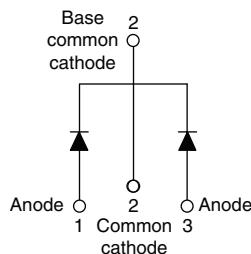


Schottky Rectifier, 2 x 15 A


D²PAK


FEATURES

- 150 °C T_J operation
- Center tap configuration
- Very low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Designed and qualified for Q101 level

DESCRIPTION

This center tap Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 150 °C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

PRODUCT SUMMARY	
$I_{F(AV)}$	2 x 15 A
V_R	30 V

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	2 x 15	A
V_{RRM}		30	V
V_F	15 Apk, $T_J = 125$ °C (per leg)	0.37	V
T_J	Range	- 55 to 150	°C

VOLTAGE RATINGS			
PARAMETER	SYMBOL	STPS30L30CG	UNITS
Maximum DC reverse voltage	V_R		
Maximum working peak reverse voltage	V_{RWM}	30	V

ABSOLUTE MAXIMUM RATINGS						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum average forward current per device	$I_{F(AV)}$	50 % duty cycle at $T_C = 140$ °C, rectangular waveform		30	A	
per leg				15		
Maximum peak one cycle non-repetitive surge current	I_{FSM}	5 μ s sine or 3 μ s rect. pulse	Following any rated load condition and with rated V_{RRM} applied	1450		
		10 ms sine or 6 ms rect. pulse		220		
Non-repetitive avalanche energy per leg	E_{AS}	$T_J = 25$ °C, $I_{AS} = 2$ A, $L = 7.5$ 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		2	A	

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum forward voltage drop per leg	$V_{FM}^{(1)}$	15 A	$T_J = 25 \text{ }^\circ\text{C}$	0.46	V	
		30 A		0.57		
		15 A	$T_J = 125 \text{ }^\circ\text{C}$	0.37		
		30 A		0.50		
Maximum reverse leakage current per leg	I_{RM}	$T_J = 25 \text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	1.50	mA	
		$T_J = 125 \text{ }^\circ\text{C}$		350		
Maximum junction capacitance per leg	C_T	$V_R = 5 \text{ V}_{\text{DC}}$ (test signal range 100 kHz to 1 MHz) $25 \text{ }^\circ\text{C}$		1500	pF	
Typical series inductance per leg	L_S	Measured lead to lead 5 mm from package body		8.0	nH	
Maximum voltage rate of change	dV/dt	Rated V_R		10 000	V/ μ s	

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 150	$^\circ\text{C}$
Maximum thermal resistance, junction to case per leg	R_{thJC}	DC operation		1.5	$^\circ\text{C}/\text{W}$
Maximum thermal resistance, junction to case per package				0.8	
Approximate weight				2	g
				0.07	oz.
Mounting torque	minimum			6 (5)	kgf · cm (lbf · in)
	maximum			12 (10)	
Marking device		Case style D ² PAK		STPS30L30CG	

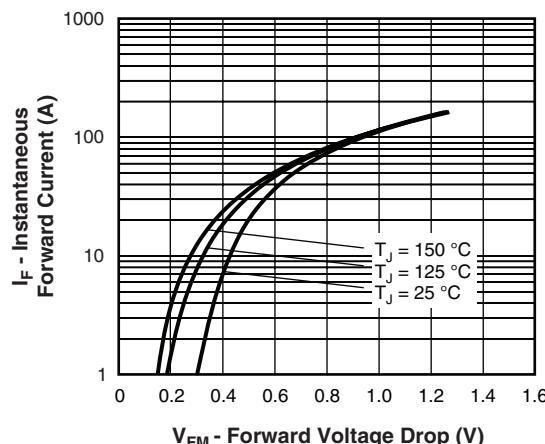


Fig. 1 - Maximum Forward Voltage Drop Characteristics

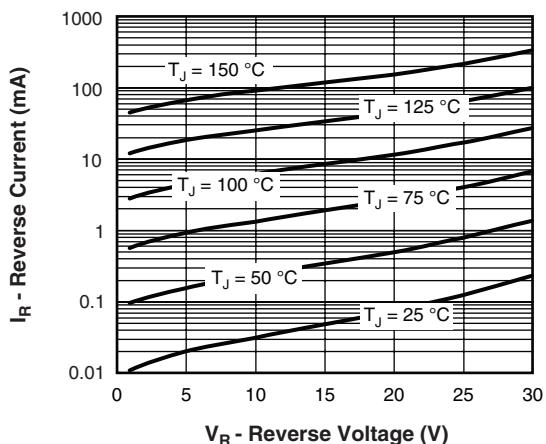


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

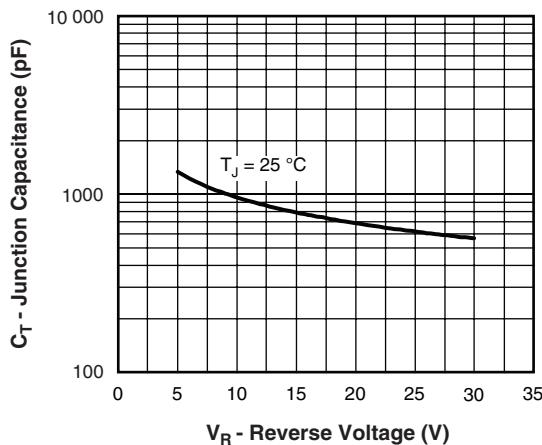


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

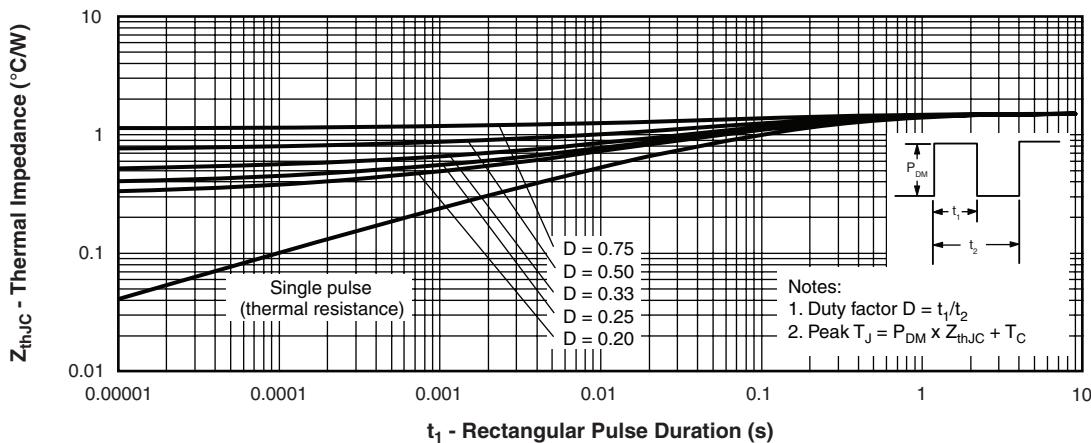


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

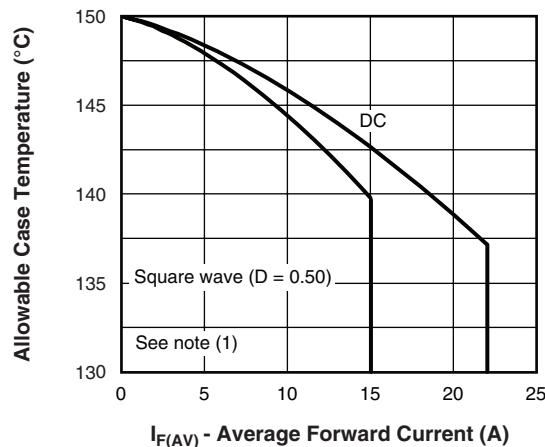


Fig. 5 - Maximum Allowable Case Temperature vs.
Average Forward Current

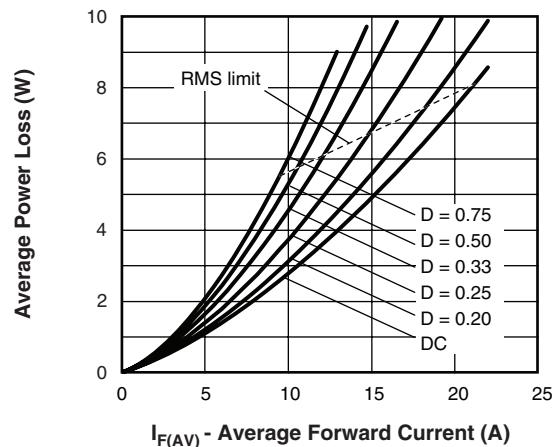


Fig. 6 - Forward Power Loss Characteristics

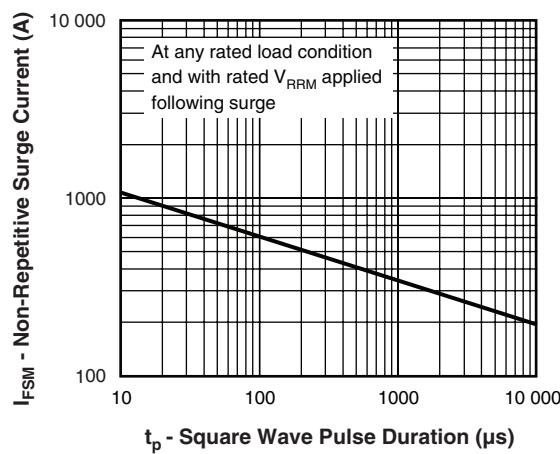


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

Note

(1) Formula used: $T_C = T_J - P_d + R_{thJC}$
 $P_d = \text{Forward power loss} = I_{F(AV)} \times V_{FM} \text{ at } (I_{F(AV)}/D)$ (see fig. 6)

ORDERING INFORMATION TABLE

Device code	STPS	30	L	30	C	G	TRL	-
	1	2	3	4	5	6	7	8
1	-	Essential part number						
2	-	Current rating (30 A)						
3	-	L = Low voltage						
4	-	Voltage rating (30 = 30 V)						
5	-	C = Common cathode						
6	-	G = D ² PAK package						
7	-	<ul style="list-style-type: none"> • None = Tube (50 pieces) • TRL = Tape and reel (left oriented) • TRR = Tape and reel (right oriented) 						
8	-	<ul style="list-style-type: none"> • None = Standard production • PbF = Lead (Pb)-free (for D²PAK tube) • P = Lead (Pb)-free (for D²PAK TRR and TRL) 						

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95046
Part marking information	http://www.vishay.com/doc?95054
Packaging information	http://www.vishay.com/doc?95032
SPICE model	http://www.vishay.com/doc?95287

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