



**THE DATASHEET OF  
NVMFS5832NLWFT3G**



# MOSFET – Power, Single N-Channel

40 V, 4.2 mΩ, 120 A

## NVMFS5832NL

### Features

- Small Footprint (5x6 mm) for Compact Design
- Low  $R_{DS(on)}$  to Minimize Conduction Losses
- Low  $Q_G$  and Capacitance to Minimize Driver Losses
- NVMFS5832NLWF - Wettable Flanks Product
- AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free and are RoHS Compliant

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

Symbol	Parameter	Value	Unit	
$V_{DSS}$	Drain-to-Source Voltage	40	V	
$V_{GS}$	Gate-to-Source Voltage	$\pm 20$	V	
$I_D$	Continuous Drain Current $R_{\Psi J-mb}$ (Notes 1, 2, 3, 4)	Steady State		
		$T_{mb} = 25\text{ }^\circ\text{C}$	120	A
$P_D$	Power Dissipation $R_{\Psi J-mb}$ (Notes 1, 2, 3)	$T_{mb} = 100\text{ }^\circ\text{C}$	84	
		$T_{mb} = 25\text{ }^\circ\text{C}$	127	W
$I_D$	Continuous Drain Current $R_{\theta JA}$ (Notes 1, 3, 4)	Steady State		
		$T_A = 100\text{ }^\circ\text{C}$	15	A
$P_D$	Power Dissipation $R_{\theta JA}$ (Notes 1 & 3)	$T_A = 25\text{ }^\circ\text{C}$	3.7	W
		$T_A = 100\text{ }^\circ\text{C}$	1.9	
$I_{DM}$	Pulsed Drain Current	$T_A = 25\text{ }^\circ\text{C}$ , $t_p = 10\text{ }\mu\text{s}$	557	A
$T_J, T_{stg}$	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$	
$I_S$	Source Current (Body Diode)	120	A	
$E_{AS}$	Single Pulse Drain-to-Source Avalanche Energy ( $T_J = 25\text{ }^\circ\text{C}$ , $V_{GS} = 10\text{ V}$ , $I_{L(pk)} = 52\text{ A}$ , $L = 0.1\text{ mH}$ , $R_G = 25\text{ }\Omega$ )	134	mJ	
$T_L$	Lead Temperature for Soldering Purposes (1/8" from case for 10 s)	260	$^\circ\text{C}$	

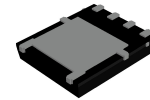
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL RESISTANCE MAXIMUM RATINGS

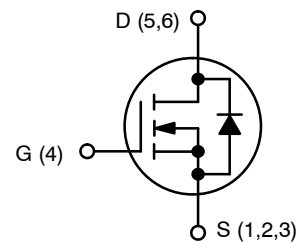
Symbol	Parameter	Value	Unit
$R_{\Psi J-mb}$	Junction-to-Mounting Board (top) - Steady State (Notes 2, 3)	1.2	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Junction-to-Ambient - Steady State (Note 3)	40	

1. The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.
2. Psi ( $\Psi$ ) is used as required per JESD51-12 for packages in which substantially less than 100% of the heat flows to single case surface.
3. Surface-mounted on FR4 board using a 650 mm<sup>2</sup>, 2 oz. Cu pad.
4. Maximum current for pulses as long as 1 second is higher but is dependent on pulse duration and duty cycle.

$V_{(BR)DSS}$	$R_{DS(ON)}\text{ MAX}$	$I_D\text{ MAX}$
40 V	4.2 mΩ @ 10 V	120 A
	6.5 mΩ @ 4.5 V	

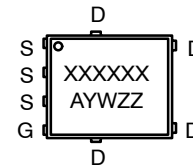


DFNW5  
CASE 507BA



N-CHANNEL MOSFET

### MARKING DIAGRAM



- A = Assembly Location
- Y = Year
- W = Work Week
- ZZ = Lot Traceability

### ORDERING INFORMATION

See detailed ordering, marking and shipping information in the package dimensions section on page 5 of this data sheet.

NOTE: Some of the devices on this data sheet have been **DISCONTINUED**. Please refer to the table on page 5.

# NVMFS5832NL

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

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit	
<b>OFF CHARACTERISTICS</b>							
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	40	-	-	V	
$V_{(BR)DSS}/T_J$	Drain-to-Source Breakdown Voltage Temperature Coefficient		-	34.2	-	mV/ $^\circ\text{C}$	
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS} = 0\text{ V}, V_{DS} = 40\text{ V}$	$T_J = 25\text{ }^\circ\text{C}$	-	-	1	$\mu\text{A}$
			$T_J = 125\text{ }^\circ\text{C}$	-	-	100	
$I_{GSS}$	Gate-to-Source Leakage Current	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	-	-	$\pm 100$	nA	

### ON CHARACTERISTICS (Note 5)

$V_{GS(TH)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}, I_D = 250\text{ }\mu\text{A}$	1.4	-	2.4	V	
$V_{GS(TH)}/T_J$	Negative Threshold Temperature Coefficient		-	6.4	-	mV/ $^\circ\text{C}$	
$R_{DS(on)}$	Drain-to-Source On Resistance	$V_{GS} = 10\text{ V}$	$I_D = 20\text{ A}$	-	3.1	4.2	m $\Omega$
		$V_{GS} = 4.5\text{ V}$	$I_D = 20\text{ A}$	-	5.0	6.5	
$g_{FS}$	Forward Transconductance	$V_{DS} = 15\text{ V}, I_D = 20\text{ A}$	-	21	-	S	

### CHARGES, CAPACITANCES & GATE RESISTANCE

$C_{ISS}$	Input Capacitance	$V_{GS} = 0\text{ V}, f = 1\text{ MHz}, V_{DS} = 25\text{ V}$	-	2700	-	pF
$C_{OSS}$	Output Capacitance		-	360	-	
$C_{RSS}$	Reverse Transfer Capacitance		-	250	-	
$Q_{G(TOT)}$	Total Gate Charge	$V_{GS} = 4.5\text{ V}, V_{DS} = 20\text{ V}; I_D = 20\text{ A}$	-	25	-	nC
$Q_{G(TOT)}$	Total Gate Charge	$V_{GS} = 10\text{ V}, V_{DS} = 20\text{ V}; I_D = 20\text{ A}$	-	51	-	
$Q_{G(TH)}$	Threshold Gate Charge	$V_{GS} = 4.5\text{ V}, V_{DS} = 20\text{ V}; I_D = 20\text{ A}$	-	2.0	-	
$Q_{GS}$	Gate-to-Source Charge		-	8.0	-	
$Q_{GD}$	Gate-to-Drain Charge		-	12.7	-	
$V_{GP}$	Plateau Voltage		-	3.2	-	V

### SWITCHING CHARACTERISTICS (Note 6)

$t_{d(ON)}$	Turn-On Delay Time	$V_{GS} = 4.5\text{ V}, V_{DS} = 20\text{ V}, I_D = 10\text{ A}, R_G = 1.0\text{ }\Omega$	-	13	-	ns
$t_r$	Rise Time		-	24	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	27	-	
$t_f$	Fall Time		-	8.0	-	

### DRAIN-SOURCE DIODE CHARACTERISTICS

$V_{SD}$	Forward Diode Voltage	$V_{GS} = 0\text{ V}, I_S = 5\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	-	0.73	1.2	V
			$T_J = 125\text{ }^\circ\text{C}$	-	0.57	-	
$t_{RR}$	Reverse Recovery Time	$V_{GS} = 0\text{ V}, dI_S/dt = 100\text{ A}/\mu\text{s}, I_S = 10\text{ A}$	-	28.6	-	ns	
$t_a$	Charge Time		-	14	-		
$t_b$	Discharge Time		-	14.5	-		
$Q_{RR}$	Reverse Recovery Charge		-	23.4	-	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.

5. Test: pulse width  $\leq 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$ .

6. Switching characteristics are independent of operating junction temperatures.

TYPICAL CHARACTERISTICS

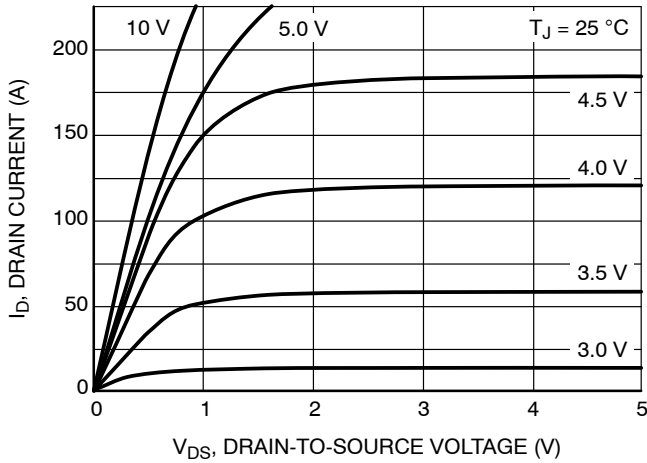


Figure 1. On-Region Characteristics

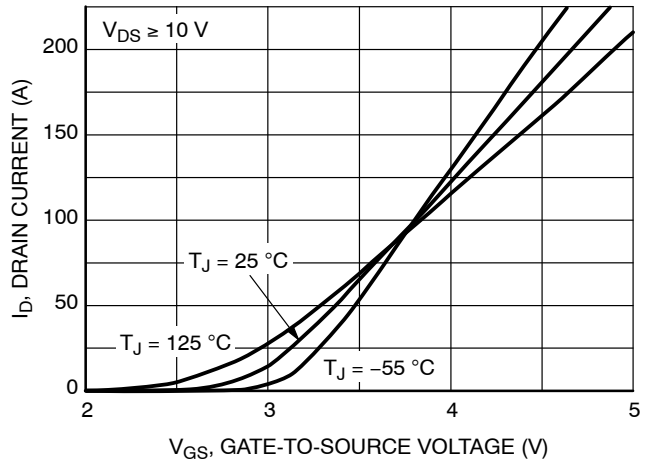


Figure 2. Transfer Characteristics

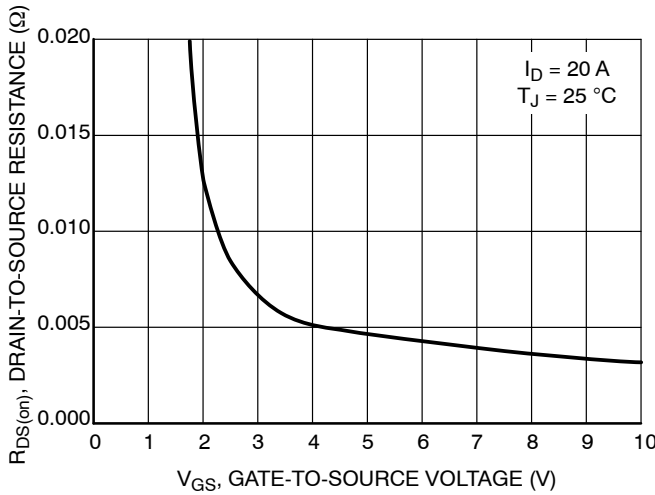


Figure 3. On-Resistance vs. Gate-to-Source Voltage

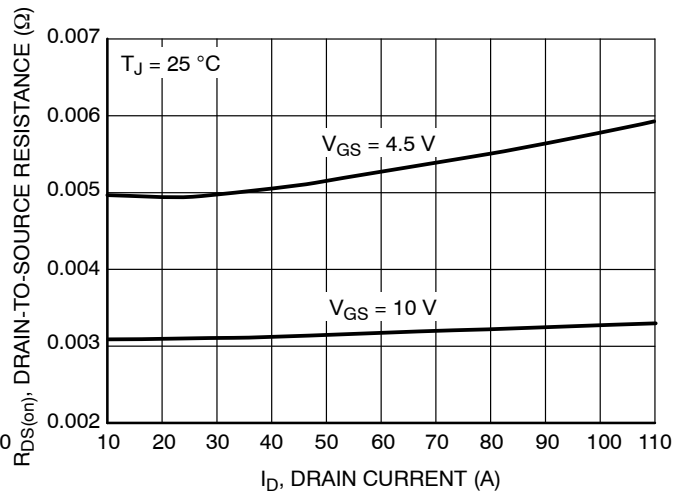


Figure 4. On-Resistance vs. Drain Current and Gate Voltage

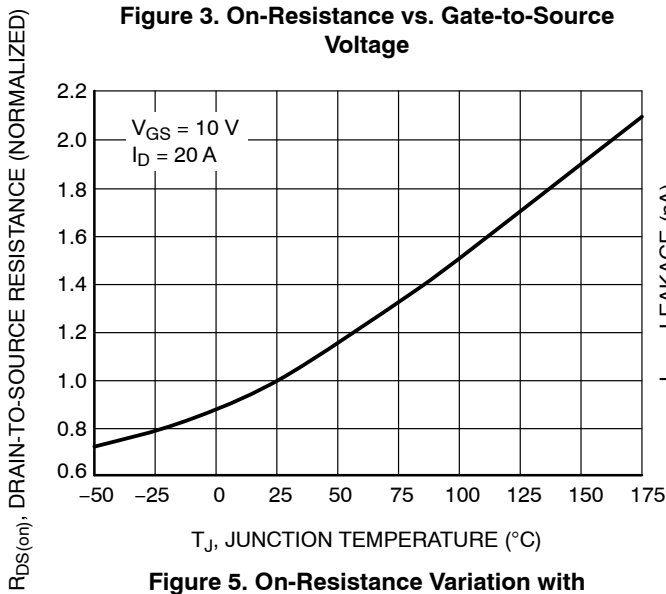


Figure 5. On-Resistance Variation with Temperature

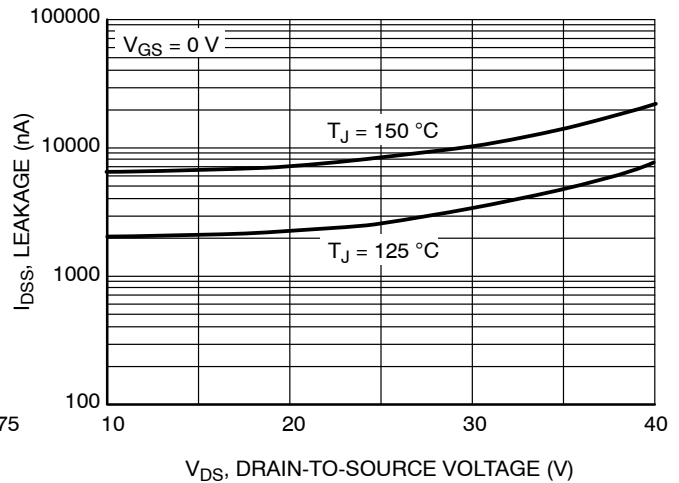
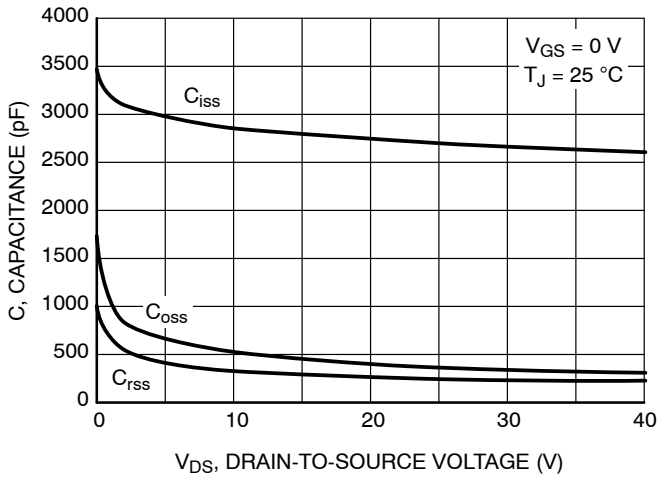


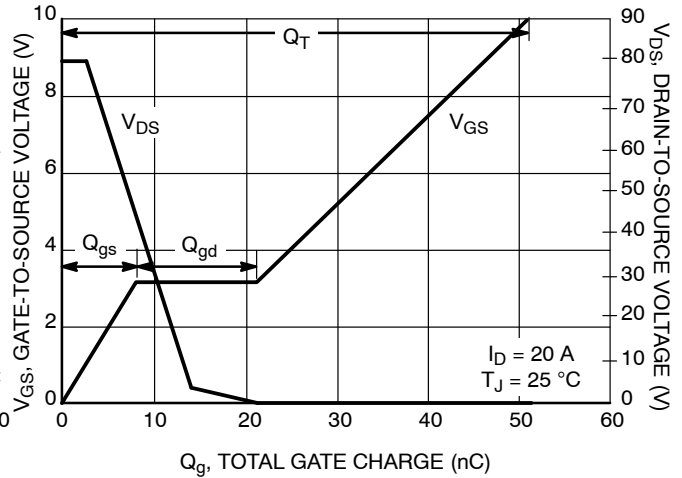
Figure 6. Drain-to-Source Leakage Current vs. Voltage

# NVMFS5832NL

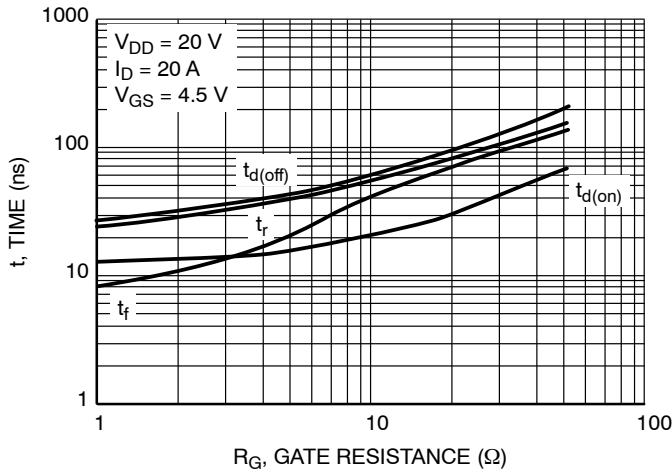
## TYPICAL CHARACTERISTICS (continued)



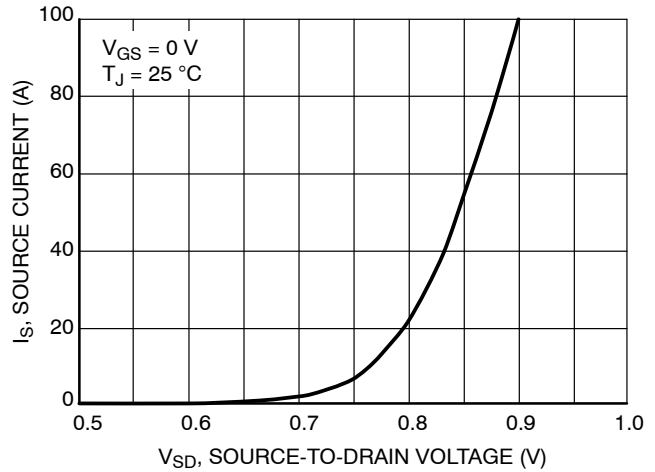
**Figure 7. Capacitance Variation**



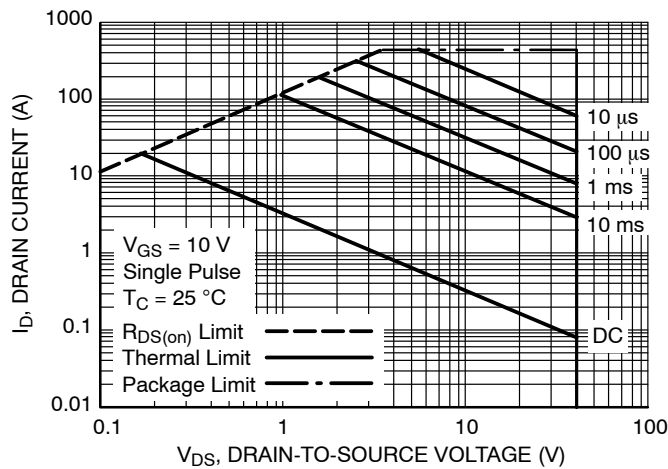
**Figure 8. Gate-to-Source Voltage vs. Total Charge**



**Figure 9. Resistive Switching Time Variation vs. Gate Resistance**



**Figure 10. Diode Forward Voltage vs. Current**



**Figure 11. Maximum Rated Forward Biased Safe Operating Area**

# NVMFS5832NL

## TYPICAL CHARACTERISTICS (continued)

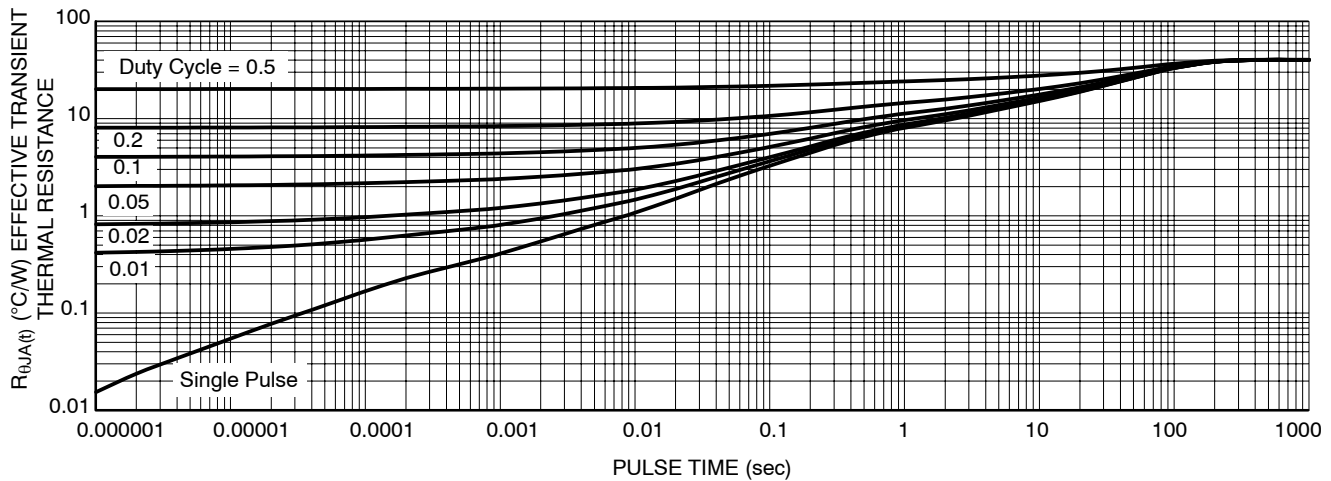


Figure 12. Thermal Response

### DEVICE ORDERING INFORMATION

Device	Marking	Package	Shipping <sup>†</sup>
NVMFS5832NLWFT1G-UM	5832LW	DFNW5 (Pb-Free)	1,500 / Tape & Reel

### DISCONTINUED (Note 7)

NVMFS5832NLT1G	V5832L	DFN5 (Pb-Free)	1,500 / Tape & Reel
NVMFS5832NLWFT1G	5832LW	DFN5 (Pb-Free)	1,500 / Tape & Reel
NVMFS5832NLT3G	V5832L	DFN5 (Pb-Free)	5,000 / Tape & Reel
NVMFS5832NLWFT3G	5832LW	DFN5 (Pb-Free)	5,000 / Tape & Reel

<sup>†</sup> For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, [BRD8011/D](#).

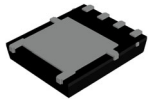
7. **DISCONTINUED:** These devices are not available. Please contact your **onsemi** representative for information. The most current information on these devices may be available on [www.onsemi.com](http://www.onsemi.com).

# NVMFS5832NL

## REVISION HISTORY

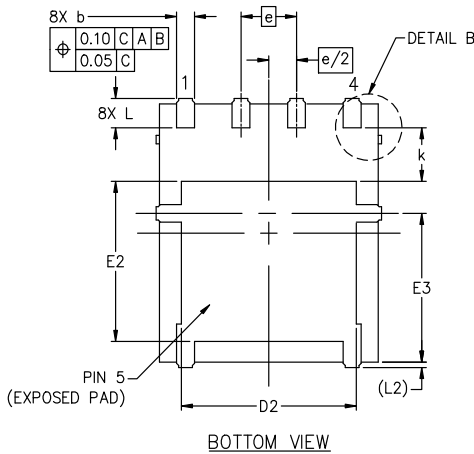
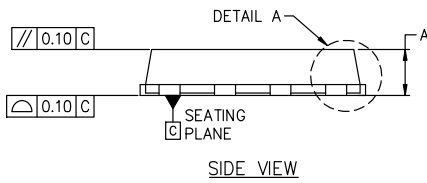
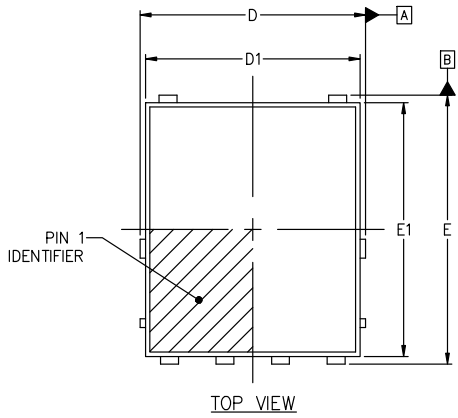
Revision	Description of Changes	Date
5	Datasheet reactivated due to active NVMFS5832NLWFT1G-UM part and rebranded to <b>onsemi</b> .	11/13/2025

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.



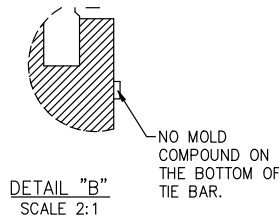
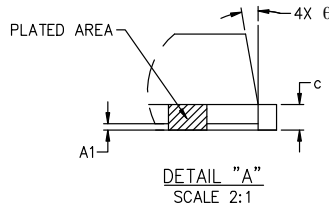
**DFNW5 4.90x5.90x1.00, 1.27P  
CASE 507BA  
ISSUE C**

DATE 19 SEP 2024

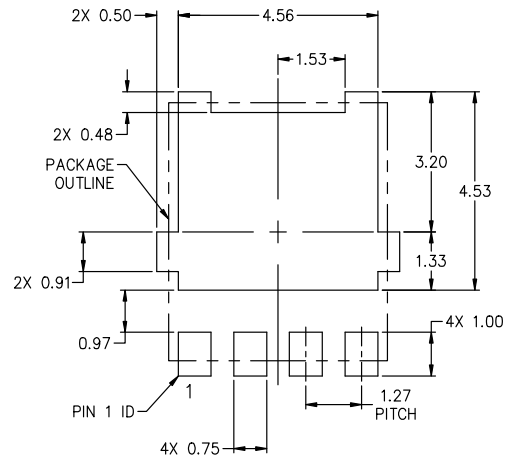


NOTES:

1. DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5M-2018.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. DIMENSIONS D1 AND E1 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.
4. THIS PACKAGE CONTAINS WETTABLE FLANK DESIGN FEATURES TO AID IN FILLET FORMATION ON THE LEADS DURING MOUNTING.



DIM	MILLIMETERS		
	MIN	NOM	MAX
A	0.90	1.00	1.10
A1	0.00	---	0.05
b	0.33	0.41	0.51
c	0.23	0.28	0.33
D	5.00	5.15	5.30
D1	4.70	4.90	5.10
D2	3.80	4.00	4.20
E	6.00	6.15	6.30
E1	5.70	5.90	6.10
E2	3.45	3.65	3.85
E3	3.00	3.40	3.80
e	1.27 BSC		
k	1.20	1.35	1.50
L	0.51	0.57	0.71
L2	0.15 REF.		
theta	0°	6°	12°



RECOMMENDED MOUNTING FOOTPRINT\*  
\*FOR ADDITIONAL INFORMATION ON OUR Pb-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ONSEMI SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERM/D.

**GENERIC MARKING DIAGRAM\***



XXXXXX = Specific Device Code  
A = Assembly Location  
Y = Year  
W = Work Week  
ZZ = Lot Traceability

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "•", may or may not be present. Some products may not follow the Generic Marking.

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<b>DESCRIPTION:</b>	<b>DFNW5 4.90x5.90x1.00, 1.27P</b>	<b>PAGE 1 OF 1</b>

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