



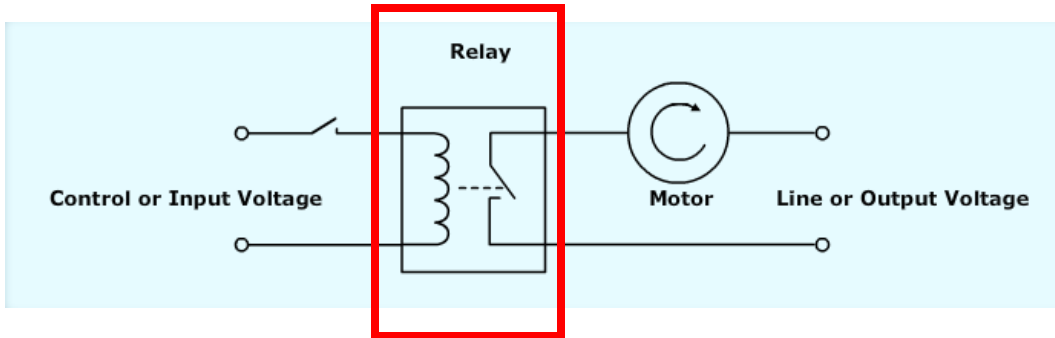
# Solid State Relays - Introduction



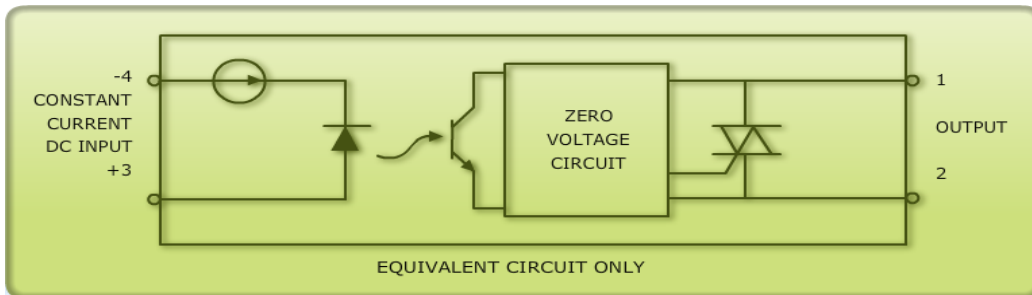
EVERY CONNECTION COUNTS



# Relays and Solid State Technology

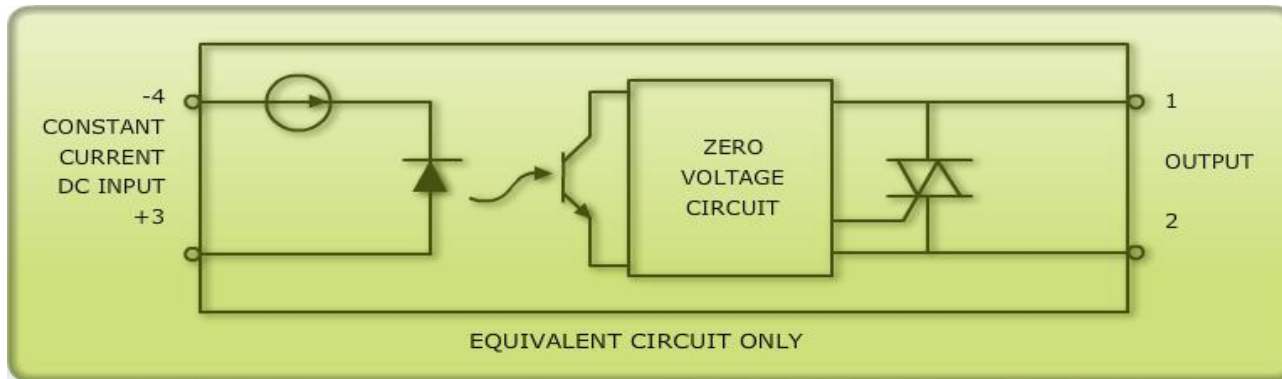


**What is Relay?**  
Relay is remote switching device, it performs switching functions electrically. It has two isolated sections, Control and load circuits.



**What is Solid State Relay?**  
Solid State relay is a type of relay which uses solid state devices (semiconductor) to perform switching functions.

# Solid State Switching



## Input Control

- Current Sensing device
- Photo Output
- AC, DC and Universal – External Input

## Switching Mechanism

- Photo-detector
  - Transistor
  - Diode
  - SCR
  - TRIAC

## Output Device

- Output Devices
  - TRIACs
  - Back-to-Back SCRs
  - MOSFETs
  - Power Transistors
- AC or DC
- Current: 1.5 A to 125 A
- Voltage : 28V to 660V

# Key Diff. between EMR and SSR

Parameter	SSR	EMR
Electrical Life	●	○
Input Control Power	●	◐
On Resistance	○	●
Acoustic Noise	●	○
Leakage Current	○	●
Package Dimensions	◐	●
Switching Time	●	◐
Sensitivity to Corrosion and Oxidation	●	○
Sensitivity to Shock and Vibration	●	○
Output Configurations	○	●
Cost/ Pole	○	●



Good



Better



Best

# SSR Portfolio



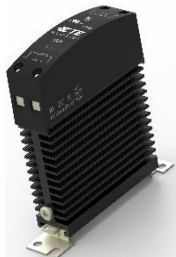
SSR Series – 1 NO, 125A, 600V AC output  
SSRD Series – 2 NO, 40A, 280V AC output  
SSRT Series – 1 NO, 25A, 280V AC output  
SSRDC Series – 1 NO, 40A, 200V DC output  
SSRMP Series – 1NO, 25A, 480V AC output – **NPI**



IAC-IACM & IDC-IDCM – Input Modules  
ODC-ODCM & OAC-OACM – Output Modules  
2IO – Mounting boards for IO Modules



SSRA Series – PCB Mount, 2A  
SSRC Series – PCB Mount, 5A  
SSRF Series – PCB Mount, 25A with integrated Heat Sink



SSRK Series – Din Rail Mount, up to 30A  
SSRM Series – Din Rail Mount, up to 65A

# SSRMP - MINI PUCK

New Product

## SSRMP – “TRIAC” Series

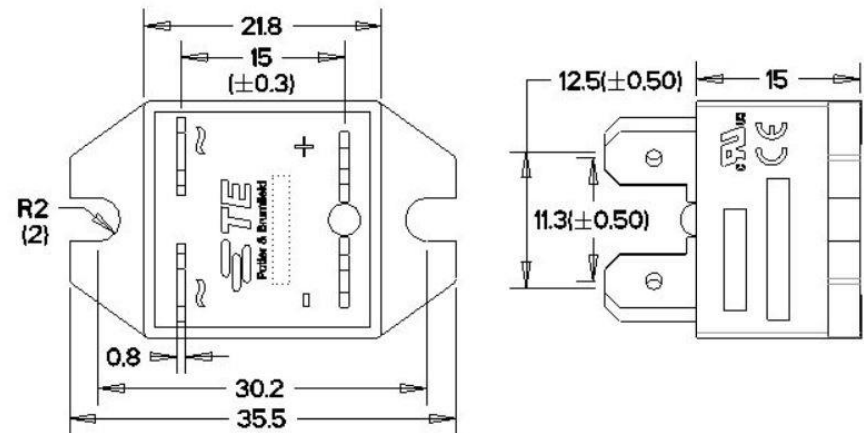
- 1 NO Configuration
- Single TRIAC as output device
- Standard Mini Puck Package
- Quick Connect Termination
- 4kV input output Isolation
- LED Indicator

## Output Parameters

- 280 V AC and 480V AC
- 10, 16 and 25A
- Zero Switching or Random (Instantaneous) Switching
- 5mA off state leakage current

## Input Parameters

- 4 – 32 VDC
- 20mA input current



# SSR Series

## SSR Series

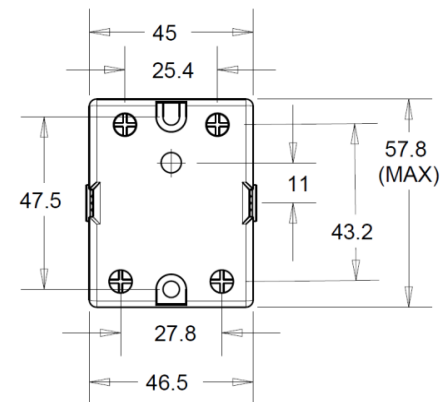
- 1 NO Configuration
- SCR Pair as output device
- Standard Hockey Puck Package
- Default finger safe cover with anti rotational feature
- 4kV input output Isolation
- Screw Termination
- LED Indicator

## Output Parameters

- 240V and 480V AC Load
- 25, 50, 125A
- Zero Switching or Random (Instantaneous) Switching
- 5mA off state leakage current

## Input Parameters

- 3 – 32 VDC or 90-280V AC
- 25mA input current



# SSRD Series

## SSRD – “Dual” Series

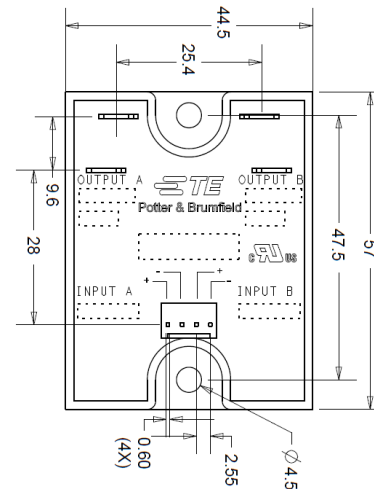
- 2 NO (normally open) configuration
- 4kV input output Isolation
- SCR Pair as output device
- Standard Hockey Puck Package
- Ships with input cable assembly
- Quick Connect Termination

## Output Parameters

- 240V AC
- 25 and 40 A
- Zero Switching or Random (Instantaneous) Switching
- 5mA off state leakage current

## Input Parameters

- 4 – 15 VDC or 18-32V AC
- 25mA input current





# SSRT Series

## SSRT – “TRIAC” Series

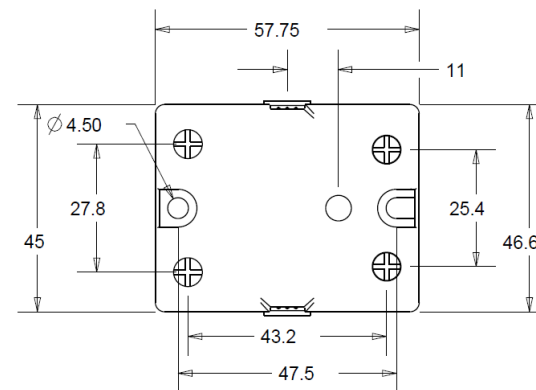
- 1 NO Configuration
- Single TRIAC as output device
- Standard Hockey Puck Package
- Default finger safe cover with anti rotational feature
- 4kV input output Isolation
- Screw Termination
- LED Indicator

## Output Parameters

- 280 V AC
- 10 and 25A
- Zero Switching or Random (Instantaneous) Switching
- 5mA off state leakage current

## Input Parameters

- 3 – 32 VDC or 90-280V AC
- 25mA input current



# SSRDC Series

## SSRDC Series

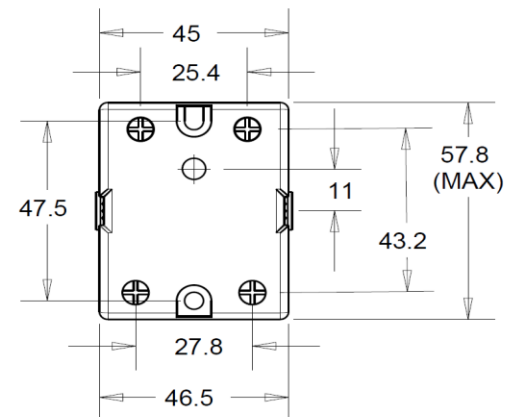
- 1 NO Configuration
- MOSFET as output device
- Standard Hockey Puck Package
- Default finger safe cover with anti rotational feature
- 1500V input output Isolation
- Screw Termination
- LED Indicator

## Output Parameters

- 200 V DC
- 12, 25 and 40A
- Zero Switching
- 12mA off state leakage current

## Input Parameters

- 3.5 – 32 VDC or 90-280V AC
- 30mA input current



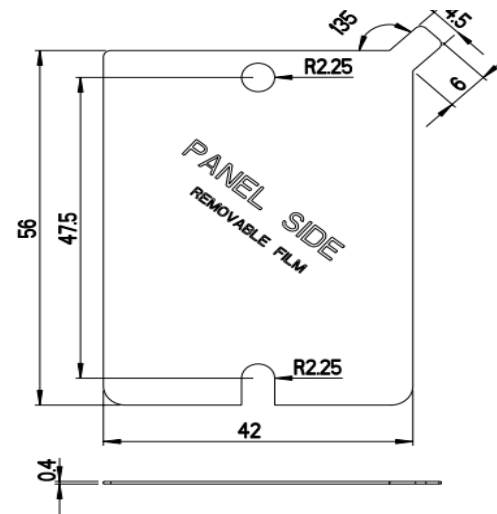
# Thermal Pad

It is an accessory for relay.

- Material grade : Bond-PLY-105
- Finish : Double side sticker
- Operating temperature range :  $-30^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



Accessory for Hockey puck style  
SSRs

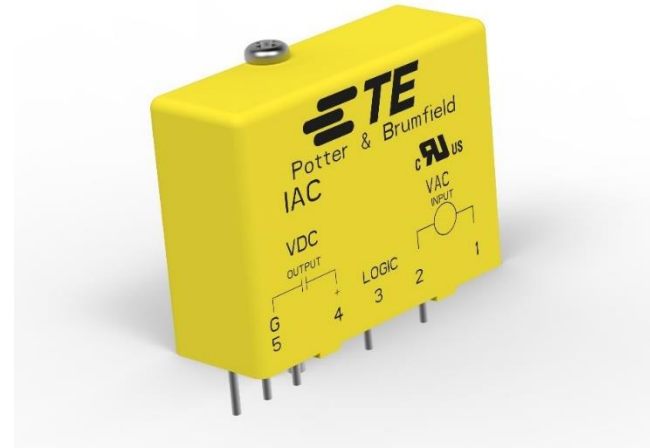


Dimension in mm

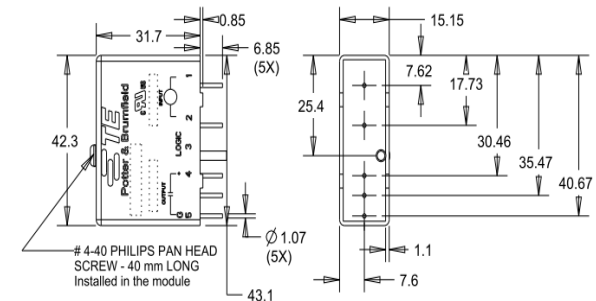
# Input Output Modules

## IO Modules

- **0.6" Width Standard Industry Package**
- Different color code for easy differentiation
- 2.54mm grid pin out (similar to SIP)
- In-built screw (to be fastened to PCB)



Series	Type	Input	Output	Color
IAC	Input AC	AC (18-240V AC)	DC	Yellow
IDC	Input DC	DC (3.3-60 V DC)	DC	White
OAC	Output AC	DC	AC (3A/5A, 240V)	Black
ODC	Output DC	DC	DC (1A/3A, 60V)	Red

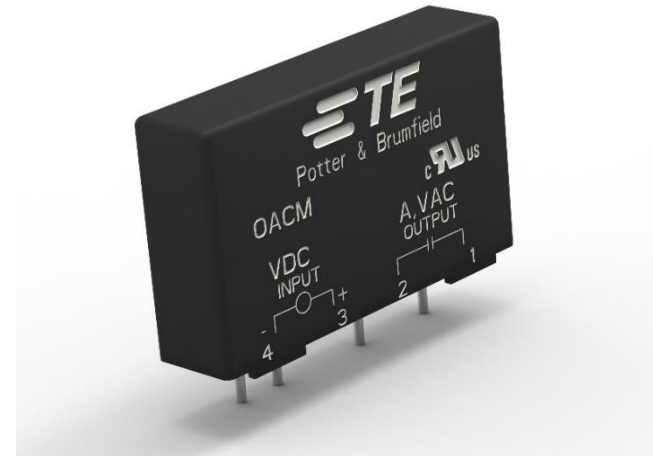


Dimension in mm

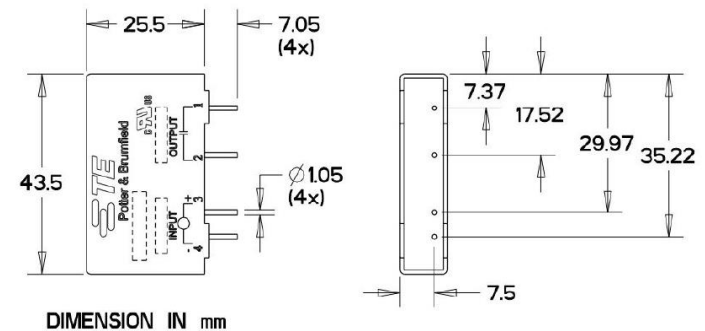
# Slim Input Output Modules

## IO Modules

- 0.4" Width Slim-line Industry Package
- Different color code for easy differentiation
- 2.54mm grid pin out (similar to SIP)



Series	Type	Input	Output	Color
IACM	Input AC	AC (18-240V)	DC	Yellow
IDCM	Input DC	DC (3.3-60 V)	DC	White
OACM	Output AC	DC	AC (3A/5A, 240V)	Black
ODCM	Output DC	DC	DC (1A/3A, 60V)	Red



# SSRK Series

## SSRK Series

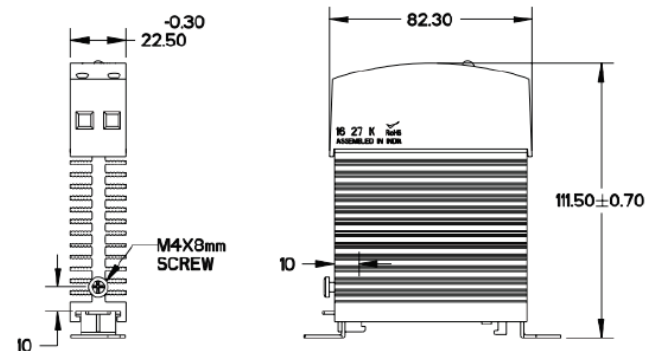
- 1 NO Configuration
- SCR Pair as output device
- 22.5 mm width
- Din-rail mount with Integrated Heat Sink
- 4kV input output Isolation
- Screw Termination

## Output Parameters

- 240V AC or 600V AC
- 10, 20 and 30 A
- Zero Switching Switching

## Input Parameters

- 3 – 32 VDC or 90-140V AC
- 25mA input current



DIMENSION IN mm

# SSRM Series

## SSRM Series

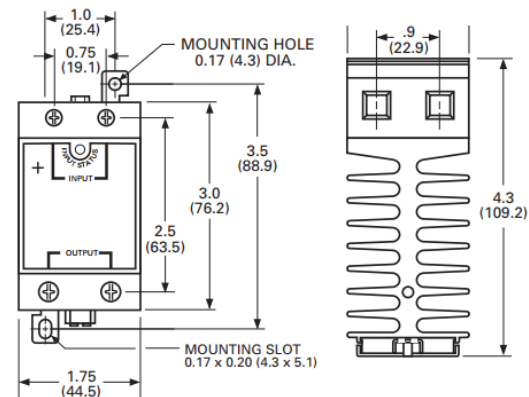
- 1 NO Configuration
- SCR Pair as output device
- Din-rail mount with Integrated Heat Sink
- 4kV input output Isolation
- Screw Termination

## Output Parameters

- 240V or 600V AC
- 45, 55 and 65 A
- Zero Switching Switching

## Input Parameters

- 3 – 32 VDC or 90-280V AC
- 25mA input current



# SSR – PCB Mounts

Parameter	SSRA	SSRC	SSRF
Current	2 A	5 A	25 A
Live Voltage	24 - 280VAC	12 - 280VAC 48 - 660VAC	12 - 280VAC 48 - 660VAC
Input Voltage	4 - 10VDC	3 - 15VDC	3 - 15VDC
Isolation	2500V rms	4000V rms	4000V rms
Switching	Zero or Instantaneous	Zero or Instantaneous	Zero or Instantaneous
Configuration	1 NO	1 NO	1 NO



SSRA



SSRC



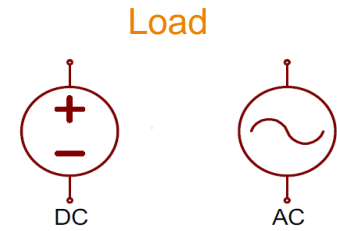
SSRF



# Applications

Differentiators: High Electrical Life, No Noise and Fast Switching

Key Applications : Injection Molding, Packaging, Food Equipment, Building Controls



## ***Automation and Control***

- Wood working machinery
- Commercial Food Equipment
- Material Handling
- Conveyor Systems
- Crane controls

## ***Intelligent Buildings***

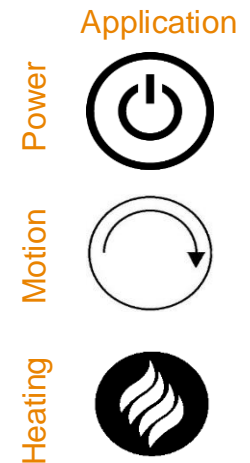
- Vending machines
- Lighting Systems
- HVAC – Commercial and Residential
- Dispensing machines
- Building gate controls

## ***Automotive***

- Infrared Paint dryers
- Battery protection
- Paint robots
- Fork lifts Aux functions
- Road sweepers
- Vehicle heating systems

## ***Aerospace, Defense and Marine***

- Gas turbine starters
- Racing boats
- Patrol aircrafts



# Preferred PNs to stock

SSR	
SSR-240A25	1393030-4
SSR-480A25	5-1393030-0
SSR-240A50	1393030-5
SSR-240D50	1-1393030-0
SSR-240D25	1393030-7
SSR-240D25R	1393030-8

SSRD	
SSRD-240D25	1-1393030-4
SSRD-240D40	1-1393030-6
SSRD-240DE25	4-1393030-0
SSRD-240DE40	1-2319263-4

SSRT	
SSRT-240A10	1-1393030-9
SSRT-240A25	2-1393030-0
SSRT-240D10	2-1393030-1
SSRT-240D25	2-1393030-2

I/P Modules	
IAC-5	1393028-4
IACM-5	1-1393028-0
IACM-5E	1-1393028-2
IDC-5	6-1393028-4
IDCM-5	2-1393028-0

O/P Modules	
OAC-15	2-1393028-3
OAC-15A	6-1393028-7
OAC-24A	2-1393028-5
OAC-5	6-1393028-9
OACM-5H	4-1393028-0
OACM-U	3-1393028-1
ODC-24	7-1393028-5
ODC-24A	7-1393028-6

2IO	
2IO24=IO MODULE BOAR	1-1393026-2
2IO4A=IO MODULE BOAR	1-1393026-3
2IO4B=IO MODULE BOAR	1-1393026-4

SSRK and SSRM	
SSRK-600D30	6-1393030-8
SSRK-600A30	7-1393030-1
SSRK-240A30	9-1393030-1
SSRK-240D30	9-1393030-4
SSRK-240D20	9-1393030-3
SSRM-600D45	7-1393030-2
SSRM-600A45	7-1393030-5

PCB Mounts	
SSRA-240D2	5-1393030-6
SSRC-240D5	5-1393030-8
SSRC-480D5	5-1393030-9
SSRF-240D25	6-1393030-2
SSRF-480D25	6-1393030-3

SSRDC	
SSRDC-200D12	2330274-1
SSRDC-200D25	2330274-2
SSRDC-200D40	2330274-3

# NPI Road Map

1. Slim SSR.
2. 3 phase relays.
3. SSRQ.

Thank You!