1N5415 THRU 1N5420
3SF05 THRU 3SF6
Axial Leaded Hermetically Sealed Fast Rectifier Diode

POWER DISCRETES

Description

Quick reference data

V_R = 50 - 600V
$I_{F\ =}$ 4.5A
t_{rr} = 150 - 400nS
I_R = 1.0µA

Features

- Very low reverse recovery time
- Hermetically sealed non-cavity construction.
- Low switching losses
- Low forward voltage drop
- Soft, non-snap off, recovery characteristics
- Capable of withstanding temperature cycle conditions from -180°C to +130°C for space critical programs.

These products are qualified to MIL-PRF-19500/411. They can be supplied fully released as JAN, JANTX, JANTXV and JANS versions.

Absolute Maximum Ratings

Electrical specifications @ T_A = 25°C unless otherwise specified.

	Symbol	1N5415 3SF05	1N5416 3SF1	1N5417 3SF2	1N5418 3SF4	1N5419 3SF5	1N5420 3SF6	Units
Working Reverse Voltage	V_{RWM}	50	100	200	400	500	600	V
Repetitive Reverse Voltage	V_{RRM}	50	100	200	400	500	600	V
Average Forward Current @ 55°C in free air, lead length 0.375"	$I_{F(AV)}$	4.5						A
Repetitive Surge Current @ 55°C in free air, lead length 0.375"	I_{FRM}	25						A
Non-Repetitive Surge Current (tp = 8.3mS @ V_R & T_{JMAX}) (tp = 8.3mS, @ V_R & 25°C)	I_{FSM}	80 150						A
Storage Temperature Range	T_{STG}	-65 to +175						°C

POWER DISCRETES

Electrical Specifications

	Symbol	1N5415 3SF05	1N5416 3SF1	1N5417 3SF2	1N5418 3SF4	1N5419 3SF5	1N5420 3SF6	Units
Average Forward Current max. for sine wave, T_A = 55°C	$I_{F(AV)}$	3.0						A
Average Forward Current max. (T_L= 55°C; L = 3/8") for sine wave for square wave	$I_{F(AV)}$ $I_{F(AV)}$	4.4 4.5						A
I^2t for fusing (t = 8.3mS) max	I^2t	90						A^2S
Forward Voltage Drop max. @ I_F = 3.0A, T_j= 25°C	V_F	1.1						V
Reverse Current max. @ V_{RWM}, Tj = 25°C @ V_{RWM}, Tj = 100°C	I_R I_R	1.0 20						µA
Reverse Recovery Time max. 0.5A I_F to 1.0A I_{RM} recovers to 0.25A $I_{RM(REC)}$	trr	150	150	150	150	250	400	nS
Junction Capacitance typ. @ V_R = 4V, f = 1MHz	Cj	550	430	250	165	140	120	pF

Thermal Characteristics

	Symbol	1N5415 3SF05	1N5416 3SF1	1N5417 3SF2	1N5418 3SF4	1N5419 3SF5	1N5420 3SF6	Units
Thermal Resistance-Junction to Lead Lead length = 0.375" Lead length = 0.0"	$R_{\theta JL}$ $R_{\theta JL}$	20 4						°C/W
Thermal Resistance-Junction to Ambient on 0.06" thick pcb. 1 oz. copper	$R_{\theta JA}$	75						°C/W

Application Note

These diodes are capable of withstanding 20 cycles of Temperature Cycling from -180°C to +130°C for for Space Critical Programs. Semtech is also able to offer this test condition as a 100% Screening Option. A full Summary Data Report is available on request. Please consult the factory for details.

Typical Characteristics

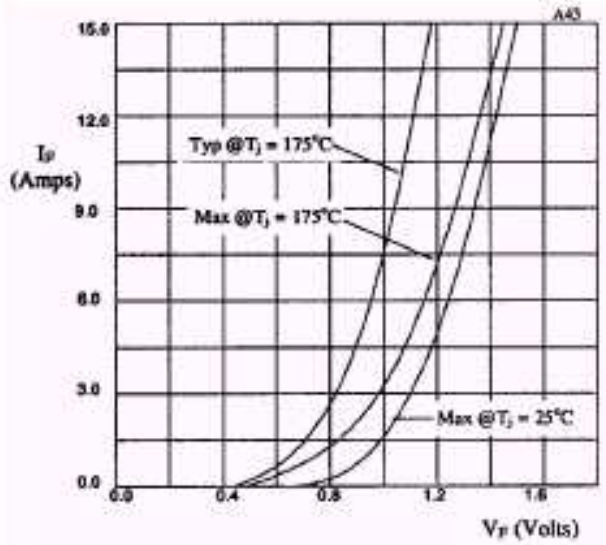


Fig 1. Forward voltage drop as a function of forward current.

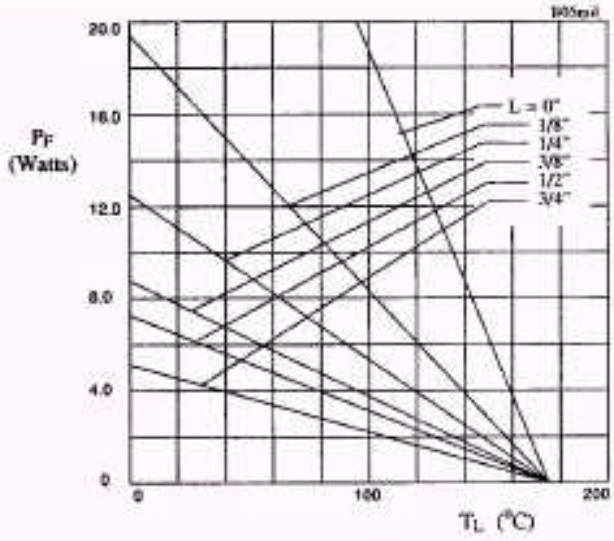


Fig 2. Maximum power versus lead temperature.

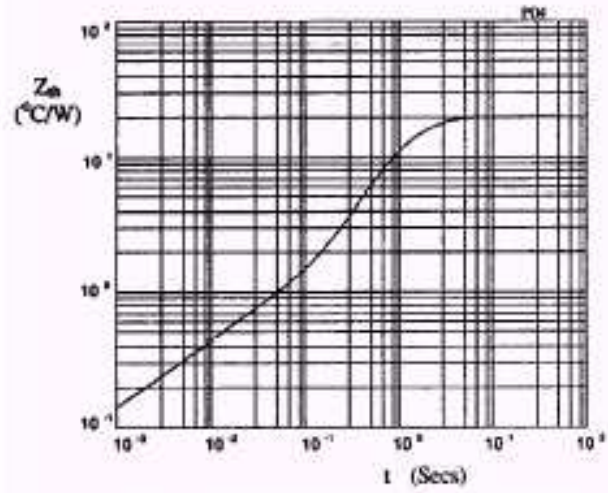


Fig 3. Transient thermal impedance characteristic.

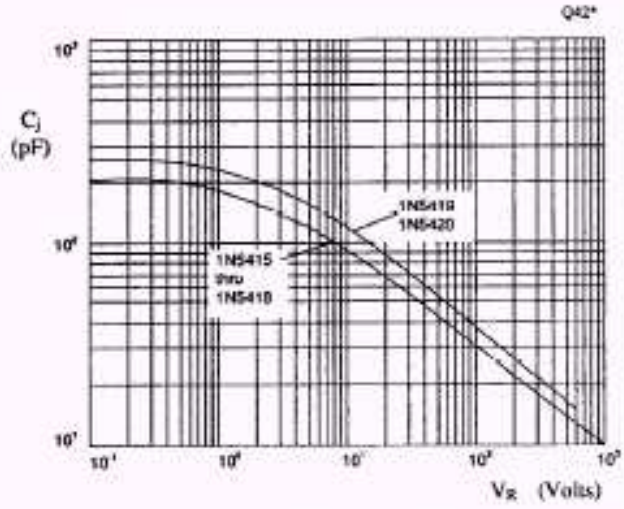


Fig 4. Typical junction capacitance as a function of reverse voltage.

Typical Characteristics

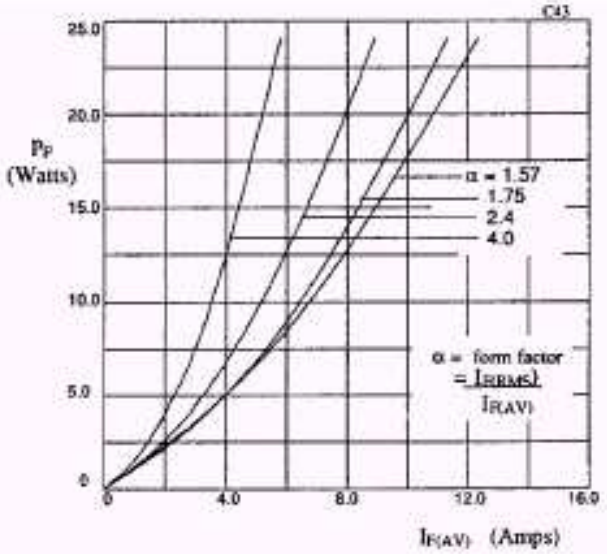


Fig 5. Forward power dissipation as a function of forward current, for sinusoidal operation.

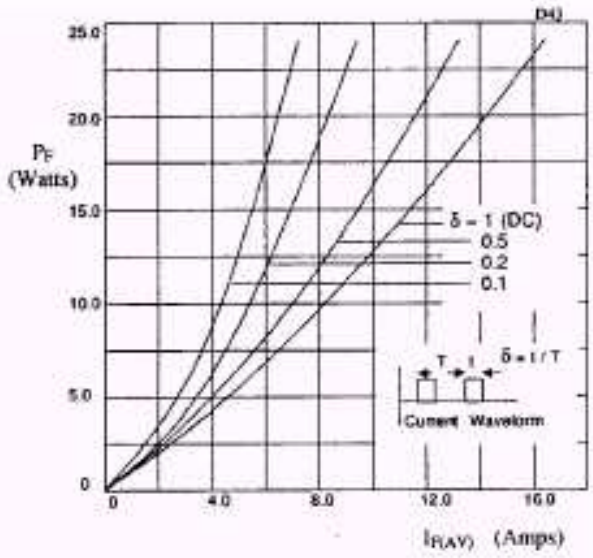


Fig 6. Forward power dissipation as a function of forward current, for square wave operation.

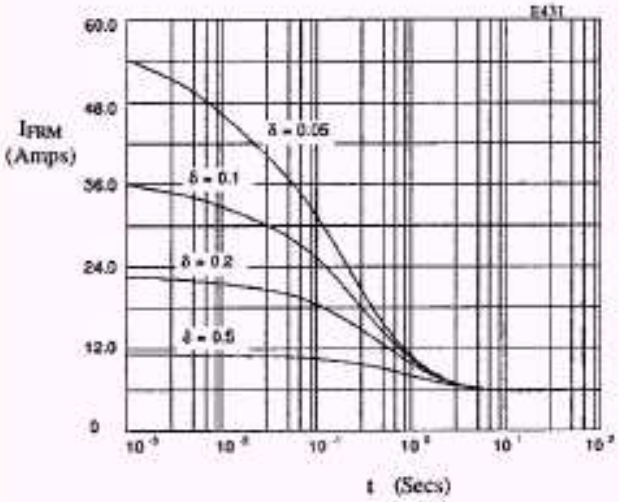


Fig 7. Typical repetitive forward current as a function of pulse width at 55°C; $R_{\theta JL}$ = 20 °C/W; V_{RWM} during 1 - δ.

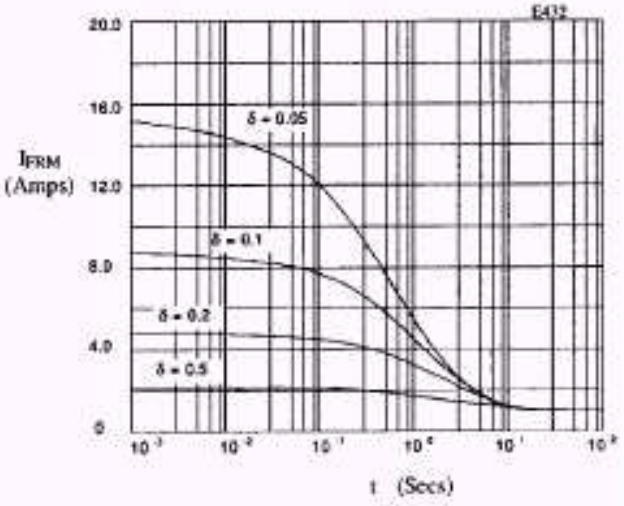


Fig 8. Typical repetitive forward current as a function of pulse width at 100°C; $R_{\theta JL}$ = 80 °C/W; V_{RWM} during 1 - δ.

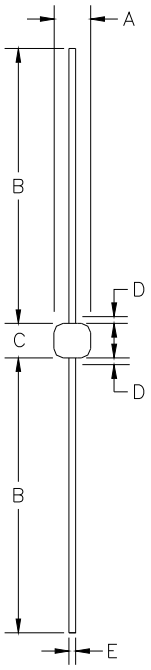
POWER DISCRETES

Ordering Information

Part Number	Description
1N5415 1N5416 1N5417 1N5418 1N5419 1N5420 3SF05 3SF1 3SF2 3SF4 3SF5 3SF6	Axial leaded hermetically sealed(1)

Note:
(1) Available in bulk and tape and reel packaging. Please consult factory for quantities.

Outline Drawing



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Dimensions					
DIM[N]	Inches		Millimeters		Note
	MIN	MAX	MIN	MAX	
A	0.135	0.18	3.43	4.57	-
B	0.9	1.3	22.9	33.0	-
C	0.13	0.17	3.3	4.32	-
D	-	0.05	-	1.27	1
E	0.036	0.042	0.91	1.07	-

Note:
(1) Lead diameter uncontrolled over this region.

Weight = 0.04oz

Contact Information

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