NTP8G202N

Product Preview

Power GaN Cascode Transistor 600 V, 290 mΩ

Features

- Fast Switching
- Extremely Low Q_{rr}
- Transphorm Inside
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

ABSOLUTE MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Parameter			Symbol	NDD	Unit
Drain−to−Source Voltage			V_{DSS}	600	V
Gate−to−Source Voltage			V_{GS}	±18	V
Continuous Drain Current $R_{\theta JC}$	Steady State	T_C = 25°C	I_D	9.0	A
		T_C = 100°C		6.0	
Power Dissipation – $R_{\theta JC}$	Steady State	T_C = 25°C	P_D	65	W
Pulsed Drain Current	t_p = 10 µs		I_{DM}	33	A
Operating Junction and Storage Temperature			T_J, T_{STG}	−55 to +150	°C
Lead Temperature for Soldering Leads			T_L	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)	$R_{\theta JC}$	2.3	°C/W
Junction−to−Ambient Steady State	$R_{\theta JA}$	62	°C/W

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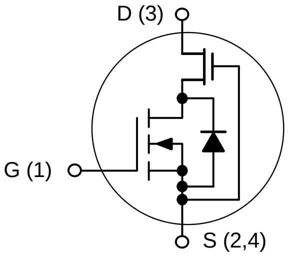
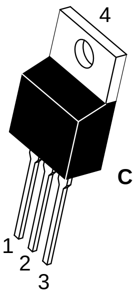
$V_{(BR)DSS}$	$R_{DS(ON)}$ TYP
600 V	290 mΩ @ 10 V

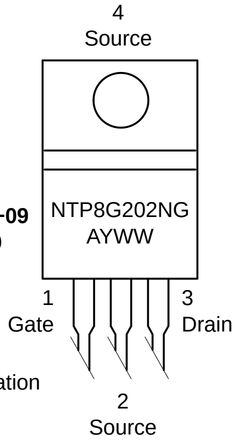
N−Channel MOSFET



MARKING DIAGRAM & PIN ASSIGNMENT



TO−220
CASE 221A−09
STYLE 10



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

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

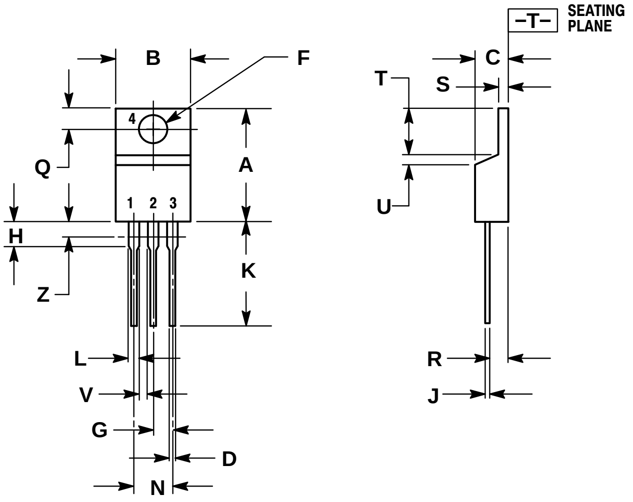
Characteristic	Symbol	Test Conditions		Min	Typ	Max	Unit
OFF CHARACTERISTICS							
Drain−to−Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 1 mA		600			V
Drain−to−Source Leakage Current	I_{DSS}	V_{DS} = 600 V, V_{GS} = 0 V	T_J = 25°C		2.5	60	µA
			T_J = 150°C		10		
Gate−to−Source Leakage Current	I_{GSS}	V_{GS} = ±18 V				±100	nA
ON CHARACTERISTICS (Note 1)							
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}$, I_D = 500 µA		1.6	2.1	2.6	V
Static Drain-to-Source On Resistance	$R_{DS(on)}$	V_{GS} = 8 V, I_D = 5.5 A			290	350	mΩ
DYNAMIC CHARACTERISTICS							
Input Capacitance	C_{iss}	V_{DS} = 400 V, V_{GS} = 0 V, f = 1 MHz			785		pF
Output Capacitance	C_{oss}				26		
Reverse Transfer Capacitance	C_{rss}				3.5		
Effective output capacitance, energy related (Note 3)	$C_{o(er)}$	V_{GS} = 0 V, V_{DS} = 0 to 480 V			36		
Effective output capacitance, time related (Note 4)	$C_{o(tr)}$	I_D = constant, V_{GS} = 0 V, V_{DS} = 0 to 480 V			63		
Total Gate Charge	Q_g	V_{DS} = 100 V, I_D = 5.5 A, V_{GS} = 4.5 V			6.2		nC
Gate-to-Source Charge	Q_{gs}				2.1		
Gate-to-Drain Charge	Q_{gd}				2.2		
RESISTIVE SWITCHING CHARACTERISTICS (Note 2)							
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 480 V, I_D = 5.5 A, V_{GS} = 10 V, R_G = 2 Ω			7.5		ns
Rise Time	t_r				4.0		
Turn-off Delay Time	$t_{d(off)}$				10		
Fall Time	t_f				4.5		
SOURCE−DRAIN DIODE CHARACTERISTICS							
Diode Forward Voltage	V_{SD}	I_S = 12 A, V_{GS} = 0 V	T_J = 25°C		2.3	2.9	V
Reverse Recovery Time	t_{rr}	V_{GS} = 0 V, V_{DD} = 480 V I_S = 5.5 A, d_i/d_t = 450 A/µs			30		ns
Reverse Recovery Charge	Q_{rr}				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. $C_{o(er)}$ is a fixed capacitance that gives the same stored energy as C_{oss} while V_{DS} is rising from 0 to 80% $V_{(BR)DSS}$
4. $C_{o(tr)}$ is a fixed capacitance that gives the same charging time as C_{oss} while V_{DS} is rising from 0 to 80% $V_{(BR)DSS}$

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.

	INCHES		MILLIMETERS	
DIM	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:
PIN 1. GATE
2. SOURCE
3. DRAIN
4. SOURCE

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