Vishay High Power Products

FlipKY[®], 1.5 A **Chip Scale Package Schottky Barrier Rectifier**



- Ultra low V_F per footprint area
- Low leakage
- Low thermal resistance
- One-fifth footprint of SMA
- Super low profile (0.6 mm)
- · Available tested on tape and reel

APPLICATIONS

- · Reverse polarity protection
- · Current steering
- · Freewheeling
- Flyback
- Oring

DESCRIPTION

Vishay's FlipKY® product family utilizes wafer level chip scale packaging to deliver Schottky diodes with the lowest V_F to PCB footprint area in industry. The four bump 1.5 x 1.5 mm devices can deliver up to 1.5 A and occupy only 2.3 mm² of board space. The anode and cathode connections are made through solder bump pads on one side of the silicon enabling designers to strategically place the diodes on the PCB. This design not only minimizes board space but also reduces thermal resistance and inductance, which can improve overall circuit efficiency.

Typical applications include hand-held, portable equipment such as cell phones, MP3 players, bluetooth, GPS, PDAs, and portable hard disk drives where space savings and performance are crucial.

MAJOR RATINGS AND CHARACTERISTICS				
SYMBOL	CHARACTERISTICS	MAX.	UNITS	
V _{RRM}		30	V	
I _{F(AV)}	Rectangular waveform	1.5	٨	
I _{FSM}		250	A	
V _F	1.5 Apk, T _J = 125 °C	0.37	V	
TJ		- 55 to 150	°C	

VOLTAGE RATINGS				
PARAMETER	SYMBOL	FCSP230LTR	UNITS	
Maximum DC reverse voltage	V _R	30	M	
Maximum working peak reverse voltage	V _{RWM}		v	

PI 30 V VR

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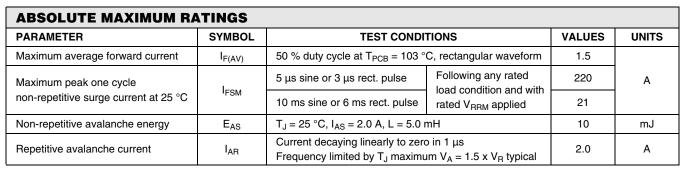


FlipKY [®]	

RODUCT SUMMARY				
I _{F(AV)}	1.5 A			
N/	20 V			

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ELECTRICAL SPECIFICATIONS (T _J = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	TEST CONDITIONS		TYP.	MAX.	UNITS
	V _{FM} ⁽¹⁾	1.5 A	T _J = 25 °C	0.44	0.48	V
Maximum forward voltage drop		3 A		0.52	0.56	
See fig. 1		1.5 A	- T _J = 125 °C	0.34	0.37	
		3 A		0.44	0.48	
Maximum reverse leakage current	I _{RM} ⁽¹⁾	V _R = Rated V _R	T _J = 25 °C	30	100	μA
See fig. 2			T _J = 125 °C	10	30	mA
Maximum junction capacitance	CT	$V_{R} = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 °C		-	210	pF
Maximum voltage rate of charge	dV/dt	Rated V _R		-	10 000	V/µs

Note

 $^{(1)}$ Pulse width < 300 $\mu s,$ duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Maximum junction and storage temperature range	T _J ⁽¹⁾ , T _{Stg}		- 55 to 150	°C	
Typical thermal resistance, junction to PCB	R _{thJL} ⁽²⁾	DC operation	40	°C/W	
Maximum thermal resistance, junction to ambient	R _{thJA}		62	0/11	

Notes

(1) $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{thJA}}$ thermal runaway condition for a diode on its own heatsink

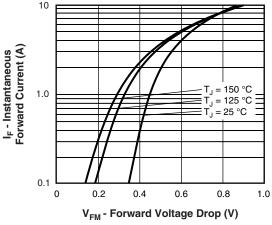
⁽²⁾ Mounted 1" square PCB

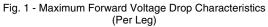


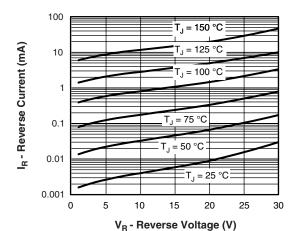
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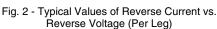
FlipKY[®], 1.5 A Chip Scale Package Schottky Barrier Rectifier

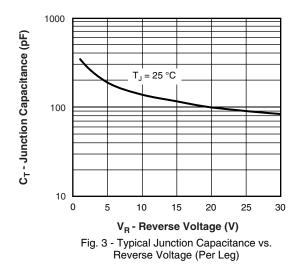
Allowable Case Temperature (°C)

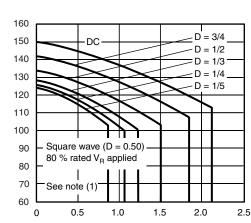




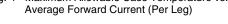








I_{F(AV)} - Average Forward Current (A) Fig. 4 - Maximum Allowable Case Temperature vs.



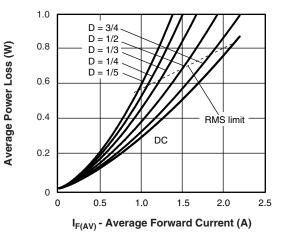
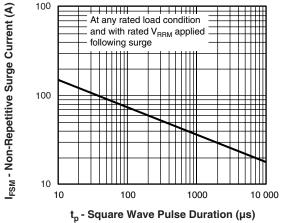


Fig. 5 - Forward Power Loss Characteristics (Per Leg)





Note

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

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 80 % V_R applied



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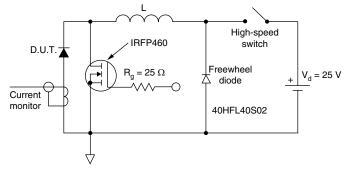


Fig. 7 - Unclamped Inductive Test Circuit

LINKS TO RELATED DOCUMENTS		
Dimensions	http://www.vishay.com/doc?95282	
Part marking information	http://www.vishay.com/doc?95281	
Packaging information	http://www.vishay.com/doc?95062	



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