

16F(R) SERIES

STANDARD RECOVERY DIODES

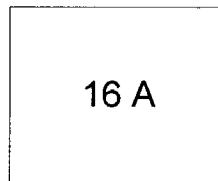
Stud Version

Features

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

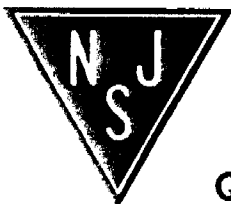
Typical Applications

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



Major Ratings and Characteristics

Parameters	16F(R)	Units	
$I_{F(AV)}$	16	A	
	@ T_C	140	$^{\circ}C$
$I_{F(RMS)}$	25	A	
I_{FSM}	@ 50Hz	350	A
	@ 60Hz	370	A
I^2t	@ 50Hz	612	A^2s
	@ 60Hz	560	A^2s
V_{RRM}	range	100 to 1200	V
T_J	range	- 65 to 175	$^{\circ}C$



16F(R) Series

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	16 140	A °C	180° conduction, half sine wave
$I_{F(RMS)}$ 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 reappplied
	370		t = 8.3ms reappplied
	295		t = 10ms 100% V_{RRM} reappplied
	310		t = 8.3ms reappplied
I^2t Maximum I^2t for fusing	612	A ² s	t = 10ms No voltage reappplied
	560		t = 8.3ms reappplied
	435		t = 10ms 100% V_{RRM} reappplied
	395		t = 8.3ms reappplied
I^2t Maximum I^2t for fusing	6120	A ² s	t = 0.1 to 10ms, no voltage reappplied
$V_{F(TO)}$ Low level value of threshold voltage	0.77	V	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}), T_J = T_J$ max.
$V_{F(TO)}$ High level value of threshold voltage	0.90		$(I > \pi \times I_{F(AV)}), T_J = T_J$ max.
$r_{\theta 1}$ Low level value of forward slope resistance	7.80	mΩ	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}), T_J = T_J$ max.
$r_{\theta 2}$ 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	1.23	V	$I_{pk} = 50A, T_J = 25^\circ\text{C}, t_p = 400\mu\text{s}$ rectangular wave

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

16F(R) Series

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 Mounting torque, $\pm 10\%$	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 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)

16F(R) Series

Outlines Table

