

#### 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 <sup>2</sup> s
	@ 60Hz	560	A <sup>2</sup> s
$V_{RRM}$	range	100 to 1200	V
$T_J$	range	- 65 to 175	°C



**ELECTRICAL SPECIFICATIONS**

Voltage Ratings

Type number	Voltage Code	V <sub>RRM</sub> , maximum repetitive peak reverse voltage V	V <sub>RSM</sub> , maximum non-repetitive peak reverse voltage V	V <sub>R(BR)</sub> , minimum avalanche voltage V (1)	I <sub>RRM</sub> max. @ T <sub>J</sub> = 175°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<sub>RRM</sub> 400V to 1200V.

Forward Conduction

Parameter	16F(R)	Units	Conditions
I <sub>F(AV)</sub> Max. average forward current @ Case temperature	16	A	180° conduction, half sine wave
	140	°C	
I <sub>F(RMS)</sub> Max. RMS forward current	25	A	
P <sub>R</sub> Maximum non-repetitive peak reverse power	15	K/W	10µs square pulse, T <sub>J</sub> = T <sub>J</sub> max. <b>see note (2)</b>
I <sub>FSM</sub> Max. peak, one-cycle forward, non-repetitive surge current	350	A	t = 10ms No voltage
	370		t = 8.3ms reapplied
	295		t = 10ms 100% V <sub>RRM</sub>
	310		t = 8.3ms reapplied
I <sup>2</sup> t Maximum I <sup>2</sup> t for fusing	612	A <sup>2</sup> s	t = 10ms No voltage
	560		t = 8.3ms reapplied
	435		t = 10ms 100% V <sub>RRM</sub>
	395		t = 8.3ms reapplied
I <sup>2</sup> √t Maximum I <sup>2</sup> √t for fusing	6120	A <sup>2</sup> √s	t = 0.1 to 10ms, no voltage reapplied
V <sub>F(TO)1</sub> Low level value of threshold voltage	0.77	V	(16.7% × π × I <sub>F(AV)</sub> < I < π × I <sub>F(AV)</sub> ), T <sub>J</sub> = T <sub>J</sub> max.
V <sub>F(TO)2</sub> High level value of threshold voltage	0.90		(I > π × I <sub>F(AV)</sub> ), T <sub>J</sub> = T <sub>J</sub> max.
r <sub>f1</sub> Low level value of forward slope resistance	7.80	mΩ	(16.7% × π × I <sub>F(AV)</sub> < I < π × I <sub>F(AV)</sub> ), T <sub>J</sub> = T <sub>J</sub> max.
r <sub>f2</sub> High level value of forward slope resistance	5.70		(I > π × I <sub>F(AV)</sub> ), T <sub>J</sub> = T <sub>J</sub> max.
V <sub>FM</sub> Max. forward voltage drop	1.23	V	I <sub>pk</sub> = 50A, T <sub>J</sub> = 25°C, t <sub>p</sub> = 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 <sub>J</sub> Max. junction operating temperature range	-65 to 175	°C	
T <sub>stg</sub> Max. storage temperature range	-65 to 200		
R <sub>thJC</sub> Max. thermal resistance, junction to case	1.6	K/W	DC operation
R <sub>thCS</sub> Max. thermal resistance, case to heatsink	0.5		Mounting surface, smooth, flat and greased
T Allowable mounting torque	1.5 <sup>+0-10%</sup>	Nm	Not lubricated threads
	13	lbf.in	
	1.2 <sup>+0-10%</sup>	Nm	Lubricated threads
	10	lbf.in	
wt Approximate weight	7 (0.25)	g (oz)	
Case style	DO-203AA (DO-4)	See Outline Table	

### ΔR<sub>thJC</sub> Conduction

(The following table shows the increment of thermal resistance R<sub>thJC</sub> 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 <sub>J</sub> = T <sub>J</sub> 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	
<div style="display: flex; justify-content: center; gap: 10px;"> <div style="border: 1px solid black; padding: 5px; background-color: #333; color: white;">A</div> <div style="border: 1px solid black; padding: 5px; background-color: #333; color: white;">16</div> <div style="border: 1px solid black; padding: 5px; background-color: #333; color: white;">F</div> <div style="border: 1px solid black; padding: 5px; background-color: #333; color: white;">R</div> <div style="border: 1px solid black; padding: 5px; background-color: #333; color: white;">120</div> <div style="border: 1px solid black; padding: 5px; background-color: #333; color: white;">M</div> </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <span>①</span> <span>②</span> <span>③</span> <span>④</span> <span>⑤</span> <span>⑥</span> </div>	<p><b>1</b> - A = Avalanche diode None = Standard diode</p> <p><b>2</b> - Current rating: Code = I<sub>F(AV)</sub></p> <p><b>3</b> - F = Standard device</p> <p><b>4</b> - None = Stud Normal Polarity (Cathode to Stud) R = Stud Reverse Polarity (Anode to Stud)</p> <p><b>5</b> - Voltage code: Code x 10 = V<sub>RRM</sub> (See Voltage Ratings table)</p> <p><b>6</b> - 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)</p>

Outlines Table

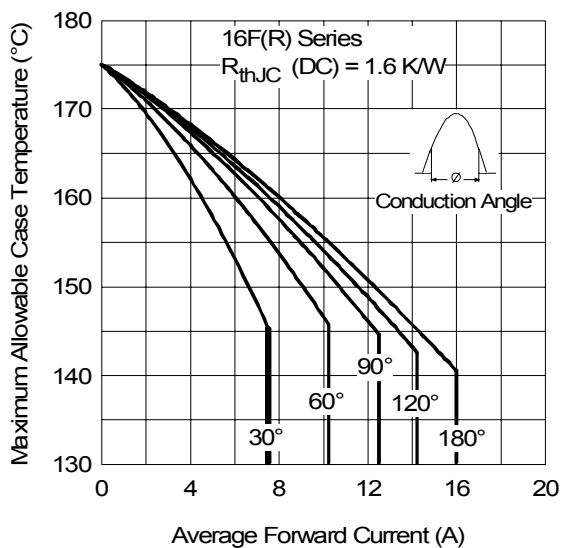
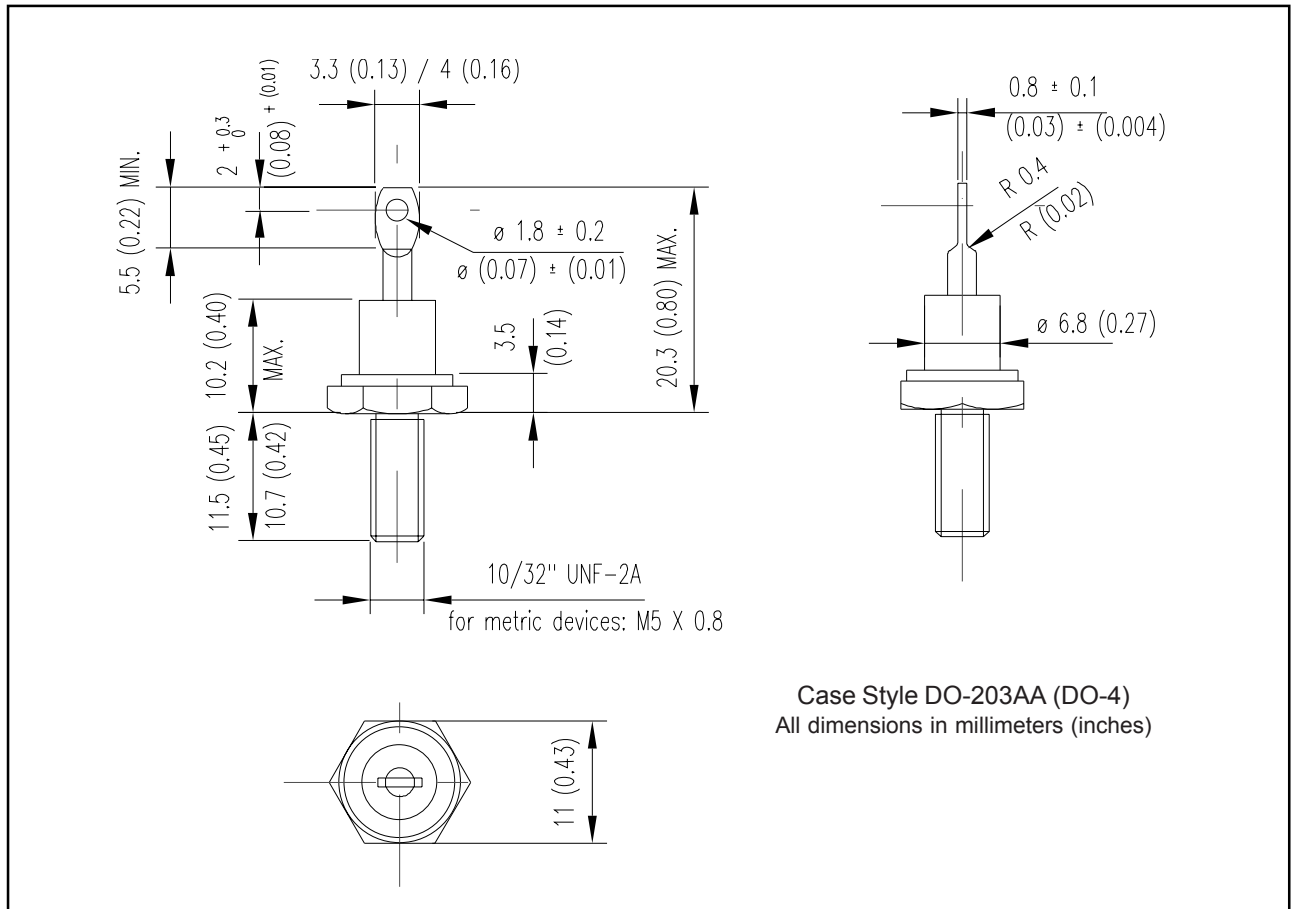


Fig. 1 - Current Ratings Characteristics

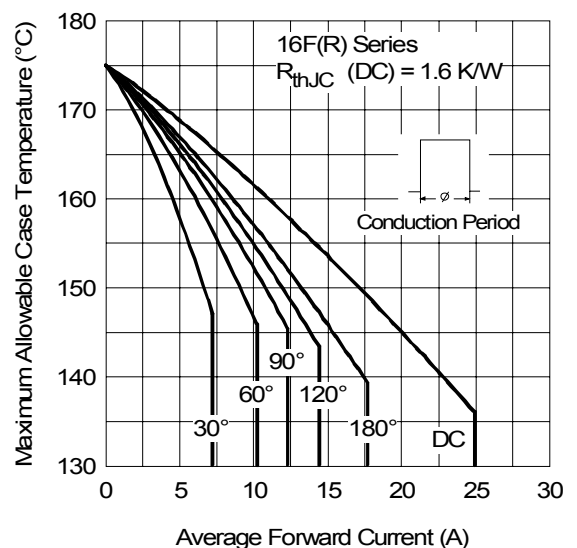


Fig. 2 - Current Ratings Characteristics

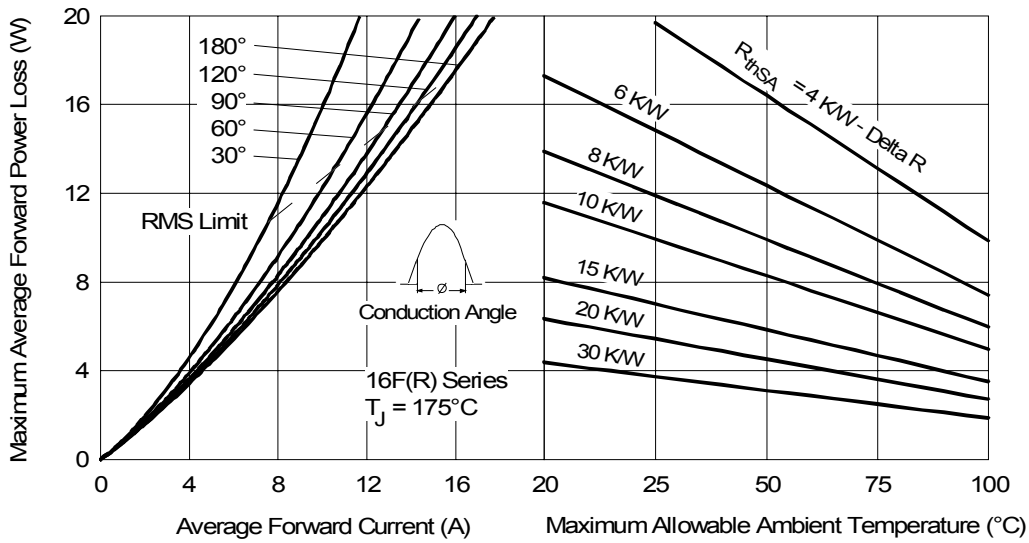


Fig. 3 - Forward Power Loss Characteristics

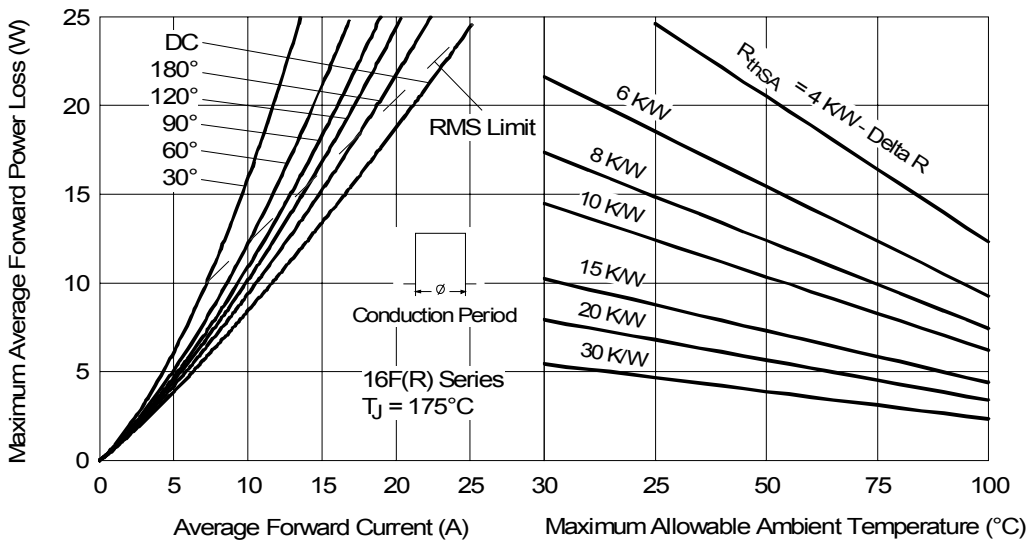


Fig. 4 - Forward Power Loss Characteristics

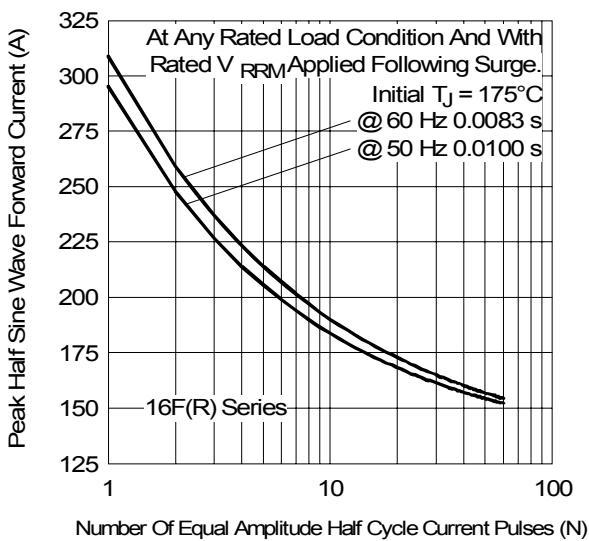


Fig. 5 - Maximum Non-Repetitive Surge Current

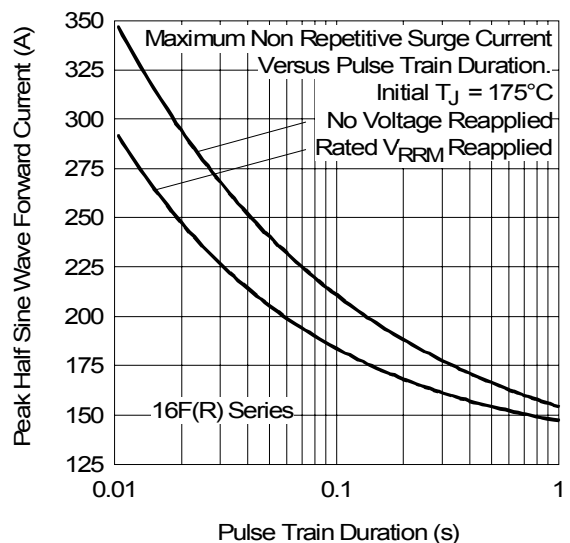


Fig. 6 - Maximum Non-Repetitive Surge Current

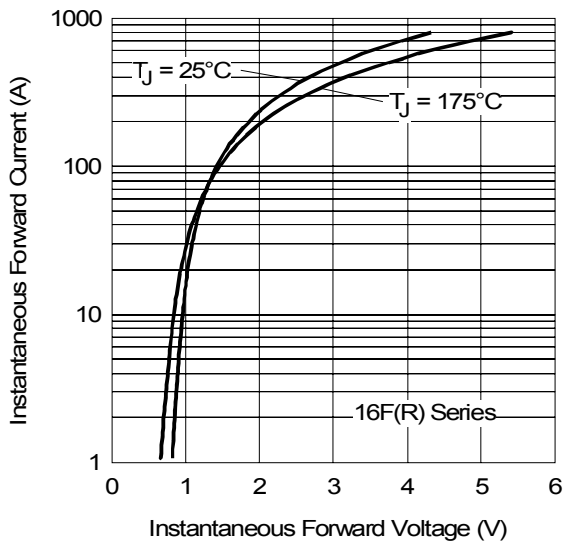


Fig. 7 - Forward Voltage Drop Characteristics

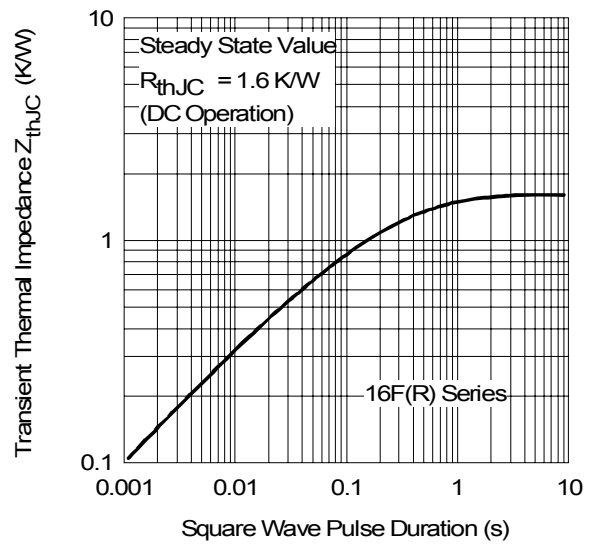


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristics

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.