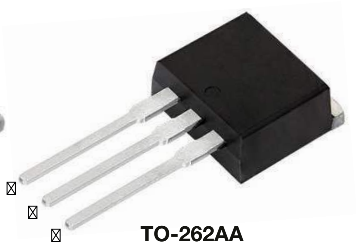
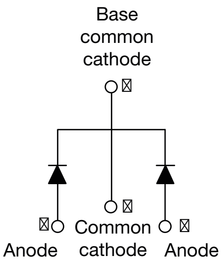
High Performance Schottky Rectifier, 2 x 15 A

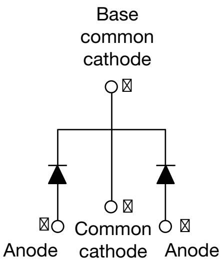
D²PAK (TO-263AB)



TO-262AA



VS-30CTQ...S-M3



VS-30CTQ...-1-M3

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	⊠⊠x⊠⊠⊠A
V_R	⊠⊠⊠V, ⊠⊠⊠V
V_F at I_F	⊠.⊠⊠⊠V
I_{RM} typ.	⊠⊠⊠mA at ⊠⊠⊠⊠°C
T_J max.	⊠⊠⊠⊠°C
E_{AS}	⊠⊠⊠mJ
Package	D⊠PAK (TO-⊠⊠⊠AB), TO-⊠⊠⊠AA
Circuit configuration	Common cathode

FEATURES

- ⊠⊠⊠⊠°C T_J operation
- Center tap configuration
- 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
- Meets MSL level ⊠, per J-STD-⊠⊠⊠, LF maximum peak of ⊠⊠⊠⊠°C
- Designed and qualified according to JEDEC®-JESD⊠⊠
- Material categorization: for definitions of compliance please see www.vishay.com/doc?⊠⊠⊠⊠⊠

Pb
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 ⊠⊠⊠⊠°C junction temperature. Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current [illegible] See fig [illegible]	per device	I_{F6AV7}	[illegible]3 duty cycle at T_C [illegible]°C: rectangular waveform		[illegible]	A
	per leg				[illegible]	
Maximum peak one cycle non; repetitive surge current per leg [illegible] See fig [illegible]		I_{FSM}	[illegible] µs sine or [illegible] µs rect< pulse	Following any rated load condition and with rated V_{RRM} applied	[illegible]	
			[illegible] ms sine or [illegible] ms rect< pulse		[illegible]	
Non; repetitive avalanche energy per leg		E_{AS}	T_J [illegible]°C: I_{AS} [illegible]A: L [illegible]mH		[illegible]	mJ
Repetitive avalanche current per leg		I_{AR}	Current decaying linearly to zero in [illegible] µs Frequency limited by T_J maximum V_A [illegible] x V_R typical		[illegible]	A

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop per leg See fig [illegible]	V_{FM} 6[illegible]7	[illegible]A	T_J [illegible]°C	[illegible]	V
		[illegible]A		[illegible]	
		[illegible]A	T_J [illegible]°C	[illegible]	
		[illegible]A		[illegible]	
Maximum reverse leakage current per leg	I_{RM} 6[illegible]7	T_J [illegible]°C	V_R [illegible] Rated V_R	[illegible]	mA
		T_J [illegible]°C		[illegible]	
Typical reverse leakage current	I_{RM} 6[illegible]7	T_J [illegible]°C	V_R [illegible] Rated V_R	[illegible]	mA
Threshold voltage	V_{F6TO7}	T_J [illegible] T_J maximum		[illegible]	V
Forward slope resistance	r_t			[illegible]	mΩ
Maximum junction capacitance per leg	C_T	V_R [illegible] V_{DC} 6test signal range [illegible] kHz to [illegible] MHz7 [illegible]°C		[illegible]	pF
Typical series inductance per leg	L_S	Measured lead to lead [illegible] mm from package body		[illegible]	nH
Maximum voltage rate of change	dV=dt	Rated V_R		[illegible]	V=µs

Note

6[illegible]7 Pulse width [illegible] µs: duty cycle [illegible]3

THERMAL - MECHANICAL SPECIFICATIONS

PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range		T_J: T_{Stg}		;[illegible] to [illegible]	°C
Maximum thermal resistance: junction to case per leg		R_{thJC}	DC operation	[illegible]	°C=W
Maximum thermal resistance: junction to case per package				[illegible]	
Typical thermal resistance: case to heatsink		R_{thCS}	Mounting surface: smooth and greased	[illegible]	
Approximate weight				[illegible]	g
				[illegible]	oz<
Mounting torque	minimum			[illegible]67	kgf cm 6lbf in7
	maximum			[illegible]6[illegible]7	
Marking device			Case style D PAK 6TO; [illegible]AB7	[illegible]CTQ[illegible]S [illegible]CTQ[illegible]S	
			Case style TO; [illegible]AA	[illegible]CTQ[illegible]; [illegible] [illegible]CTQ[illegible]; [illegible]	

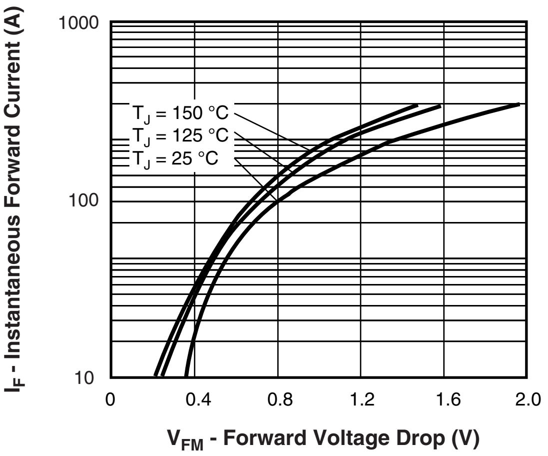


Fig. - Maximum Forward Voltage Drop Characteristics (Per Leg)

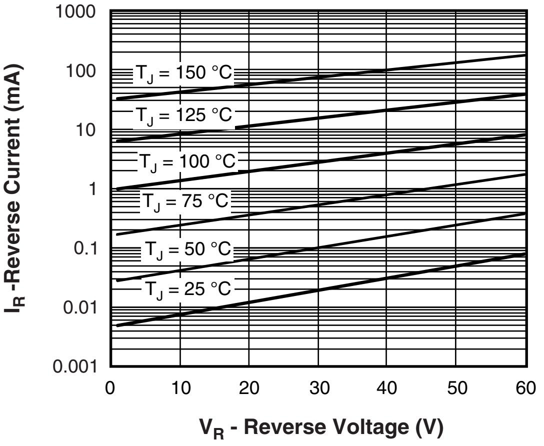


Fig. - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

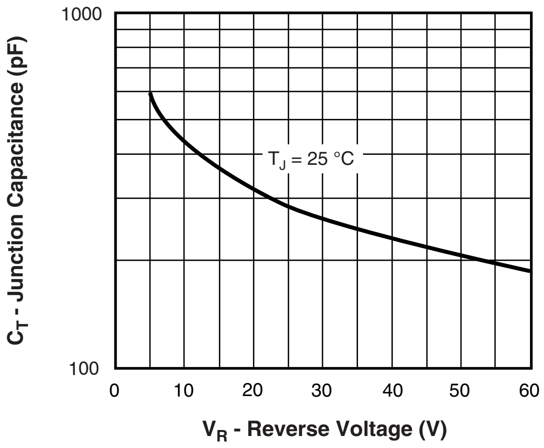


Fig. - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

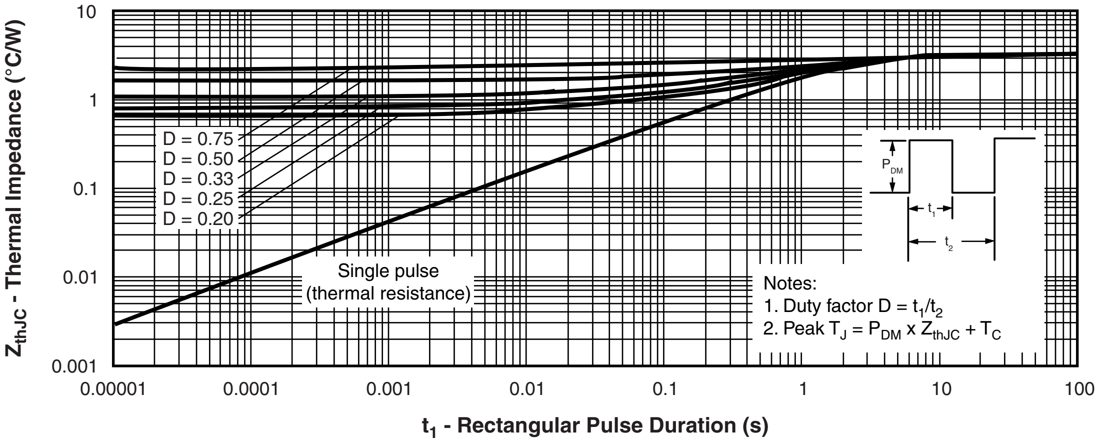


Fig. - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

Pd_{REV} [illegible] inverse power loss [illegible] $V_{R[illegible]}$ x I_R [illegible] D); I_R at $V_{R[illegible]}$ [illegible] rated V_R

ORDERING INFORMATION TABLE

Device code

VS-	30	C	T	Q	045	S	TRL	-M3
①	②	③	④	⑤	⑥	⑦	⑧	⑨

1	-	Vishay Semiconductors product
2	-	Current rating ([illegible] A)
3	-	Circuit configuration: C = common cathode
4	-	T = TO-[illegible]
5	-	Schottky "Q" series
6	-	Voltage ratings: [illegible] V [illegible] V [illegible] V
7	-	• S = D²PAK (TO-[illegible]AB) • -[illegible] = TO-[illegible]AA
8	-	• None = tube • TRL = tape and reel (left oriented, for D²PAK (TO-[illegible]AB) only) • TRR = tape and reel (right oriented, for D²PAK (TO-[illegible]AB) only)
9	-	-M[illegible] = halogen-free, RoHS-compliant, and termination lead (Pb)-free

ORDERING INFORMATION

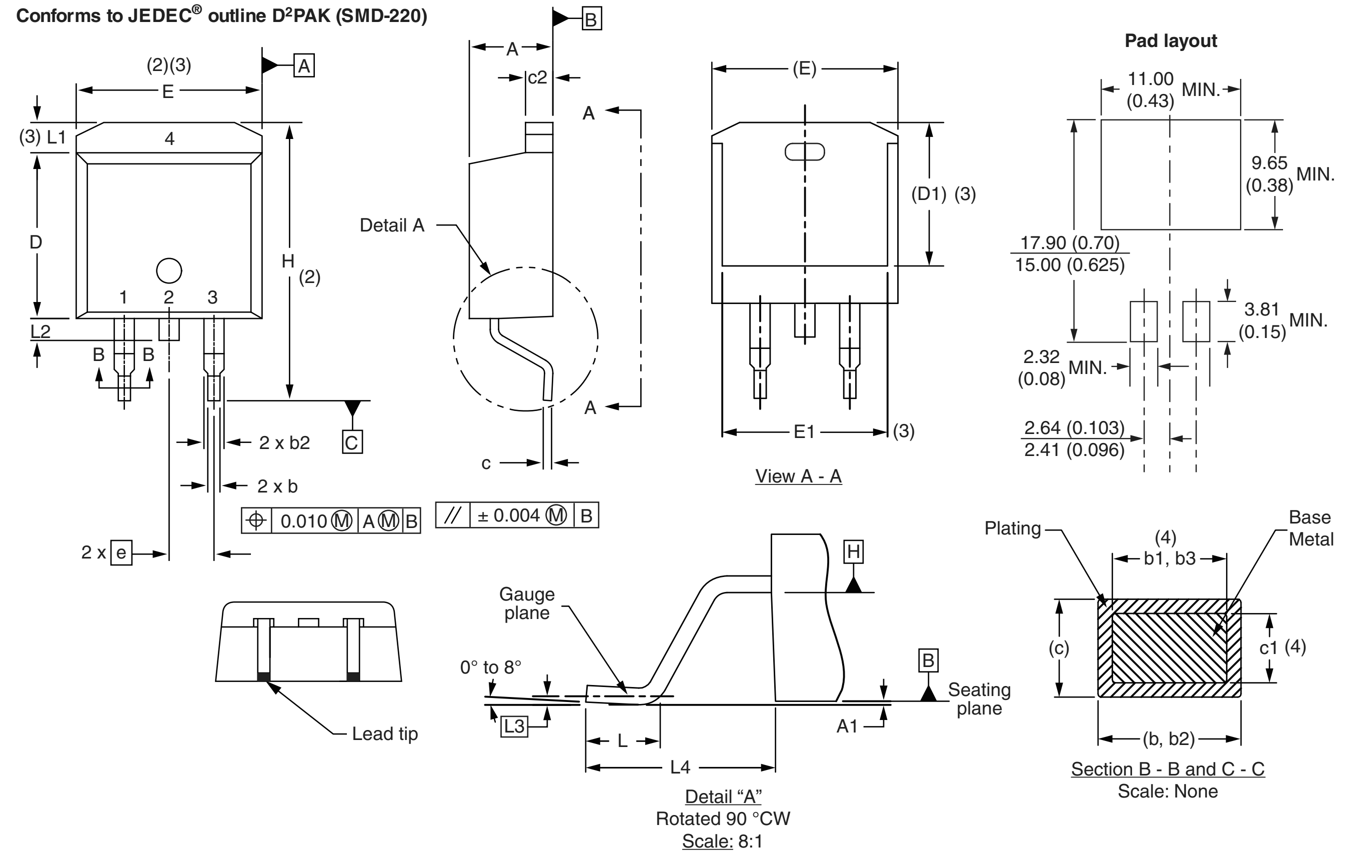
PREFERRED P/N	BASE QUANTITY	PACKAGING DESCRIPTION
VS-[illegible]CTQ[illegible]S-M[illegible]	[illegible]	Antistatic plastic tubes
VS-[illegible]CTQ[illegible]STRL-M[illegible]	[illegible]	[illegible] diameter plastic tape and reel
VS-[illegible]CTQ[illegible]STRR-M[illegible]	[illegible]	[illegible] diameter plastic tape and reel
VS-[illegible]CTQ[illegible]S-M[illegible]	[illegible]	Antistatic plastic tubes
VS-[illegible]CTQ[illegible]STRL-M[illegible]	[illegible]	[illegible] diameter plastic tape and reel
VS-[illegible]CTQ[illegible]STRR-M[illegible]	[illegible]	[illegible] diameter plastic tape and reel
VS-[illegible]CTQ[illegible]-[illegible]-M[illegible]	[illegible]	Antistatic plastic tubes

LINKS TO RELATED DOCUMENTS		
Dimensions	D²PAK (TO-[illegible]AB)	www.vishay.com/doc?[illegible]
	TO-[illegible]AA	www.vishay.com/doc?[illegible]
Part marking information	D²PAK (TO-[illegible]AB)	www.vishay.com/doc?[illegible]
	TO-[illegible]AA	www.vishay.com/doc?[illegible]
Packaging information		www.vishay.com/doc?[illegible]

D^2PAK

DIMENSIONS in millimeters and inches

Conforms to JEDEC® outline D^2PAK (SMD-220)



Detail "A"
Rotated 90 °CW
Scale: 8:1

Section B - B and C - C
Scale: None

SYMBOL	MILLIMETERS		INCHES		NOTES		SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.				MIN.	MAX.	MIN.	MAX.	
A	4.06	4.83	0.160	0.190			D1	6.86	8.00	0.270	0.315	3
A1	0.00	0.254	0.000	0.010			E	9.65	10.67	0.380	0.420	2, 3
b	0.51	0.99	0.020	0.039			E1	7.90	8.80	0.311	0.346	3
b1	0.51	0.89	0.020	0.035	4		e	2.54 BSC		0.100 BSC		
b2	1.14	1.78	0.045	0.070			H	14.61	15.88	0.575	0.625	
b3	1.14	1.73	0.045	0.068	4		L	1.78	2.79	0.070	0.110	
c	0.38	0.74	0.015	0.029			L1	-	1.65	-	0.066	3
c1	0.38	0.58	0.015	0.023	4		L2	1.27	1.78	0.050	0.070	
c2	1.14	1.65	0.045	0.065			L3	0.25 BSC		0.010 BSC		
D	8.51	9.65	0.335	0.380	2		L4	4.78	5.28	0.188	0.208	

Notes

(1) Dimensioning and tolerancing per ASME Y14.5 M-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) Datum A and B to be determined at datum plane H

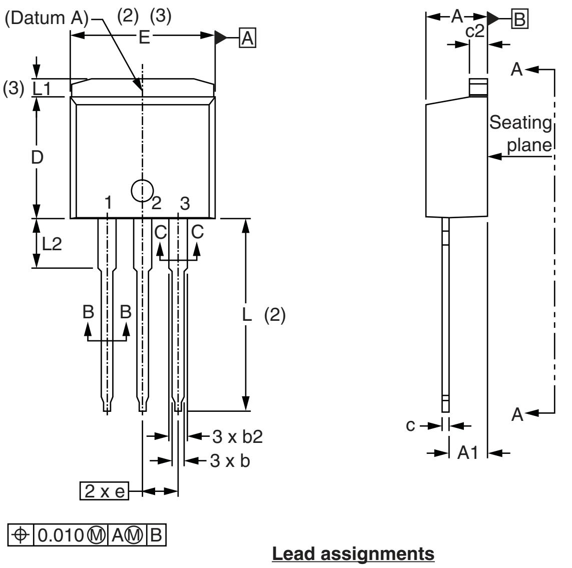
(6) Controlling dimension: inch

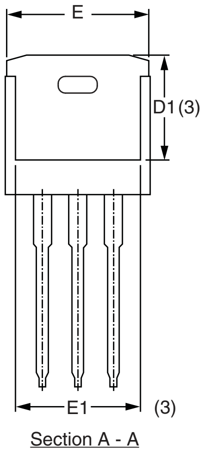
(7) Outline conforms to JEDEC® outline TO-263AB

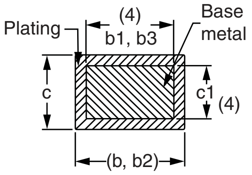
TO-262

DIMENSIONS in millimeters and inches

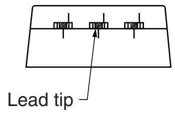
Modified JEDEC® outline TO-262







Section B - B and C - C
Scale: None



Lead assignments

Diodes
1. - Anode (two die)/open (one die)
2., 4. - Cathode
3. - Anode

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	3.36	3.71	0.132	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) , D1 (minimum) and L2 where dimensions derived the actual package outline

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