

NVMFD5852NL

Power MOSFET

40 V, 6.9 mΩ, 44 A, Dual N-Channel Logic Level, Dual SO-8FL

Features

- Small Footprint (5x6 mm) for Compact Designs
- Low $R_{DS(on)}$ to Minimize Conduction Losses
- Low Capacitance to Minimize Driver Losses
- NVMFD5852NLWF – Wettable Flanks Option for Enhanced Optical Inspection
- AEC-Q101 Qualified and PPAP Capable
- This is a Pb-Free Device

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

Parameter			Symbol	Value	Unit	
Drain-to-Source Voltage			V _{DSS}	40	V	
Gate-to-Source Voltage			V _{GS}	± 20	V	
Continuous Drain Current R _{ΨJ-mb} (Notes 1, 2, 3, 4)	Steady State	T _{mb} = 25°C	I _D	44	A	
		T _{mb} = 100°C		31		
		Power Dissipation R _{ΨJ-mb} (Notes 1, 2, 3)	T _{mb} = 25°C	P _D	27	W
			T _{mb} = 100°C		13	
Continuous Drain Current R _{θJA} (Notes 1, 3 & 4)	Steady State	T _A = 25°C	I _D	15	A	
		T _A = 100°C		10.6		
		Power Dissipation R _{θJA} (Notes 1 & 3)	T _A = 25°C	P _D	3.2	W
			T _A = 100°C		1.6	
Pulsed Drain Current	T _A = 25°C, t _p = 10 μs		I _{DM}	329	A	
Operating Junction and Storage Temperature			T _J , T _{stg}	-55 to 175	°C	
Source Current (Body Diode)			I _S	40	A	
Single Pulse Drain-to-Source Avalanche Energy (T _J = 25°C, V _{GS} = 10 V, I _{L(pk)} = 40 A, L = 0.1 mH, R _G = 25 Ω)			E _{AS}	80	mJ	
Lead Temperature for Soldering Purposes (1/8" from case for 10 s)			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 MAXIMUM RATINGS (Note 1)

Parameter	Symbol	Value	Unit
Junction-to-Mounting Board (top) – Steady State (Notes 2, 3)	$R_{\Psi J-mb}$	5.6	$^\circ\text{C/W}$
Junction-to-Ambient – Steady State (Note 3)	$R_{\theta JA}$	47	

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 (Ψ) 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 mm², 2 oz. Cu pad.
4. Maximum current for pulses as long as 1 second are higher but are dependent on pulse duration and duty cycle.

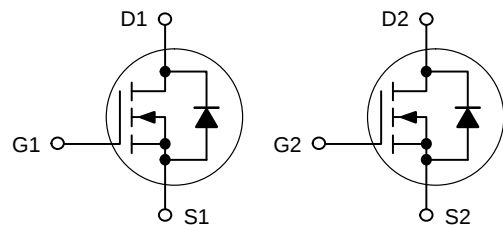


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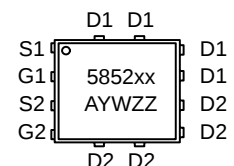
$V_{(BR)DSS}$	$R_{DS(on)} \text{ MAX}$	$I_D \text{ MAX}$
40 V	6.9 mΩ @ 10 V	44 A
	12.0 mΩ @ 4.5 V	

Dual N-Channel



MARKING DIAGRAM

DFN8 5x6
(SO8FL)
CASE 506BT



5852NL = Specific Device Code for NVMFD5852NL

5852LW = Specific Device Code for NVMFD5852NLWF

A = Assembly Location

Y = Year

W = Work Week

ZZ = Lot Traceability

ORDERING INFORMATION

Device	Package	Shipping†
NVMFD5852NLT1G	DFN8 (Pb-Free)	1500 / Tape & Reel
NVMFD5852NLWFT1G	DFN8 (Pb-Free)	1500 / 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.

NVMFD5852NL

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	40			V
Drain-to-Source Breakdown Voltage Temperature Coefficient	$V_{(BR)DSS}/T_J$			37.3		mV/ $^\circ\text{C}$
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS} = 0\text{ V}, V_{DS} = 40\text{ V}$	$T_J = 25^\circ\text{C}$		1.0	μA
			$T_J = 125^\circ\text{C}$		100	
Gate-to-Source Leakage Current	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA

ON CHARACTERISTICS (Note 5)

Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\text{ }\mu\text{A}$	1.4		2.4	V
Negative Threshold Temperature Coefficient	$V_{GS(TH)}/T_J$			6.3		mV/ $^\circ\text{C}$
Drain-to-Source On Resistance	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 20\text{ A}$		5.3	6.9	m Ω
		$V_{GS} = 4.5\text{ V}, I_D = 20\text{ A}$		8.7	12	
Forward Transconductance	g_{FS}	$V_{DS} = 5\text{ V}, I_D = 5\text{ A}$		24		S

CHARGES AND CAPACITANCES

Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}, f = 1.0\text{ MHz}, V_{DS} = 25\text{ V}$		1800		pF
Output Capacitance	C_{oss}			240		
Reverse Transfer Capacitance	C_{rss}			180		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = 4.5\text{ V}, V_{DS} = 32\text{ V}, I_D = 20\text{ A}$		20		nC
Threshold Gate Charge	$Q_{G(TH)}$			1.5		
Gate-to-Source Charge	Q_{GS}			5.5		
Gate-to-Drain Charge	Q_{GD}			10.9		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = 10\text{ V}, V_{DS} = 32\text{ V}, I_D = 20\text{ A}$		36		nC

SWITCHING CHARACTERISTICS (Note 6)

Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 4.5\text{ V}, V_{DS} = 32\text{ V}, I_D = 20\text{ A}, R_G = 2.5\text{ }\Omega$		12		ns
Rise Time	t_r			52		
Turn-Off Delay Time	$t_{d(off)}$			21		
Fall Time	t_f			13		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 32\text{ V}, I_D = 20\text{ A}, R_G = 2.5\text{ }\Omega$		12		ns
Rise Time	t_r			8.0		
Turn-Off Delay Time	$t_{d(off)}$			27		
Fall Time	t_f			5.0		

DRAIN-SOURCE DIODE CHARACTERISTICS

Forward Diode Voltage	V_{SD}	$V_{GS} = 0\text{ V}, I_S = 20\text{ A}$	$T_J = 25^\circ\text{C}$		0.84	1.1	V
			$T_J = 125^\circ\text{C}$		0.69		
Reverse Recovery Time	t_{RR}	$V_{GS} = 0\text{ V}, dI_S/dt = 100\text{ A}/\mu\text{s}, I_S = 20\text{ A}$		22.3		ns	
Charge Time	t_a			12.8			
Discharge Time	t_b			9.4			
Reverse Recovery Charge	Q_{RR}			15.2			nC

5. Pulse Test: pulse width = 300 μs , duty cycle $\leq 2\%$.

6. Switching characteristics are independent of operating junction temperatures.

TYPICAL CHARACTERISTICS

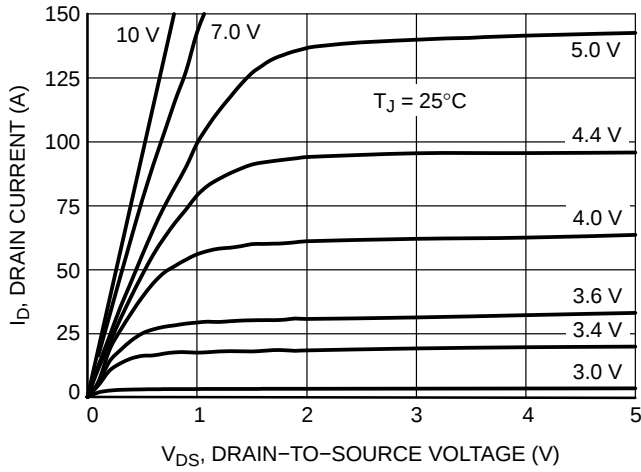


Figure 1. On-Region Characteristics

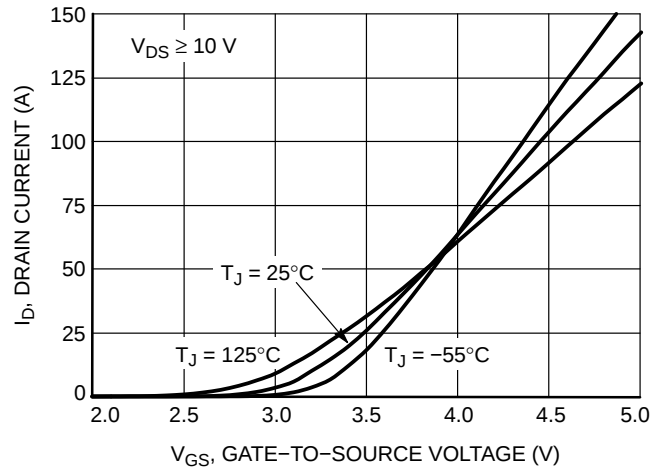


Figure 2. Transfer Characteristics

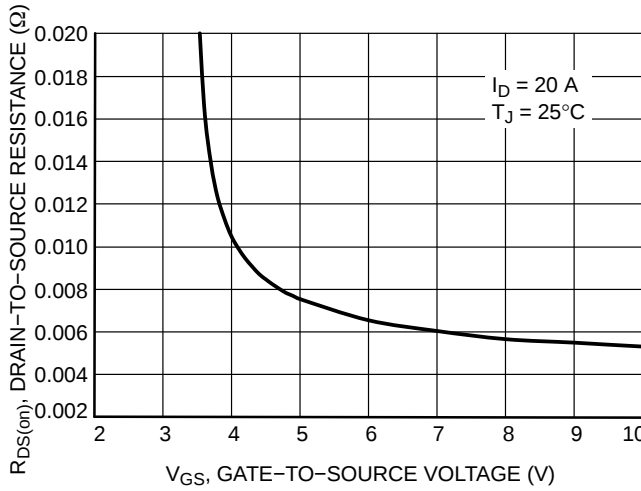


Figure 3. On-Resistance vs. V_{GS}

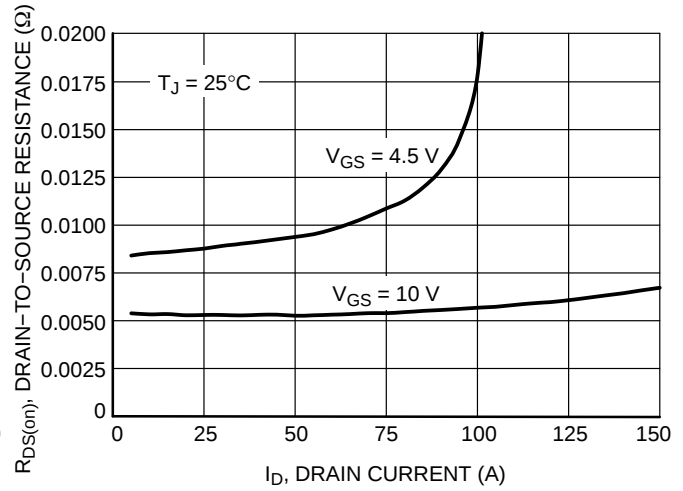


Figure 4. On-Resistance vs. Drain Current and Gate Voltage

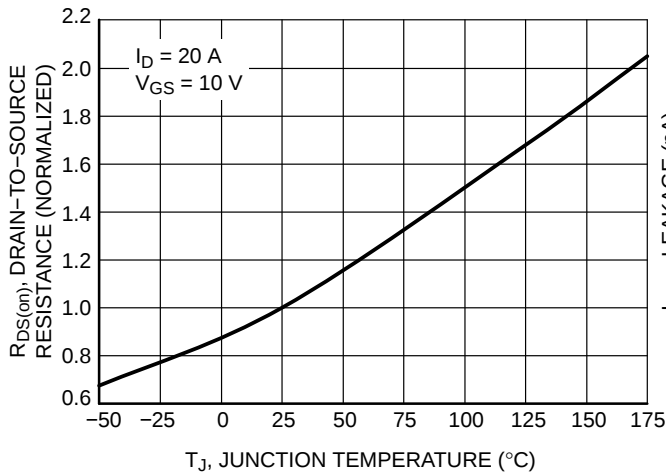


Figure 5. On-Resistance Variation with Temperature

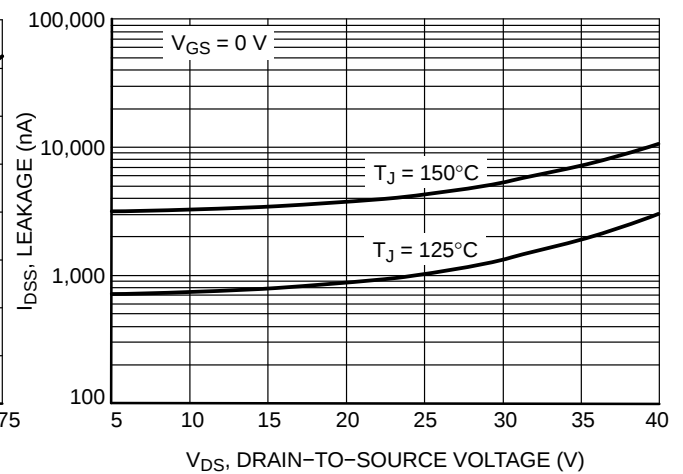


Figure 6. Drain-to-Source Leakage Current vs. Voltage

TYPICAL CHARACTERISTICS

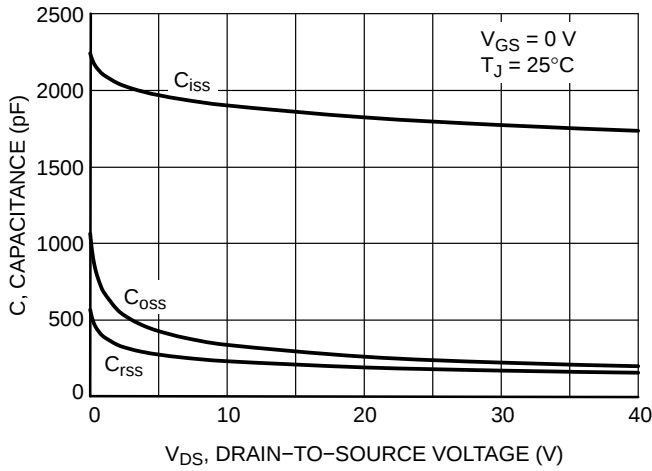


Figure 7. Capacitance Variation

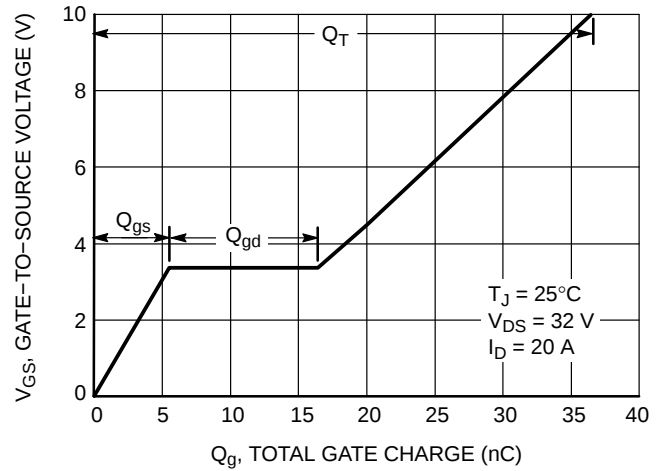


Figure 8. Gate-to-Source and Drain-to-Source Voltage vs. Total Charge

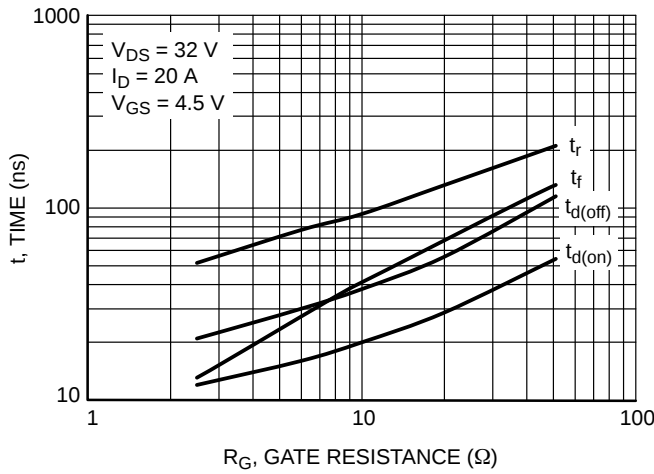


Figure 9. Resistive Switching Time Variation vs. Gate Resistance

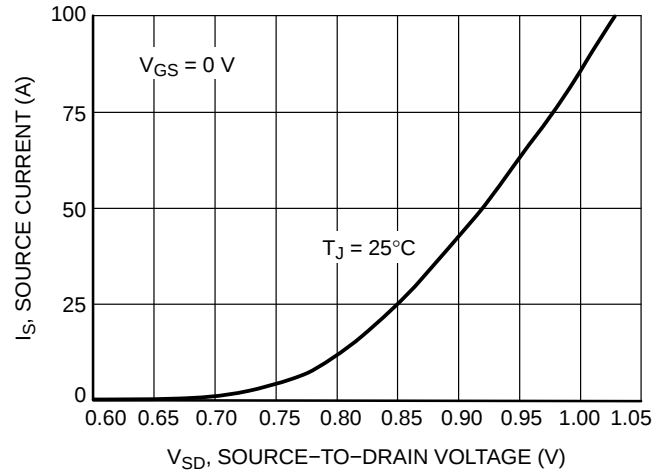


Figure 10. Diode Forward Voltage vs. Current

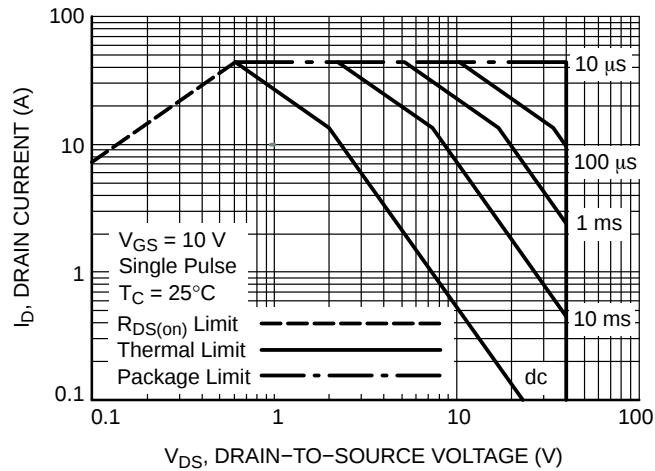


Figure 11. Maximum Rated Forward Biased Safe Operating Area

TYPICAL CHARACTERISTICS

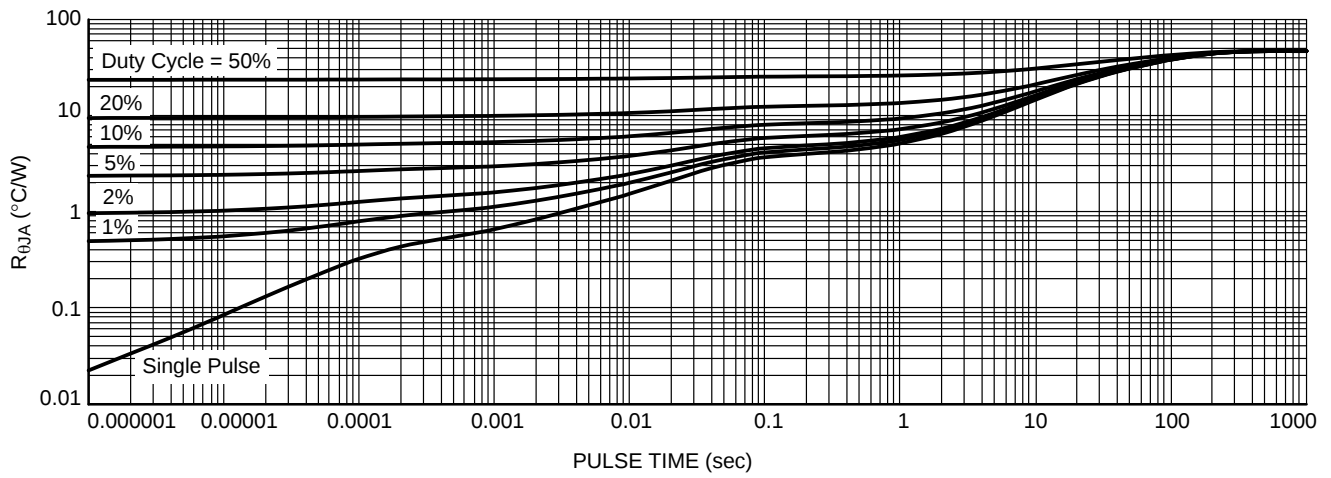


Figure 12. Thermal Response



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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