

STANDARD RECOVERY DIODES

Stud Version

Features

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

16 A

Typical Applications

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

Major Ratings and Characteristics

Parameters	16F(R)	Units
$I_{F(AV)}$	16	A
@ T_C	140	°C
$I_{F(RMS)}$	25	A
I_{FSM} @ 50Hz	350	A
@ 60Hz	370	A
I^2t @ 50Hz	612	A ² s
@ 60Hz	560	A ² s
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. @ $T_J = 175^\circ\text{C}$ mA
16F(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		16F(R)	Units	Conditions			
I _{F(AV)}	Max. average forward current @ Case temperature	16	A	180° conduction, half sine wave			
		140	°C				
I _{F(RMS)}	Max. RMS forward current	25	A				
P _R	Maximum non-repetitive peak reverse power	15	K/W	10μs square pulse, T _J = T _J max. see note (2)			
I _{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	350	A	t = 10ms	No voltage	Sinusoidal half wave, Initial T _J = T _J max.	
		t = 8.3ms		reapplied			
		295		t = 10ms	100% V _{RRM}		
		310		t = 8.3ms	reapplied		
I ² t	Maximum I ² t for fusing	612	A ² s	t = 10ms	No voltage		
		560		t = 8.3ms	reapplied		
		435		t = 10ms	100% V _{RRM}		
		395		t = 8.3ms	reapplied		
I ² √t	Maximum I ² √t for fusing	6120	A ² √s	t = 0.1 to 10ms, no voltage reapplied			
V _{F(TO)1}	Low level value of threshold voltage	0.77	V	(16.7% x π x I _{F(AV)} < I < π x I _{F(AV)}), T _J = T _J max.			
V _{F(TO)2}	High level value of threshold voltage	0.90		(I > π x I _{F(AV)}), T _J = T _J max.			
r _{f1}	Low level value of forward slope resistance	7.80	mΩ	(16.7% x π x I _{F(AV)} < I < π x I _{F(AV)}), T _J = T _J max.			
r _{f2}	High level value of forward slope resistance	5.70		(I > π x I _{F(AV)}), T _J = T _J max.			
V _{FM}	Max. forward voltage drop	1.23	V	I _{pk} = 50A, T _J = 25°C, t _p = 400μs rectangular wave			

(2) Available only for Avalanche version, all other parameters the same as 16F.

Thermal and Mechanical Specifications

Parameter	16F(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	1.6	K/W	DC operation
R_{thCS} Max. thermal resistance, case to heatsink	0.5		Mounting surface, smooth, flat and greased
T Allowable mounting torque	1.5 ^{+0-10%}	Nm	Not lubricated threads
	13	lbf.in	
	1.2 ^{+0-10%}	Nm	Lubricated threads
	10	lbf.in	
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 resistance R_{thJC} when devices operate at different conduction angles than DC)

Conduction angle	Sinusoidal conduction	Rectangular conduction	Units	Conditions
180°	0.31	0.23	K/W	$T_J = T_J \text{ max.}$
120°	0.38	0.40		
90°	0.49	0.54		
60°	0.72	0.75		
30°	1.20	1.21		

Ordering Information Table

Device Code					
	A	16	F	R	120 M
	①	②	③	④	⑤ ⑥
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

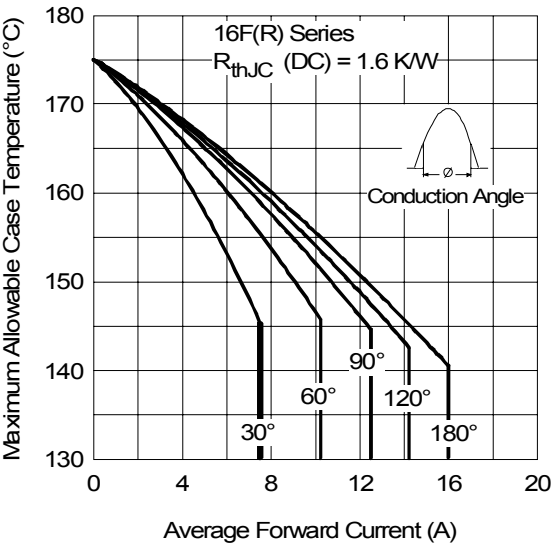
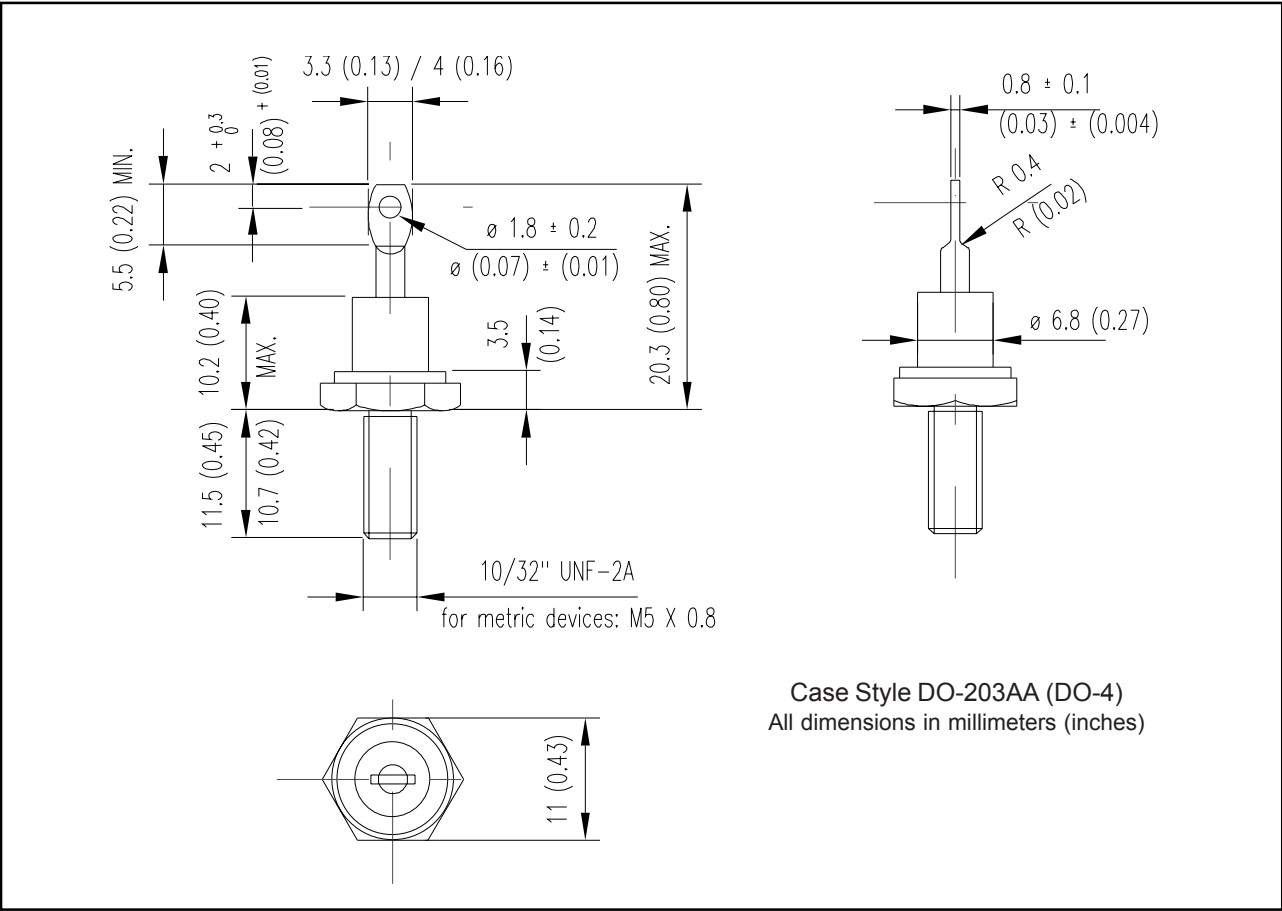


Fig. 1 - Current Ratings Characteristics

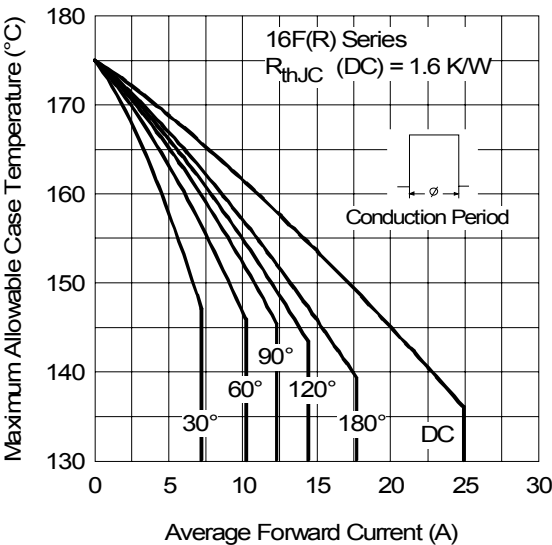


Fig. 2 - Current Ratings Characteristics

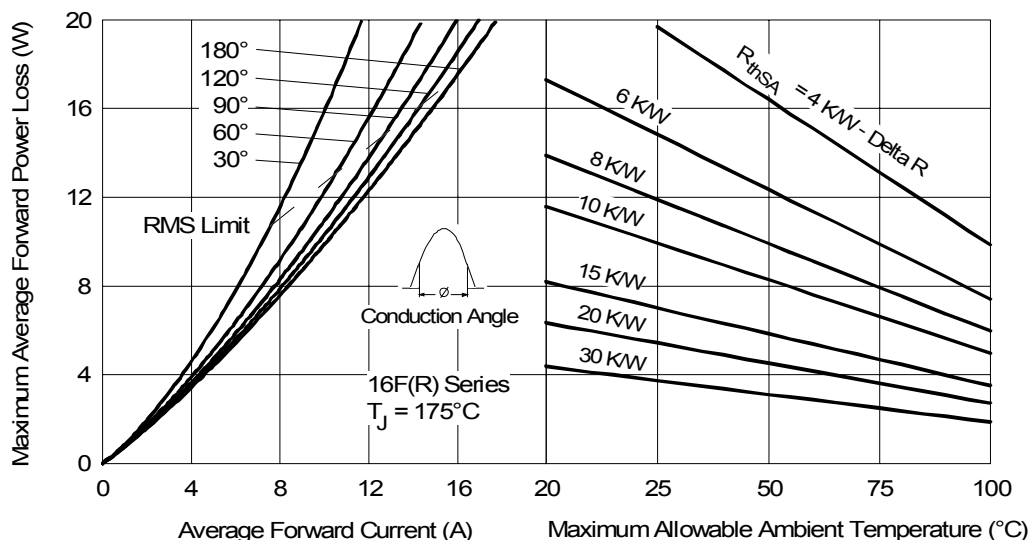


Fig. 3 - Forward Power Loss Characteristics

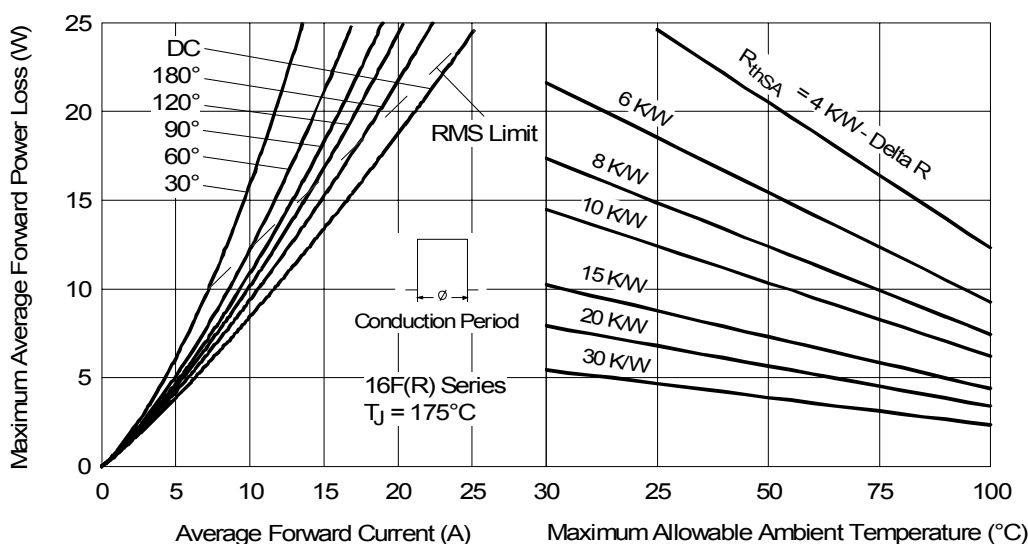


Fig. 4 - Forward Power Loss Characteristics

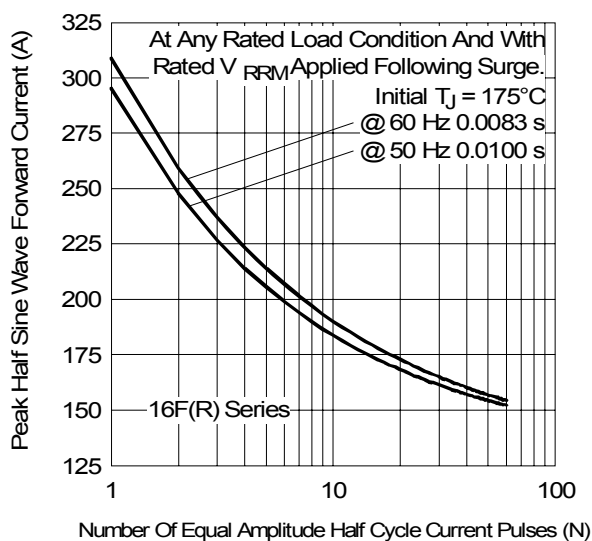


Fig. 5 - Maximum Non-Repetitive Surge Current

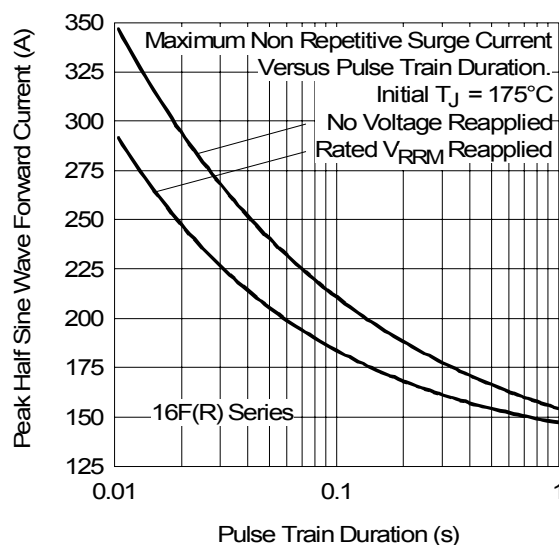


Fig. 6 - Maximum Non-Repetitive Surge Current

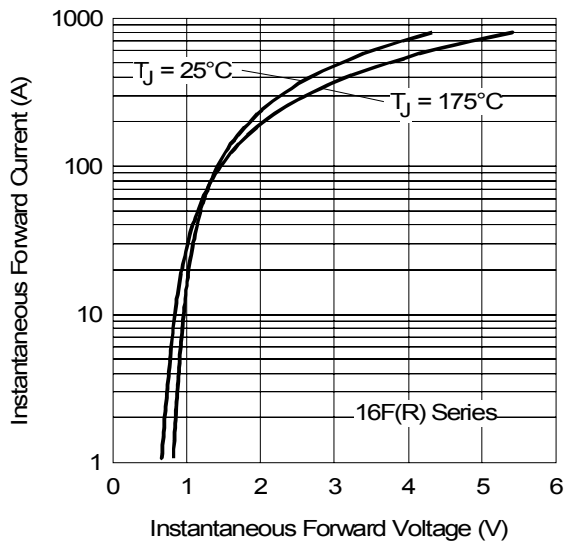


Fig. 7 - Forward Voltage Drop Characteristics

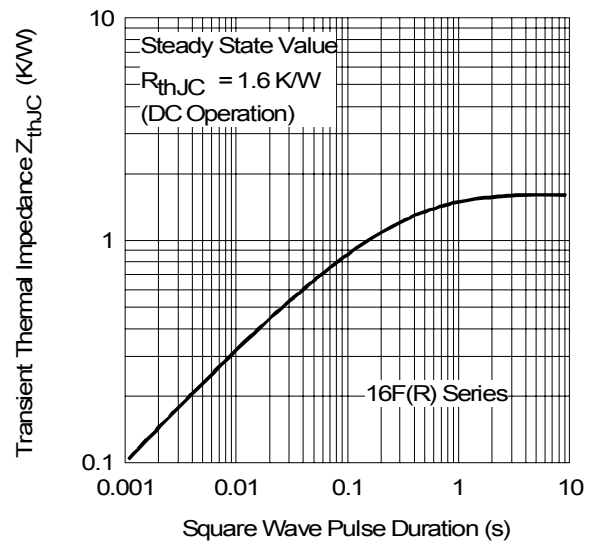


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial and Consumer Level.
Qualification Standards can be found on IR's Web site.