

FlipKY®, 1 A



FlipKY®

FEATURES

- Ultralow V_F per footprint area
- Low thermal resistance
- One-fifth footprint of SMA
- Super low profile (< 0.7 mm)
- Available tested on tape and reel
- Small footprint, surface mountable
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Designed for consumer level

DESCRIPTION

True chip-scale packaging is available from Vishay HPP. The FCSP130ETR surface mount Schottky rectifier has been designed for applications requiring low forward drop and very small footprints on PC boards. Typical applications are in disk drives, switching power supplies, converters, freewheeling diodes, battery charging, and reverse battery protection.

The FlipKY® package, is one-fifth the footprint of a comparable SMA package and has a profile of less than 0.7 mm. Combined with the low thermal resistance of the die level device, this makes the FlipKY the best device for applications where printed circuit board space is at a premium and in extremely thin application environments such as battery packs, cell phones and PCMCIA cards.

PRODUCT SUMMARY

$I_{F(AV)}$	1 A
V_R	30 V

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	1.0	A
V_{RRM}		30	V
I_{FSM}	$t_p = 5 \mu s$ sine	220	A
V_F	1.0 Apk, $T_J = 125^\circ C$	0.33	V
T_J	Range	- 55 to 150	$^\circ C$

VOLTAGE RATINGS

PARAMETER	SYMBOL	FCSP130ETR	UNITS
Maximum DC reverse voltage	V_R	30	V
Maximum working peak reverse voltage	V_{RWM}		

FCSP130ETR

Vishay High Power Products

FlipKY®, 1 A



ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current	I _{F(AV)}	50 % duty cycle at T _{PCB} = 120 °C, rectangular waveform		1.0	A
Maximum peak one cycle non-repetitive surge current at 25 °C	I _{FSM}	5 μs sine or 3 μs rect. pulse	Following any rated load condition and with rated V _{RRM} applied	220	
		10 ms sine or 6 ms rect. pulse		21	
Non-repetitive avalanche energy	E _{AS}	T _J = 25 °C, I _{AS} = 2.0 A, L = 5.0 mH		10	mJ
Repetitive avalanche current	I _{AR}	Current decaying linearly to zero in 1 μs Frequency limited by T _J maximum V _A = 1.5 x V _R typical		2.0	A

ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		TYP.	MAX.	UNITS
Maximum forward voltage drop	$V_{FM}^{(1)}$	1 A	$T_J = 25\text{ }^{\circ}\text{C}$	0.41	0.45	V
		2 A		0.46	0.50	
		1 A	$T_J = 125\text{ }^{\circ}\text{C}$	0.29	0.33	
		2 A		0.37	0.40	
Maximum reverse leakage current	$I_{RM}^{(1)}$	$V_R = \text{Rated } V_R$	$T_J = 25\text{ }^{\circ}\text{C}$	30	100	μA
			$T_J = 125\text{ }^{\circ}\text{C}$	10	30	mA
Maximum junction capacitance	C_T	$V_R = 5\text{ V}_{DC}$ (test signal range 100 kHz to 1 MHz) $25\text{ }^{\circ}\text{C}$		-	210	pF
Maximum voltage rate of charge	dV/dt	Rated V_R		-	10 000	V/ μs

Note

(1) Pulse width < 300 μs , 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	$^{\circ}\text{C}$
Typical thermal resistance, junction to PCB	$R_{thJL}^{(2)}$	DC operation	40	$^{\circ}\text{C/W}$
Maximum thermal resistance, junction to ambient	R_{thJA}		62	

Notes

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

(2) Mounted on 1" square PCB

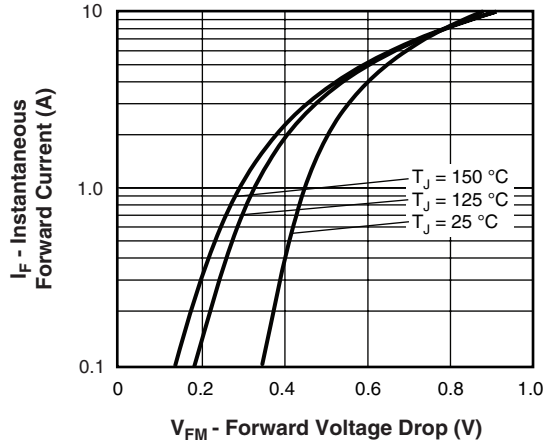


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

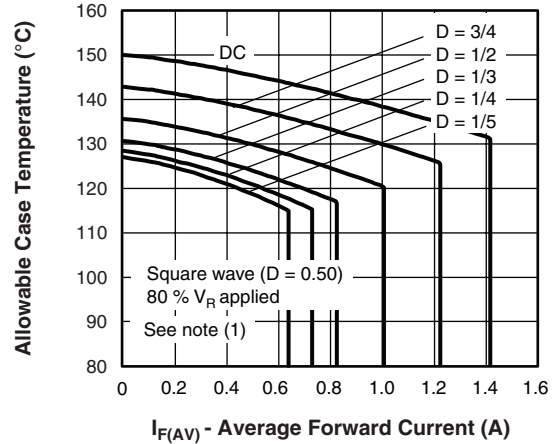


Fig. 4 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

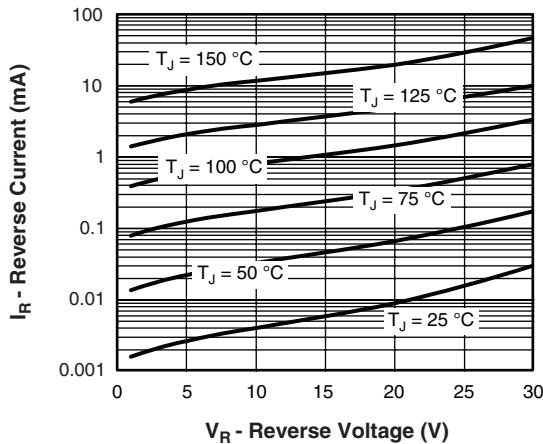


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

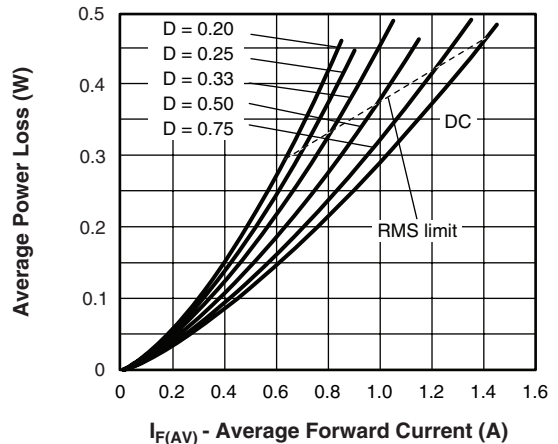


Fig. 5 - Forward Power Loss Characteristics (Per Leg)

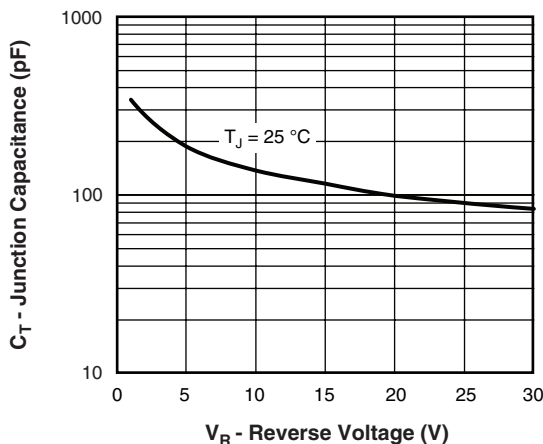


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

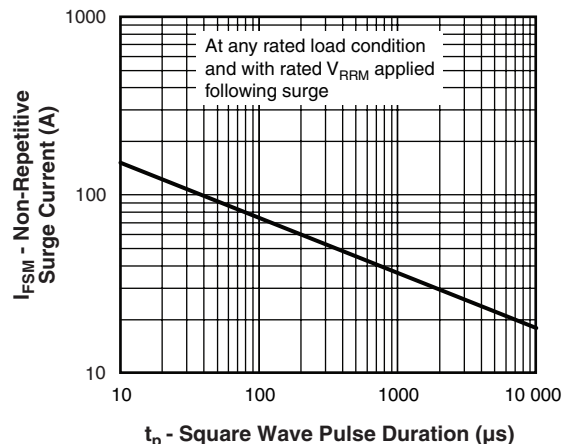


Fig. 6 - Maximum Non-Repetitive Surge Current (Per Leg)

Note

(1) Formula used: $T_C = T_J - (P_d + P_{dREV}) \times R_{thJC}$;

P_d = Forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6); P_{dREV} = Inverse power loss = $V_{R1} \times I_R (1 - D)$; I_R at 80 % V_R applied

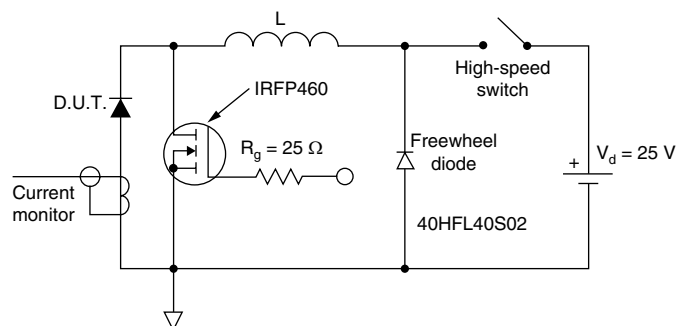


Fig. 7 - Unclamped Inductive Test Circuit

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95359
Part marking information	http://www.vishay.com/doc?95281
Packaging information	http://www.vishay.com/doc?95062



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 expand 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.