NTQS6466

Product Preview

Power MOSFET
6.8 Amps, 20 Volts
N–Channel TSSOP–8

ON Semiconductor

http://onsemi.com

6.8 AMPERES
20 VOLTS
$R_{DS(on)}$ = 17 mΩ

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

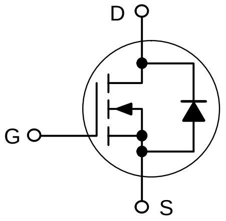
- Power Management in Portable and Battery–Powered Products, i.e.: Computers, Printers, PCMCIA Cards, Cellular and Cordless Telephones
- Lithium Ion Battery Applications
- Note Book PC

MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

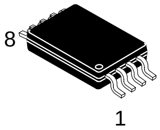
Rating	Symbol	10 secs	Steady State	Unit
Drain–to–Source Voltage	V_{DS}	20		Vdc
Gate–to–Source Voltage	V_{GS}	12		
Continuous Drain Current – T_J = 150°C (Note 1.)	I_D			Adc
– T_A = 25°C		8.1	6.8	
– T_A = 70°C		6.6	5.4	
Pulsed Drain Current (10 µs Pulse Width)	I_{DM}	± 30		Apk
Continuous Source Current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

1. Surface mounted to 1″ x 1″ FR–4 board.

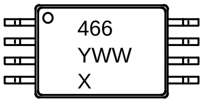
N–Channel



MARKING DIAGRAM

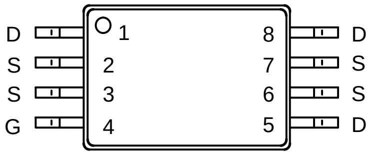


TSSOP–8
CASE 948S
PLASTIC



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.

January, 2001 – Rev. 0

Publication Order Number:
NTQS6466/D

THERMAL RESISTANCE RATINGS

Rating	Symbol	Typical	Max	Unit
Maximum Junction–to–Ambient (Note 2.)	$R_{\theta JA}$			°C/W
t ≤ 10 sec		65	83	
Steady State		100	120	
Maximum Junction–to–Foot	$R_{\theta JF}$			°C/W
Steady State		43	52	

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

STATIC

Characteristic	Symbol	Min	Typ	Max	Unit
Gate Threshold Voltage ($V_{DS} = V_{GS}$, I_D = 250 μA)	$V_{GS(th)}$	0.45	0.9	–	Vdc
Gate–Body Leakage (V_{DS} = 0 Vdc, V_{GS} = ±8 Vdc)	I_{GSS}	–	–	±100	nAdc
Zero Gate Threshold Voltage Drain Current	I_{DSS}				μAdc
(V_{DS} = 16 Vdc, V_{GS} = 0 Vdc)		–	–	1.0	
(V_{DS} = 16 Vdc, V_{GS} = 0 Vdc, T_J = 70°C)		–	–	10	
On–State Drain Current (Note 3.) (V_{DS} = 5.0 Vdc, V_{GS} = 4.5 Vdc)	$I_{D(on)}$	20	–	–	Adc
Drain–Source On–State Resistance (Note 3.)	$R_{DS(on)}$				Ω
(V_{GS} = 4.5 Vdc, I_D = 8.1 Adc)		–	0.014	0.017	
(V_{GS} = 2.5 Vdc, I_D = 6.6 Adc)		–	0.017	0.020	
Forward Transconductance (V_{DS} = 10 Vdc, I_D = 8.1 Adc) (Note 3.)	g_{FS}	–	30	–	S
Diode Forward Voltage (I_S = 1.35 Adc, V_{GS} = 0 Vdc (Note 3.)	V_{SD}	–	0.65	1.1	Vdc

DYNAMIC (Note 4.)

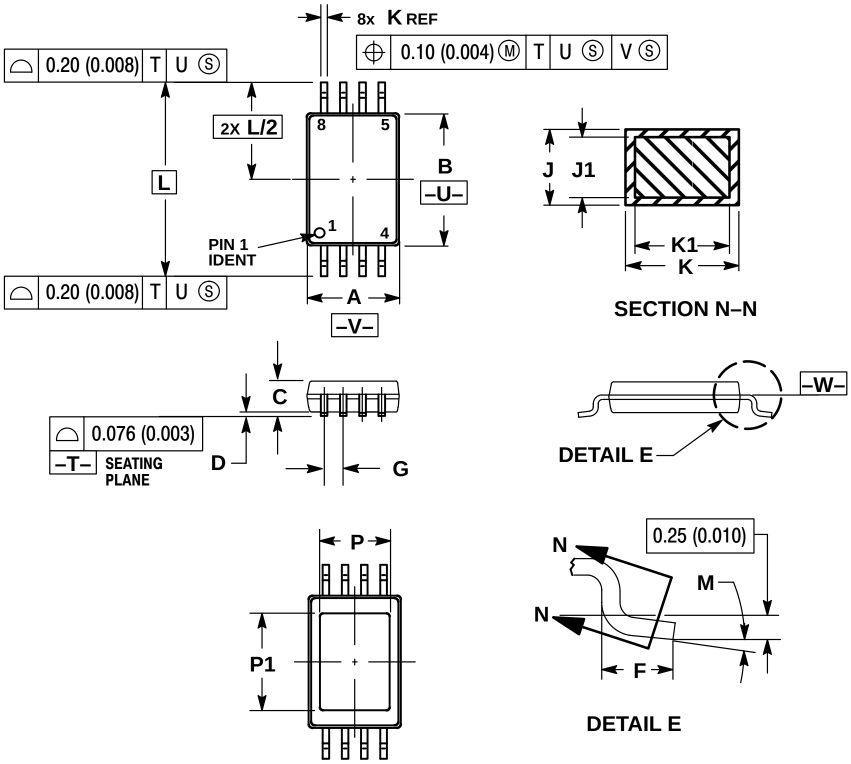
Characteristic		Symbol	Min	Typ	Max	Unit
Total Gate Charge	(V_{DS} = 10 Vdc, V_{GS} = 5.0 Vdc, I_D = 8.1 Adc)	Q_g	–	25	27	nC
Gate–Source Charge		Q_{gs}	–	3.2	–	
Gate–Drain Charge		Q_{gd}	–	7.0	–	
Turn–On Delay Time	(V_{DD} = 10 Vdc, R_L = 10 Ω, $I_D \cong$ 1.0 Adc, V_{GEN} = 4.5 Vdc, R_G = 6.0 Ω)	$t_{d(on)}$	–	17	45	ns
Rise Time		t_r	–	80	100	
Turn–Off Delay Time		$t_{d(off)}$	–	95	110	
Fall Time		t_f	–	90	100	
Source–Drain Reverse Recovery Time	(I_F = 1.5 Adc, di/dt = 100 A/μs)	t_{rr}	–	28	70	ns

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

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–.

	MILLIMETERS		INCHES	
DIM	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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