



**SEMICONDUCTORS:**  
Rectifiers • High-Power Diodes and Thyristors • Small-Signal Diodes • Zener and Suppressor Diodes  
• FETs • RF Transistors • Optoelectronics • ICs • Modules

**PASSIVE COMPONENTS:**  
Resistive Products • Magnetics • Capacitors • Strain Gage Transducers and Stress Analysis Systems



VISHAY INTERTECHNOLOGY, INC.



## POWER DIODE AND SCR MODULES

Versatile and high-efficiency power diode and SCR modules from Vishay Intertechnology feature industry-standard outlines with a choice of diode and thyristor rectifiers. Offering single-rectifying/switch component, half-bridge, and center-tapped configurations, these modules are the ideal choice for input rectification applications at either low or high voltages.

Vishay modules fulfill a single or composite function within a single package that offers a thermally conductive, but electrically isolated, path to the outside circuit. This electrical isolation between the baseplate and the active semiconductors provides a key advantage over discrete components. The modules are RoHS-compliant and meet industry standards for safety, including UL approval.

State-of-the-art compression bonding (for current ratings higher than 250 A) and ultrasonic aluminum wire bonding technologies allow the modules to achieve outstanding performance. Vishay's high-power modules are recognized throughout the world for their ruggedness, high reliability, and consistency of mechanical specifications and electrical characteristics.

### Features

- Wide range of industry-standard package styles
- Direct mounting on heatsink
- Choice of rectifier and thyristor technologies
- Optimized high-voltage diode and SCR
- Fast-recovery diode modules available
- High isolation voltage (2500 V)
- RoHS-compliant
- Low thermal resistance
- Low-/high-temperature performance (-40 °C to +150 °C)
- UL approved

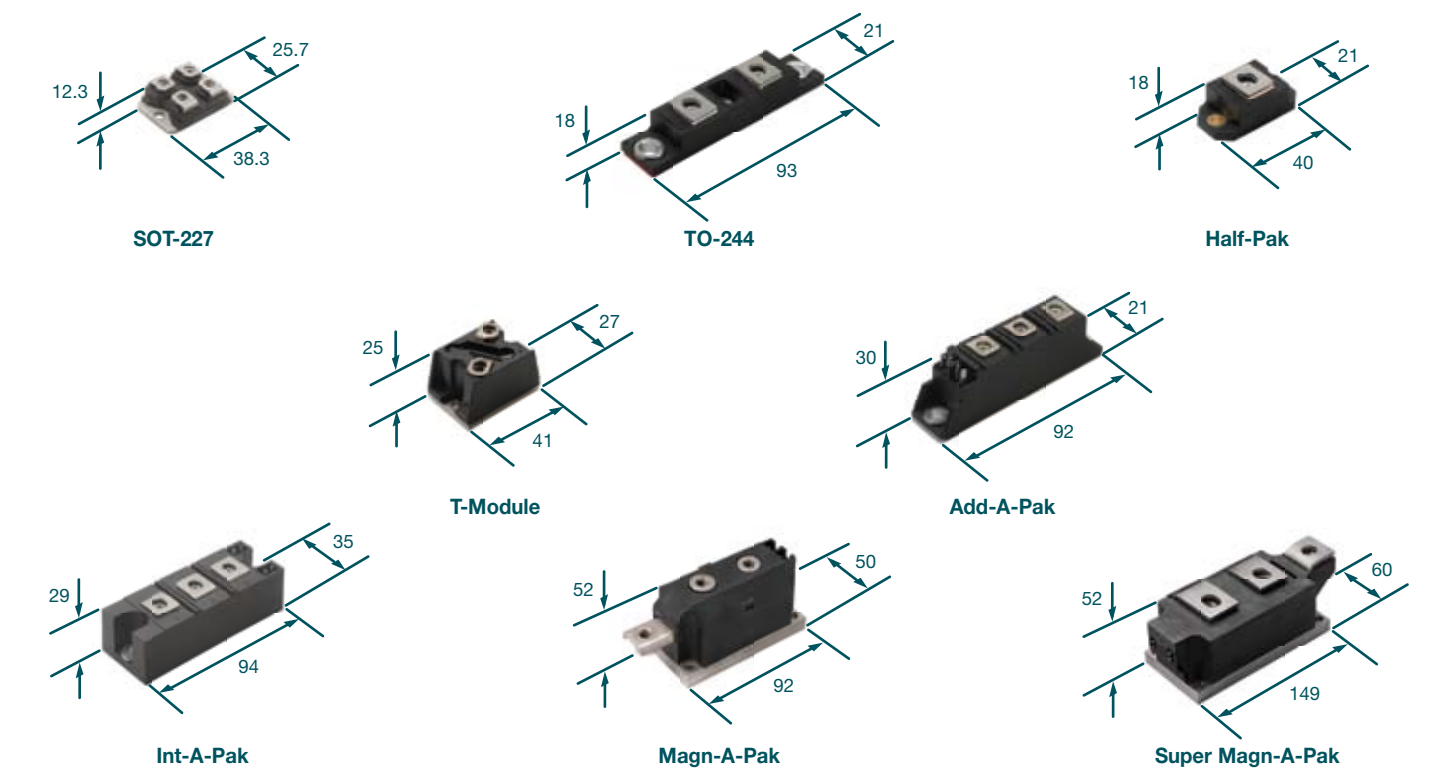
### Options

- Customizable for specific application needs
- Gate and auxiliary cathode accessories available upon request

### Applications

- Single- and three-phase input rectification
- Industrial welding
- Switch-mode power supplies
- Motor drives
- UPS
- Anti-parallel thyristor (AC switch)

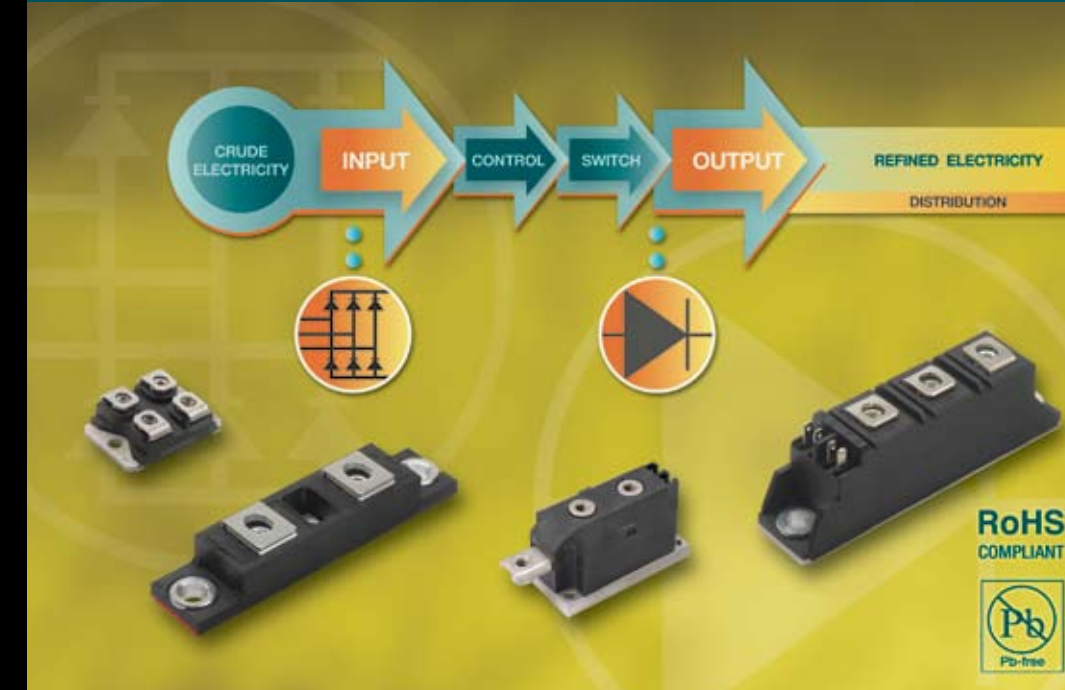
### Dimensions in Millimeters



Vishay Intertechnology

www.vishay.com

HIGH POWER PRODUCTS SELECTOR GUIDE



## POWER DIODE AND SILICON-CONTROLLED RECTIFIER (SCR) MODULES

SOT-227

TO-244

Half-Pak

T-Module

Add-A-Pak

Int-A-Pak

Magn-A-Pak

Super Magn-A-Pak

One of the World's Largest Manufacturers of  
**Discrete Semiconductors and Passive Components**

### WORLDWIDE SALES CONTACTS

#### THE AMERICAS

**UNITED STATES**  
VISHAY AMERICAS  
ONE GREENWICH PLACE  
SHELTON, CT 06484  
UNITED STATES  
PH: +1-402-563-6866  
FAX: +1-402-563-6296

#### ASIA

**SINGAPORE**  
VISHAY INTERTECHNOLOGY ASIA PTE LTD.  
25 TAMPINES STREET 92  
KEPPEL BUILDING #02-00  
SINGAPORE 528877  
PH: +65-6788-6668  
FAX: +65-6788-0988

#### P.R. CHINA

VISHAY TRADING (SHANGHAI) CO., LTD.  
15D, SUN TONG INFOPORT PLAZA  
55 HUAI HAI WEST ROAD  
SHANGHAI 200030  
P.R. CHINA  
PH: +86-21-5258 5000  
FAX: +86-21-5258 7979

#### JAPAN

VISHAY JAPAN CO., LTD.  
MG IKENOHATA BLDG. 4F  
1-2-18, IKENOHATA  
TAITO-KU  
TOKYO 110-0008  
JAPAN  
PH: +81-3-5832-6210  
FAX: +81-3-5832-6260

#### EUROPE

**GERMANY**  
VISHAY EUROPE SALES GMBH  
GEHEIMRAT-ROSENTHAL-STR. 100  
95100 SELB  
GERMANY  
PH: +49-9287-71-0  
FAX: +49-9287-70435

#### FRANCE

VISHAY S.A.  
199, BLVD DE LA MADELEINE  
06003 NICE, CEDEX 1  
FRANCE  
PH: +33-4-9337-2920  
FAX: +33-4-9337-2997

#### UNITED KINGDOM

VISHAY LTD.  
PALLION INDUSTRIAL ESTATE  
SUNDERLAND SR4 6SU  
UNITED KINGDOM  
PH: +44-191-514-4155  
FAX: +44-191-567-8262

MODULES								
Package Model	Max. Dim. LWH (mm)	Pinout	Number of Connectors	Available Circuit Configurations	Voltage Range (V)	Current Ratings (A)	Part Number Series	Silicon Technology
SOT-227	38.3 x 25.7 x 12.3	Screwable	4	2 Separate diodes	400-1200	80-210	UFB-UFL	Ultrafast Diode
				Customized configuration			HFA	
				2 Separate diodes	1000	60	SA60FA100P	Fast diode
TO-244	93 x 21 x 18	Screwable	2 + Baseplate	Common cathode— not isolated	45-150	200-400	2..CNQ...-3..CNQ...-4..CNQ...	Schottky Diode
					30	200-400	220CNQ...-440CNQ...	Schottky Diode
					400-600	167-320	HFA..NJ..PBF	Ultrafast Diode
					400-600	360-400	VSUD..CW...	Ultrafast Diode
					200	400	VSUD400CW20PBF	Ultrafast Diode
Half-Pak	40 x 21 x 18	Screwable	1 + Baseplate	Single diode cathode on base	45-150	120-240	12..NQ...-18..NQ...-24..NQ...	Schottky Diode
					30	120-240	122NQ...-182NQ...-242NQ...	Schottky Diode
					400	180-275	HFA..NH40PBF	Ultrafast Diode
					200	240	VSUD200CH20PBF	Ultrafast Diode
					600	200	VSUD200CH60PBF	Ultrafast Diode
					400	150	VSSD150CH40PBF	Standard Diode
T-Module	41 x 27 x 25	Screwable	Up to 3	Single SCR	400-1600	40-110	T..RIA	SCR
				Single diode	400-1600	40-110	T..HF	Diode
Add-A-Pak AAP	92 x 21 x 30	Screwable	Up to 7	Half bridge	400-1600	25-105	T..HFL	Fast Diode
								VSKT
							VSKD	Diode
							VSKH-VSKL	SCR-Diode
				Common cathode	400-1600	25-105	VSKU	SCR
							VSKC	Diode
				Common anode	400-1600	25-105	VSKV	SCR
							VSKJ	Diode
				Single diode	400-1600	25-105	VSKV	SCR
				Half bridge	30-150	100-440	VSKJ	Diode
Common cathode			VSKV	SCR				
Common anode			VSKJ	Diode				
Half bridge			VSKD	Ultrafast Diode				
Int-A-Pak IAP	94 x 35 x 29	Screwable	Up to 7	Half bridge	400-1600	130-230	VSKT	SCR
								VSKD
							VSKH-VSKL	SCR-Diode
				Common cathode	400-1600	130-230	VSKU	SCR
							VSKC	Diode
				Common anode	400-1600	130-230	VSKV	SCR
							VSKJ	Diode
				AC switch	800-1600	50-100	.4MT..K	SCR
				Single diode	400-1600	130-230	VSKV	SCR
				Half bridge	600	300	VSKD	Diode
Common anode, non-isolated	400	150	VSKD	Ultrafast Diode				
Magn-A-Pak MAP	92 x 50 x 52	Screwable	Up to 7	Half bridge	400-2000	170-320	VSKT	SCR
					800-1200	180-200	VSKTF	SCR fast
					400-2000	170-320	VSKD	Diode
					400-2500	240	VSKDL	Diode Fast
					400-2000	170-320	VSKH-VSKL -VSKL	SCR-Diode
				800-1200	180-200	VSKHF...-VSKLF...	SCR fast-Diode Fast	
				400-2000	170-320	VSKU	SCR	
				Common cathode	800-1200	180-200	VSKC	Diode
					400-2500	240	VSKUF	SCR fast
					400-2000	170-320	VSKCL	Diode Fast
					400-2000	170-320	VSKV	SCR
					400-2000	170-320	VSKJ	Diode
				Common anode	800-1200	180-200	VSKVF	SCR fast
					400-2500	240	VSKJL	Diode Fast
					400-2000	170-320	VSKV	SCR
Single diode	400-2000	170-320	VSKV	SCR				
	400-2500	240	VSKEL	Diode Fast				
Single SCR switch	400-800	500	VSKS500...PBF	SCR				
Super Magn-A-Pak SMAP	149 x 60 x 52	Screwable	Up to 7	Half bridge	400-2000	430-600	VSKT	SCR
					1600-2500	450	VSKD	Diode
					400-2000	430-600	VSKDL	Fast Diode
							VSKH-VSKL	SCR-Diode

**DISCLAIMER** All product specifications and data are subject to change without notice. Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product. Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not represent or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications. Product names and markings noted herein may be trademarks of their respective owners.

Vishay Intertechnology

www.vishay.com

WMN-SG2138-0808

www.vishay.com

www.vishay.com

Configuration	Voltage (V)	Current Rating (A)	Recovery	SOT-227	TO-244	Half-Pak	T-Module	Package			Super Magn-A-Pak						
								Int-A-Pak	Magn-A-Pak	Acid-A-Pak							
Single Diode	30	120 180 240	Schottky			12N0Q30PBF 18N0Q30PBF 24N0Q30PBF											
	45	120 180 240	Schottky			12N0Q45PBF 18N0Q45PBF 24N0Q45PBF											
	100	120 180 240	Schottky			12N0Q100PBF 18N0Q100PBF 24N0Q100PBF											
	150	240	Schottky			24N0Q150PBF											
	200	240	Ultrafast			VSUD200CH20PBF											
	600	200	Ultrafast			VSUD200CH60PBF											
	200-1600	40 56 70 90 100 150 160 190 230 270 320	Standard				T40HF... T70HF... T85HF... T110HF...			VSK166/.PBF VSK196/.PBF VSK236/.PBF							
	600-2500	240	Standard														
	800-2000	600	Standard										VSK250-... VSK320-... VSKL240-...				
	Single Thyristor	400-1200	50 70 90	Standard				T50RIA... T70RIA... T90RIA...						VSKD600-... VSKDL450-...			
		400-800	90 500	Standard										VSKS500-...PBF			
		30	110 220	Schottky													
		45	100 150 200	Schottky													
		60	150 200	Schottky													
		100	100 150 200	Schottky													
150		100 200	Schottky														
400-1600		160 190 230 250 270 320	Standard														
600-2500		240	Fast														
1600-2500		460	Fast														
Up to 1200		100	Ultrafast														
Up to 600		300	Ultrafast														
Half Bridge, Fully Controlled		400-1600	25 40 56 70 90	Standard													
		400-1600	105 130 140 160 170 230 250	Standard													
		800-1200	180 200	Fast													
	800-2000	500	Standard														
	Half Bridge, Positive-Controlled	400-1600	25 40 56 70 90	Standard													
		400-1600	105 130 140 160 170 230 250	Standard													
		800-1200	180 200	Fast													
		800-2000	500	Standard													
		Half Bridge, Negative Controlled	400-1600	25 40 56 70 90	Standard												
			400-1600	105 130 140 160 170 230 250	Standard												
			800-1200	180 200	Fast												
			800-2000	500	Standard												
			Common Cathode Diodes	30	220 440	Schottky			220CNO30PBF 440CNO30PBF								
				45	200	Schottky			200CNO45PBF 300CNO45PBF 300CNO45PBF 400CNO45PBF 400CNO45PBF								
				60	200 300 400	Schottky											
100				200 300 400	Schottky												
150				200 300 400	Schottky												
200				400	Ultrafast												
400-600				167 210 240 280 320 360 400	Ultrafast												
800-1200	56 70 90			Standard													
400-1600	130 140 160			Standard													
Thyristor Common Cathode	800-1200			250 200	Standard												
	800-2000			200 500	Standard												
	30	220 440		Schottky			220CNO30PBF 440CNO30PBF										
	45	200		Schottky			200CNO45PBF 300CNO45PBF 300CNO45PBF 400CNO45PBF 400CNO45PBF										
	60	200 300 400		Schottky													
	100	200 300 400		Schottky													
	150	200 300 400	Schottky														
	200	400	Ultrafast														
	400-600	167 210 240 280 320 360 400	Ultrafast														
	800-1200	56 70 90	Standard														
	400-1600	130 140 160	Standard														
	Common Anode Diodes	800-1200	250 200	Standard													
		800-2000	200 500	Standard													
		30	220 440	Schottky			220CNO30PBF 440CNO30PBF										
		45	200	Schottky			200CNO45PBF 300CNO45PBF 300CNO45PBF 400CNO45PBF 400CNO45PBF										
60		200 300 400	Schottky														
100		200 300 400	Schottky														
150		200 300 400	Schottky														
200		400	Ultrafast														
400-600		167 210 240 280 320 360 400	Ultrafast														
800-1200		56 70 90	Standard														
400-1600		130 140 160	Standard														
Thyristor Common Anode		800-1200	250 200	Standard													
		800-2000	200 500	Standard													
		30	220 440	Schottky			220CNO30PBF 440CNO30PBF										
		45	200	Schottky			200CNO45PBF 300CNO45PBF 300CNO45PBF 400CNO45PBF 400CNO45PBF										
	60	200 300 400	Schottky														
	100	200 300 400	Schottky														
	150	200 300 400	Schottky														
	200	400	Ultrafast														
	400-600	167 210 240 280 320 360 400	Ultrafast														
	800-1200	56 70 90	Standard														
	400-1600	130 140 160	Standard														
	2 Separate Diodes, Parallel Pin-out	800-1200	250 200	Standard													
		800-2000	200 500	Standard													
		30	220 440	Schottky			220CNO30PBF 440CNO30PBF										
		45	200	Schottky			200CNO45PBF 300CNO45PBF 300CNO45PBF 400CNO45PBF 400CNO45PBF										
60		200 300 400	Schottky														
100		200 300 400	Schottky														
150		200 300 400	Schottky														
200		400	Ultrafast														
400-600		167 210 240 280 320 360 400	Ultrafast														
800-1200		56 70 90	Standard														
400-1600		130 140 160	Standard														
Back-to-Back Diodes		800-1200	250 200	Standard													
		800-2000	200 500	Standard													
		30	220 440	Schottky			220CNO30PBF 440CNO30PBF										
		45	200	Schottky			200CNO45PBF 300CNO45PBF 300CNO45PBF 400CNO45PBF 400CNO45PBF										
	60	200 300 400	Schottky														
	100	200 300 400	Schottky														
	150	200 300 400	Schottky														
	200	400	Ultrafast														
	400-600	167 210 240 280 320 360 400	Ultrafast														
	800-1200	56 70 90	Standard														
	400-1600	130 140 160	Standard														
	Back-to-Back SCR	800-1200	250 200	Standard													
		800-2000	200 500	Standard													
		30	220 440	Schottky			220CNO30PBF 440CNO30PBF										
		45	200	Schottky			200CNO45PBF 300CNO45PBF 300CNO45PBF 400CNO45PBF 400CNO45PBF										
60		200 300 400	Schottky														
100		200 300 400	Schottky														
150		200 300 400	Schottky														
200		400	Ultrafast														
400-600		167 210 240 280 320 360 400	Ultrafast														
800-1200		56 70 90	Standard														
400-1600		130 140 160	Standard														