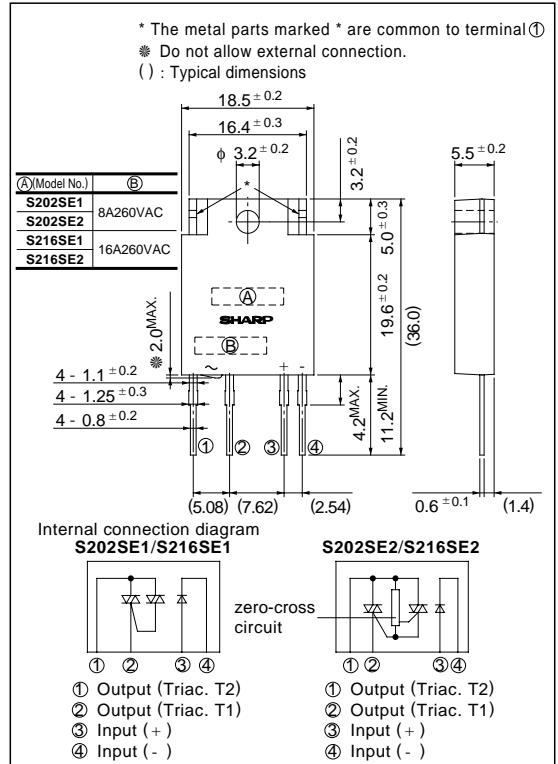
(Note) When the isolation voltage is necessary at using external heat sink, please use the insulation sheet.

\*3 For 10 seconds \*4  $T_c \leq 80^\circ\text{C}$  \*5  $T_c \leq 60^\circ\text{C}$

## SIP Type SSR for Medium Power Control

## ■ Outline Dimensions

(Unit : mm)



( $T_a = 25^\circ\text{C}$ )

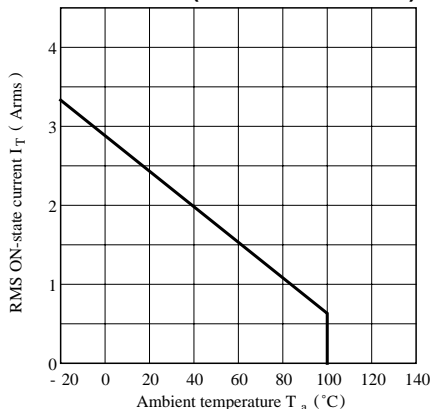
## ■ Electrical Characteristics

(Ta = 25°C)

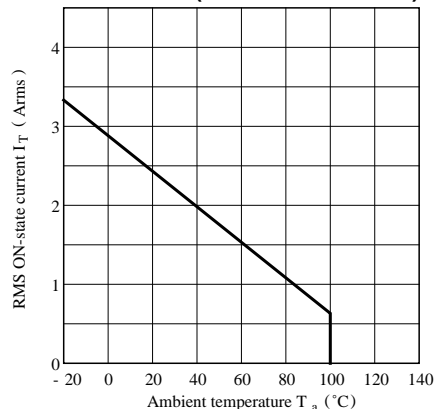
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	V <sub>F</sub>	I <sub>F</sub> = 20mA	-	1.2	1.4	V	
	Reverse current	I <sub>R</sub>	V <sub>R</sub> = 3V	-	-	10 <sup>-4</sup>	A	
Repetitive peak OFF-state current		I <sub>DRM</sub>	V <sub>D</sub> = V <sub>DRM</sub>	-	-	10 <sup>-4</sup>	A	
Output	ON-state voltage	V <sub>T</sub>	I <sub>T</sub> = 2A <sub>rms</sub>	-	-	1.5	V <sub>rms</sub>	
			I <sub>T</sub> = 16A <sub>rms</sub>	-	-	1.5		
	Holding current		I <sub>H</sub>	-	-	50	mA	
	Critical rate of rise of OFF-state voltage		dV/dt	V <sub>D</sub> = 2/3V <sub>DRM</sub>	30	-	-	V/μs
	Critical rate of rise of commutating OFF-state voltage		(dV/dt) <sub>c</sub>	T <sub>j</sub> = 125°C, V <sub>D</sub> = 400V *6	5	-	-	V/μs
	Zero-cross voltage	S202SE2/S216SE2	V <sub>OX</sub>	I <sub>F</sub> = 8mA	-	-	35	V
Transfer characteristics	Minimum trigger current	I <sub>FT</sub>	S202SE1/S216SE1	V <sub>D</sub> = 12V, R <sub>L</sub> = 30Ω	-	-	8	mA
			S202SE2/S216SE2		V <sub>D</sub> = 6V, R <sub>L</sub> = 30Ω	-	-	
			Isolation resistance		R <sub>ISO</sub>	DC500V, 40 to 60 % RH	10 <sup>10</sup>	
	Turn-on time	S202SE1/S216SE1	t <sub>on</sub>	AC60Hz	-	-	1	ms
		S202SE2/S216SE2			-	-	9.3	
	Turn-off time		t <sub>off</sub>	AC60Hz	-	-	9.3	ms
Thermal resistance (Between junction and case)		R <sub>th(j-c)</sub>	-	-	4.5	-	°C/W	
				-	3.3	-		
Thermal resistance (Between junction and ambience)		R <sub>th(j-a)</sub>	-	-	40	-	°C/W	

\*6 dI<sub>T</sub>/dt = -4.0A/ms (S202SE1/S202SE2)dI<sub>T</sub>/dt = -8.0A/ms (S216SE1/S216SE2)

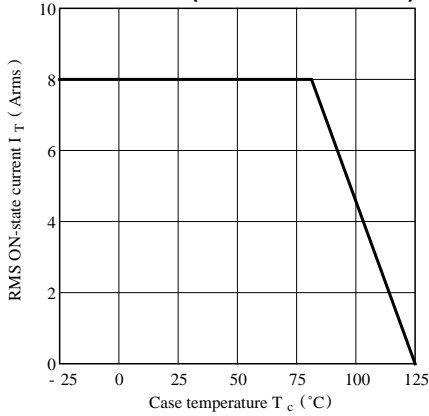
**Fig.1-a RMS ON-state Current vs. Ambient Temperature**  
(S202SE1/S202SE2)



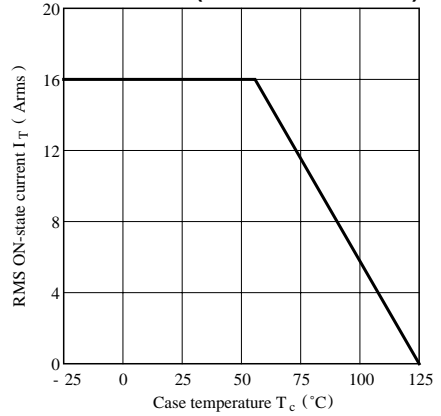
**Fig.1-b RMS ON-state Current vs. Ambient Temperature**  
(S216SE1/S216SE2)



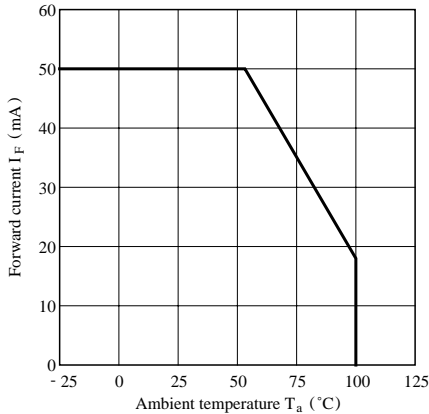
**Fig.2-a RMS ON-state Current vs. Case Temperature (S202SE1/ S202SE2)**



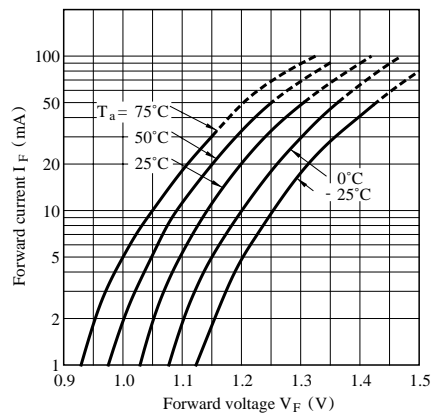
**Fig.2-b RMS ON-state Current vs. Case Temperature (S216SE1/ S216SE2)**



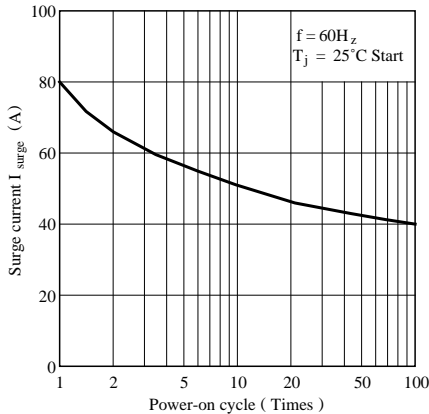
**Fig. 3 Forward Current vs. Ambient Temperature**



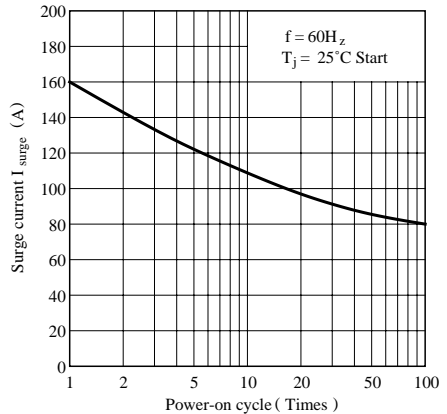
**Fig. 4 Forward Current vs. Forward Voltage**



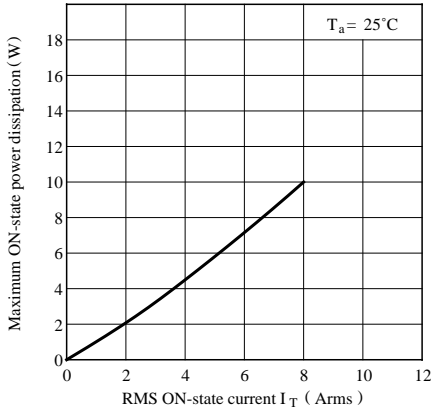
**Fig.5-a Surge Current vs. Power-ON Cycle (S202SE1/ S202SE2)**



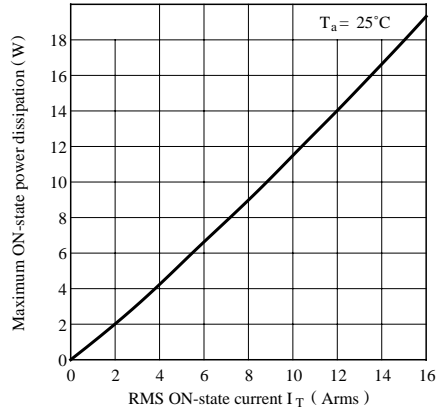
**Fig.5-b Surge Current vs. Power-ON Cycle (S216SE1/ S216SE2)**



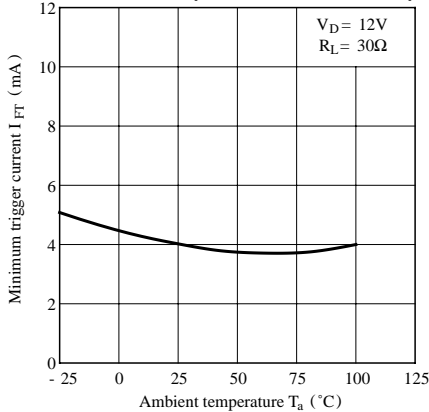
**Fig.6-a Maximum ON-State Power Dissipation vs. RMS ON-State Current (S202SE1 / S202SE2)**



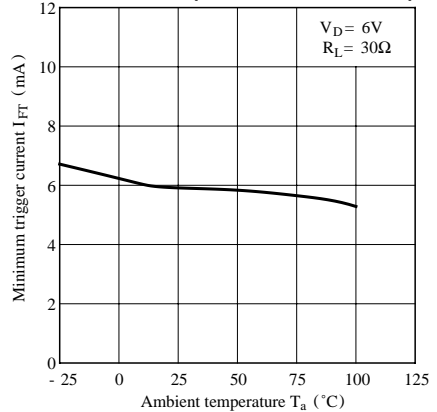
**Fig.6-b Maximum ON-State Power Dissipation vs. RMS ON-State Current (S216SE1 / S216SE2)**



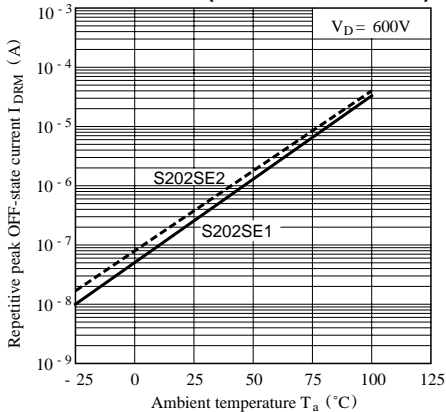
**Fig.7-a Minimum Trigger Current vs. Ambient Temperature (Typical Value) (S202SE1 / S216SE1)**



**Fig.7-b Minimum Trigger Current vs. Ambient Temperature (Typical Value) (S202SE2 / S216SE2)**



**Fig.8-a Repetitive Peak OFF-state Current vs. Ambient Temperature (Typical Value) (S202SE1 / S202SE2)**



**Fig.8-b Repetitive Peak OFF-state Current vs. Ambient Temperature (Typical Value) (S216SE1 / S216SE2)**

