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International
IOR Rectifier

25F(R) SERIES

STANDARD RECOVERY DIODES

Stud Version

25 A

Features

- High surge current capability
- Avalanche types available
- Stud cathode and stud anode version
- Wide current range
- Types up to 1200V V_{RRM}

TypicalApplications

- Battery charges
- Converters
- Power supplies
- Machine tool controls

Major Ratings and Characteristics

Parameters		25F(R)	Units
$I_{F(AV)}$		25	A
	@ T_C	120	°C
$I_{F(RMS)}$		40	A
I_{FSM}	@ 50Hz	356	A
	@ 60Hz	373	A
I^2t	@ 50Hz	636	A^2s
	@ 60Hz	580	A^2s
V_{RRM}	range	100 to 1200	V
T_J	range	- 65 to 175	°C

case style
DO-203AA (DO-4)

ELECTRICAL SPECIFICATIONS

Voltage Ratings

Type number	Voltage Code	V_{RRM}, maximum repetitive peak reverse voltage V	V_{RSM}, maximum non-repetitive peak reverse voltage V	$V_{R(BR)}$, minimum avalanche voltage V **(1)**	I_{RRM} max. @ T_J = 175°C mA
25F(R)	10	100	150	--	12
	20	200	275	--	
	40	400	500	500	
	60	600	725	750	
	80	800	950	950	
	100	1000	1200	1150	
	120	1200	1400	1350	

(1) Avalanche version only available from V_{RRM} 400V to 1200V.

Forward Conduction

	Parameter	25F(R)	Units	Conditions		
$I_{F(AV)}$	Max. average forward current	25	A	180° conduction, half sine wave		
	@ Case temperature	120	°C			
$I_{F(RMS)}$	Max. RMS forward current	40	A			
P_R	Maximum non-repetitive peak reverse power	10	K/W	10µs square pulse, $T_J = T_J$ max. **see note (2)**		
I_{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	356	A	t = 10ms	No voltage reapplied	Sinusoidal half wave, Initial $T_J = T_J$ max.
		373		t = 8.3ms		
		300		t = 10ms	100% V_{RRM} reapplied	
		314		t = 8.3ms		
I^2t	Maximum I^2t for fusing	636	A^2s	t = 10ms	No voltage reapplied	
		580		t = 8.3ms		
		450		t = 10ms	100% V_{RRM} reapplied	
		410		t = 8.3ms		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	6360	$A^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied		
$V_{F(TO)1}$	Low level value of threshold voltage	0.80	V	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J$ max.		
$V_{F(TO)2}$	High level value of threshold voltage	0.90		$(I > \pi \times I_{F(AV)})$, $T_J = T_J$ max.		
r_{f1}	Low level value of forward slope resistance	6.80	mΩ	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J$ max.		
r_{f2}	High level value of forward slope resistance	5.70		$(I > \pi \times I_{F(AV)})$, $T_J = T_J$ max.		
V_{FM}	Max. forward voltage drop	1.30	V	I_{pk}= 78A, T_J = 25°C, t_p = 400µs rectangular wave		

(2) Available only for Avalanche version, all other parameters the same as 25F.

Thermal and Mechanical Specifications

	Parameter	25F(R)	Units	Conditions
T_J	Max. junction operating temperature range	-65 to 175	°C	
T_{stg}	Max. storage temperature range	-65 to 200		
R_{thJC}	Max. thermal resistance, junction to case	1.5	K/W	DC operation
R_{thCS}	Max. thermal resistance, case to heatsink	0.5		Mounting surface, smooth, flat and greased
T	Mounting torque, ± 10%	1.2 (1.5)	Nm	Lubricated threads (Not lubricated threads)
wt	Approximate weight	7 (0.25)	g (oz)	
	Case style	DO-203AA (DO-4)		See Outline Table

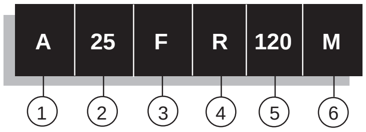
ΔR_{thJC} Conduction

(The following table shows the increment of thermal resistence R_{thJC} when devices operate at different conduction angles than DC)

Conduction angle	Sinusoidal conduction	Rectangular conduction	Units	Conditions
180°	0.28	0.24	K/W	$T_J = T_J$ max.
120°	0.39	0.41		
90°	0.50	0.54		
60°	0.73	0.75		
30°	1.20	1.21		

Ordering Information Table

Device Code



1 - A = Avalanche diode
None = Standard diode

2 - Current rating: Code = $I_{F(AV)}$

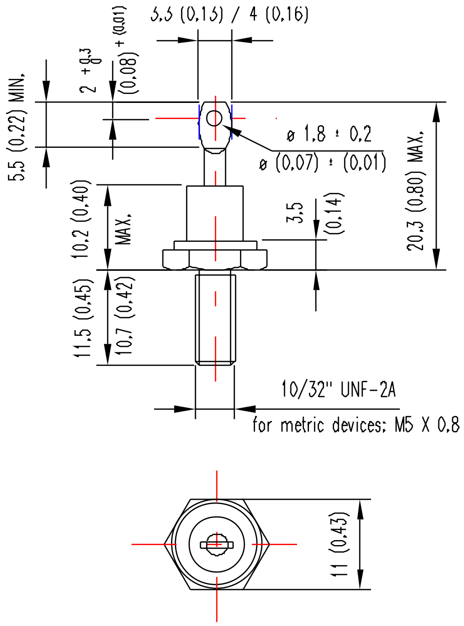
3 - F = Standard device

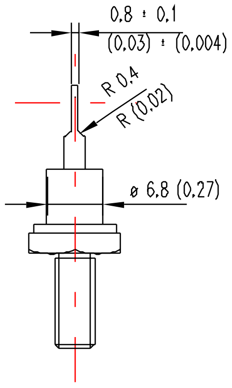
4 - None = Stud Normal Polarity (Cathode to Stud)
R = Stud Reverse Polarity (Anode to Stud)

5 - Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings table)

6 - None = Stud base DO-203AA (DO-4) 10-32UNF-2A
M = Stud base DO-203AA (DO-4) M5 X 0.8 - (Not available for Avalanche diodes)

Outlines Table





Case Style DO-203AA (DO-4)
All dimensions in millimeters (inches)

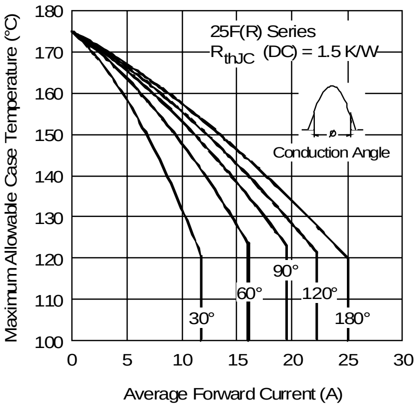


Fig. 1 - Current Ratings Characteristics

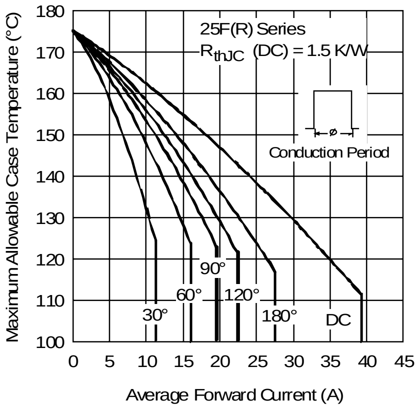


Fig. 2 - Current Ratings Characteristics

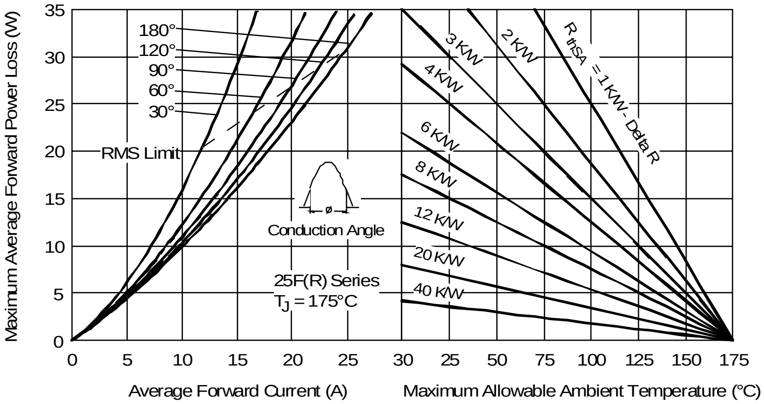


Fig. 3 - Forward Power Loss Characteristics

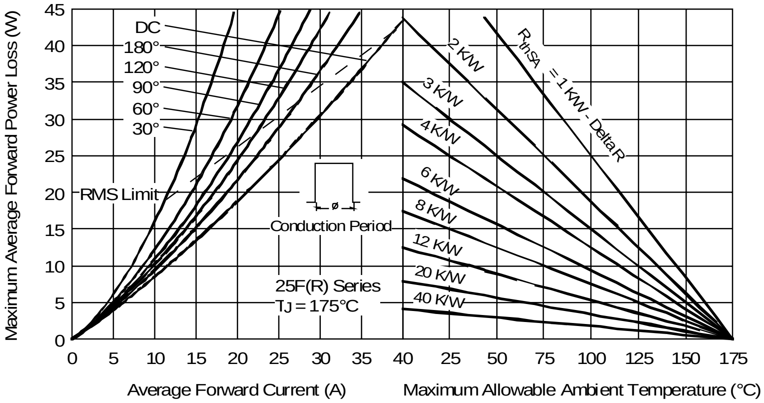


Fig. 4 - Forward Power Loss Characteristics

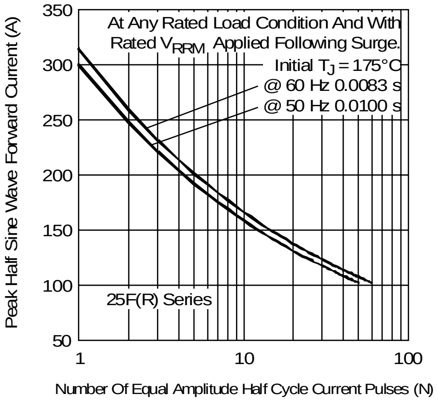


Fig. 5 - Maximum Non-Repetitive Surge Current

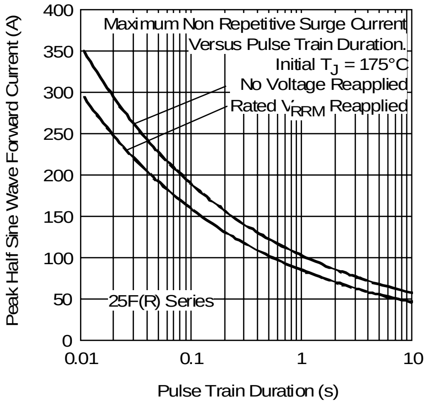


Fig. 6 - Maximum Non-Repetitive Surge Current

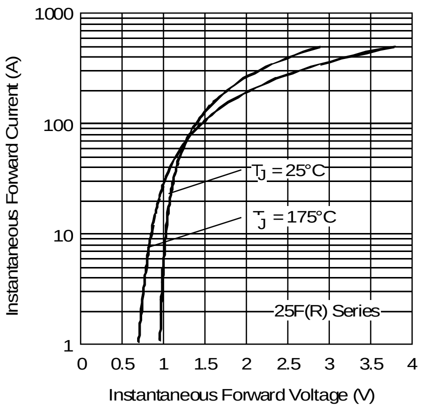


Fig. 7 - Forward Voltage Drop Characteristics

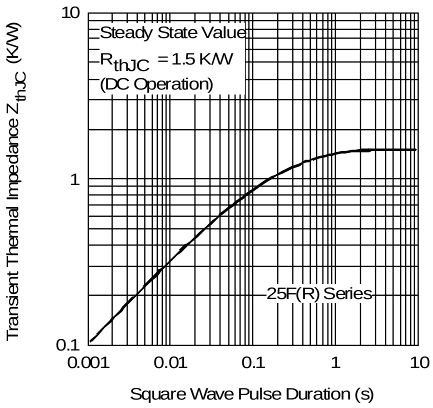


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

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