



# 100V 7.4mΩ N-Ch Power MOSFET

## Features

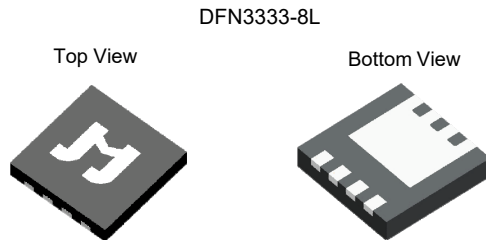
- Ultra-low  $R_{DS(ON)}$
- Low Gate Charge
- 100% UIS Tested, 100%  $R_g$  Tested
- Pb-free Lead Plating
- Halogen-free and RoHS-compliant

## Product Summary

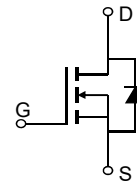
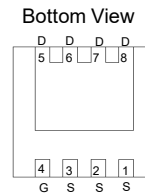
Parameter	Value	Unit
$V_{DS}$	100	V
$V_{GS(th\_Typ)}$	1.8	V
$I_D$ (@ $V_{GS} = 10V$ ) <sup>(1)</sup>	36	A
$R_{DS(ON\_Typ)}$ (@ $V_{GS} = 10V$ )	7.4	mΩ
$R_{DS(ON\_Typ)}$ (@ $V_{GS} = 4.5V$ )	9.1	mΩ

## Applications

- Power Management in Computing, CE, IE 4.0, Communications
- Current Switching in DC/DC & AC/DC (SR) Sub-systems
- Load Switching, Quick/Wireless Charging, Motor Driving



## Pin Configuration

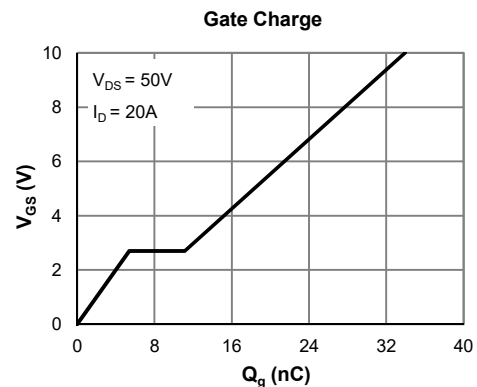
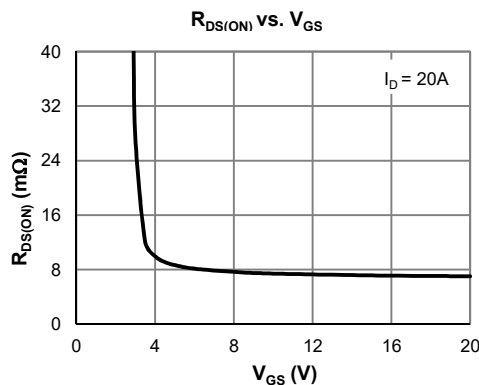


## Ordering Information

Device	Package	# of Pins	Marking	MSL	$T_J$ (°C)	Media	Quantity (pcs)
JMSL1008AUN-13	DFN3333-8L	8	SL1008A	1	-55 to 150	13-inch Reel	5000

## Absolute Maximum Ratings (@ $T_A = 25^\circ C$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	$V_{DS}$	100	V
Gate-to-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>(1)</sup>	$I_D$	$T_C = 25^\circ C$	36
		$T_C = 100^\circ C$	23
Pulsed Drain Current <sup>(2)</sup>	$I_{DM}$	132	A
Avalanche Current <sup>(3)</sup>	$I_{AS}$	29	A
Avalanche Energy <sup>(3)</sup>	$E_{AS}$	122	mJ
Power Dissipation <sup>(4)</sup>	$P_D$	$T_C = 25^\circ C$	23
		$T_C = 100^\circ C$	9.3
Junction & Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	°C



**Electrical Characteristics** (@  $T_J = 25^\circ\text{C}$  unless otherwise specified)

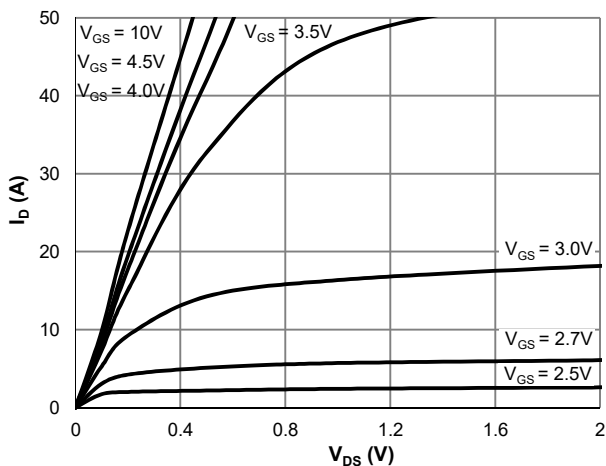
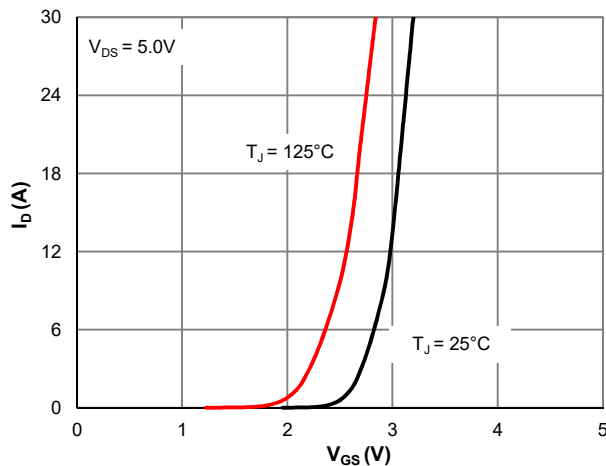
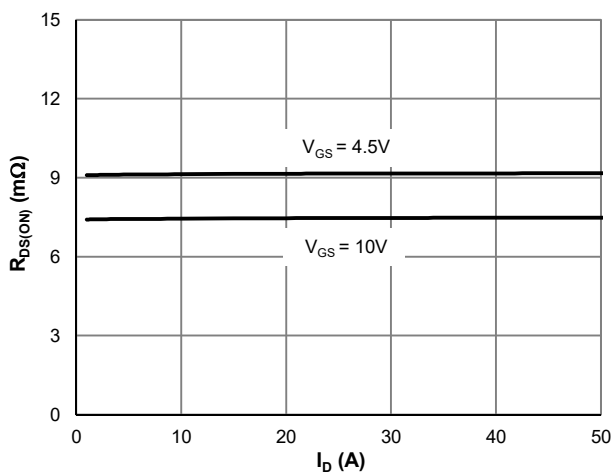
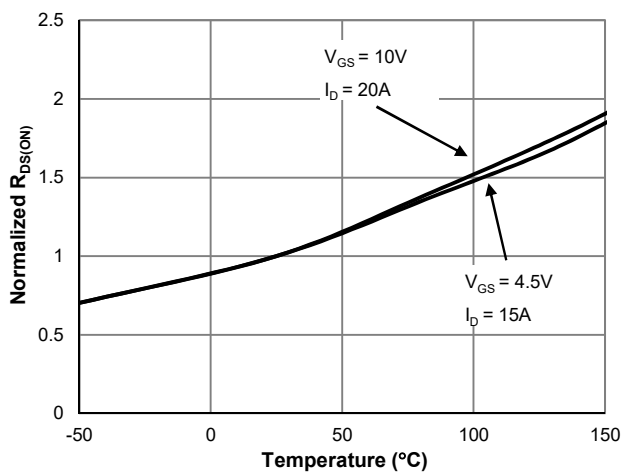
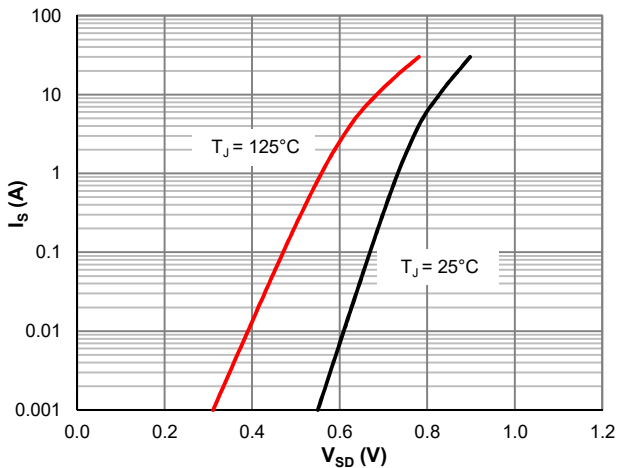
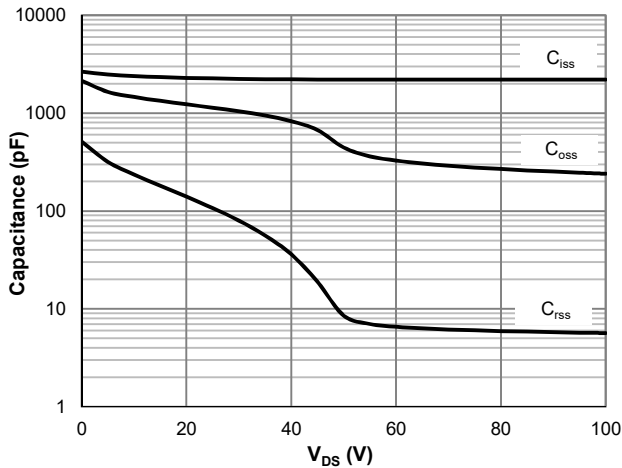
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>STATIC PARAMETERS</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu\text{A}$ , $V_{GS} = 0\text{V}$	100			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 80\text{V}$ , $V_{GS} = 0\text{V}$ $T_J = 55^\circ\text{C}$			1.0 5.0	$\mu\text{A}$
Gate-Body Leakage Current	$I_{GSS}$	$V_{DS} = 0\text{V}$ , $V_{GS} = \pm 20\text{V}$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 250\mu\text{A}$	1.2	1.8	2.5	V
Static Drain-Source ON-Resistance	$R_{DS(ON)}$	$V_{GS} = 10\text{V}$ , $I_D = 20\text{A}$		7.4	9.3	$\text{m}\Omega$
		$V_{GS} = 4.5\text{V}$ , $I_D = 15\text{A}$		9.1	11.8	$\text{m}\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS} = 5\text{V}$ , $I_D = 20\text{A}$		82		S
Diode Forward Voltage	$V_{SD}$	$I_S = 1\text{A}$ , $V_{GS} = 0\text{V}$		0.70	1.0	V
Diode Continuous Current	$I_S$	$T_C = 25^\circ\text{C}$			23	A
<b>DYNAMIC PARAMETERS</b> <sup>(5)</sup>						
Input Capacitance	$C_{iss}$	$V_{GS} = 0\text{V}$ , $V_{DS} = 50\text{V}$ , $f = 1\text{MHz}$		2200		pF
Output Capacitance	$C_{oss}$			445		pF
Reverse Transfer Capacitance	$C_{rss}$			8		pF
Gate Resistance	$R_g$	$V_{GS} = 0\text{V}$ , $V_{DS} = 0\text{V}$ , $f = 1\text{MHz}$		2.0		$\Omega$
<b>SWITCHING PARAMETERS</b> <sup>(5)</sup>						
Total Gate Charge (@ $V_{GS} = 10\text{V}$ )	$Q_g$	$V_{GS} = 0$ to $10\text{V}$ $V_{DS} = 50\text{V}$ , $I_D = 20\text{A}$		34		nC
Total Gate Charge (@ $V_{GS} = 4.5\text{V}$ )	$Q_g$			17.0		nC
Gate Source Charge	$Q_{gs}$			5.5		nC
Gate Drain Charge	$Q_{gd}$			5.7		nC
Turn-On Delay Time	$t_{D(on)}$			13.0		ns
Turn-On Rise Time	$t_r$	$V_{GS} = 10\text{V}$ , $V_{DS} = 50\text{V}$		14.0		ns
Turn-Off Delay Time	$t_{D(off)}$	$R_L = 2.5\Omega$ , $R_{GEN} = 6\Omega$		29.0		ns
Turn-Off Fall Time	$t_f$			17.0		ns
Body Diode Reverse Recovery Time	$t_{rr}$	$I_F = 15\text{A}$ , $dI_F/dt = 100\text{A}/\mu\text{s}$		49		ns
Body Diode Reverse Recovery Charge	$Q_{rr}$	$I_F = 15\text{A}$ , $dI_F/dt = 100\text{A}/\mu\text{s}$		43		nC

**Thermal Performance**

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	60	75	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	4.5	5.4	$^\circ\text{C}/\text{W}$

**Notes:**

1. Computed continuous current assumes the condition of  $T_{J\_Max}$  while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. This single-pulse measurement was taken under  $T_{J\_Max} = 150^\circ\text{C}$ .
3. This single-pulse measurement was taken under the following condition [ $L = 100\mu\text{H}$ ,  $V_{GS} = 10\text{V}$ ,  $V_{DS} = 100\text{V}$ ] while its value is limited by  $T_{J\_Max} = 150^\circ\text{C}$ .
4. The power dissipation  $P_D$  is based on  $T_{J\_Max} = 150^\circ\text{C}$ .
5. This value is guaranteed by design hence it is not included in the production test.

**Typical Electrical & Thermal Characteristics**

**Figure 1: Saturation Characteristics**

**Figure 2: Transfer Characteristics**

**Figure 3:  $R_{DS(ON)}$  vs. Drain Current**

**Figure 4:  $R_{DS(ON)}$  vs. Junction Temperature**

**Figure 5: Body-Diode Characteristics**

**Figure 6: Capacitance Characteristics**

Typical Electrical & Thermal Characteristics

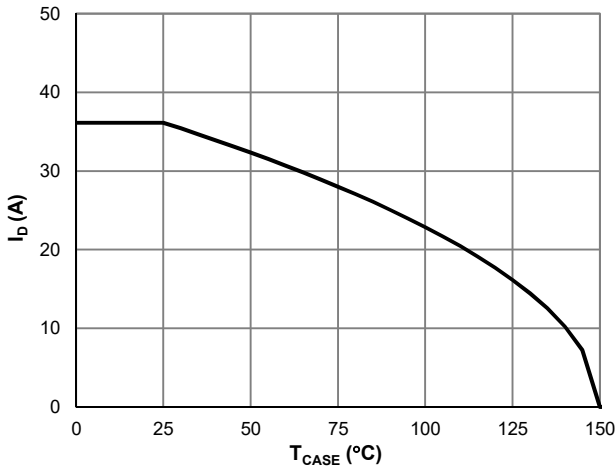


Figure 7: Current De-rating

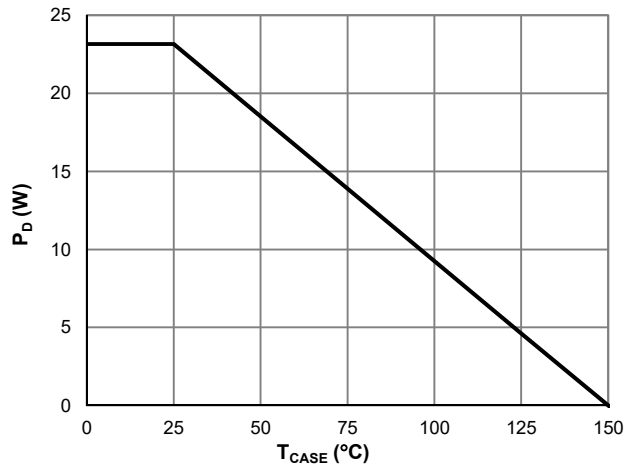


Figure 8: Power De-rating

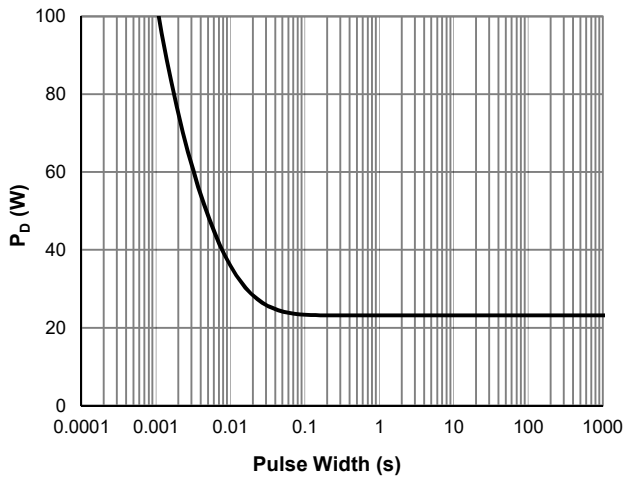
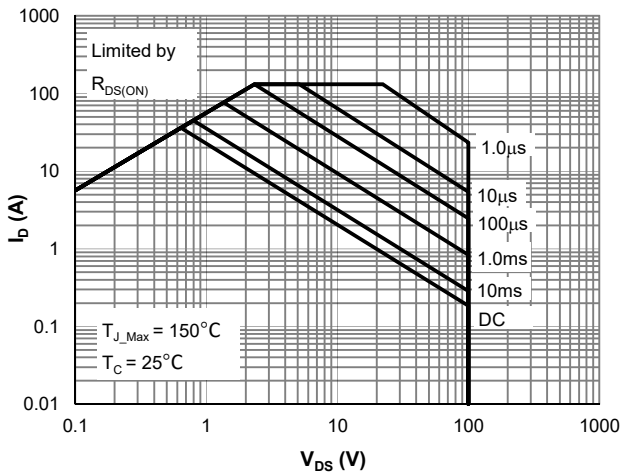


Figure 10: Single Pulse Power Rating, Junction-to-Case

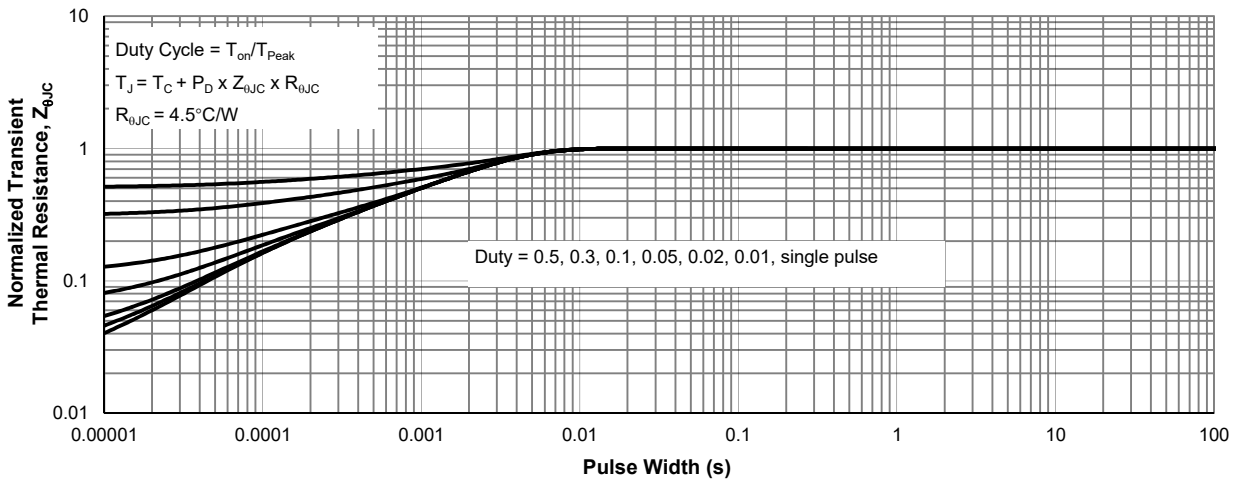
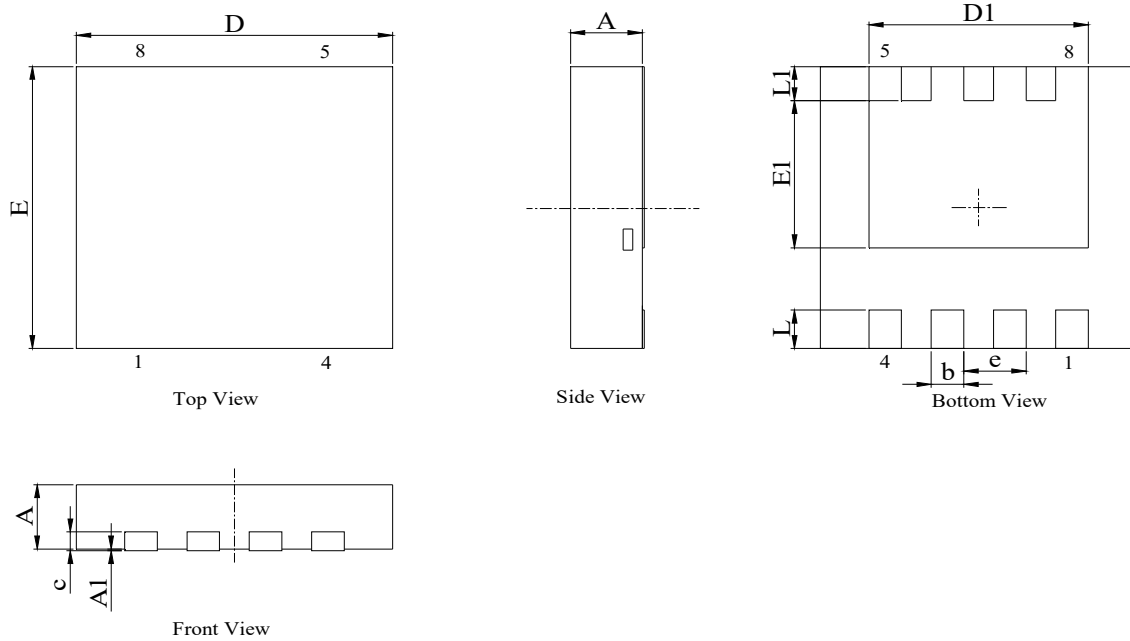
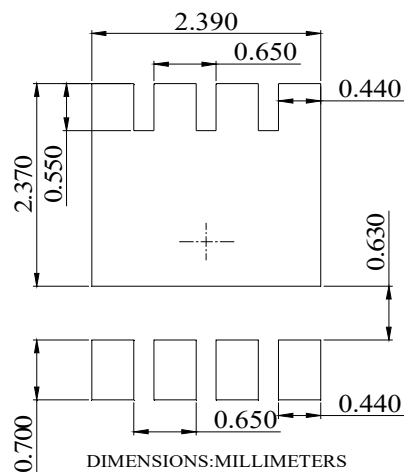


Figure 11: Normalized Maximum Transient Thermal Impedance

**DFN3333-8L Package Information**
**Package Outline**


DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	0.70	0.75	0.80
A1	--	--	0.05
b	0.29	0.34	0.39
c	--	0.20	--
D	3.20	3.30	3.40
D1	2.19	2.29	2.39
E	3.20	3.30	3.40
E1	1.62	1.72	1.82
L	0.35	0.45	0.55
L1	0.30	0.40	0.50
e	0.65BSC		

**Recommended Soldering Footprint**


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