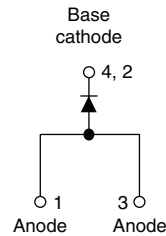


Schottky Rectifier, 5.5 A


I-PAK


FEATURES

- 150 °C T_J operation
- Unique I-PAK outline
- Center tap configuration
- Small foot print
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead (Pb)-free ("PbF" suffix)
- Designed and qualified for AEC Q101 level


RoHS*
COMPLIANT

PRODUCT SUMMARY

$I_{F(AV)}$	5.5 A
V_R	30 V

DESCRIPTION

The 50UQ03GPbF I-PAK Schottky rectifier has been designed for applications requiring low forward drop and small foot prints on PC board. Typical applications are in disk drives, switching power supplies, converters, freewheeling diodes, battery charging, and reverse battery protection.

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	5.5	A
V_{RRM}		30	V
I_{FSM}	$t_p = 5 \mu s$ sine	240	A
V_F	5 Apk, $T_J = 125^\circ C$	0.35	V
T_J	Range	- 40 to 150	$^\circ C$

VOLTAGE RATINGS

PARAMETER	SYMBOL	50UQ03GPbF	UNITS
Maximum DC reverse voltage	V_R	30	V
Maximum working peak reverse voltage	V_{RWM}		

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current See fig. 5	$I_{F(AV)}$	50 % duty cycle at $T_C = 136^\circ C$, rectangular waveform	5.5	A
Maximum peak one cycle non-repetitive surge current See fig. 7	I_{FSM}	5 μs sine or 3 μs rect. pulse	240	
		10 ms sine or 6 ms rect. pulse	100	
Non-repetitive avalanche energy	E_{AS}	$T_J = 25^\circ C$, $I_{AS} = 2.0 A$, $L = 5 mH$	10	mJ
Repetitive avalanche current	I_{AR}	Current decaying linearly to zero in 1 μs Frequency limited by T_J maximum $V_A = 1.5 \times V_R$ typical	2.0	A

* Pb containing terminations are not RoHS compliant, exemptions may apply

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	$V_{FM}^{(1)}$	5 A	$T_J = 25\text{ }^\circ\text{C}$	0.46	V
		10 A		0.53	
		5 A	$T_J = 125\text{ }^\circ\text{C}$	0.39	
		10 A		0.48	
Maximum reverse leakage current See fig. 2	$I_{RM}^{(1)}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	1.1	mA
		$T_J = 125\text{ }^\circ\text{C}$		58	
Threshold voltage	$V_{F(TO)}$	$T_J = T_J \text{ maximum}$		0.19	V
Forward slope resistance	r_t			22.22	$\text{m}\Omega$
Typical junction capacitance	C_T	$V_R = 5\text{ }V_{DC}$ (test signal range 100 kHz to 1 MHz) $25\text{ }^\circ\text{C}$		590	pF
Typical series inductance	L_S	Measured lead to lead 5 mm from package body		5.0	nH

Note

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

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction and storage temperature range	$T_J^{(1)}, T_{Stg}$			- 40 to 150	$^\circ\text{C}$
Maximum thermal resistance, junction to case	R_{thJC}	DC operation See fig. 4		3.0	$^\circ\text{C}/\text{W}$
Approximate weight				0.3	g
				0.01	oz.
Marking device		Case style I-PAK (similar to TO-251SL)		50UQ03G	

Note

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

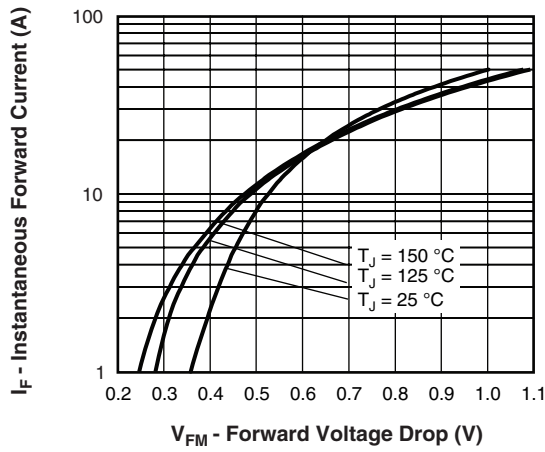


Fig. 1 - Maximum Forward Voltage Drop Characteristics

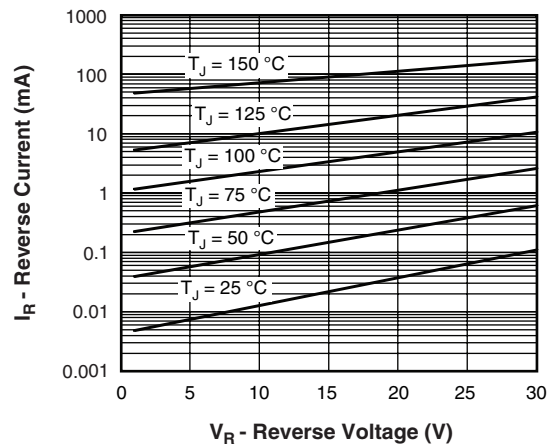


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

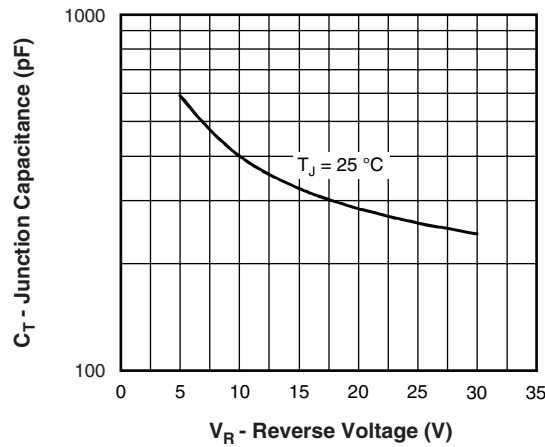


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

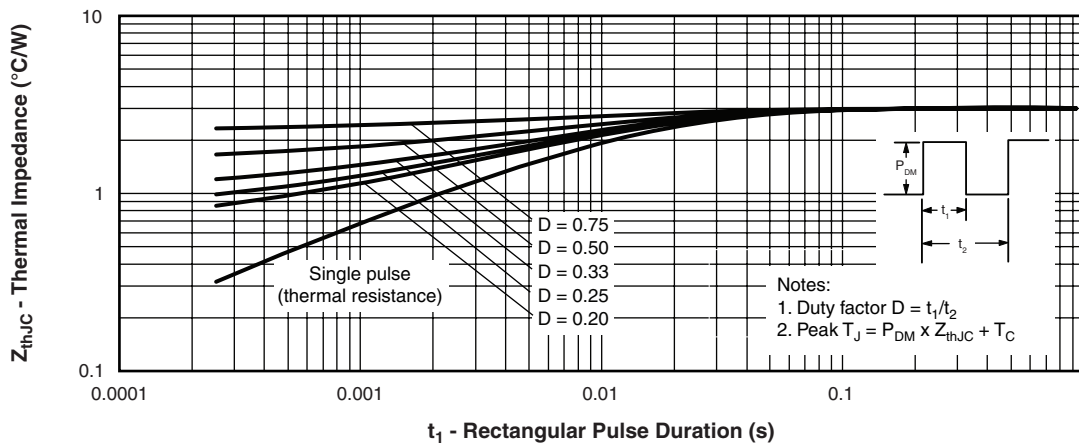


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

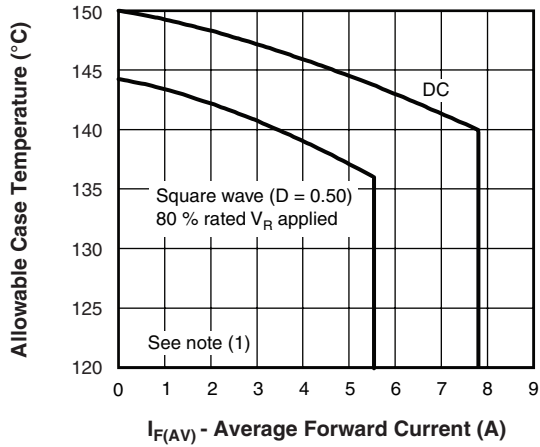


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

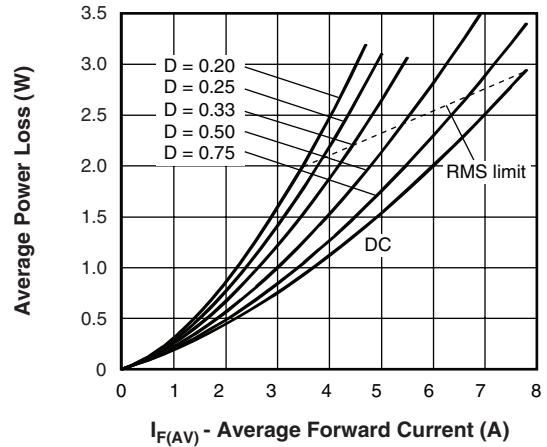


Fig. 6 - Forward Power Loss Characteristics

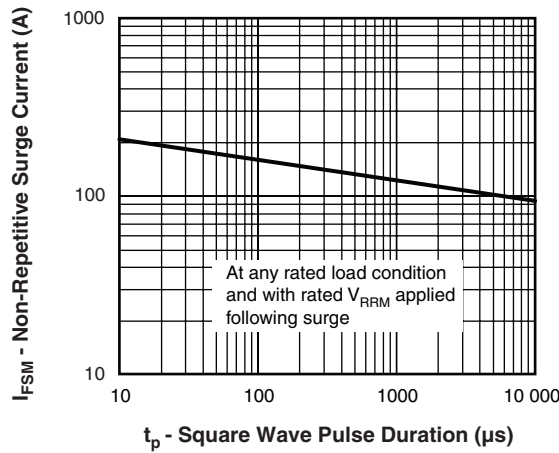


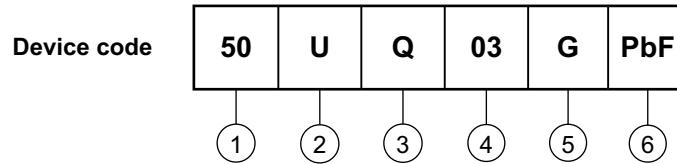
Fig. 7 - Maximum Non-Repetitive Surge Current

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 $V_{R1} = 80\%$ rated V_R



ORDERING INFORMATION TABLE



- 1** - Current rating
- 2** - Package:
U = I-PAK
- 3** - Q = Schottky "Q" series
- 4** - Voltage rating code x 10 = V_{RRM} (03 = 30 V)
- 5** - Schottky generation
- 6** -
 - None = Standard production
 - PbF = Lead (Pb)-free

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95047
Part marking information	http://www.vishay.com/doc?95055



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