

# NTP8G202N

## Product Preview

# N-Channel Power MOSFET 600 V, 290 mΩ

### Features

- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

### ABSOLUTE MAXIMUM RATINGS (T<sub>J</sub> = 25°C unless otherwise noted)

Parameter			Symbol	NDD	Unit
Drain-to-Source Voltage			V <sub>DSS</sub>	600	V
Gate-to-Source Voltage			V <sub>GS</sub>	±18	V
Continuous Drain Current R <sub>θJC</sub>	Steady State	T <sub>C</sub> = 25°C	I <sub>D</sub>	9.0	A
		T <sub>C</sub> = 100°C		6.0	
Power Dissipation – R <sub>θJC</sub>	Steady State	T <sub>C</sub> = 25°C	P <sub>D</sub>	65	W
Pulsed Drain Current	t <sub>p</sub> = 10 μs		I <sub>DM</sub>	33	A
Operating Junction and Storage Temperature			T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C
Lead Temperature for Soldering Leads			T <sub>L</sub>	260	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL RESISTANCE

Parameter	Symbol	Value	Unit
Junction-to-Case (Drain)	R <sub>θJC</sub>	2.3	°C/W
Junction-to-Ambient Steady State	R <sub>θJA</sub>	62	°C/W

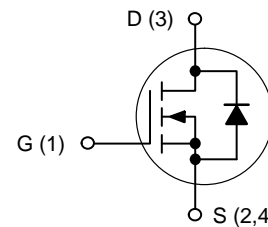


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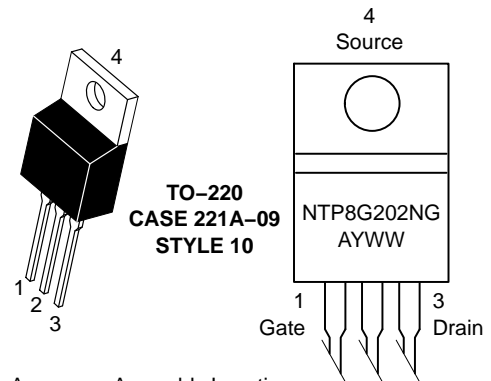
[www.onsemi.com](http://www.onsemi.com)

V <sub>(BR)DSS</sub>	R <sub>DS(ON)</sub> TYP
600 V	290 mΩ @ 10 V

### N-Channel MOSFET



### MARKING DIAGRAM & PIN ASSIGNMENT



- A = Assembly Location
- Y = Year
- WW = Work Week
- G = Pb-Free Package

### ORDERING INFORMATION

Device	Package	Shipping
NTP8G202NG	TO-220 (Pb-Free)	50 Units / Rail

This document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.

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## ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 1 mA	600			V
Drain-to-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> = 600 V, V <sub>GS</sub> = 0 V	T <sub>J</sub> = 25°C	2.5	60	μA
			T <sub>J</sub> = 150°C	10		
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±18 V			±100	nA

### ON CHARACTERISTICS (Note 1)

Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 1 mA	1.35	1.8	2.35	V
Static Drain-to-Source On Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 8 V, I <sub>D</sub> = 5.5 A		290	350	mΩ

### DYNAMIC CHARACTERISTICS

Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 400 V, V <sub>GS</sub> = 0 V, f = 1 MHz		785		pF
Output Capacitance	C <sub>oss</sub>			26		
Reverse Transfer Capacitance	C <sub>rss</sub>			3.5		
Effective output capacitance, energy related (Note 3)	C <sub>o(er)</sub>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 0 to 480 V		36		
Effective output capacitance, time related (Note 4)	C <sub>o(tr)</sub>	I <sub>D</sub> = constant, V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 0 to 480 V		63		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 100 V, I <sub>D</sub> = 5.5 A, V <sub>GS</sub> = 4.5 V		6.2		nC
Gate-to-Source Charge	Q <sub>gs</sub>			2.1		
Gate-to-Drain Charge	Q <sub>gd</sub>			2.2		

### RESISTIVE SWITCHING CHARACTERISTICS (Note 2)

Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 480 V, I <sub>D</sub> = 5.5 A, V <sub>GS</sub> = 10 V, R <sub>G</sub> = 2 Ω		7.5		ns
Rise Time	t <sub>r</sub>			4.0		
Turn-off Delay Time	t <sub>d(off)</sub>			10		
Fall Time	t <sub>f</sub>			4.5		

### SOURCE-DRAIN DIODE CHARACTERISTICS

Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> = 12 A, V <sub>GS</sub> = 0 V	T <sub>J</sub> = 25°C		2.3	2.9	V
Reverse Recovery Time	t <sub>rr</sub>	V <sub>GS</sub> = 0 V, V <sub>DD</sub> = 480 V			30		ns
Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>S</sub> = 5.5 A, d <sub>i</sub> /d <sub>t</sub> = 450 A/μs			29		nC

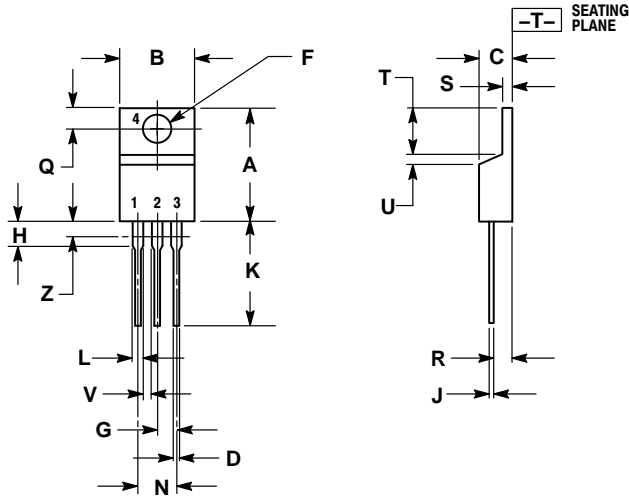
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

1. Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.
2. Switching characteristics are independent of operating junction temperatures.
3. C<sub>o(er)</sub> is a fixed capacitance that gives the same stored energy as C<sub>oss</sub> while V<sub>DS</sub> is rising from 0 to 80% V<sub>(BR)DSS</sub>
4. C<sub>o(tr)</sub> is a fixed capacitance that gives the same charging time as C<sub>oss</sub> while V<sub>DS</sub> is rising from 0 to 80% V<sub>(BR)DSS</sub>

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## PACKAGE DIMENSIONS

TO-220  
CASE 221A-09  
ISSUE AH



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.415	9.66	10.53
C	0.160	0.190	4.07	4.83
D	0.025	0.038	0.64	0.96
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.161	2.80	4.10
J	0.014	0.024	0.36	0.61
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

STYLE 10:

1. GATE
2. SOURCE
3. DRAIN
4. SOURCE

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