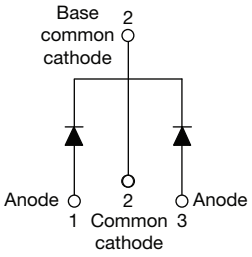
Schottky Rectifier, 2 x 15 A

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
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Halogen-free according to IEC 61249-2-21 definition
- Compliant to RoHS directive 2002/95/EC
- AEC-Q101 qualified

RoHS COMPLIANT
HALOGEN FREE

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	VS-STPS30L30CGPbF	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	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 µs sine or 3 µs 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 µs Frequency limited by T_J maximum V_A = 1.5 x 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 °C	0.46	V
		30 A		0.57	
		15 A	T_J = 125 °C	0.37	
		30 A		0.50	
Maximum reverse leakage current per leg	I_{RM}	T_J = 25 °C	V_R = Rated V_R	1.50	mA
		T_J = 125 °C		350	
Maximum junction capacitance per leg	C_T	V_R = 5 V_{DC} (test signal range 100 kHz to 1 MHz), 25 °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/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, T_{Stg}		- 55 to 150	°C
Maximum thermal resistance, junction to case per leg		R_{thJC}	DC operation	1.5	°C/W
				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^2PAK	STPS30L30CG	

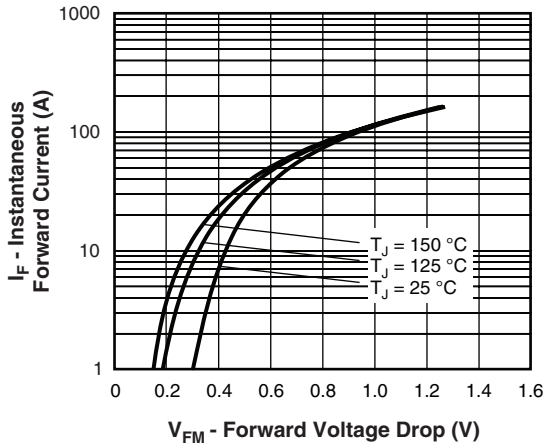


Fig. 1 - Maximum Forward Voltage Drop Characteristics

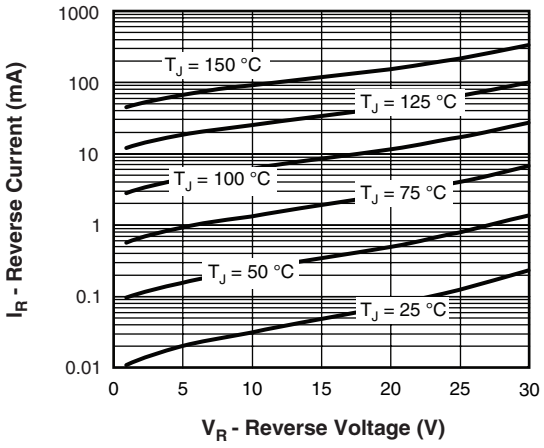


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

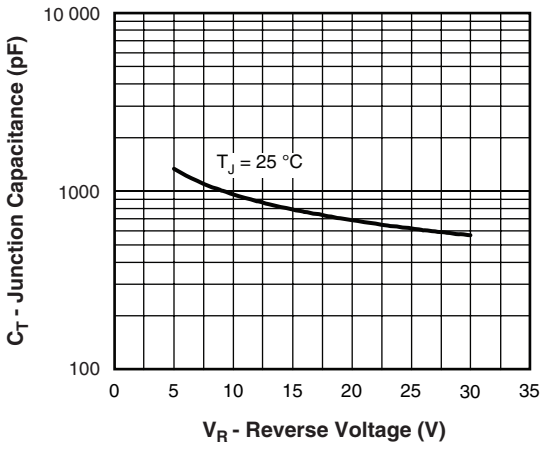


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

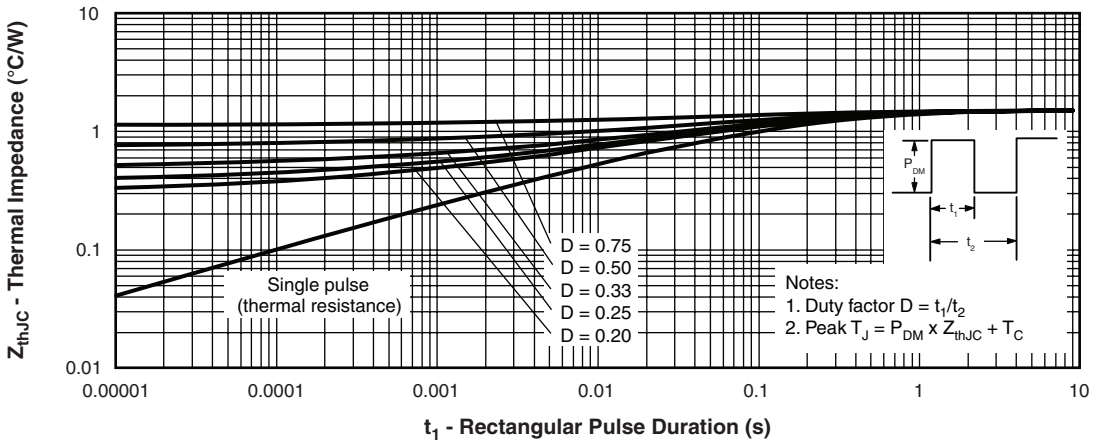


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

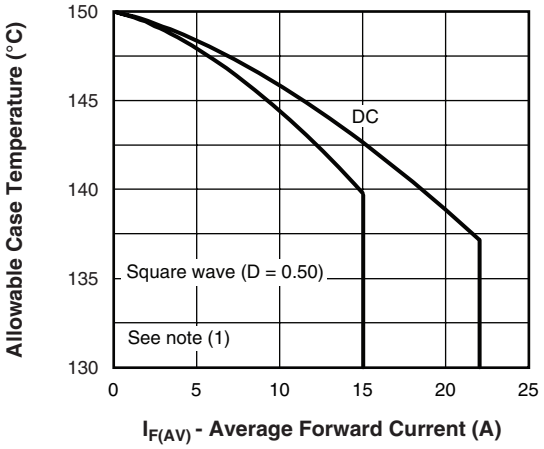


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

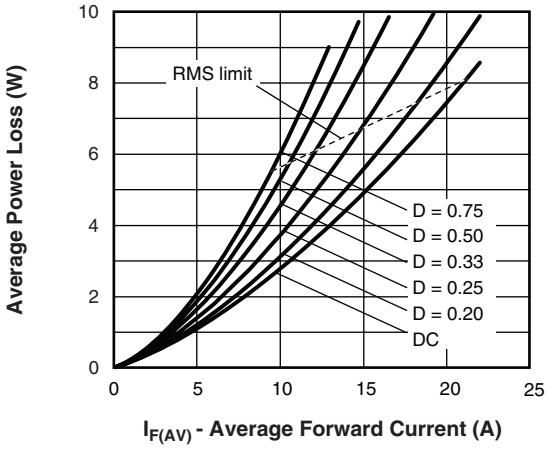


Fig. 6 - Forward Power Loss Characteristics

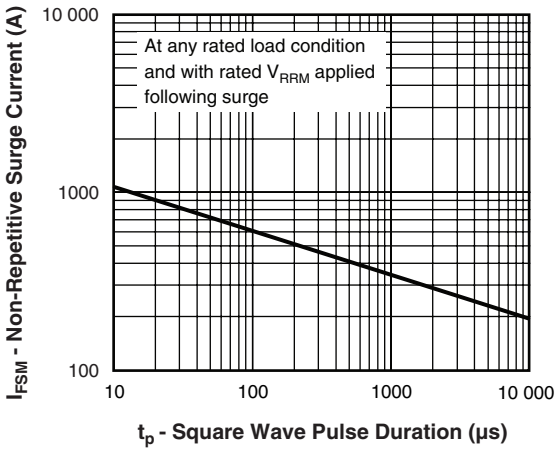


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

Note

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

ORDERING INFORMATION TABLE

Device code

VS-	STPS	30	L	30	C	G	TRL	PbF
1	2	3	4	5	6	7	8	9

- 1 - HPP product suffix
- 2 - Essential part number
- 3 - Current rating (30 A)
- 4 - L = Low voltage
- 5 - Voltage rating (30 = 30 V)
- 6 - C = Common cathode
- 7 - G = D^2PAK package
- 8 -
  - None = Tube (50 pieces)
  - TRL = Tape and reel (left oriented)
  - TRR = Tape and reel (right oriented)
- 9 -
  - PbF = Lead (Pb)-free (for D^2PAK tube)
  - P = Lead (Pb)-free (for D^2PAK TRR and TRL)

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

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