

## PANEL MOUNT SOLID STATE RELAY ESR50/51/52/53 SERIES

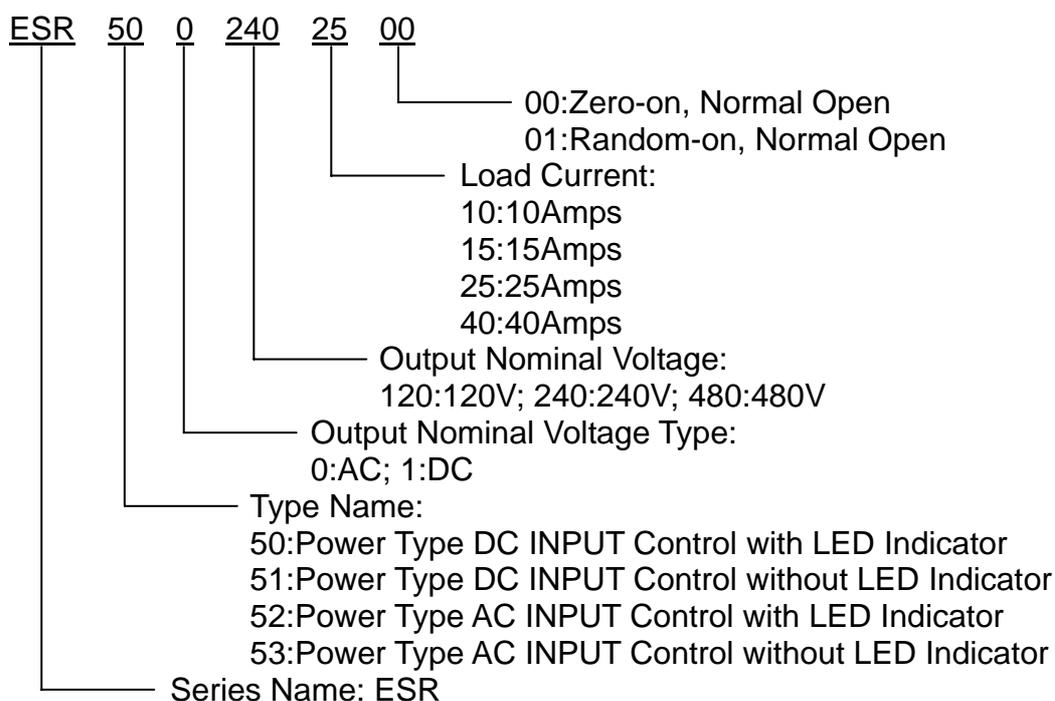


### FEATURES

- Optically Isolated.
- Input LED Indicator.
- High dv/dt and High Blocking Voltage.
- Low Input Power Consumption, TTL and CMOS Compatible.
- Zero Voltage Turn-on, Zero Current Turn-off (minizes EMI/RFI).
- High Surge Rating Allows Lamp and Motor Load Switching.
- Output Snubber Circuit Protection.



### PART NUMBERING SYSTEM



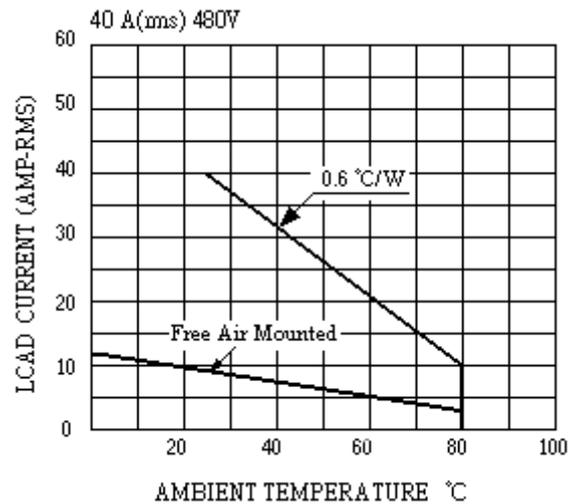
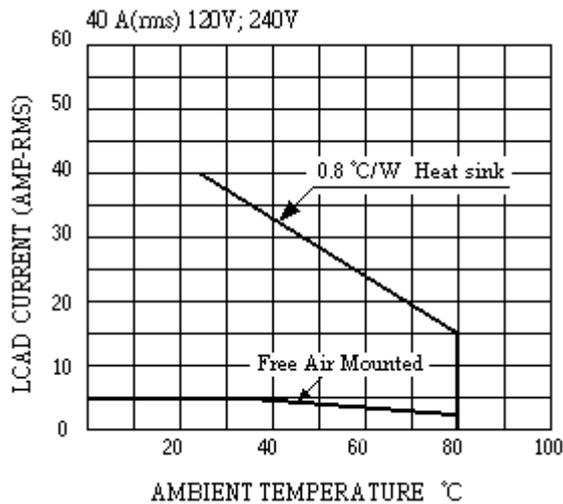
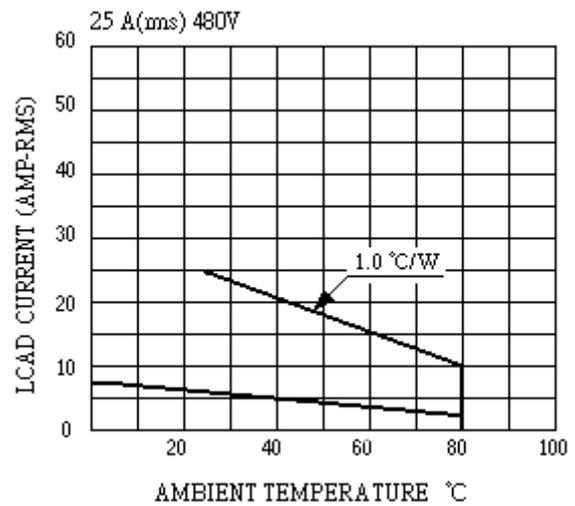
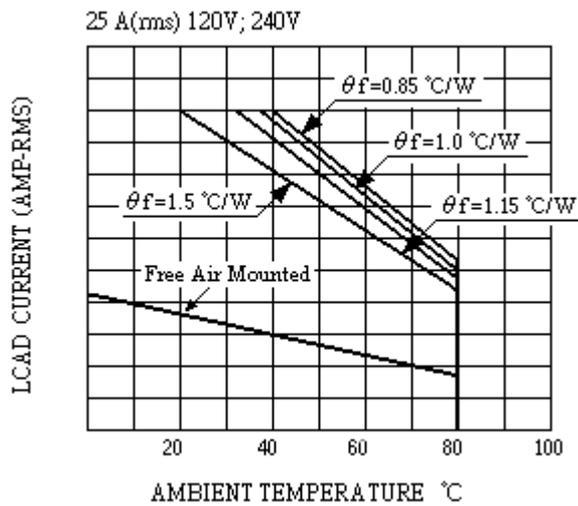
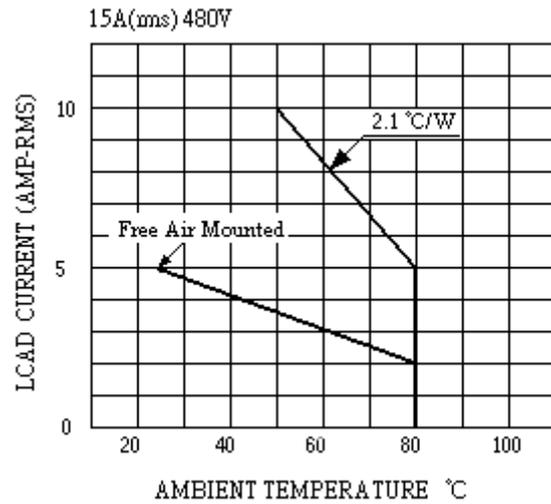
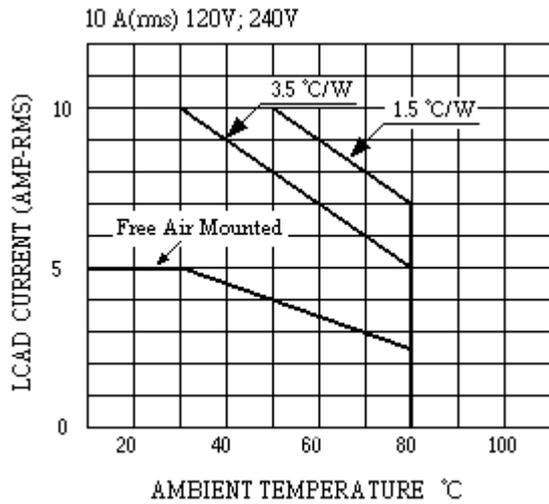
### OPTIONS:

Protective cover: 436-41100



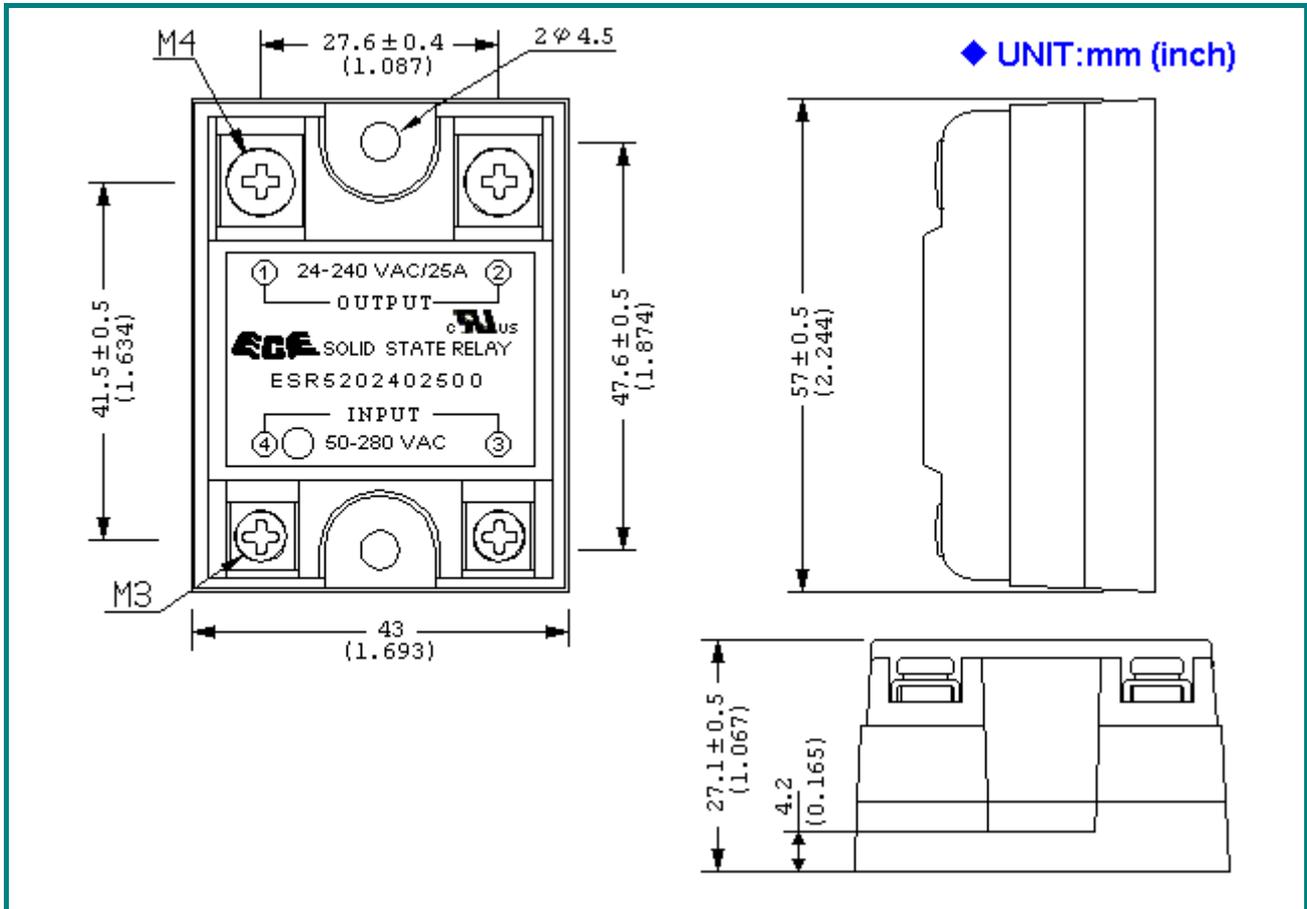


**TEMPERAURE DERATING CHART**





## ■ DIMENSIONS



## ■ SPECIFICATIONS

### 1.ESR500/ESR510 SERIES (DC INPUT CONTROL)

- MAX. LOAD CURRENT: 10A(rms) 120V;240V
- MAX. LOAD CURRENT: 25A(rms) 120V;240V
- MAX. LOAD CURRENT: 40A(rms) 120V;240V
- MAX. LOAD CURRENT: 15A(rms) 480V
- MAX. LOAD CURRENT: 25A(rms) 480V
- MAX. LOAD CURRENT: 40A(rms) 480V

### 2.ESR520/ESR530 SERIES (AC INPUT CONTROL)

- MAX. LOAD CURRENT: 10A(rms) 120V;240V
- MAX. LOAD CURRENT: 25A(rms) 120V;240V
- MAX. LOAD CURRENT: 40A(rms) 120V;240V

## ■ SPECIFICATIONS ..... (DC INPUT CONTROL)

◆ MAX. LOAD CURRENT: 10A(rms) 120V;240V

DESCRIPTION	TYPES	ESR500				ESR510			
		1201000	2401000	1201001	2401001	1201000	2401000	1201001	2401001
<b>■ INPUT CIRCUIT</b>									
LED Indicate	YES				NO				
Control Voltage Range	4-32 VDC				3-32 VDC				
Control Current	15mA Max.				15mA Max.				
Min. Turn-off Voltage	1.5 VDC				1 VDC				
Input Impedance	2.0K $\Omega$ Min.				2.0K $\Omega$ Min.				
<b>■ OUTPUT CIRCUIT</b>									
Max. Load Current	10A (rms)				10A (rms)				
Nominal load Voltage (VAC)	120	240	120	240	120	240	120	240	
Load Voltage Range (VAC)	24-140	24-280	24-140	24-280	24-140	24-280	24-140	24-280	
Non-Repetitive Max. Peak Voltage (VAC)	400	600	400	600	400	600	400	600	
Non-Repetitive Max. Peak Current	125A								
Max. Off-state Leakage Current	1mA								
Max. On-state Voltage Drop	1.6V								
Min. Load Current	50mA								
Max. Off-state Slew Rated (dv/dt)	250V/ $\mu$ s								
Operating Frequency Range	47Hz ~ 63Hz								
<b>■ GENERAL CHARACTERISTICS</b>									
Zero-on or Random-on	Z		R		Z		R		
Max. Turn -on Time (60Hz)	8.3ms		100 $\mu$ s		8.3ms		100 $\mu$ s		
Max. Turn-off Time (60Hz)	8.3ms								
Insulation Resistance	DC 500V 10 <sup>9</sup> $\Omega$ Min. (Between Input & Output, Input / Output & Case)								
Dielectric Strength	3.5K VAC(Between Input & Output)								
Capacitance (Input to Output)	15pF Max. (Between Input & Output)								
Operating Temperature	-20 $^{\circ}$ C ~ +80 $^{\circ}$ C								
Storage Temperature	-40 $^{\circ}$ C ~ +100 $^{\circ}$ C								
Heatsink	3.5 $^{\circ}$ C/W(Max. Load Current)								

## ■ SPECIFICATIONS ..... (DC INPUT CONTROL)

◆ MAX. LOAD CURRENT: 25A(rms) 120V;240V

DESCRIPTION	TYPES	ESR500				ESR510			
		1202500	2402500	1202501	2402501	1202500	2402500	1202501	2402501
<b>■ INPUT CIRCUIT</b>									
LED Indicate	YES				NO				
Control Voltage Range	4-32 VDC				3-32 VDC				
Control Current	15mA Max.				15mA Max.				
Min. Turn-off Voltage	1.5 VDC				1 VDC				
Input Impedance	2.0K $\Omega$ Min.				2.0K $\Omega$ Min.				
<b>■ OUTPUT CIRCUIT</b>									
Max. Load Current	25A (rms)				25A (rms)				
Nominal load Voltage (VAC)	120	240	120	240	120	240	120	240	
Load Voltage Range (VAC)	24-140	24-280	24-140	24-280	24-140	24-280	24-140	24-280	
Non-Repetitive Max. Peak Voltage (VAC)	400	600	400	600	400	600	400	600	
Non-Repetitive Max. Peak Current	260A								
Max. Off-state Leakage Current	7mA								
Max. On-state Voltage Drop	1.6V								
Min. Load Current	100mA								
Max. Off-state Slew Rated (dv/dt)	250V/ $\mu$ s								
Operating Frequency Range	47Hz ~ 63Hz								
<b>■ GENERAL CHARACTERISTICS</b>									
Zero-on or Random-on	Z		R		Z		R		
Max. Turn -on Time (60Hz)	8.3ms		100 $\mu$ s		8.3ms		100 $\mu$ s		
Max. Turn-off Time (60Hz)	8.3ms								
Insulation Resistance	DC 500V 10 <sup>9</sup> $\Omega$ Min. (Between Input & Output, Input / Output & Case)								
Dielectric Strength	3.5K VAC(Between Input & Output)								
Capacitance (Input to Output)	15pF Max. (Between Input & Output)								
Operating Temperature	-20 $^{\circ}$ C ~ +80 $^{\circ}$ C								
Storage Temperature	-40 $^{\circ}$ C ~ +100 $^{\circ}$ C								
Heatsink	1.5 $^{\circ}$ C/W(Max. Load Current)								

## ■ SPECIFICATIONS ..... (DC INPUT CONTROL)

◆ MAX. LOAD CURRENT: 40A(rms) 120V;240V

DESCRIPTION	TYPES	ESR500				ESR510			
		1204000	2404000	1204001	2404001	1204000	2404000	1204001	2404001
<b>■ INPUT CIRCUIT</b>									
LED Indicate	YES				NO				
Control Voltage Range	4-32 VDC				3-32 VDC				
Control Current	15mA Max.				15mA Max.				
Min. Turn-off Voltage	1.5 VDC				1 VDC				
Input Impedance	2.0K $\Omega$ Min.				2.0K $\Omega$ Min.				
<b>■ OUTPUT CIRCUIT</b>									
Max. Load Current	40A (rms)				40A (rms)				
Nominal load Voltage (VAC)	120	240	120	240	120	240	120	240	
Load Voltage Range (VAC)	24-140	24-280	24-140	24-280	24-140	24-280	24-140	24-280	
Non-Repetitive Max. Peak Voltage (VAC)	400	600	400	600	400	600	400	600	
Non-Repetitive Max. Peak Current	315A								
Max. Off-state Leakage Current	7mA								
Max. On-state Voltage Drop	1.8V								
Min. Load Current	100mA								
Max. Off-state Slew Rated (dv/dt)	250V/ $\mu$ s								
Operating Frequency Range	47Hz ~ 63Hz								
<b>■ GENERAL CHARACTERISTICS</b>									
Zero-on or Random-on	Z		R		Z		R		
Max. Turn -on Time (60Hz)	8.3ms		100 $\mu$ s		8.3ms		100 $\mu$ s		
Max. Turn-off Time (60Hz)	8.3ms								
Insulation Resistance	DC 500V 10 <sup>9</sup> $\Omega$ Min. (Between Input & Output, Input / Output & Case)								
Dielectric Strength	3.5K VAC(Between Input & Output)								
Capacitance (Input to Output)	15pF Max. (Between Input & Output)								
Operating Temperature	-20 $^{\circ}$ C ~ +75 $^{\circ}$ C								
Storage Temperature	-40 $^{\circ}$ C ~ +100 $^{\circ}$ C								
Heatsink	0.8 $^{\circ}$ C/W(Max. Load Current)								

## ■ SPECIFICATIONS ..... (DC INPUT CONTROL)

◆ MAX. LOAD CURRENT: 15A(rms) 480V

DESCRIPTION	TYPES	ESR500		ESR510	
		4801500	4801501	4801500	4801501
<b>■ INPUT CIRCUIT</b>					
LED Indicate		YES		NO	
Control Voltage Range		4-32 VDC		4-32 VDC	
Control Current		120mA Max.		120mA Max.	
Min. Turn-off Voltage		1.5 VDC		1.5 VDC	
Input Impedance		270Ω Min.		270Ω Min.	
<b>■ OUTPUT CIRCUIT</b>					
Max. Load Current		15A (rms)		15A (rms)	
Nominal load Voltage (VAC)		440		440	
Load Voltage Range (VAC)		48-480		48-480	
Non-Repetitive Max. Peak Voltage (VAC)		800		800	
Non-Repetitive Max. Peak Current		200A			
Max. Off-state Leakage Current		2mA			
Max. On-state Voltage Drop		1.6V			
Min. Load Current		70mA			
Max. Off-state Slew Rated (dv/dt)		700V/μs			
Operating Frequency Range		47Hz ~ 63Hz			
<b>■ GENERAL CHARACTERISTICS</b>					
Zero-on or Random-on		Z	R	Z	R
Max. Turn -on Time (60Hz)		8.3ms	100 μs	8.3ms	100 μs
Max. Turn-off Time (60Hz)		8.3ms			
Insulation Resistance		DC 500V 10 <sup>9</sup> Ω Min. (Between Input & Output, Input / Output & Case)			
Dielectric Strength		3.5K VAC(Between Input & Output)			
Capacitance (Input to Output)		15pF Max. (Between Input & Output)			
Operating Temperature		-20°C ~ +75°C			
Storage Temperature		-40°C ~ +100°C			
Heatsink		2.1°C/W(Max. Load Current)			

## ■ SPECIFICATIONS ..... (DC INPUT CONTROL)

◆ MAX. LOAD CURRENT: 25A(rms) 480V

DESCRIPTION	TYPES	ESR500		ESR510	
		4802500	4802501	4802500	4802501
<b>■ INPUT CIRCUIT</b>					
LED Indicate		YES		NO	
Control Voltage Range		4-32 VDC		4-32 VDC	
Control Current		120mA Max.		120mA Max.	
Min. Turn-off Voltage		1.5 VDC		1.5 VDC	
Input Impedance		270Ω Min.		270Ω Min.	
<b>■ OUTPUT CIRCUIT</b>					
Max. Load Current		25A (rms)		25A (rms)	
Nominal load Voltage (VAC)		440		440	
Load Voltage Range (VAC)		48-480		48-480	
Non-Repetitive Max. Peak Voltage (VAC)		800		800	
Non-Repetitive Max. Peak Current		250A			
Max. Off-state Leakage Current		1mA			
Max. On-state Voltage Drop		1.6V			
Min. Load Current		120mA			
Max. Off-state Slew Rated (dv/dt)		700V/μs			
Operating Frequency Range		47Hz ~ 63Hz			
<b>■ GENERAL CHARACTERISTICS</b>					
Zero-on or Random-on		Z	R	Z	R
Max. Turn -on Time (60Hz)		8.3ms	100 μs	8.3ms	100 μs
Max. Turn-off Time (60Hz)		8.3ms			
Insulation Resistance		DC 500V 10 <sup>9</sup> Ω Min. (Between Input & Output, Input / Output & Case)			
Dielectric Strength		3.5K VAC(Between Input & Output)			
Capacitance (Input to Output)		15pF Max. (Between Input & Output)			
Operating Temperature		-20°C ~ +75°C			
Storage Temperature		-40°C ~ +100°C			
Heatsink		1.0°C/W(Max. Load Current)			

## ■ SPECIFICATIONS ..... (DC INPUT CONTROL)

◆ MAX. LOAD CURRENT: 40A(rms) 480V

DESCRIPTION	TYPES	ESR500		ESR510	
		4804000	4804001	4804000	4804001
<b>■ INPUT CIRCUIT</b>					
LED Indicate		YES		NO	
Control Voltage Range		4-32 VDC		4-32 VDC	
Control Current		120mA Max.		120mA Max.	
Min. Turn-off Voltage		1.5 VDC		1.5 VDC	
Input Impedance		270Ω Min.		270Ω Min.	
<b>■ OUTPUT CIRCUIT</b>					
Max. Load Current		40A (rms)		40A (rms)	
Nominal load Voltage (VAC)		440		440	
Load Voltage Range (VAC)		48-480		48-480	
Non-Repetitive Max. Peak Voltage (VAC)		800		800	
Non-Repetitive Max. Peak Current		400A			
Max. Off-state Leakage Current		1mA			
Max. On-state Voltage Drop		1.8V			
Min. Load Current		120mA			
Max. Off-state Slew Rate (dv/dt)		900V/μs			
Operating Frequency Range		47Hz ~ 63Hz			
<b>■ GENERAL CHARACTERISTICS</b>					
Zero-on or Random-on		Z	R	Z	R
Max. Turn -on Time (60Hz)		8.3ms	100 μs	8.3ms	100 μs
Max. Turn-off Time (60Hz)		8.3ms			
Insulation Resistance		DC 500V 10 <sup>9</sup> Ω Min. (Between Input & Output, Input / Output & Case)			
Dielectric Strength		3.5K VAC(Between Input & Output)			
Capacitance (Input to Output)		15pF Max. (Between Input & Output)			
Operating Temperature		-20°C ~ +75°C			
Storage Temperature		-40°C ~ +100°C			
Heatsink		0.6°C/W(Max. Load Current)			

## ■ SPECIFICATIONS ..... (AC INPUT CONTROL)

◆ MAX. LOAD CURRENT: 10A(rms) 120V; 240V

DESCRIPTION	TYPES	ESR520		ESR530	
		1201000	2401000	1201000	2401000
<b>■ INPUT CIRCUIT</b>					
LED Indicate		YES		NO	
Control Voltage Range		50-280 VAC		50-280 VAC	
Control Current		15mA Max.		15mA Max.	
Min. Turn-off Voltage		40 VAC		35 VAC	
Input Impedance		106K $\Omega$ Min.		106K $\Omega$ Min.	
<b>■ OUTPUT CIRCUIT</b>					
Max. Load Current		10A (rms)		10A (rms)	
Nominal load Voltage (VAC)		120	240	120	240
Load Voltage Range (VAC)		24-140	24-280	24-140	24-280
Non-Repetitive Max. Peak Voltage (VAC)		400	600	400	600
Non-Repetitive Max. Peak Current		125A			
Max. Off-state Leakage Current		1mA			
Max. On-state Voltage Drop		1.6V			
Min. Load Current		50mA			
Max. Off-state Slew Rated (dv/dt)		250V/ $\mu$ s			
Operating Frequency Range		47Hz ~ 63Hz			
<b>■ GENERAL CHARACTERISTICS</b>					
Zero-on or Random-on		Z		Z	
Max. Turn -on Time (60Hz)		10ms		10ms	
Max. Turn-off Time (60Hz)		20ms			
Insulation Resistance		DC 500V 10 <sup>9</sup> $\Omega$ Min. (Between Input & Output, Input / Output & Case)			
Dielectric Strength		3.5K VAC(Between Input & Output)			
Capacitance (Input to Output)		15pF Max. (Between Input & Output)			
Operating Temperature		-20 $^{\circ}$ C ~ +80 $^{\circ}$ C			
Storage Temperature		-40 $^{\circ}$ C ~ +100 $^{\circ}$ C			
Heatsink		3.5 $^{\circ}$ C/W(Max. Load Current)			

## ■ SPECIFICATIONS ..... (AC INPUT CONTROL)

◆ MAX. LOAD CURRENT: 25A(rms) 120V; 240V

DESCRIPTION	TYPES	ESR520		ESR530	
		1202500	2402500	1202500	2402500
<b>■ INPUT CIRCUIT</b>					
LED Indicate		YES		NO	
Control Voltage Range		50-280 VAC		50-280 VAC	
Control Current		15mA Max.		15mA Max.	
Min. Turn-off Voltage		40 VAC		35 VAC	
Input Impedance		106K $\Omega$ Min.		106K $\Omega$ Min.	
<b>■ OUTPUT CIRCUIT</b>					
Max. Load Current		25A (rms)		25A (rms)	
Nominal load Voltage (VAC)		120	240	120	240
Load Voltage Range (VAC)		24-140	24-280	24-140	24-280
Non-Repetitive Max. Peak Voltage (VAC)		400	600	400	600
Non-Repetitive Max. Peak Current		260A			
Max. Off-state Leakage Current		7mA			
Max. On-state Voltage Drop		1.6V			
Min. Load Current		100mA			
Max. Off-state Slew Rated (dv/dt)		250V/ $\mu$ s			
Operating Frequency Range		47Hz ~ 63Hz			
<b>■ GENERAL CHARACTERISTICS</b>					
Zero-on or Random-on		Z		Z	
Max. Turn -on Time (60Hz)		10ms		10ms	
Max. Turn-off Time (60Hz)		20ms			
Insulation Resistance		DC 500V 10 <sup>9</sup> $\Omega$ Min. (Between Input & Output, Input / Output & Case)			
Dielectric Strength		3.5K VAC(Between Input & Output)			
Capacitance (Input to Output)		15pF Max. (Between Input & Output)			
Operating Temperature		-20 $^{\circ}$ C ~ +80 $^{\circ}$ C			
Storage Temperature		-40 $^{\circ}$ C ~ +100 $^{\circ}$ C			
Heatsink		1.5 $^{\circ}$ C/W(Max. Load Current)			

■ **SPECIFICATIONS ..... (AC INPUT CONTROL)**

◆ MAX. LOAD CURRENT: 40A(rms) 120V; 240V

DESCRIPTION	TYPES	ESR520		ESR530	
		1204000	2404000	1204000	2404000
<b>■ INPUT CIRCUIT</b>					
LED Indicate		YES		NO	
Control Voltage Range		50-280 VAC		50-280 VAC	
Control Current		15mA Max.		15mA Max.	
Min. Turn-off Voltage		40 VAC		35 VAC	
Input Impedance		106K $\Omega$ Min.		106K $\Omega$ Min.	
<b>■ OUTPUT CIRCUIT</b>					
Max. Load Current		40A (rms)		40A (rms)	
Nominal load Voltage (VAC)		120	240	120	240
Load Voltage Range (VAC)		24-140	24-280	24-140	24-280
Non-Repetitive Max. Peak Voltage (VAC)		400	600	400	600
Non-Repetitive Max. Peak Current		315A			
Max. Off-state Leakage Current		7mA			
Max. On-state Voltage Drop		1.8V			
Min. Load Current		100mA			
Max. Off-state Slew Rated (dv/dt)		250 V/ $\mu$ s			
Operating Frequency Range		47Hz ~ 63Hz			
<b>■ GENERAL CHARACTERISTICS</b>					
Zero-on or Random-on		Z		Z	
Max. Turn -on Time (60Hz)		10ms		10ms	
Max. Turn-off Time (60Hz)		20ms			
Insulation Resistance		DC 500V 10 <sup>9</sup> $\Omega$ Min. (Between Input & Output, Input / Output & Case)			
Dielectric Strength		3.5K VAC(Between Input & Output)			
Capacitance (Input to Output)		15pF Max. (Between Input & Output)			
Operating Temperature		-20 $^{\circ}$ C ~ +75 $^{\circ}$ C			
Storage Temperature		-40 $^{\circ}$ C ~ +100 $^{\circ}$ C			
Heatsink		0.8 $^{\circ}$ C/W(Max. Load Current)			