PR29MF11NSZ Series/ PR39MF11NSZ Series

8-Pin DIP Type SSR for Low Power Control

■ Features

1. Compact 8-pin dual-in-line package type
2. RMS ON-state current $I_{T\ (rms)}$:0.9A
3. Built-in zero-cross circuit
   (PR29MF21NSZ/PR39MF21NSZ)
4. High repetitive peak OFF-state voltage
   PR29MF11NSZ/PR29MF21NSZ V_{DRM}:MIN. 400V
   PR39MF11NSZ/PR39MF21NSZ V_{DRM}:MIN. 600V
5. Isolation voltage between input and output
   ($V_{iso\ (rms)}$:4kV)
6. Recognized by UL (No. E94758)
7. Recognized by CSA (No. LR63705)
8. VDE (VDE0884) approved type
   (PR39MF11YSZ, PR39MF21YSZ) is also available as an option

■ Applications

1. Various types of home appliances

■ Absolute Maximum Ratings

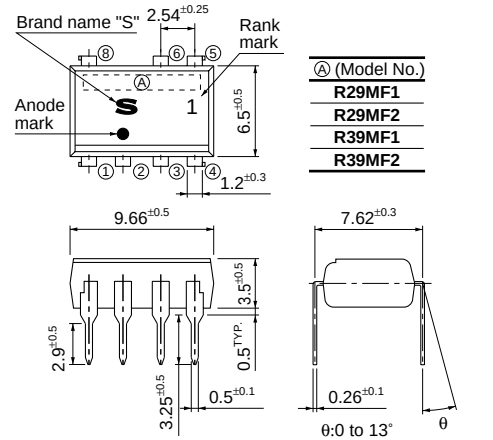
(T_a=25°C)

	Parameter		Symbol	Rating	Unit
Input	*1 Forward current		I_F	50	mA
	Reverse voltage		V_R	6	V
Output	*1 RMS ON-state current		$I_{T\ (rms)}$	0.9	A
	Peak one cycle surge current		I_{surge}	9 (50Hz sine wave)	A
	Repetitive peak OFF-state voltage	PR29MF11NSZ	V_{DRM}	400	V
		PR29MF21NSZ			
		PR39MF11NSZ		600	
		PR39MF21NSZ			
*2 Isolation voltage			$V_{iso\ (rms)}$	4.0	kV
	Operating temperature	PR29MF11NSZ	T_{opr}	–25 to +85	°C
		PR39MF11NSZ			
		PR29MF21NSZ		–30 to +85	
		PR39MF21NSZ			
	Storage temperature		T_{stg}	–40 to +125	°C
	Soldering temperature		T_{sol}	260 (For 10s)	°C

*1 The derating factors of absolute maximum ratings due to ambient temperature are shown in Fig.1, 2, 3, 4
*2 40 to 60%RH, AC for 1 minute, f=60Hz

■ Outline Dimensions

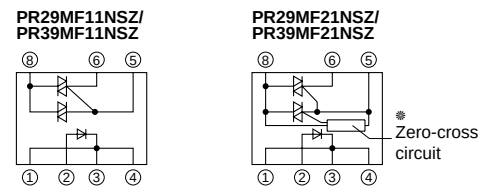
(Unit : mm)



Ⓐ (Model No.)
R29MF1
R29MF2
R39MF1
R39MF2

❋Zero-cross circuit for **(PR29MF21NSZ/PR39MF21NSZ)**

Internal connection Diagram



① Cathode
② Anode
③ Cathode
④ Cathode
⑤ G
⑥ T_1
⑧ T_2

Terminal ①, ③ and ④ are common ones of cathode.To radiate the heat, solder all of the lead pins on the pattern of PWB.

■ Model Line-up

	For 100V line	For 200V line
No built-in zero-cross circuit	**PR29MF11NSZ**	**PR39MF11NSZ** ∗**(PR39MF11YSZ)**
Built-in zero-cross circuit	**PR29MF21NSZ**	**PR39MF21NSZ** ∗**(PR39MF21YSZ)**

∗ VDE (VDE0884) approved type

■ Electrical Characteristics

(T_a=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	μA
Output	Repetitive peak OFF-state current		I_{DRM}	V_D=V_{DRM}	–	–	100	μA
	ON-state voltage		V_T	I_T=0.9A	–	–	3.0	V
	Holding current		I_H	V_D=6V	–	–	25	mA
	Critical rate of rise of OFF-state voltage		dV/dt	V_D=1/$\sqrt{2}$ • V_{DRM}	100	–	–	V/μs
	Zero-cross voltage	**PR29MF21NSZ**	V_{OX}	I_F=15mA, R load	–	–	35	V
		PR39MF21NSZ						
Transfer characteristics	Minimum trigger current		I_{FT}	V_D=6V, R_L=100Ω	–	–	10	mA
	Isolation resistance		R_{ISO}	DC=500V, 40 to 60%RH	5×10^{10}	10^{11}	–	Ω
	Turn-on time	PR29MF11NSZ/PR39MF11NSZ	t_{on}	V_D=6V, R_L=100Ω, I_F=20mA	–	–	100	μs
		PR29MF21NSZ/PR39MF21NSZ					50	

Fig.1 RMS ON-state Current vs. Ambient Temperature (PR29MF11NSZ/PR39MF11NSZ)

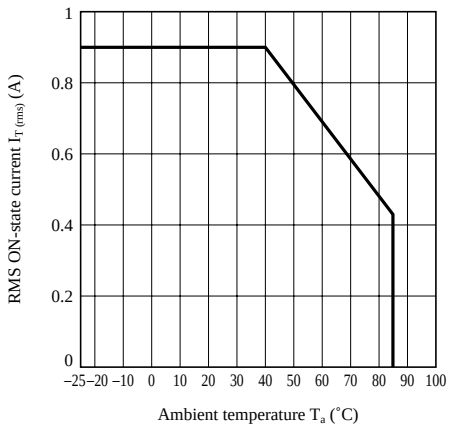


Fig.2 RMS ON-state Current vs. Ambient Temperature (PR29MF21NSZ/PR39MF21NSZ)

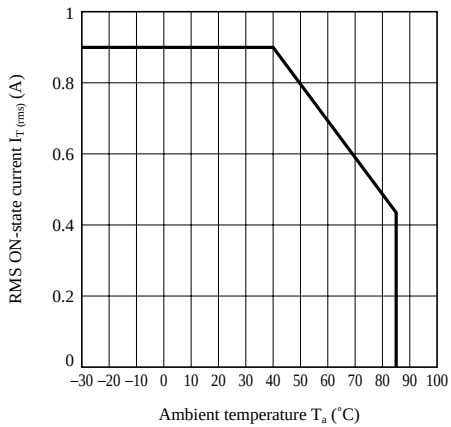


Fig.3 Forward Current vs. Ambient Temperature (PR29MF11NSZ/PR39MF11NSZ)

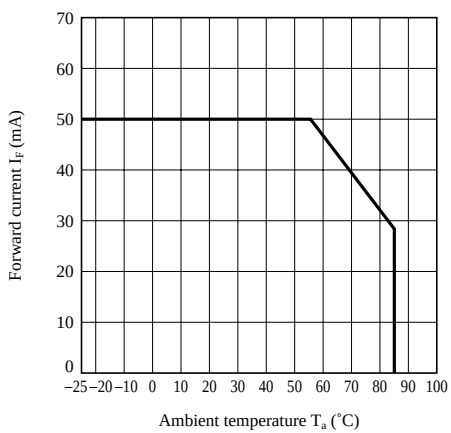


Fig.4 Forward Current vs. Ambient Temperature (PR29MF21NSZ/PR39MF21NSZ)

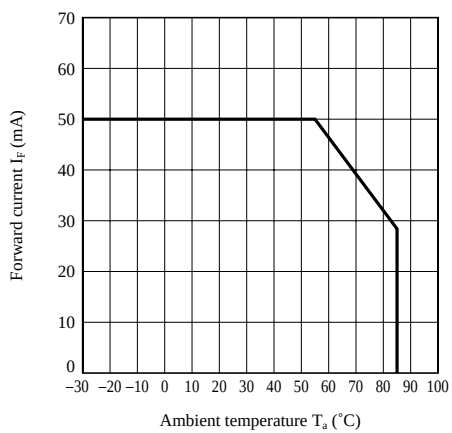


Fig.5 Forward Current vs. Forward Voltage

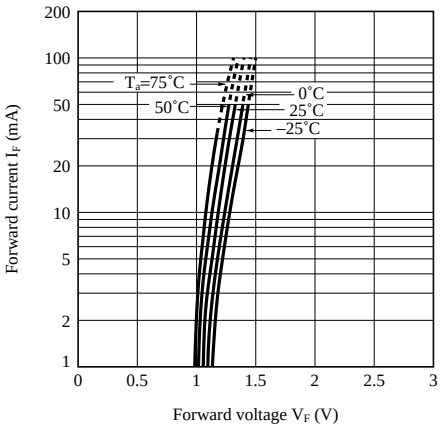


Fig.6 Minimum Trigger Current vs. Ambient Temperature

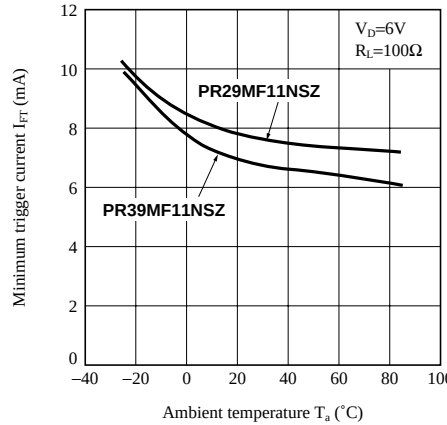


Fig.7 Minimum Trigger Current vs. Ambient Temperature (PR29MF21NSZ/PR39MF21NSZ)

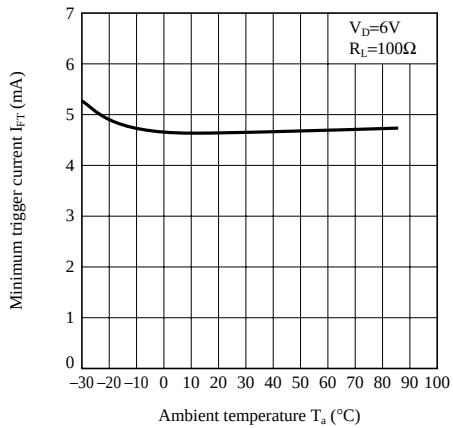


Fig.8 ON-state Voltage vs. Ambient Temperature (PR29MF11NSZ/PR39MF11NSZ)

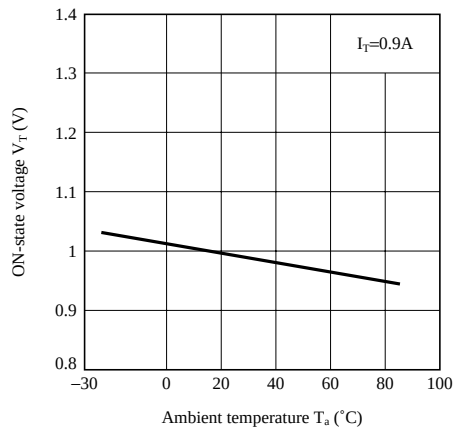


Fig.9 ON-state Voltage vs. Ambient Temperature (PR29MF21NSZ/PR39MF21NSZ)

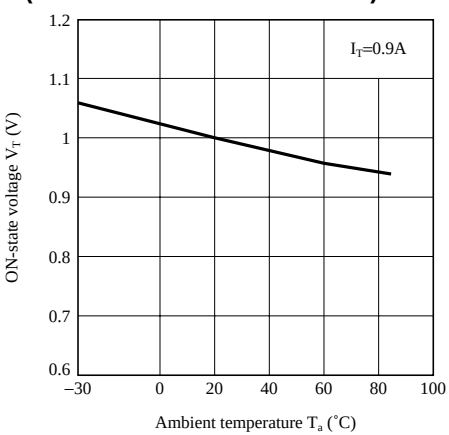


Fig.10 Relative Holding Current vs. Ambient Temprature (PR29MF11NSZ/PR39MF11NSZ)

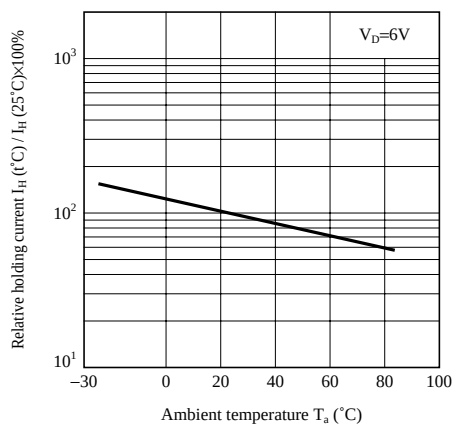


Fig.11 Relative Holding Current vs. Ambient Temperature (PR29MF21NSZ/PR39MF21NSZ)

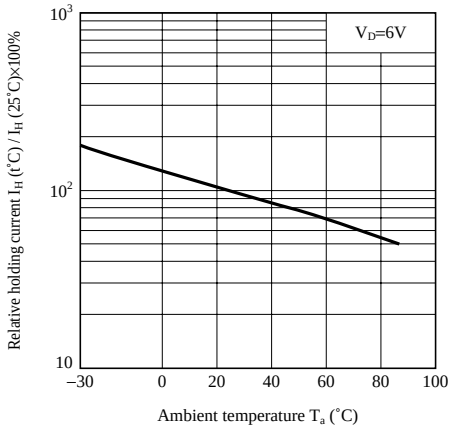


Fig.12 Zero-cross Voltage vs. Ambient Temperature (PR29MF21NSZ/PR39MF21NSZ)

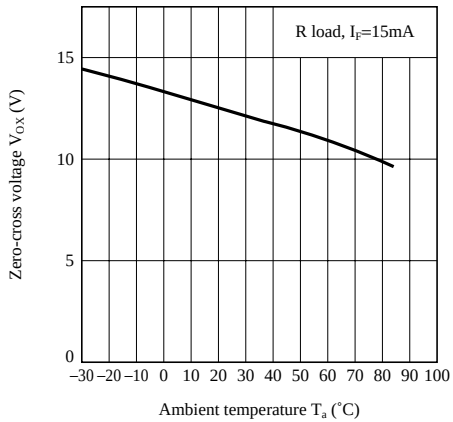


Fig.13 ON-state Current vs. ON-state Voltage (PR29MF11NSZ/PR39MF11NSZ)

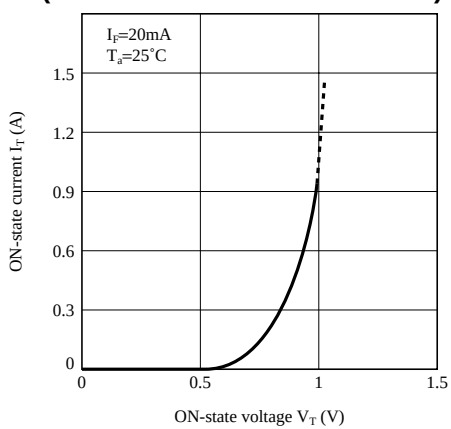


Fig.14 ON-state Current vs. ON-state Voltage (PR29MF21NSZ/PR39MF21NSZ)

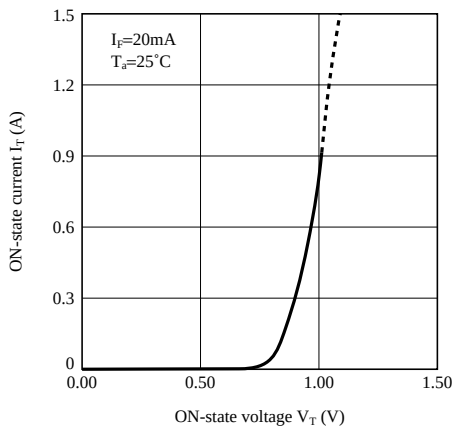


Fig.15 Turn-on Time vs. Forward Current (PR29MF11NSZ)

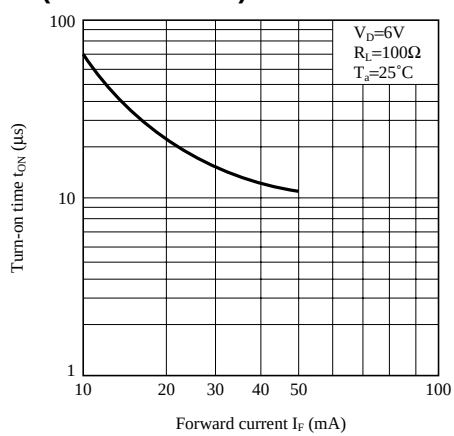


Fig.16 Turn-on Time vs. Forward Current (PR39MF11NSZ)

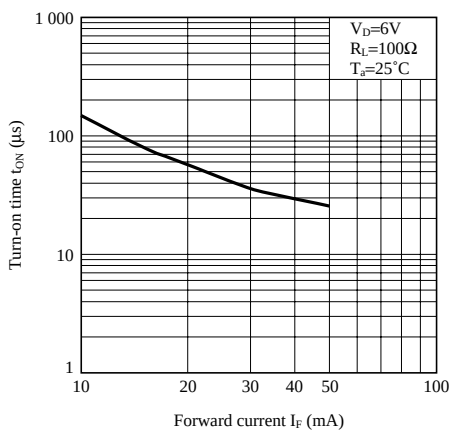
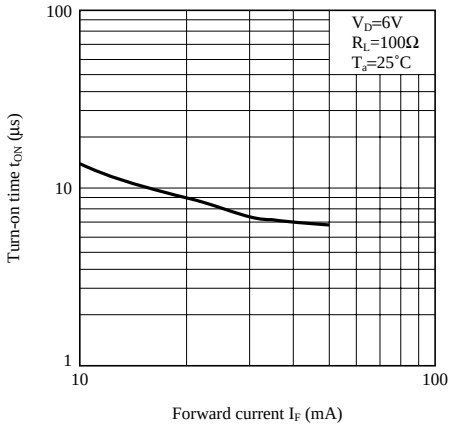


Fig.17 Turn-on Time vs. Forward Current (PR29MF21NSZ/PR39MF21NSZ)



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  --- Telecommunication equipment [terminal]
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  --- Industrial control
  --- Audio visual equipment
  --- Consumer electronics

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