

# NTQS6466

## Product Preview

# Power MOSFET 6.8 Amps, 20 Volts N-Channel TSSOP-8

### Features

- New Low Profile TSSOP-8 Package
- Ultra Low  $R_{DS(on)}$
- Higher Efficiency Extending Battery Life
- Logic Level Gate Drive
- Diode Exhibits High Speed, Soft Recovery
- Avalanche Energy Specified
- $I_{DSS}$  and  $V_{DS(on)}$  Specified at Elevated Temperatures

### Applications

- Power Management in Portable and Battery-Powered Products, i.e.: Computers, Printers, PCMCIA Cards, Cellular and Cordless Telephones
- Lithium Ion Battery Applications
- Note Book PC

### MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	10 secs	Steady State	Unit
Drain-to-Source Voltage	$V_{DS}$	20		Vdc
Gate-to-Source Voltage	$V_{GS}$	12		
Continuous Drain Current – $T_J = 150^\circ\text{C}$ (Note 1.) – $T_A = 25^\circ\text{C}$ – $T_A = 70^\circ\text{C}$	$I_D$	8.1 6.6	6.8 5.4	Adc
Pulsed Drain Current (10 $\mu\text{s}$ Pulse Width)	$I_{DM}$	$\pm 30$		Apk
Continuous Source Current (Diode Conduction) (Note 1.)	$I_S$	1.35	0.95	Adc
Maximum Power Dissipation (Note 1.) – $T_A = 25^\circ\text{C}$ – $T_A = 70^\circ\text{C}$	$P_D$	1.5 1.0	1.05 0.67	W
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	–55 to +150		$^\circ\text{C}$
Single Pulse Drain-to-source Avalanche Energy – Starting $T_J = 25^\circ\text{C}$ ( $V_{DD} = 50\text{ V}$ , $I_L = 7.7\text{ Apk}$ , $L = 44\text{ mH}$ )	EAS	1.36		J

1. Surface mounted to 1" x 1" FR-4 board.

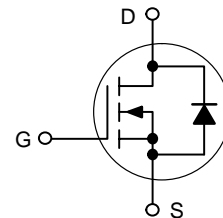


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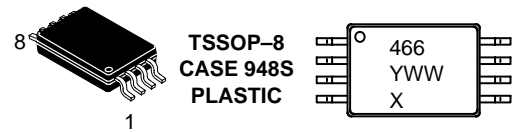
<http://onsemi.com>

**6.8 AMPERES**  
**20 VOLTS**  
 **$R_{DS(on)} = 17\text{ m}\Omega$**

N-Channel

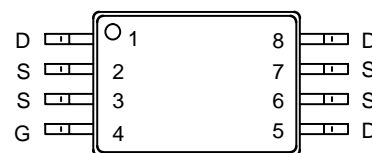


### MARKING DIAGRAM



Y = Year  
WW = Work Week  
X = MOSFET

### PIN ASSIGNMENT



Top View

### ORDERING INFORMATION

Device	Package	Shipping
NTQS6466	TSSOP-8	100 Units/Rail
NTQS6466R2	TSSOP-8	3000/Tape & Reel

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

# NTQS6466

## THERMAL RESISTANCE RATINGS

Rating	Symbol	Typical	Max	Unit
Maximum Junction-to-Ambient (Note 2.) t ≤ 10 sec Steady State	R <sub>θJA</sub>	65 100	83 120	°C/W
Maximum Junction-to-Foot Steady State	R <sub>θJF</sub>	43	52	°C/W

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

Characteristic	Symbol	Min	Typ	Max	Unit
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### STATIC

Gate Threshold Voltage (V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA)	V <sub>GS(th)</sub>	0.45	0.9	–	Vdc
Gate-Body Leakage (V <sub>DS</sub> = 0 Vdc, V <sub>GS</sub> = ±8 Vdc)	I <sub>GSS</sub>	–	–	±100	nAdc
Zero Gate Threshold Voltage Drain Current (V <sub>DS</sub> = 16 Vdc, V <sub>GS</sub> = 0 Vdc) (V <sub>DS</sub> = 16 Vdc, V <sub>GS</sub> = 0 Vdc, T <sub>J</sub> = 70°C)	I <sub>DSS</sub>	– –	– –	1.0 10	μAdc
On-State Drain Current (Note 3.) (V <sub>DS</sub> = 5.0 Vdc, V <sub>GS</sub> = 4.5 Vdc)	I <sub>D(on)</sub>	20	–	–	Adc
Drain-Source On-State Resistance (Note 3.) (V <sub>GS</sub> = 4.5 Vdc, I <sub>D</sub> = 8.1 Adc) (V <sub>GS</sub> = 2.5 Vdc, I <sub>D</sub> = 6.6 Adc)	R <sub>DS(on)</sub>	– –	0.014 0.017	0.017 0.020	Ω
Forward Transconductance (V <sub>DS</sub> = 10 Vdc, I <sub>D</sub> = 8.1 Adc) (Note 3.)	g <sub>FS</sub>	–	30	–	S
Diode Forward Voltage (I <sub>S</sub> = 1.35 Adc, V <sub>GS</sub> = 0 Vdc (Note 3.))	V <sub>SD</sub>	–	0.65	1.1	Vdc

### DYNAMIC (Note 4.)

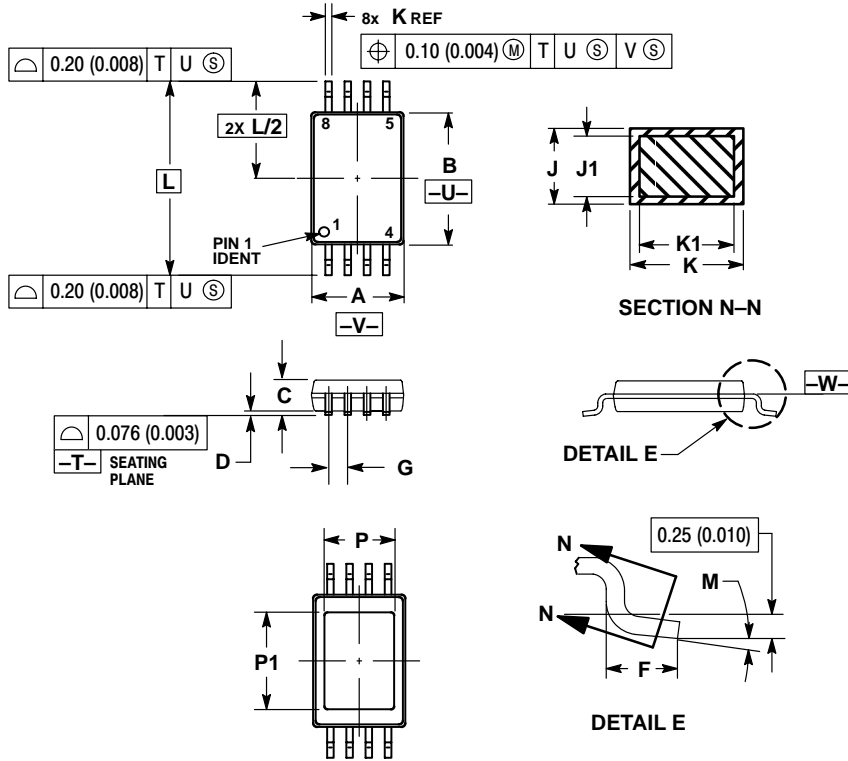
Total Gate Charge	(V <sub>DS</sub> = 10 Vdc, V <sub>GS</sub> = 5.0 Vdc, I <sub>D</sub> = 8.1 Adc)	Q <sub>g</sub>	–	25	27	nC
Gate-Source Charge		Q <sub>gs</sub>	–	3.2	–	
Gate-Drain Charge		Q <sub>gd</sub>	–	7.0	–	
Turn-On Delay Time	(V <sub>DD</sub> = 10 Vdc, R <sub>L</sub> = 10 Ω, I <sub>D</sub> ≅ 1.0 Adc, V <sub>GEN</sub> = 4.5 Vdc, R <sub>G</sub> = 6.0 Ω)	t <sub>d(on)</sub>	–	17	45	ns
Rise Time		t <sub>r</sub>	–	80	100	
Turn-Off Delay Time		t <sub>d(off)</sub>	–	95	110	
Fall Time		t <sub>f</sub>	–	90	100	
Source-Drain Reverse Recovery Time	(I <sub>F</sub> = 1.5 Adc, di/dt = 100 A/μs)	t <sub>rr</sub>	–	28	70	ns

- Surface mounted to 1" x 1" FR-4 board.
- Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

# NTQS6466

## PACKAGE DIMENSIONS

TSSOP-8  
CASE 948S-01  
ISSUE O



### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A DOES NOT INCLUDE MOLD FLASH. PROTRUSIONS OR GATE BURRS. MOLD FLASH OR GATE BURRS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
4. DIMENSION B DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 (0.010) PER SIDE.
5. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
6. DIMENSION A AND B ARE TO BE DETERMINED AT DATUM PLANE -W-.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.90	3.10	0.114	0.122
B	4.30	4.50	0.169	0.177
C	---	1.10	---	0.043
D	0.05	0.15	0.002	0.006
F	0.50	0.70	0.020	0.028
G	0.65 BSC		0.026 BSC	
J	0.09	0.20	0.004	0.008
J1	0.09	0.16	0.004	0.006
K	0.19	0.30	0.007	0.012
K1	0.19	0.25	0.007	0.010
L	6.40 BSC		0.252 BSC	
M	0°	8°	0°	8°
P	---	2.20	---	0.087
P1	---	3.20	---	0.126

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