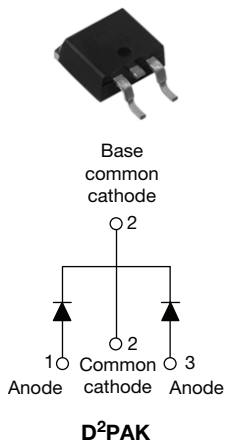
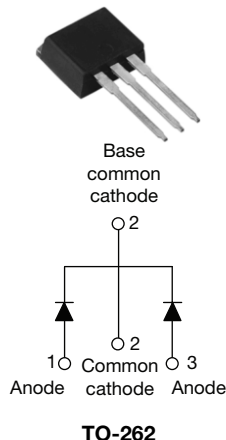


Schottky Rectifier, 2 x 15 A

VS-30CTQ...GSPbF



VS-30CTQ...G-1PbF



FEATURES

- 175 °C T_J operation
- Center tap configuration
- Low forward voltage drop
- High frequency operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- 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

PRODUCT SUMMARY

$I_{F(AV)}$	2 x 15 A
V_R	80 V/100 V

DESCRIPTION

This center tap Schottky rectifier series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175 °C junction temperature. Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	30	A
V_{RRM}		80/100	V
I_{FSM}	$t_p = 5 \mu s$ sine	650	A
V_F	15 Apk, $T_J = 125^\circ C$ (per leg)	0.69	V
T_J	Range	- 55 to 175	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	VS-30CTQ080GSPbF VS-30CTQ080G-1PbF	VS-30CTQ100GSPbF VS-30CTQ100G-1PbF	UNITS
Maximum DC reverse voltage	V_R	80	100	V
Maximum working peak reverse voltage	V_{RWM}			

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current per device See fig. 5	$I_{F(AV)}$	50 % duty cycle at $T_C = 129^\circ C$, rectangular waveform	30	A
			15	
Maximum peak one cycle non-repetitive surge current per leg See fig. 7	I_{FSM}	5 μs sine or 3 μs rect. pulse	650	
		10 ms sine or 6 ms rect. pulse	210	
Non-repetitive avalanche energy per leg	E_{AS}	$T_J = 25^\circ C$, $I_{AS} = 0.50$ A, $L = 60$ mH	7.50	mJ
Repetitive avalanche current per leg	I_{AR}	Current decaying linearly to zero in 1 μs Frequency limited by T_J maximum $V_A = 1.5 \times V_R$ typical	0.50	A

VS-30CTQ...GSPbF, VS-30CTQ...G-1PbF Series



Vishay High Power Products Schottky Rectifier, 2 x 15 A

ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum forward voltage drop per leg See fig. 1	$V_{FM}^{(1)}$	15 A	$T_J = 25\text{ }^{\circ}\text{C}$	0.86	V	
		30 A		1.05		
		15 A	$T_J = 125\text{ }^{\circ}\text{C}$	0.69		0.82
		30 A				
Maximum reverse leakage current per leg See fig. 2	$I_{RM}^{(1)}$	$T_J = 25\text{ }^{\circ}\text{C}$	$V_R = \text{Rated } V_R$	0.28	mA	
		$T_J = 125\text{ }^{\circ}\text{C}$		7.0		
Maximum junction capacitance per leg	C_T	$V_R = 5\text{ }V_{DC}$ (test signal range 100 kHz to 1 MHz), $25\text{ }^{\circ}\text{C}$		500	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 175	$^{\circ}\text{C}$
Maximum thermal resistance, junction to case per leg	R_{thJC}	DC operation	3.25	$^{\circ}\text{C/W}$
Maximum thermal resistance, junction to case per package			1.63	
Typical thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth and greased	0.50	
Approximate weight			2	g
			0.07	oz.
Mounting torque	minimum		6 (5)	kgf · cm
	maximum		12 (10)	(lbf · in)
Marking device		Case style D ² PAK	30CTQ080GS	
			30CTQ100GS	
		Case style TO-262	30CTQ080G-1	
			30CTQ100G-1	



VS-30CTQ...GSPbF, VS-30CTQ...G-1PbF Series

Schottky Rectifier, 2 x 15 A Vishay High Power Products

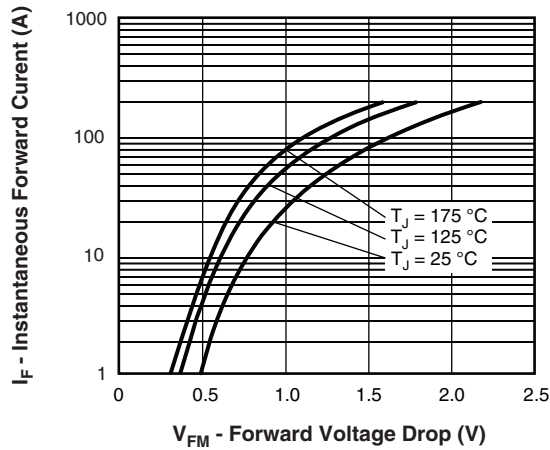


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

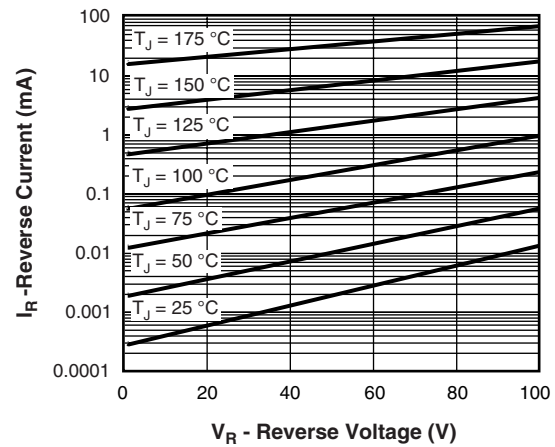


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

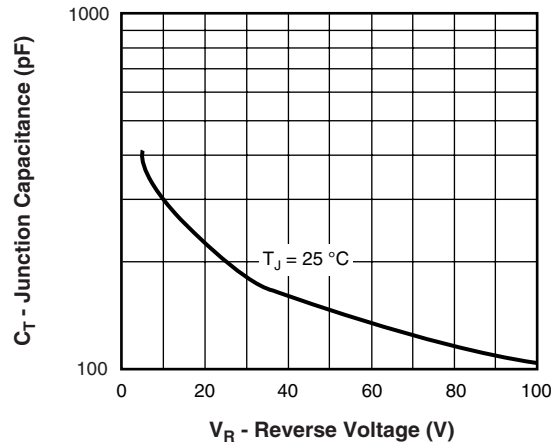


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

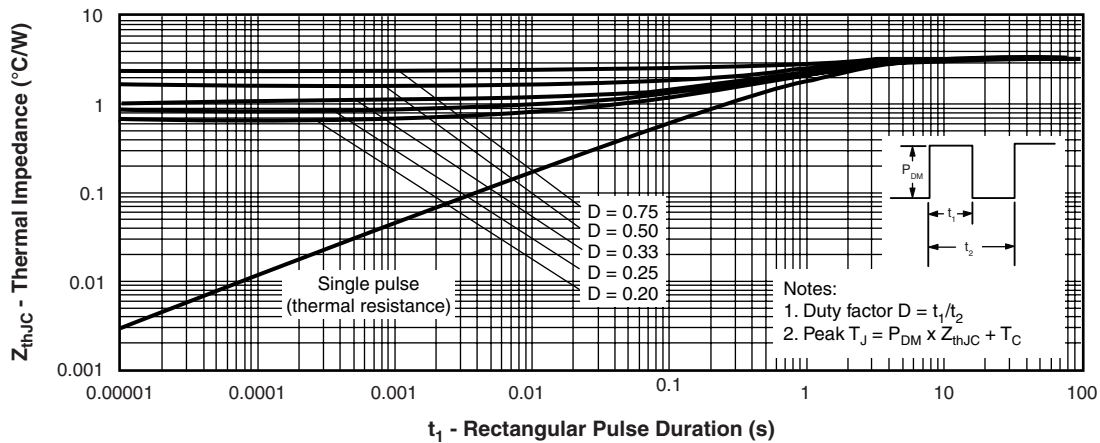


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

VS-30CTQ...GSPbF, VS-30CTQ...G-1PbF Series

Vishay High Power Products Schottky Rectifier, 2 x 15 A

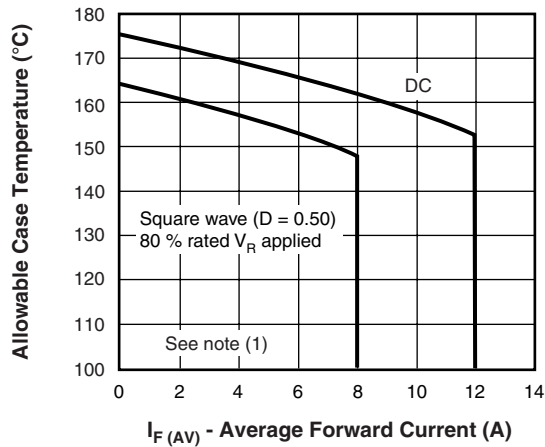


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

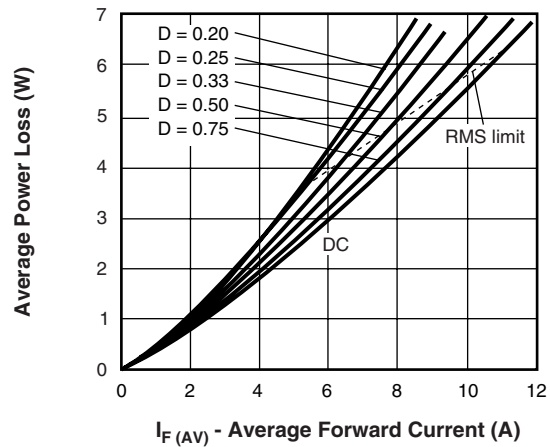


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

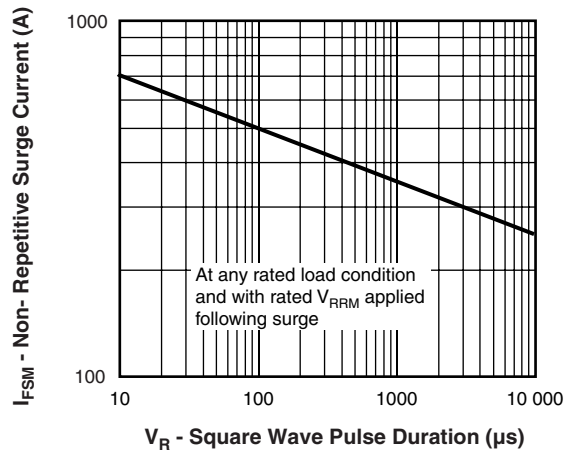


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)



Fig. 8 - Unclamped Inductive Test Circuit

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 $V_{R1} = 10$ V



VS-30CTQ...GSPbF, VS-30CTQ...G-1PbF Series

Schottky Rectifier, 2 x 15 A Vishay High Power Products

ORDERING INFORMATION TABLE

Device code	VS-	30	C	T	Q	100	G	S	TRL	PbF
	1	2	3	4	5	6	7	8	9	10

- | | | | |
|-----------|---|--|---------------------------|
| 1 | - | HPP product suffix | |
| 2 | - | Current rating (30 = 30 A) | |
| 3 | - | C = Common cathode | |
| 4 | - | T = TO-220, TO-262, D ² PAK | |
| 5 | - | Q = Schottky "Q" series | |
| 6 | - | Voltage ratings | 080 = 80 V
100 = 100 V |
| 7 | - | G = Schottky generation | |
| 8 | - | • -1 = TO-262
• S = D ² PAK | |
| 9 | - | • None = Tube (50 pieces)
• TRL = Tape and reel (left oriented - for D ² PAK only)
• TRR = Tape and reel (right oriented - for D ² PAK only) | |
| 10 | - | • PbF = Lead (Pb)-free (for D ² PAK tube and TO-262)
• P = Lead (Pb)-free (for D ² PAK TRL and TRR) | |

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95014
Part marking information	www.vishay.com/doc?95008
Packaging information	www.vishay.com/doc?95032

D²PAK, TO-262

DIMENSIONS FOR D²PAK in millimeters and inches

Conforms to JEDEC outline D²PAK (SMD-220)



DIMENSIONS FOR TO-262 in millimeters and inches



SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	4.06	4.83	0.160	0.190	
A1	2.03	3.02	0.080	0.119	
b	0.51	0.99	0.020	0.039	
b1	0.51	0.89	0.020	0.035	4
b2	1.14	1.78	0.045	0.070	
b3	1.14	1.73	0.045	0.068	4
c	0.38	0.74	0.015	0.029	
c1	0.38	0.58	0.015	0.023	4
c2	1.14	1.65	0.045	0.065	
D	8.51	9.65	0.335	0.380	2
D1	6.86	8.00	0.270	0.315	3
E	9.65	10.67	0.380	0.420	2, 3
E1	7.90	8.80	0.311	0.346	3
e	2.54 BSC		0.100 BSC		
L	13.46	14.10	0.530	0.555	
L1	-	1.65	-	0.065	3
L2	3.56	3.71	0.140	0.146	

Notes

- (1) Dimensioning and tolerancing as per ASME Y14.5M-1994
- (2) Dimension D and E do not include mold flash. Mold flash shall not exceed 0.127 mm (0.005") per side. These dimensions are measured at the outmost extremes of the plastic body
- (3) Thermal pad contour optional within dimension E, L1, D1 and E1
- (4) Dimension b1 and c1 apply to base metal only
- (5) Controlling dimension: inches

- (6) Outline conform to JEDEC TO-262 except A1 (maximum), b (minimum) and D1 (minimum) where dimensions derived the actual package outline



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