

## Product Summary

$V_R = 1200\text{ V}$   
 $I_F = 20\text{ A}$  ( $T_C=150^\circ\text{C}$ )  
 $Q_C = 105\text{ nC}$  ( $V_R=800\text{ V}$ )



Die Size	Anode	Cathode
2.985 x 2.985 mm <sup>2</sup> (include 80μm Scribe Lane Width)	Al	Ti/Ni/Ag

## Features

- Zero Forward/Reverse Recovery Current
- High Blocking Voltage
- High Frequency Operation
- Positive Temperature Coefficient on  $V_F$
- Temperature Independent Switching Behavior
- High surge current capability

## Benefits

- Higher System Efficiency
- Parallel Device Convenience without thermal runaway
- Higher Temperature Application
- No Switching loss
- Hard Switching & Higher Reliability
- Environmental Protection

## Applications

- Motor Drives
- Solar / Wind Inverters
- AC/DC converters
- DC/DC converters
- Uninterruptable power supplies

## Maximum Ratings ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Value	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$		1200	V
Peak Reverse Surge Voltage	$V_{RSM}$		1200	V
DC Blocking Voltage	$V_R$		1200	V
Continuous Forward Current	$I_F$	$T_J=150^\circ\text{C}$	20	A
Non repetitive Forward Surge Current	$I_{FSM}$	$T_J = 25^\circ\text{C}$ , $t_p=10\text{ ms}$ , Half Sine Pulse	140	A
		$T_J = 110^\circ\text{C}$ , $t_p=10\text{ ms}$ , Half Sine Pulse	130	
Repetitive peak Forward Surge Current	$I_{FRM}$	$T_J = 25^\circ\text{C}$ , $t_p=10\text{ ms}$ , Freq = 0.1Hz, 100 cycles, Half Sine Pulse	110	A
		$T_J = 110^\circ\text{C}$ , $t_p=10\text{ ms}$ , Freq = 0.1Hz, 100 cycles, Half Sine Pulse	100	
Operating Junction Temperature	$T_J$		-55 to 175	$^\circ\text{C}$
Storage Temperature	$T_{STG}$		-55 to 175	$^\circ\text{C}$
Maximum Processing Temperature	$T_{Proc}$	10 min. maximum	325	$^\circ\text{C}$

## Electrical Characteristics

Parameter	Symbol	Test conditions	Min	Typ.	Max	Unit
DC Blocking Voltage	$V_{DC}$	$T_J = 25^\circ C$	1200			V
Forward Voltage	$V_F$	$I_F = 20A, T_J = 25^\circ C$		1.4	1.75	V
		$I_F = 20A, T_J = 125^\circ C$		1.75		
		$I_F = 20A, T_J = 175^\circ C$		1.95		
Reverse Current	$I_R$	$V_R = 1200V, T_J = 25^\circ C$		2	150	uA
		$V_R = 1200V, T_J = 125^\circ C$		9		
		$V_R = 1200V, T_J = 175^\circ C$		30		
Total Capacitive Charge	$Q_C$	$V_R = 800V, T_J = 25^\circ C$		105		nC
Total Capacitance	C	$V_R = 1V, T_J = 25^\circ C,$ Freq = 1MHz		1210		pF
		$V_R = 400V, T_J = 25^\circ C,$ Freq = 1MHz		100		
		$V_R = 800V, T_J = 25^\circ C,$ Freq = 1MHz		68		

Note: This is a majority carrier diode, so there is no reverse recovery charge

## Mechanical Parameters

Parameter	Typ.	Unit
Die Size	2.985 x 2.985	mm <sup>2</sup>
Anode Pad Opening	2.480 x 2.480	mm <sup>2</sup>
Thickness	175	um
Wafer Size	150	mm
Cathode Metallization (Ti/Ni/Ag)	1.5	um
Frontside Passivation	Oxide	

## Ordering Information

Chip P/N	Ordering P/N	Inking?	Packing Method
NWC20D120A2	PD20120004B	Inkless (CP map provided)	6" wafer box with separator

**Typical Electrical Curves**

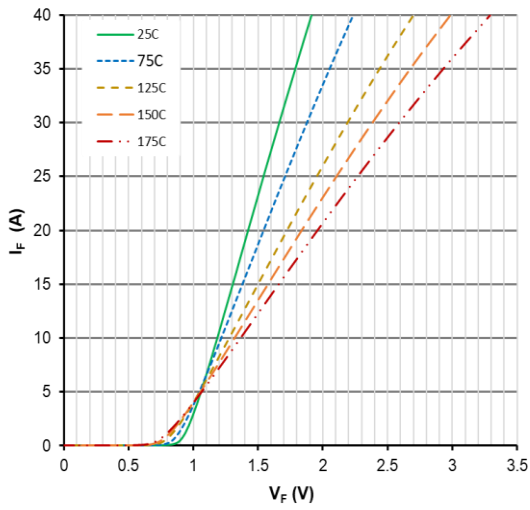


Figure 1. Forward Characteristics

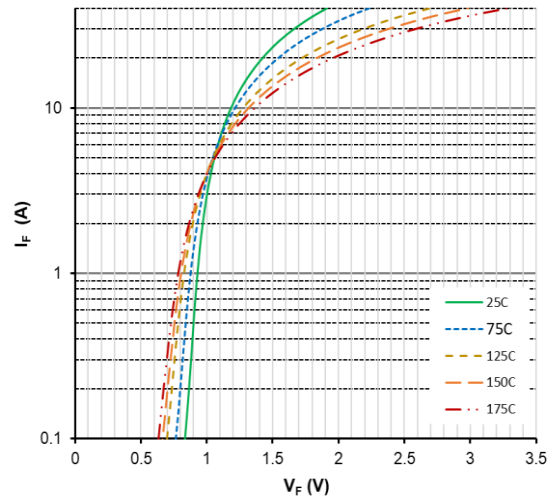
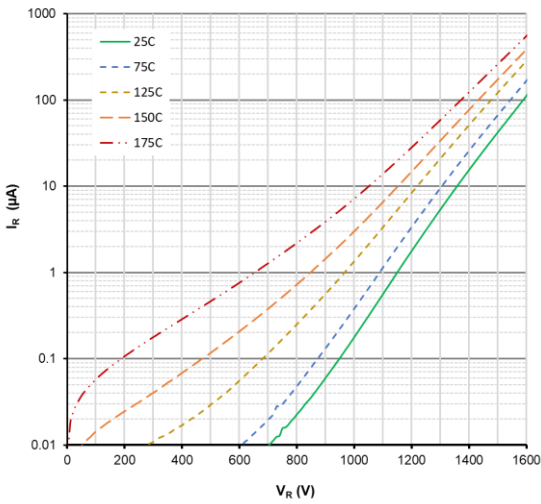


Figure 2. Forward Characteristics



3. Reverse Characteristics

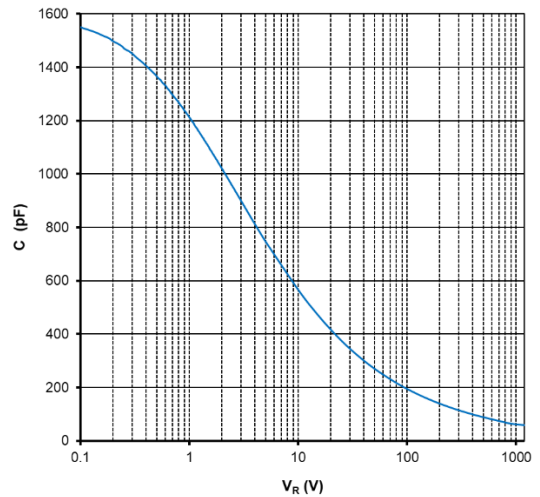


Figure 4. Capacitance vs Reverse Voltage

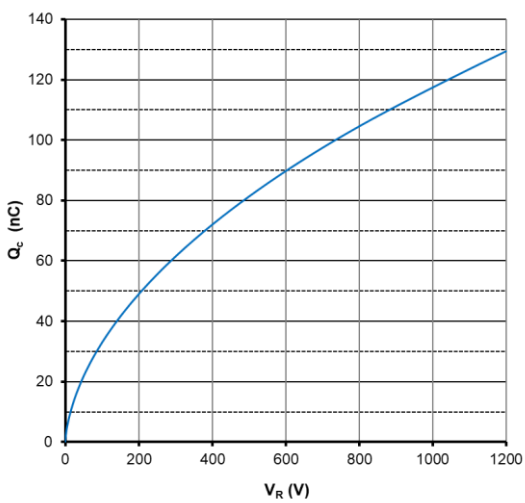
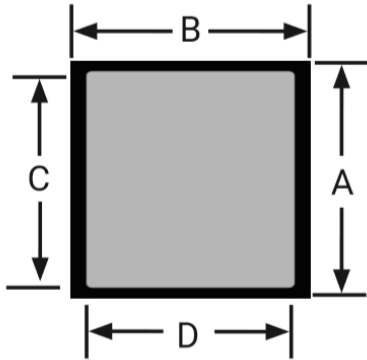


Figure 5. Capacitance Charge vs Reverse Voltage

### Chip Dimensions



Symbol	Dimension	
	mm	inch
A	2.985	0.1175
B	2.985	0.1175
C	2.480	0.0976
D	2.480	0.0976