

NTNS260P02P8Z

Product Preview

Power MOSFET

-20 V, Single P-Channel, SOT883 (XDFN3)

Features

- Ultra-Small and Thin Package (1.0 x 0.6 x 0.4 mm)
- Low $R_{DS(on)}$ Solution
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

Typical Applications

- Load Switch
- High Speed Interfacing
- Battery Management and Protection
- Optimized for Power Management in Ultra-Portable Solutions

MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise stated)

Parameter		Symbol	Value	Unit
Drain-to-Source Voltage		V_{DSS}	-20	V
Gate-to-Source Voltage		V_{GS}	± 12	V
Continuous Drain Current $R_{\theta JA}$ (Notes 1, 2)	Steady State	$T_A = 25^\circ\text{C}$	-574	mA
		$T_A = 85^\circ\text{C}$	414	
Power Dissipation $R_{\theta JA}$ (Notes 1, 2)		$T_A = 25^\circ\text{C}$	178	mW
Pulsed Drain Current	$T_A = 25^\circ\text{C}, t_p = 10 \mu\text{s}$	I_{DM}	TBD	mA
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to +150	$^\circ\text{C}$
Lead Temperature Soldering Reflow for Soldering Purposes (1/8" from case for 10 s)		T_L	260	$^\circ\text{C}$

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.

1. Surface-mounted on FR4 board using minimum pad size, 1 oz Cu pad.
2. The entire application environment impacts the thermal resistance values shown. They are not constants and are only valid for the particular conditions noted. Actual continuous current will be limited by thermal & electro-mechanical application board design. $R_{\theta CA}$ is determined by the user's board design.

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

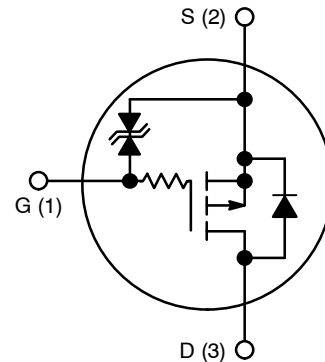


ON Semiconductor®

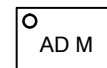
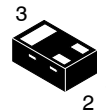
www.onsemi.com

$V_{(BR)DSS}$	$R_{DS(on)}$ MAX	I_D Max
-20 V	348 m Ω @ -4.5 V	-574 mA
	570 m Ω @ -2.5 V	

P-CHANNEL MOSFET



MARKING DIAGRAM



SOT-883 (XDFN3)
CASE 506CB

AD = Specific Device Code
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
NTNS260P02P8ZTCG	SOT-883 (Pb-Free)	8000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

NTNS260P02P8Z

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Max	Unit
Junction-to-Ambient – Steady State (Note 3)	$R_{\theta JA}$	703	$^{\circ}\text{C}/\text{W}$

3. Surface-mounted on FR4 board using the minimum recommended pad size, or 2 mm², 1 oz Cu.

ELECTRICAL CHARACTERISTICS ($T_J = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = -250\ \mu\text{A}$	-20			V
Drain-to-Source Breakdown Voltage Temperature Coefficient	$V_{(BR)DSS}/T_J$	$I_D = -250\ \mu\text{A}$, ref to 25°C		TBD		$\text{mV}/^{\circ}\text{C}$
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS} = 0\text{ V}, V_{DS} = -16\text{ V}$	$T_J = 25^{\circ}\text{C}$		-1	μA
			$T_J = 85^{\circ}\text{C}$		-10	
Gate-to-Source Leakage Current	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 12\text{ V}$			± 10	μA

ON CHARACTERISTICS (Note 4)

Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = -250\ \mu\text{A}$	-0.5		-1.3	V	
Threshold Temperature Coefficient	$V_{GS(TH)}/T_J$	$I_D = -250\ \mu\text{A}$, ref to 25°C		TBD		$\text{mV}/^{\circ}\text{C}$	
Drain-to-Source On Resistance	$R_{DS(on)}$	$V_{GS} = -4.5\text{ V}, I_D = -500\text{ mA}$		267	348	$\text{m}\Omega$	
		$V_{GS} = -2.5\text{ V}, I_D = -400\text{ mA}$		380	570		
Forward Transconductance	g_{FS}	$V_{DS} = -5\text{ V}, I_D = -500\text{ mA}$		TBD		S	
Forward Diode Voltage	V_{SD}	$V_{GS} = 0\text{ V}, I_S = -500\text{ mA}$	$T_J = 25^{\circ}\text{C}$		TBD	TBD	V
			$T_J = 85^{\circ}\text{C}$		TBD		

CHARGES & CAPACITANCES

Input Capacitance	C_{ISS}	$V_{GS} = 0\text{ V}, f = 1\text{ MHz}, V_{DS} = -10\text{ V}$		129		pF
Output Capacitance	C_{OSS}			17		
Reverse Capacitance	C_{RSS}			16		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = 4.5\text{ V}, V_{DS} = -10\text{ V}, I_D = 500\text{ mA}$		1		nC
Gate-to-Drain Charge	Q_{GD}			0.3		
Gate-to-Source Charge	Q_{GS}			0.1		

SWITCHING CHARACTERISTICS, $V_{GS} = -4.5\text{ V}$ (Note 4)

Turn-On Delay Time	$t_{d(ON)}$	$V_{GS} = -4.5\text{ V}, V_{DD} = -10\text{ V}, I_D = -500\text{ mA}, R_G = 2\ \Omega$		TBD		ns
Rise Time	$t_{r(ON)}$			TBD		
Turn-Off Delay Time	$t_{d(OFF)}$			TBD		
Fall Time	t_f			TBD		

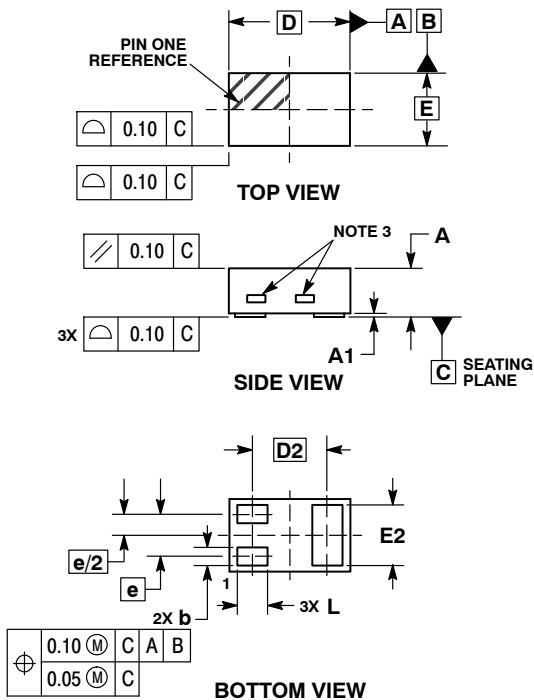
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

4. Switching characteristics are independent of operating junction temperatures

NTNS260P02P8Z

PACKAGE DIMENSIONS

SOT-883 (XDFN3), 1.0x0.6, 0.35P
CASE 506CB
ISSUE A

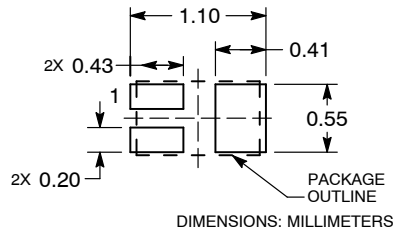


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. EXPOSED COPPER ALLOWED AS SHOWN.

MILLIMETERS		
DIM	MIN	MAX
A	0.340	0.440
A1	0.000	0.030
b	0.075	0.200
D	0.950	1.075
D2	0.620	BSC
e	0.350	BSC
E	0.550	0.675
E2	0.425	0.550
L	0.170	0.300

RECOMMENDED SOLDER FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor and are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910

ON Semiconductor Website: www.onsemi.com
Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative