

FR501G THRU FR507G
FAST RECOVERY RECTIFIERS



VOLTAGE 50~1000 Volts

CURRENT 5.0 Amperes

DO-27(DO-201AD)

Marking and Polarity

FEATURES

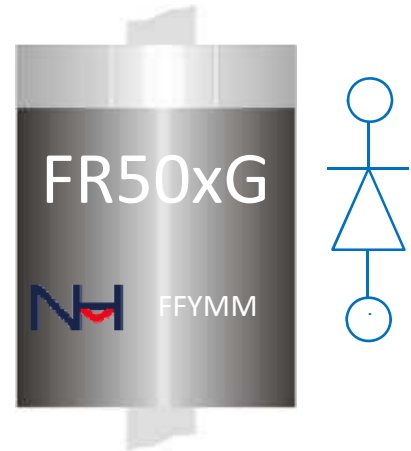
Plastic package has Underwriters Laboratory Flammability Classification 94V-0
Metal silicon junction ,majority carrier conduction
Guard ring for overvoltage protection
Low power loss ,high efficiency
High current capability ,ultra low forward voltage drop
High surge capability
High temperature soldering guaranteed:260℃/10 seconds at terminals
Component in accordance to RoHS 2011/65/EU

MECHANICAL DATA

Case: JEDEC DO-201AD molded plastic body
Terminals: Plated axial leads, solderable per MIL-STD-750,method 2026
Polarity: color band denotes cathode end
Mounting Position: Any
Weight: App. 1.05 grams (0.0108 ounce)

TYPICAL APPLICATIONS

For use in low voltage ,high frequency inverters ,DC/DC converters,
free wheeling ,and polarity protection applications



Remark:

- ①. SF50xG=Model,x=1,2,3,4,5,6,7,8
- ②. NH=niuhang trademark
- ③. FFDDK=Internal control code,According to actual changes
- ④. White band denotes cathode

Maximum Ratings and Electrical Characteristics(Ratings at 25℃ ambient temperature unless otherwise specified)

Parameter	Symbol	FR 501G	FR 502G	FR 503G	FR 504G	FR 505G	FR 506G	FR 507G	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	100	150	200	300	400	500	600	V
Maximum RMS voltage	V_{RMS}	70	105	140	210	280	350	420	V
Maximum DC blocking voltage	V_{DC}	100	150	200	300	400	500	600	V
Maximum average forward rectified current(see fig.1)	$I_{F(AV)}$	5.0							A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated TL)	I_{FSM}	200							A

Electrical Characteristics (Ratings at 25℃ ambient temperature unless otherwise specified).

Parameter	Symbol	FR 501G	FR 502G	FR 503G	FR 504G	FR 505G	FR 506G	FR 507G	Unit
Maximum instantaneous forward voltage (Note 1) @ 5.0 A	V_F	1.3							V
Maximum instantaneous reversecurrent at rated DC blockingvoltage (Note 1) Ta=25℃ Ta=125℃	I_{RRM}	5 200							uA
Maximum Reverse Recovery Time (Note 2)	T_{RR}	150			250	500			ns
Typical junction capacitance (Note 3)	C_J	70			55			pF	

Thermal Characteristics (Ratings at 25℃ ambient temperature unless otherwise specified)

Parameter	Symbol	FR 501G	FR 502G	FR 503G	FR 504G	FR 505G	FR 506G	FR 507G	Unit
Operating junction	T_J	-55 to 150							℃
Storage temperature range	T_{STG}	-55 to 150							
Typical thermal resistance (Note 4)	$R_{\theta JA}$	18							℃/W
	$R_{\theta JC}$	4							

Note: 1. Pulse width < 300 uS, Duty cycle < 2%
2. Reverse Recovery Time test condition: IF=0.5A, IR=1.0A, IRR=0.25A
3. Measured at 1MHz and applied reverse voltage of 4.0V D.C.
4. Thermal resistance from junction to lead vertical P.C.B. mounted , 0.375"(9.5mm)lead length,Polymide PCB, 2 oz Copper.
Cathode pad dimensions 18.8x14.4mm , Anode pad dimensions- (5.6x14.4mm)

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RATING AND CHARACTERISTIC CURVES

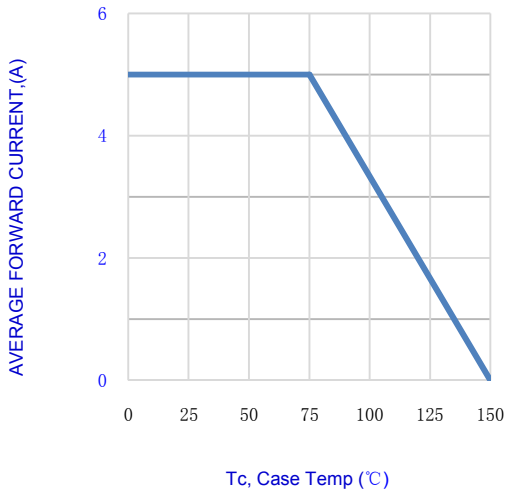


Fig.1-FORWARD CURRENT DERATING CURVE

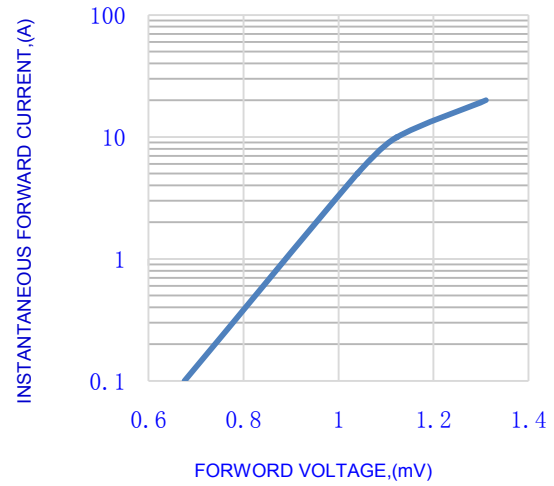


Fig.2- TYPICAL INSTANTANEOUS FORWARD

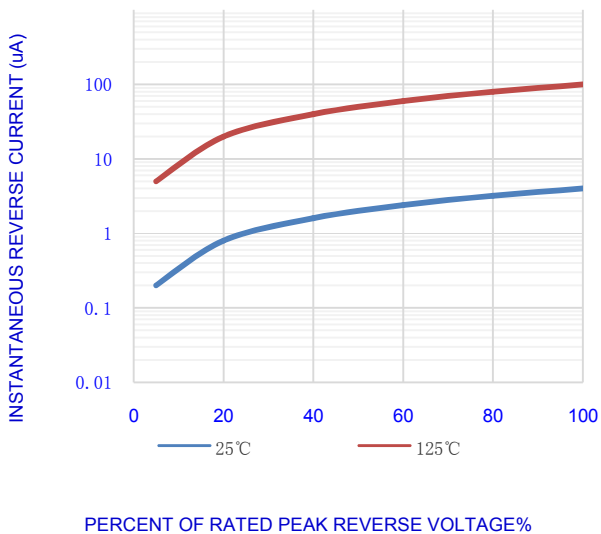


Fig.3- TYPICAL REVERSE CHARACTERISTICS

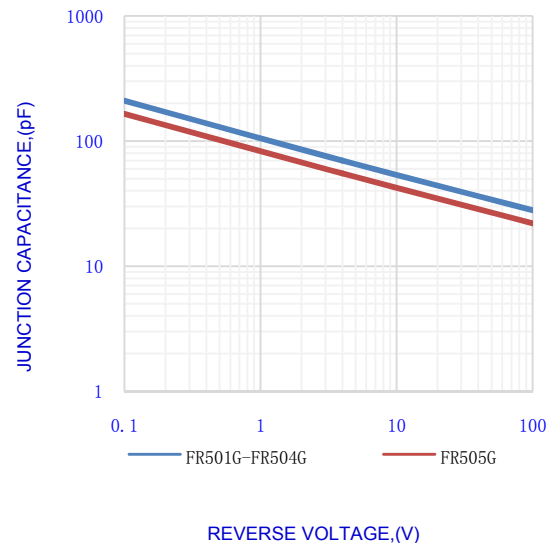


Fig.4-TYPICAL JUNCTION CAPACITANCE

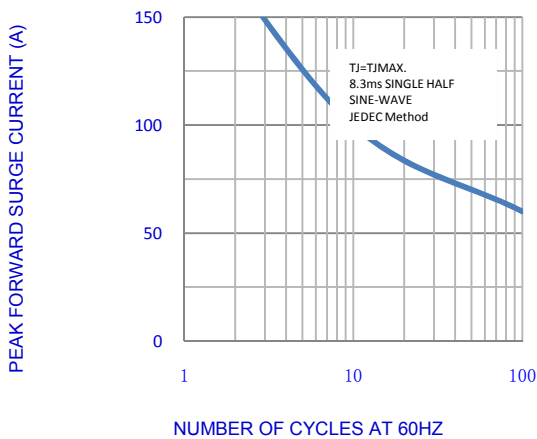


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

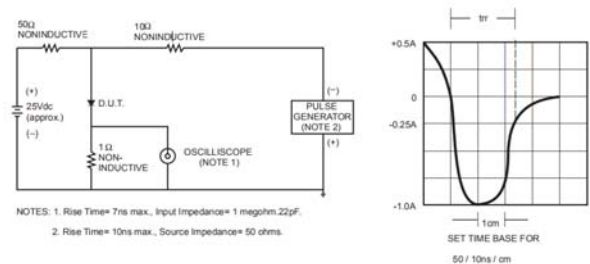
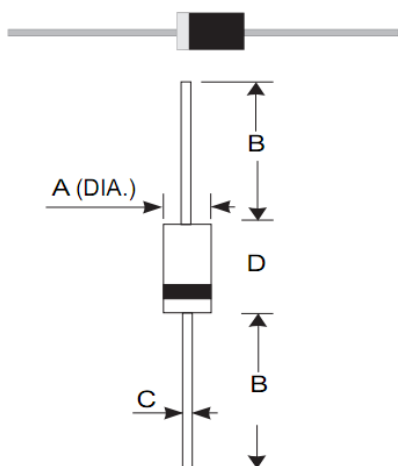


Fig.6-REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT

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OUTLINE DRAWINGS



OUTLINE DIMENSIONS						
DIM	MILLIMETERS			INCHES		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.9	-	5.6	0.193	-	0.220
B	24.5	-	26.4	0.965	-	1.039
C	0.9	-	1.3	0.035	-	0.051
D	7.2	-	9.5	0.285	-	0.374

DO-27(DO-201AD)

Packing Information

Package	Pack	Box Size L×W×H(mm)	Quantity (pcs/box)	Carton Size L×W×H(mm)	Quantity (box/carton)
DO-27(DO-201AD)	B/G	250*75*140	1250	420*280*310	10

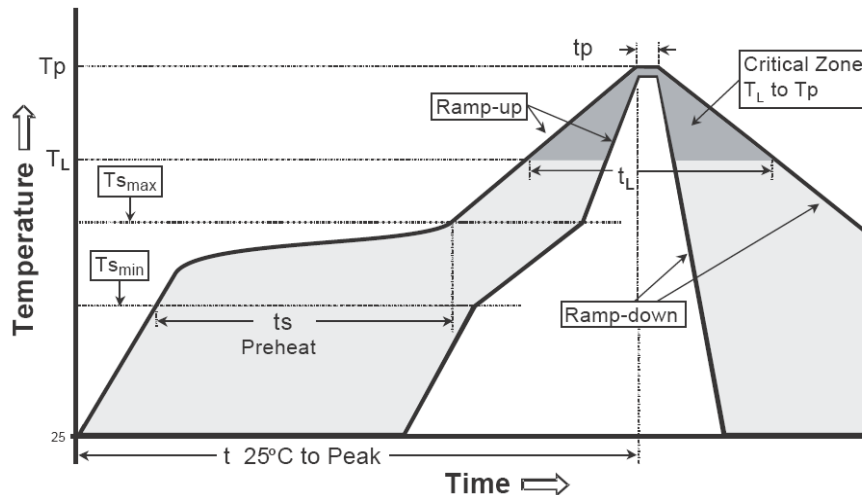
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Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
Preheat -Temperature Min(T _s min) -Temperature Max(T _s max) -Time(t _s min to t _s max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: -Temperature (T _L) - Time (t _L)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(T _P)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

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