



isopac



High Reliability Products

# ISOPAC<sup>®</sup> Products Guide

Semtech ISOPAC products: high power density, rugged and reliable

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## ISOPAC

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## Semtech's ISOPAC<sup>®</sup> Products

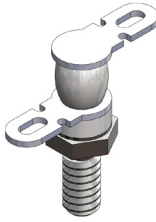
Semtech's ISOPAC family of products are designed to operate across a wide temperature range in unforgiving environments. Extremely low thermal impedances maximize power transfer capability. The unique construction provides the flexibility to support your system's requirements with bespoke or off-the-shelf designs.

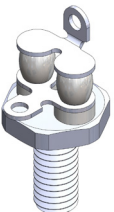
### PRODUCTS

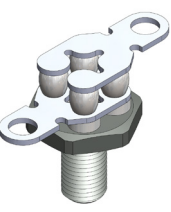
- Modules
- Rotating Modules

# Half Wave Rectifier Assemblies

Semtech's ISOPAC® products have many available configurations to suit your connection requirements and mounting preference.

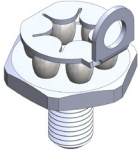
SET01XXYY – Ministud High Current Rectifier Assembly							
SET01	XX – Configuration			YY - Electrical Specifications			
Package	XX	Description	YY	$V_{RWM}$ (V)	$t_{rr}$ (ns)	$I_{F(AVG)}$ (A) @ 55C	$I_{FSM}$ (A <sub>PK</sub> ) @ 100C
	01	Cathode to Stud, Non-Isolated	11	150	30	15	175
	02	Cathode to Stud, Isolated	04	400	150	15	80
	03	Anode to Stud, Non-Isolated	12	600	2000	15	100
	04	Anode to Stud, Isolated	19	1000	150	10	80
Isolated Package Shown			03	1000	2000	15	100
Example: SET010112 = Single phase half wave, cathode to stud, non-isolated, 600V, 2000 ns, 15A							


SET04XXYY – DO4 Stud High Current Rectifier Assembly							
SET04XXYY	XX – Configuration			YY - Electrical Specifications			
Package	XX	Description	YY	$V_{RWM}$ (V)	$t_{rr}$ (ns)	$I_{F(AVG)}$ (A) @ 55C	$I_{FSM}$ (A <sub>PK</sub> ) @ 100C
	01	Cathode to Stud, Non-Isolated	11	150	30	30	250
	02	Cathode to Stud, Isolated	04	400	150	30	160
	03	Anode to Stud, Non-Isolated	12	600	2000	30	200
	04	Anode to Stud, Isolated	19	1000	150	20	160
Isolated Package Shown			03	1000	2000	30	200
Example: SET040112 = Single phase half wave, cathode to stud, non-isolated, 600V, 2000 ns, 15A							

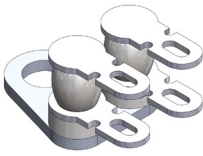
SET05XXYY – DO5 Stud High Current Rectifier Assembly							
SET05XXYY	XX – Configuration			YY - Electrical Specifications			
Package	XX	Description	YY	$V_{RWM}$ (V)	$t_{rr}$ (ns)	$I_{F(AVG)}$ (A) @ 55C	$I_{FSM}$ (A <sub>PK</sub> ) @ 100C
	01	Cathode to Stud, Non-Isolated	11	150	30	60	500
	02	Cathode to Stud, Isolated	04	400	150	60	320
	03	Anode to Stud, Non-Isolated	12	600	2000	60	400
	04	Anode to Stud, Isolated	19	1000	150	40	320
Isolated Package Shown			03	1000	2000	60	400
Example: SET050112 = Single phase half wave, cathode to stud, non-isolated, 600V, 2000 ns, 15A							

# Half Wave Rectifier Assemblies

Semtech's ISOPAC® products have many available configurations to suit your connection requirements and mounting preference.

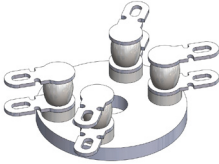
SET10XXYY – DO5 Stud High Current Rectifier Assembly							
SET10XXYY	XX - Configuration			YY - Electrical Specifications			
Package	XX	Description	YY	$V_{RWM}$ (V)	$t_{rr}$ (ns)	$I_{F(AVG)}$ (A) @ 55C	$I_{FSM}$ ( $A_{PK}$ ) @ 100C
	01	Cathode to Stud, Non-Isolated	11	150	30	60	500
	02	Cathode to Stud, Isolated	04	400	150	60	320
	03	Anode to Stud, Non-Isolated	12	600	2000	60	400
	04	Anode to Stud, Isolated	19	1000	150	40	320
Non-Isolated Package Shown			03	1000	2000	60	400
Example: SET100112 = Single phase half wave, cathode to stud, non-isolated, 600V, 60A, 2000 ns							

ISOPAC01YY – One Single Phase Half Wave High Current Rectifier Assembly					
ISOPAC01	YY - Electrical Specifications				
Package	YY	$V_{RWM}$ (V)	$t_{rr}$ (ns)	$I_{F(AVG)}$ (A) @ 55C	$I_{FSM}$ ( $A_{PK}$ ) @ 100C
	11	150	30	15	175
	04	400	150	15	80
	12	600	2000	15	100
	19	1000	150	10	80
	03	1000	2000	15	100
Example: ISOPAC0112 = One single phase half wave, isolated, 600V, 15A, 2000 ns					


ISOPAC02YY – Two Single Phase Half Wave High Current Rectifier Assembly					
ISOPAC02	YY - Electrical Specifications				
Package	YY	$V_{RWM}$ (V)	$t_{rr}$ (ns)	$I_{F(AVG)}$ (A) @ 55C	$I_{FSM}$ ( $A_{PK}$ ) @ 100C
	11	150	30	15	175
	04	400	150	15	80
	12	600	2000	15	100
	19	1000	150	10	80
	03	1000	2000	15	100
Example: ISOPAC0212 = Two single phase half wave, isolated, 600V, 15A, 2000 ns					

# Half Wave Rectifier Assemblies


## ISOPAC®04YY – Four Single Phase Half Wave High Current Rectifier Assembly

ISOPAC04		YY - Electrical Specifications			
Package	YY	$V_{RWM}$ (V)	$t_{rr}$ (ns)	$I_{F(AVG)}$ (A) @ 55C	$I_{FSM}$ ( $A_{PK}$ ) @ 100C
	11	150	30	15	175
	04	400	150	15	80
	12	600	2000	15	100
	19	1000	150	10	80
	03	1000	2000	15	100
Example: ISOPAC0412 = Four single phase half wave, isolated, 600V, 15A, 2000 ns					

## ISOPAC06YY – Six Single Phase Half Wave High Current Rectifier Assembly

ISOPAC06		YY - Electrical Specifications			
Package	YY	$V_{RWM}$ (V)	$t_{rr}$ (ns)	$I_{F(AVG)}$ (A) @ 55C	$I_{FSM}$ ( $A_{PK}$ ) @ 100C
	11	150	30	15	175
	04	400	150	15	80
	12	600	2000	15	100
	19	1000	150	10	80
	03	1000	2000	15	100
Example: ISOPAC0612 = Six single phase half wave, isolated, 600V, 15A, 2000 ns					

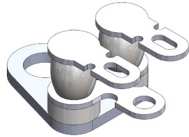
## ISOPAC12YY – 12 Single Phase Half Wave High Current Rectifier Assembly

ISOPAC12		YY - Electrical Specifications			
Package	YY	$V_{RWM}$ (V)	$t_{rr}$ (ns)	$I_{F(AVG)}$ (A) @ 55C	$I_{FSM}$ ( $A_{PK}$ ) @ 100C
	11	150	30	15	175
	04	400	150	15	80
	12	600	2000	15	100
	19	1000	150	10	80
	03	1000	2000	15	100
Example: ISOPAC1212 = 12 single phase half wave, isolated, 600V, 15A, 2000 ns					


# Center Taps, Doublers, Single Phase, and Three Phase Full Wave Bridges

Semtech's ISOPAC® products have many available configurations to suit your connection requirements and mounting preference.

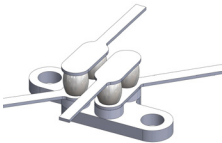
## SET03XXYY – High Current Single Phase Center Tap or Doubler Rectifier Assembly

SET03	XX - Configuration		YY - Electrical Specifications				
Package	XX	Description	YY	$V_{RWM}$ (V)	$t_{rr}$ (ns)	$I_{F(AVG)}$ (A) @ 55C (1)	$I_{FSM}$ ( $A_{PK}$ ) @ 100C
	06	Positive Center Tap	11	150	30	30	175
	08	Negative Center Tap	04	400	150	30	80
	10	Doubler	12	600	2000	30	100
			19	1000	150	30	80
			03	1000	2000	30	100
(1) Average rectified current = 0.5 x $I_{F(AVG)}$ for Doubler configuration							
Example: SET030812 = Negative center tap, 600V, 30A, 2000 ns							

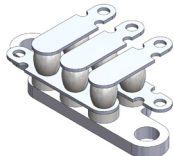
## SET0612YY – Single Phase Full Wave High Current Rectifier Assembly

SET0612	YY - Electrical Specifications				
Package	YY	$V_{RWM}$ (V)	$t_{rr}$ (ns)	$I_{F(AVG)}$ (A) @ 55C	$I_{FSM}$ ( $A_{PK}$ ) @ 100C
	11	150	30	30	175
	04	400	150	30	80
	12	600	2000	30	100
	19	1000	150	20	80
	03	1000	2000	30	100
Example: SET061212 = Single phase full wave bridge, 600V, 30A, 2000 ns					

## SET1212YY – Single Phase Full Wave High Current Rectifier Assembly

SET1212	YY - Electrical Specifications				
Package	YY	$V_{RWM}$ (V)	$t_{rr}$ (ns)	$I_{F(AVG)}$ (A) @ 55C	$I_{FSM}$ ( $A_{PK}$ ) @ 100C
	11	150	30	30	175
	04	400	150	30	80
	12	600	2000	30	100
	19	1000	150	20	80
	03	1000	2000	30	100
Example: SET121212 = Single phase full wave bridge, 600V, 30A, 2000 ns					

## SET1114YY – Three Phase Full Wave High Current Rectifier Assembly

SET1114	YY - Electrical Specifications				
Package	YY	$V_{RWM}$ (V)	$t_{rr}$ (ns)	$I_{F(AVG)}$ (A) @ 55C	$I_{FSM}$ ( $A_{PK}$ ) @ 100C
	11	150	30	45	175
	04	400	150	45	80
	12	600	2000	45	100
	19	1000	150	30	80
	03	1000	2000	45	100
Example: SET111412 = Three phase full wave bridge, 600V, 45A, 2000 ns					

# Hi-Rel Screening Specification and Test Procedure for Power Rectifier Assemblies

1. Purpose. This specification establishes the requirements for lot process-conditioning, testing, and screening for those applications requiring a high degree of reliability assurance.
2. Scope. This specification is applicable to power rectifier assemblies.
3. Applicable Documents. The following documents form a part of this specification to the extent specified herein.
  - 3.1 Specification Military MIL-S-19500 – Semiconductor Devices, General Specification
  - 3.2 Standard Military MIL-STD-750 – Test Methods for Semiconductor Devices
4. Requirements. All rectifier assemblies shall be process-conditioned, tested and screened in accordance with the procedure specified herein. All assemblies passing the log process-conditioning, testing and screening shall be identified (unless otherwise specified) with prefix 'HR' added to the applicable part number. All assemblies with aluminum cases shall be black anodized.
  - 4.1 The definitions, abbreviations, symbols, and statistical sampling used herein are defined in MIL-S-19500 appendices.
5. Quality Assurance Provisions.
  - 5.1 Inspection shall be on a 100% basis unless otherwise specified.
  - 5.2 Methods of examination and test shall be as specified in Table 1 herein.
  - 5.3 The procedure for process-conditioning, testing and screening shall be in accordance with 5.3.1 through 5.3.4.
    - 5.3.1 All diodes used in the assembly shall be subjected to 100% screening and testing in accordance with the applicable HR specification for the diodes being utilized.
    - 5.3.2 All assemblies shall be subjected to 100% screening and testing in accordance with 5.3.3 and 5.3.4.
    - 5.3.3. All assemblies shall be subjected to thermal shock (temp. cycle) in accordance with MIL-STD-750, Method 1051, test condition F, except the low temperature shall be at minimum rated storage temperature and the time at the temperature extreme shall be 30 minutes minimum.
    - 5.3.4 All assemblies shall be subjected to Group A Inspections and Tests in accordance with Table 1. All assemblies failing to meet the limits of Table 1 shall be removed from the lot.

**Table 1 – HR500A Tests**

Inspection (A)	MIL-STD-750		LTPD	Symbol	Limits
	Method	Conditions			
Visual & mechanical examination	2071		10	SET061211	
Reverse current	4016	dc method $V_R = \text{Rated}$	100%	IR	Applicable part number data sheet
Forward voltage	4011	$t_p$ duty cycle $I_f = \text{applicable part number data sheet}$	100%	VF	Applicable part number data sheet
Reverse current	4016	dc method $T_A = 100^\circ\text{C}$ $V_R = \text{rated}$	10	IR	Applicable part number data sheet

(A) All tests are performed at 25°C unless otherwise specified.



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