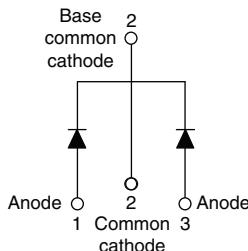


Schottky Rectifier, 2 x 15 A



TO-220AB



PRODUCT SUMMARY	
Package	TO-220AB
$I_{F(AV)}$	2 x 15 A
V_R	30 V
V_F at I_F	0.37 V
I_{RM} max.	350 mA at 125 °C
T_J max.	150 °C
Diode variation	Common cathode
E_{AS}	15 mJ

FEATURES

- 150 °C T_J operation
- Very 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
- Compliant to RoHS Directive 2002/95/EC
- Designed and qualified according to JEDEC-JESD47
- Halogen-free according to IEC 61249-2-21 definition (-N3 only)



RoHS
COMPLIANT
HALOGEN
FREE
Available

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, freewheeling diodes, and reverse battery protection.

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

VOLTAGE RATINGS				
PARAMETER	SYMBOL	VS-30L30CTPBF	VS-30L30CT-N3	UNITS
Maximum DC reverse voltage	V_R			
Maximum working peak reverse voltage	V_{RWM}	30	30	V

ABSOLUTE MAXIMUM RATINGS								
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS		
Maximum average forward current	$I_{F(AV)}$	50 % duty cycle at T_C = 140 °C, rectangular waveform			30	A		
per device					15			
per leg								
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				
non-repetitive surge current		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} ⁽¹⁾	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
Maximum thermal resistance, junction to case per package				0.8	
Approximate weight				2.0	g
				0.07	oz.
Mounting torque	minimum			6 (5)	kgf · cm (lbf · in)
	maximum			12 (10)	
Marking device		Case style TO-220AB		30L30CT	

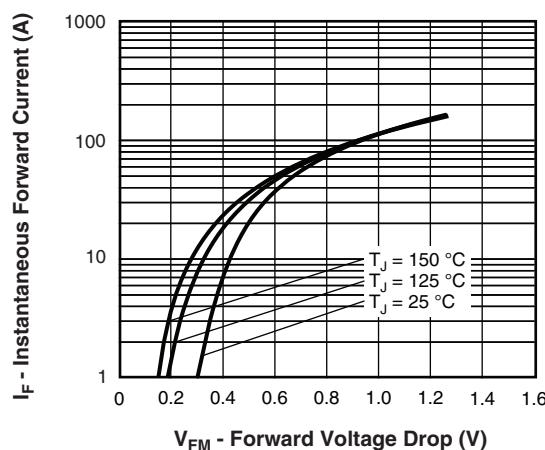


Fig. 1 - Maximum Forward Voltage Drop Characteristics

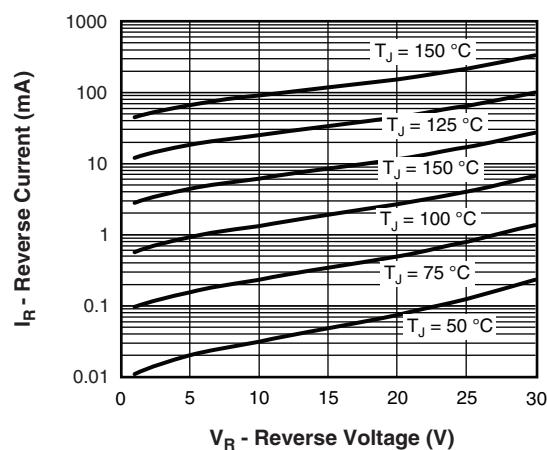


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

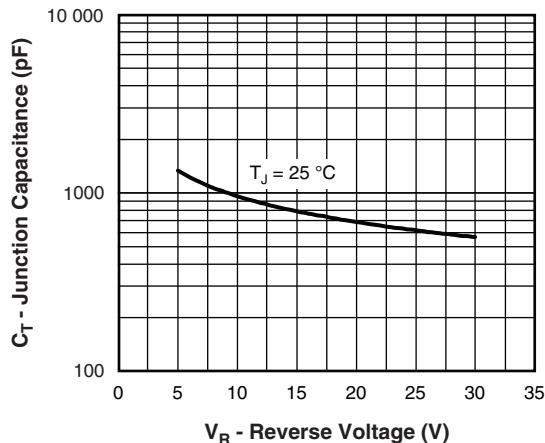


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

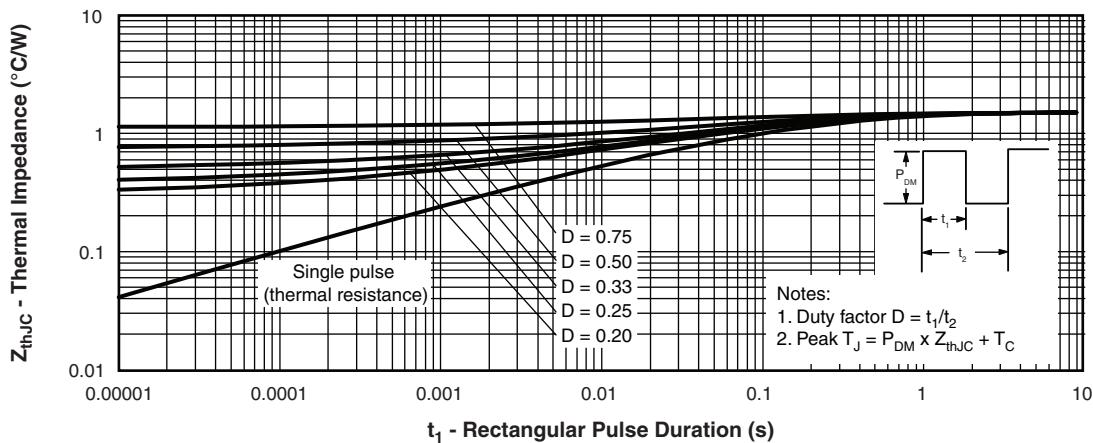


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

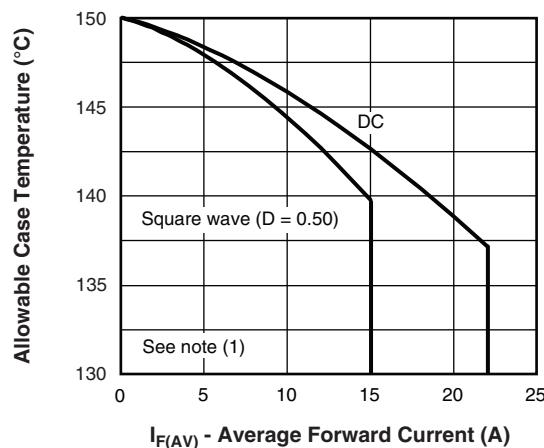


Fig. 5 - Maximum Allowable Case Temperature vs.
Average Forward Current

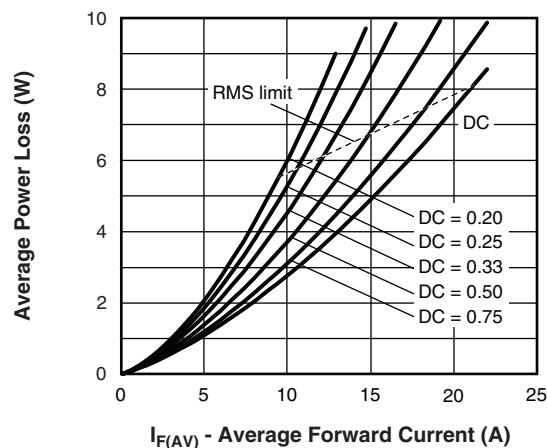


Fig. 6 - Forward Power Loss Characteristics

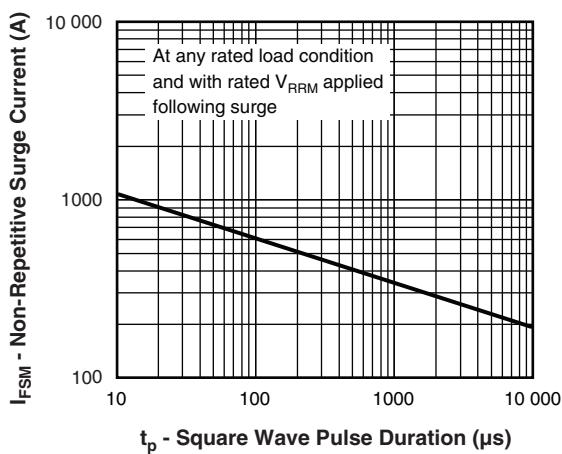


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

Note

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

ORDERING INFORMATION TABLE

Device code	VS-	30	L	30	C	T	PbF
	1	2	3	4	5	6	7

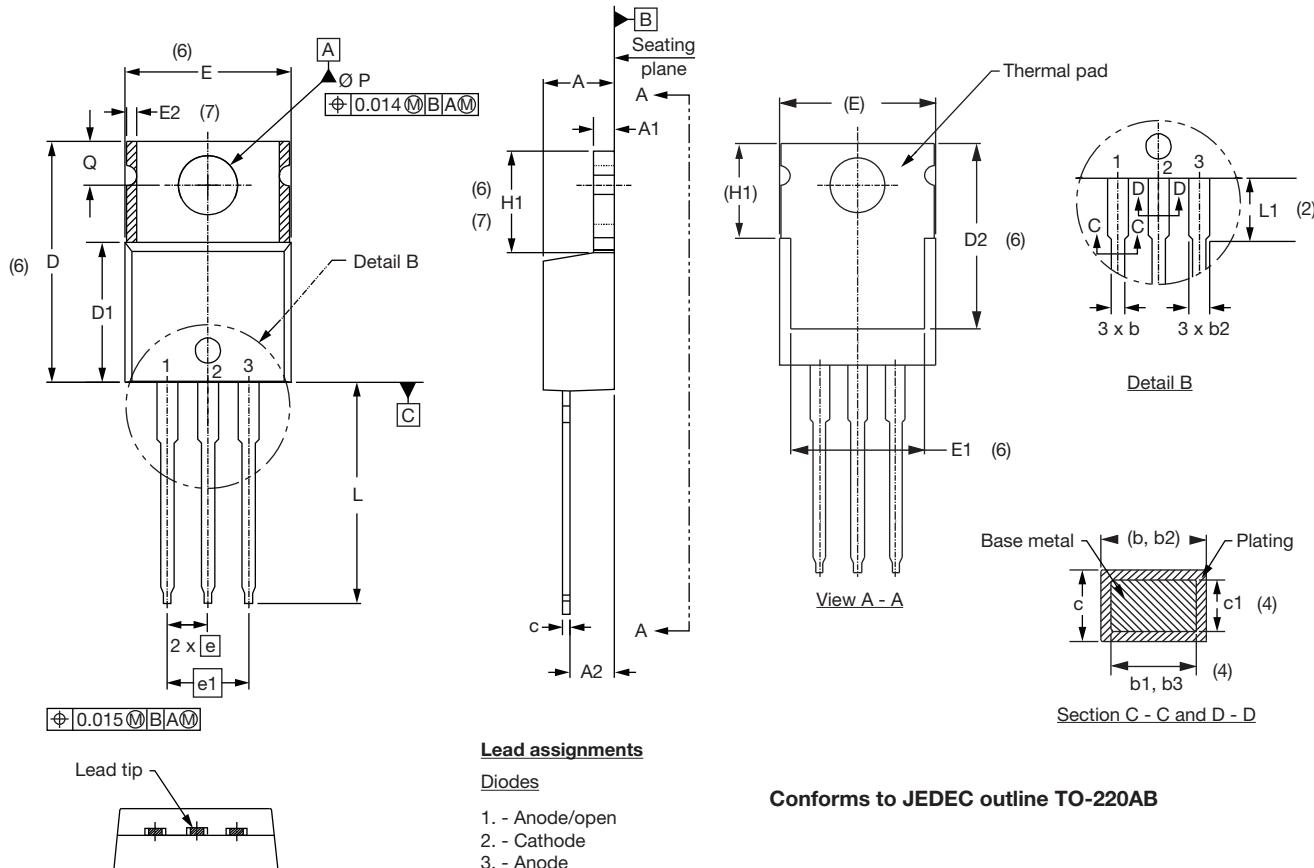
- 1** - Vishay Semiconductors product
- 2** - Current rating (30 = 30 A)
- 3** - Schottky "L" series
- 4** - Voltage rating (30 = 30 V)
- 5** - C = Common cathode
- 6** - Package:
T = TO-220
- 7** - Environmental digit
 - PbF = Lead (Pb)-free and RoHS compliant
 - -N3 = Halogen-free, RoHS compliant, and totally lead (Pb)-free

ORDERING INFORMATION (Example)			
PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION
VS-30L30CTPbF	50	1000	Antistatic plastic tube
VS-30L30CT-N3	50	1000	Antistatic plastic tube

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95222
Part marking information	www.vishay.com/doc?95225
	www.vishay.com/doc?95028
SPICE model	www.vishay.com/doc?95287

TO-220AB

DIMENSIONS in millimeters and inches



SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	4.25	4.65	0.167	0.183	
A1	1.14	1.40	0.045	0.055	
A2	2.56	2.92	0.101	0.115	
b	0.69	1.01	0.027	0.040	
b1	0.38	0.97	0.015	0.038	4
b2	1.20	1.73	0.047	0.068	
b3	1.14	1.73	0.045	0.068	4
c	0.36	0.61	0.014	0.024	
c1	0.36	0.56	0.014	0.022	4
D	14.85	15.25	0.585	0.600	3
D1	8.38	9.02	0.330	0.355	
D2	11.68	12.88	0.460	0.507	6

Notes

- (1) Dimensioning and tolerancing as per ASME Y14.5M-1994
- (2) Lead dimension and finish uncontrolled in L1
- (3) Dimension D, D1 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 outermost extremes of the plastic body
- (4) Dimension b1, b3 and c1 apply to base metal only
- (5) Controlling dimensions: inches
- (6) Thermal pad contour optional within dimensions E, H1, D2 and E1

(7) Dimensions E2 x H1 define a zone where stamping and singulation irregularities are allowed

(8) Outline conforms to JEDEC TO-220, except A2 (maximum) and D2 (minimum) where dimensions are derived from the actual package outline

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