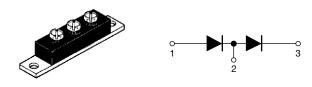
Vishay High Power Products

Schottky Rectifier, 400 A



TO-244AB Isolated Doubler

PRODUCT SUMMARY			
I _{F(AV)}	400 A		
V _R	135 V		

FEATURES

- 175 °C T_J operation
- High purity, high temperature epoxy RoHS encapsulation for enhanced mechanical COMPLIANT strength and moisture resistance
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Compliant to RoHS directive 2002/95/EC
- Designed and qualified for industrial level

DESCRIPTION

The 409DMQ135 Schottky rectifier doubler module has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175 °C junction temperature. Typical applications are in high current switching power supplies, plating power supplies, UPS systems, converters, freewheeling diodes, welding, and reverse battery protection.

MAJOR RATINGS AND CHARACTERISTICS						
SYMBOL	CHARACTERISTICS VALUES		UNITS			
I _{F(AV)}	Rectangular waveform	400	А			
V _{RRM}		135	V			
I _{FSM}	t _p = 5 μs sine	25 500	А			
V _F	200 Apk, T _J = 125 °C per leg	0.72	V			
TJ	Range	- 55 to 175	°C			

VOLTAGE RATINGS					
PARAMETER	SYMBOL	409DMQ135	UNITS		
Maximum DC reverse voltage	V _R	135	V		
Maximum working peak reverse voltage	V _{RWM}	100	v		

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current per device	I _{F(AV)}	50 % duty cycle at T_C = 80 °C, rectangular waveform		400	
Maximum peak one cycle non-repetitive	I _{FSM}	5 µs sine or 3 µs rect. pulse	Following any rated load condition and with rated V _{RRM} applied	20 000	А
surge current per leg		10 ms sine or 6 ms rect. pulse		2300	
Non-repetitive avalanche energy per leg	E _{AS}	T _J = 25 °C, I _{AS} = 1 A, L = 30 mH		15	mJ
Repetitive avalanche current per leg	I _{AR}	Current decaying linearly to zero in 1 μ s Frequency limited by T _J maximum V _A = 1.5 x V _R typical		1	А

409DMQ135

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ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum forward voltage drop per leg	V _{FM} ⁽¹⁾	200 A	- T _J = 25 °C	1.03	V	
		400 A		1.21		
		200 A	• T _J = 125 °C	0.71		
		400 A		0.82		
Maximum reverse leakage current per leg	I _{RM} ⁽¹⁾	T _J = 25 °C	$V_{\rm B}$ = Rated $V_{\rm B}$	6	mA	
Maximum reverse leakage current per leg		T _J = 125 °C	V _R = naleu V _R	85		
Maximum junction capacitance per leg	CT	$V_{\rm R}$ = 5 $V_{\rm DC}$ (test signal range 100 kHz to 1 MHz), 25 °C		6000	pF	
Typical series inductance per leg	L _S	From top of terminal hole to mounting plane		5.0	nH	
Maximum voltage rate of change	dV/dt	Rated V _R		10 000	V/µs	

Note

⁽¹⁾ Pulse width < 300 μ s, duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS						
PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Maximum junction and storage temperature range		T _J , T _{Stg}		- 55 to 175	°C	
Maximum thermal resistance,	per leg	P	DC operation	0.4	°C 444	
junction to case	per package	R _{thJC}	De operation	0.2	°C/W	
Typical thermal resistance, case to heatsink		R _{thCS}	Mounting surface, smooth and greased	0.1	°C/W	
				79	g	
Approximate weight				2.80	oz.	
	minimum			24 (20)		
Mounting torque base	maximum			35 (30)		
Mounting torque center hole	typical		Non-lubricated threads	13.5 (12)	kgf · cm (lbf · in)	
Terminal torque	minimum			35 (30)		
	maximum			46 (40)		
Case style			Modified JEDEC	TO-244AB Isolated Doubler		



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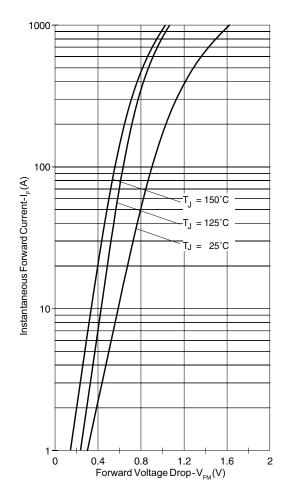


Fig. 1 - Maximum Forward Voltage Drop Characteristics

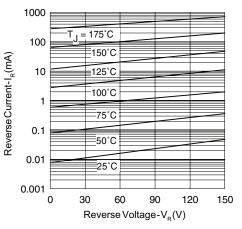


Fig. 2 - Typical Values of Reverse Current vs. **Reverse Voltage**

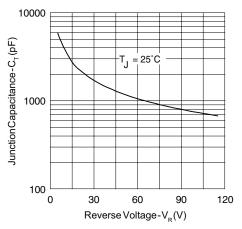
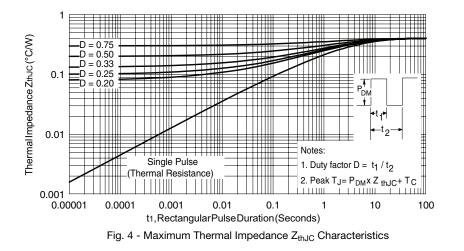


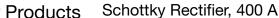
Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

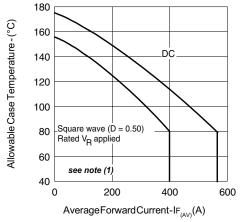


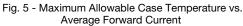
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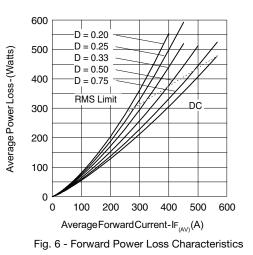
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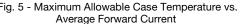


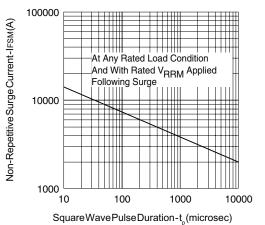














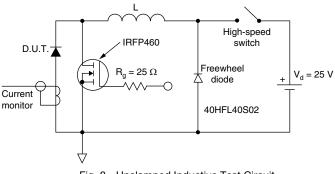


Fig. 8 - Unclamped Inductive Test Circuit

Note

⁽¹⁾ Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;

Pd = Forward power loss = I_{F(AV)} x V_{FM} at (I_{F(AV)}/D) (see fig. 6); Pd_{REV} = Inverse power loss = V_{R1} x I_R (1 - D); I_R at V_{R1} = 80 % rated V_R

LINKS TO RELATED DOCUMENTS				
Dimensions www.vishay.com/doc?95269				
www.vishay.com	For technical questions, contact: indmodules@vishay.com	Document Number: 93110		

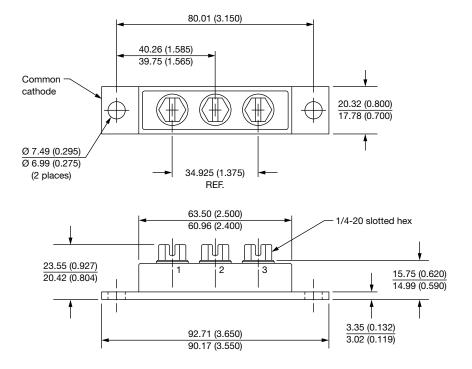


Vishay Semiconductors



DIMENSIONS in millimeters (inches)

SHAY





Vishay

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