Power MOSFET 60 V, 24 mΩ, 26 A, Single N–Channel

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
- NVMFS5826NLWF Wettable Flanks Product
- AEC-Q101 Qualified and PPAP Capable
- These are Pb-Free Devices and RoHS Compliant

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

Parameter			Symbol	Value	Unit
Drain-to-Source Voltage			V _{DSS}	60	V
Gate-to-Source Voltage			V _{GS}	±20	V
Continuous Drain Cur-		T _{mb} = 25°C	۱ _D	26	А
rent R _{ΨJ-mb} (Notes 1, 2, 3, 4)	Steady	T _{mb} = 100°C		19	
Power Dissipation	State	T _{mb} = 25°C	PD	39	W
R _{ΨJ-mb} (Notes 1, 2, 3)		$T_{mb} = 100^{\circ}C$		19	
Continuous Drain Cur-		$T_A = 25^{\circ}C$	I _D	8.0	А
rent R _{θJA} (Notes 1, 3, 4)	Steady	T _A = 100°C		6.0	
Power Dissipation	State	T _A = 25°C	PD	3.6	W
$R_{\theta JA}$ (Notes 1 & 3)		T _A = 100°C		1.8	
Pulsed Drain Current	T _A = 25	°C, t _p = 10 μs	I _{DM}	130	А
Operating Junction and Storage Temperature			T _J , T _{stg}	– 55 to + 175	°C
Source Current (Body Diode)			۱ _S	32	А
Single Pulse Drain-to-Source Avalanche Energy (T _J = 25°C, V _{DD} = 24 V, V _{GS} = 10 V, $I_{L(pk)} = 20 \text{ A}, L = 0.1 \text{ mH}, R_G = 25 \Omega$)			E _{AS}	20	mJ
Lead Temperature for Soldering Purposes (1/8" from case for 10 s)			ΤL	260	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

THERMAL RESISTANCE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Junction-to-Mounting Board (top) - Steady State (Notes 2, 3)	$R_{\Psi J-mb}$	3.9	°C/W
Junction-to-Ambient - Steady State (Note 3)	$R_{\theta JA}$	42	

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.

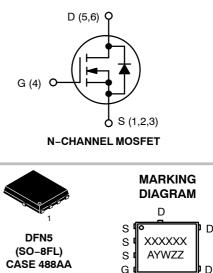
4. Maximum current for pulses as long as 1 second is higher but is dependent on pulse duration and duty cycle.

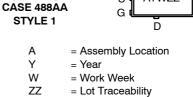


ON Semiconductor®

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V _{(BR)DSS}	R _{DS(ON)} MAX	I _D MAX
60 V	24 m Ω @ 10 V	00 1
60 V	32 mΩ @ 4.5 V	26 A





ORDERING INFORMATION

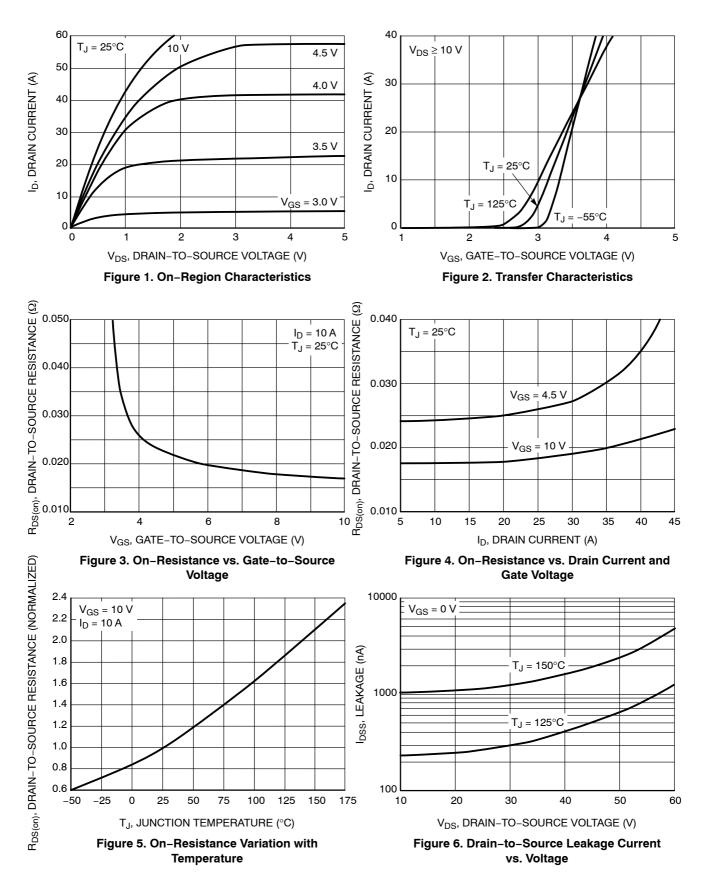
See detailed ordering, marking and shipping information in the package dimensions section on page 5 of this data sheet.

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

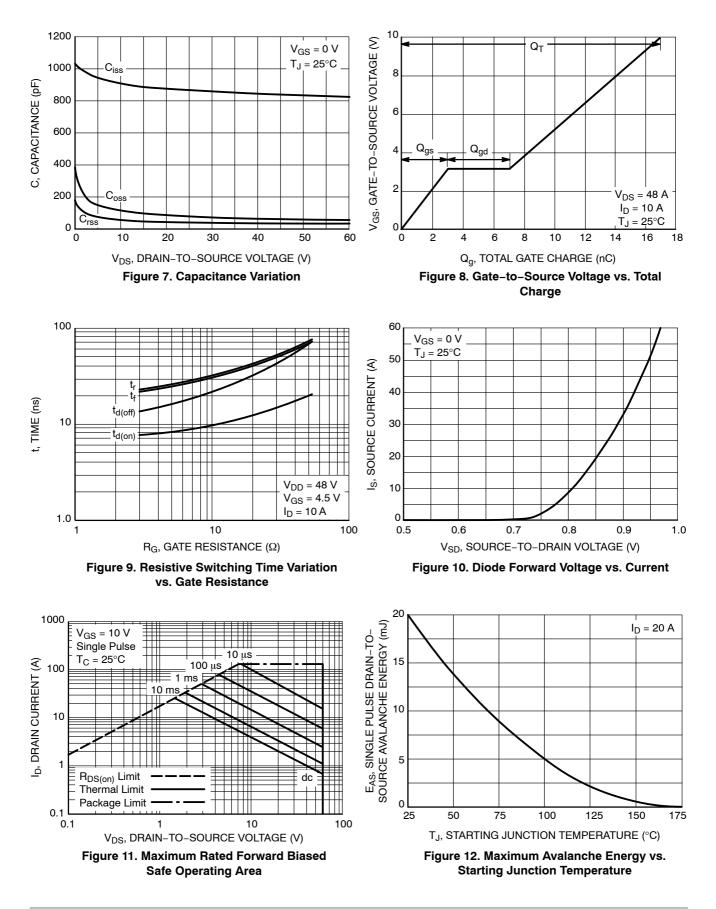
Parameter	Symbol	Test Condition		Min	Тур	Max	Unit
OFF CHARACTERISTICS		•	I			-	-
Drain-to-Source Breakdown Voltage	V _{(BR)DSS}	V_{GS} = 0 V, I _D = 250 μ A		60			V
Zero Gate Voltage Drain Current	I _{DSS}	$V_{CS} = 0 V_{L}$ $T_J = 25^{\circ}C$				1.0	μA
		V _{GS} = 0 V, V _{DS} = 60 V	T _J = 125°C			10	1
Gate-to-Source Leakage Current	I _{GSS}	V_{DS} = 0 V, V_{GS} = ± 20 V				±100	nA
ON CHARACTERISTICS (Note 5)							
Gate Threshold Voltage	V _{GS(TH)}	$V_{GS} = V_{DS}, I_{D}$	= 250 μA	1.5		2.5	V
Drain-to-Source On Resistance	R _{DS(on)}	V _{GS} = 10 V, I	_D = 10 A		18	24	mΩ
		V _{GS} = 4.5 V,	V _{GS} = 4.5 V, I _D = 10 A		24	32	
Forward Transconductance	9 _{FS}	V _{DS} = 15 V, I _D = 5 A			8.0		S
CHARGES AND CAPACITANCES							
Input Capacitance	C _{iss}	V_{GS} = 0 V, f = 1 MHz, V_{DS} = 25 V			850		pF
Output Capacitance	C _{oss}				85		
Reverse Transfer Capacitance	C _{rss}				50		
Total Gate Charge	Q _{G(TOT)}	V_{GS} = 4.5 V, V_{DS} = 48 V, I_D = 10 A V_{GS} = 10 V, V_{DS} = 48 V, I_D = 10 A			9.1		nC
Threshold Gate Charge	Q _{G(TH)}				1.0		
Gate-to-Source Charge	Q _{GS}				3.0		
Gate-to-Drain Charge	Q _{GD}				4.0		
Total Gate Charge	Q _{G(TOT)}				17		nC
SWITCHING CHARACTERISTICS (No	te 6)	-					-
Turn-On Delay Time	t _{d(ON)}				9.0		
Rise Time	t _r	V _{GS} = 4.5 V, V	ns = 48 V,		32		- ns
Turn-Off Delay Time	t _{d(OFF)}	$I_{\rm D} = 10 \rm A, R_{\rm C}$	_a = 2.5 Ω		15		
Fall Time	t _f	1			24		1
DRAIN-SOURCE DIODE CHARACTER	ISTICS						
Forward Diode Voltage	V _{SD}	$V_{GS} = 0 V,$	$T_J = 25^{\circ}C$		0.8	1.2	V
		I _S = 10 A T _J =	T _J = 125°C		0.7		1
Reverse Recovery Time	t _{RR}	V _{GS} = 0 V, dls/dt = 100 A/μs, I _S = 10 A			15		
Charge Time	ta				11		ns
Discharge Time	t _b				4.0		1
Reverse Recovery Charge	Q _{RR}				11		nC

Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.
Switching characteristics are independent of operating junction temperatures.

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS

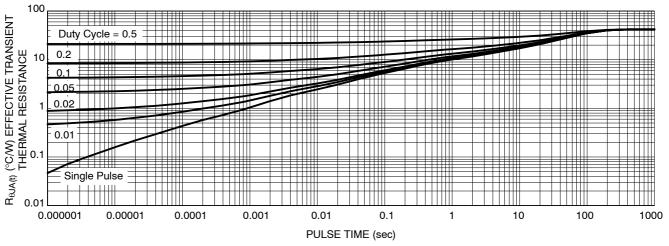


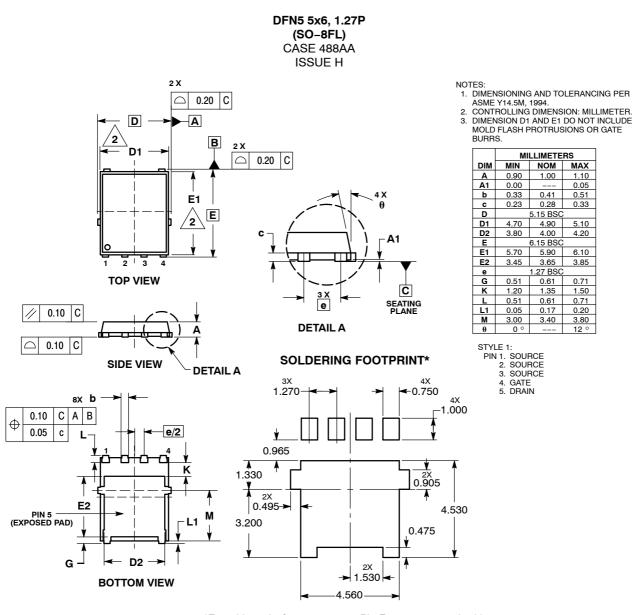
Figure 13. Thermal Response

DEVICE ORDERING INFORMATION

Device	Marking	Package	Shipping [†]
NVMFS5826NLT1G	V5826L	DFN5 (Pb-Free)	1500 / Tape & Reel
NVMFS5826NLWFT1G	5826LW	DFN5 (Pb-Free)	1500 / Tape & Reel
NVMFS5826NLT3G	V5826L	DFN5 (Pb–Free)	5000 / Tape & Reel
NVMFS5826NLWFT3G	5826LW	DFN5 (Pb-Free)	5000 / Tape & Reel

+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.

PACKAGE DIMENSIONS



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

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