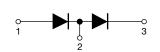


Vishay High Power Products

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 encapsulation for enhanced mechanical strength and moisture resistance

RoHS COMPLIANT

- 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	Α			
V _F	200 Apk, T _J = 125 °C per leg	0.72	V			
T _J	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}	195	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 surge current per leg	I _{FSM}	5 μs sine or 3 μs rect. pulse	Following any rated load condition and with rated V _{RRM} applied	20 000	Α
		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 $V_A = 1.5 \times V_R$ typical		Α	

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	
Marian was a last a same a sum at a sulla	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 = nateu v _R	85	IIIA
Maximum junction capacitance per leg	C _T	$V_R = 5 V_{DC}$ (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	nΗ
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	D	DC operation	0.4	°C/W	
junction to case	per package	R_{thJC}	DC operation	0.2	C/VV	
Typical thermal resistance, case to heatsink		R _{thCS}	Mounting surface, smooth and greased	0.1	°C/W	
Approximate weight			79	g		
				2.80	OZ.	
Maunting targue base	minimum			24 (20)		
Mounting torque base	founting torque base maximum			35 (30)		
Mounting torque center hole	typical		Non-lubricated threads 13.5		kgf · cm (lbf · in)	
Terminal torque -	minimum			35 (30)		
	maximum			46 (40)		
Case style			Modified JEDEC	TO-244AB Isolated Doubler		

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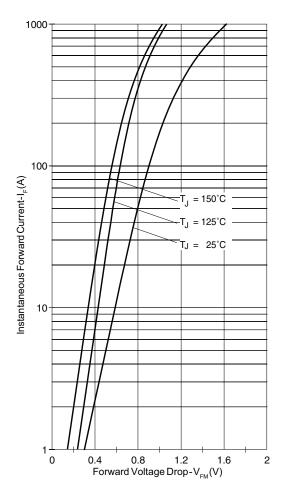


Fig. 1 - Maximum Forward Voltage Drop Characteristics

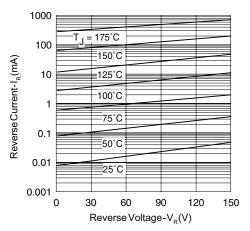


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

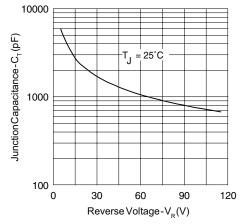


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

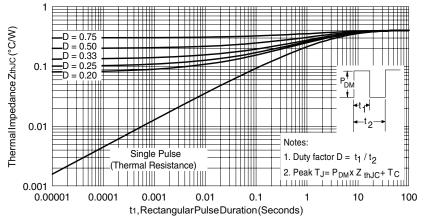


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

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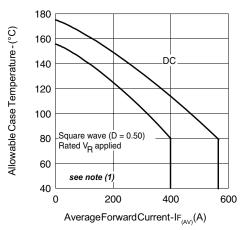


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

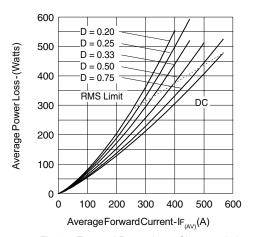


Fig. 6 - Forward Power Loss Characteristics

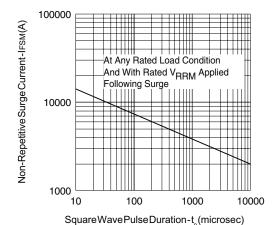


Fig. 7 - Maximum Non-Repetitive Surge Current

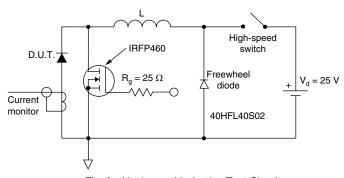


Fig. 8 - Unclamped Inductive Test Circuit

Note

(1) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{th,JC}$; $Pd = Forward power loss = I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6); $Pd_{REV} = Inverse power loss = V_{R1} \times I_R$ (1 - D); I_R at $V_{R1} = 80$ % rated V_R

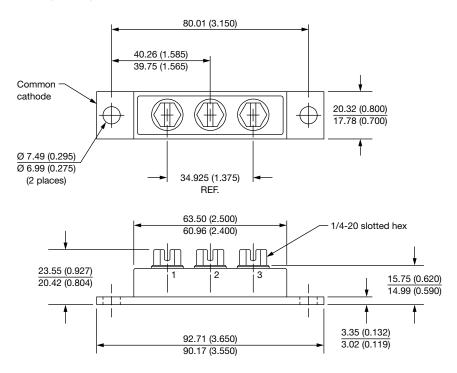
LINKS TO RELATED DOCUMENTS				
Dimensions	www.vishay.com/doc?95269			



Vishay Semiconductors

TO-244AB Isolated

DIMENSIONS in millimeters (inches)







Vishay

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