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) (1)	36	A
$R_{DS(ON)\_Typ}$ (@ V_{GS} = 10V)	7.4	mΩ
$R_{DS(ON)\_Typ}$ (@ V_{GS} = 4.5V)	9.1	mΩ

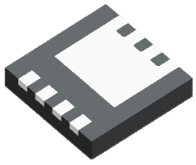
Applications

- 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

DFN3333-8L

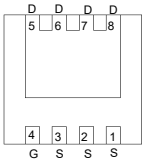
Top View

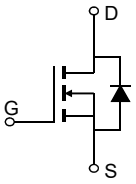
Bottom View



Pin Configuration

Bottom View





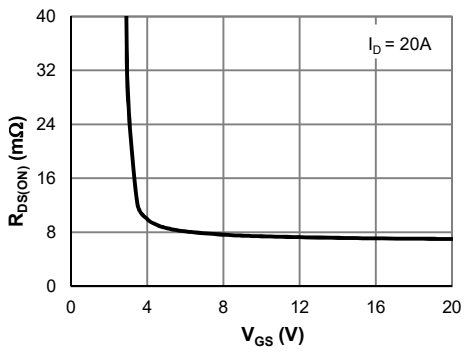
Ordering Information

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	3000

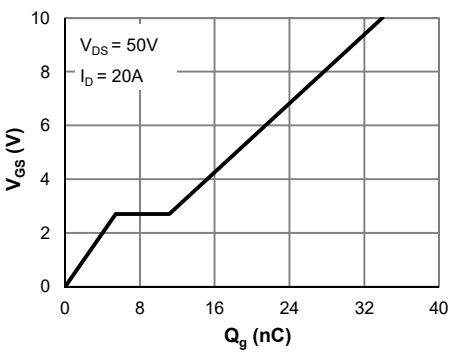
Absolute Maximum Ratings (@ T_A = 25°C unless otherwise specified)

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

$R_{DS(ON)}$ vs. V_{GS}



Gate Charge



Electrical Characteristics (@ T_J = 25°C unless otherwise specified)

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

Thermal Performance

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	60	75	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	4.5	5.4	°C/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°C.
3. This single-pulse measurement was taken under the following condition [L = 100μH, V_{GS} = 10V, V_{DS} = 100V] while its value is limited by T_{J_Max} = 150°C.
4. The power dissipation P_D is based on T_{J_Max} = 150°C.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Electrical & Thermal Characteristics

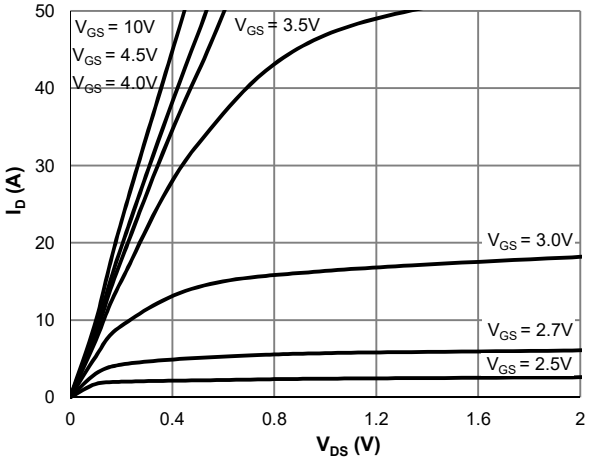


Figure 1: Saturation Characteristics

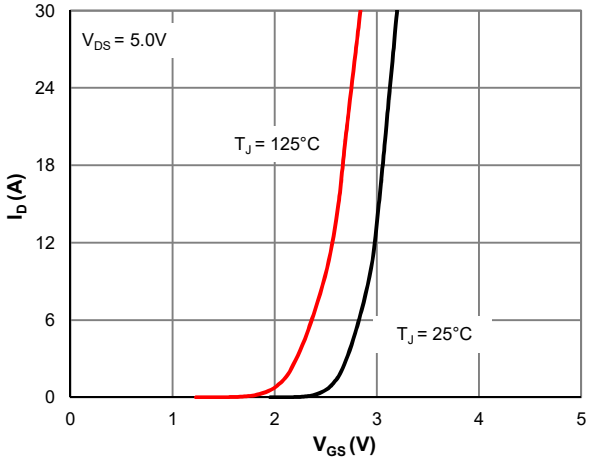


Figure 2: Transfer Characteristics

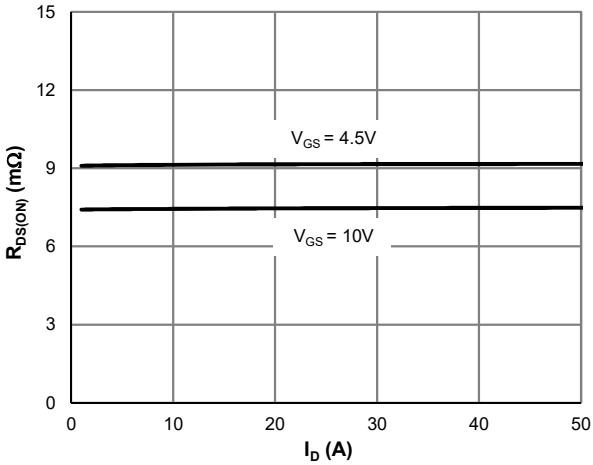


Figure 3: $R_{DS(ON)}$ vs. Drain Current

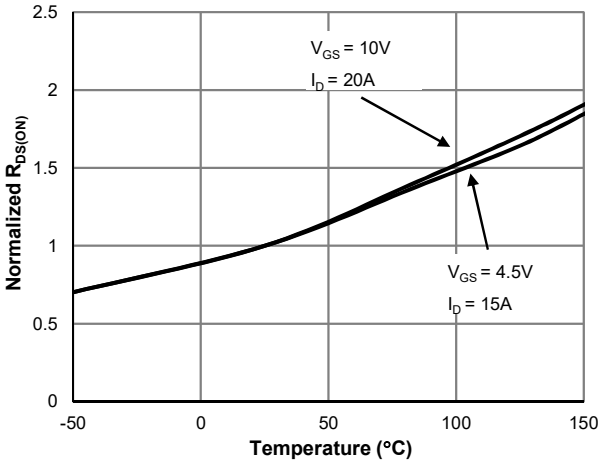


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

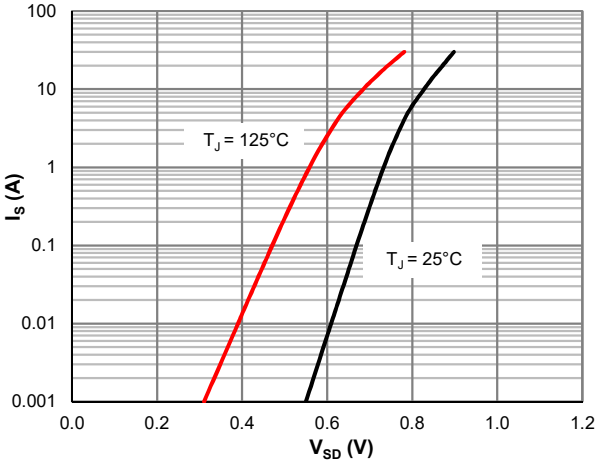


Figure 5: Body-Diode Characteristics

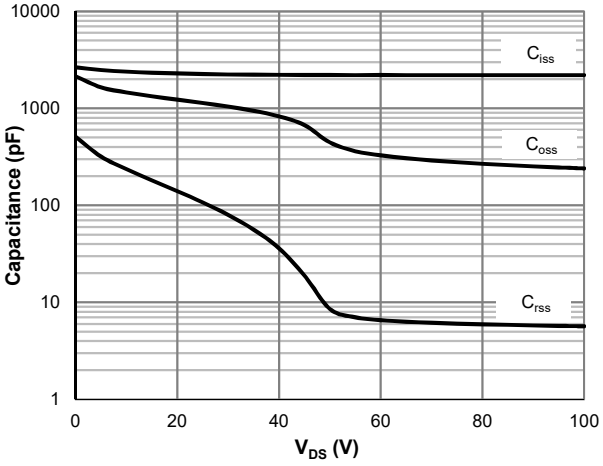


Figure 6: Capacitance Characteristics

Typical Electrical & Thermal Characteristics

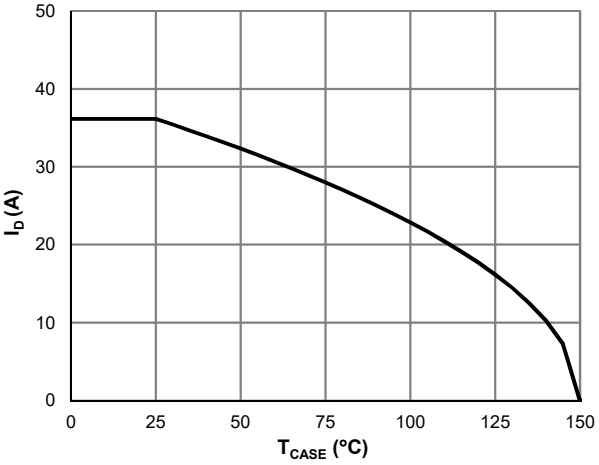


Figure 7: Current De-rating

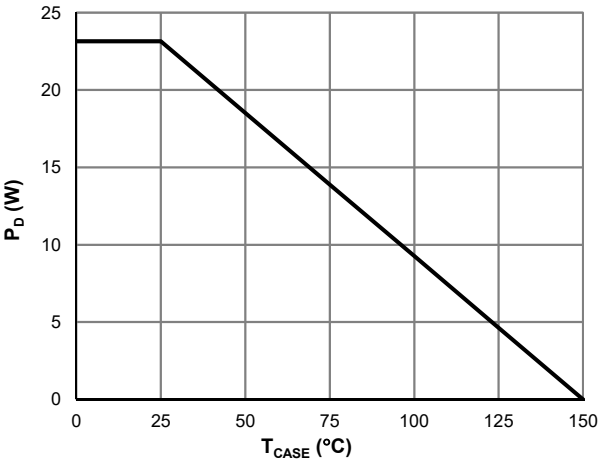
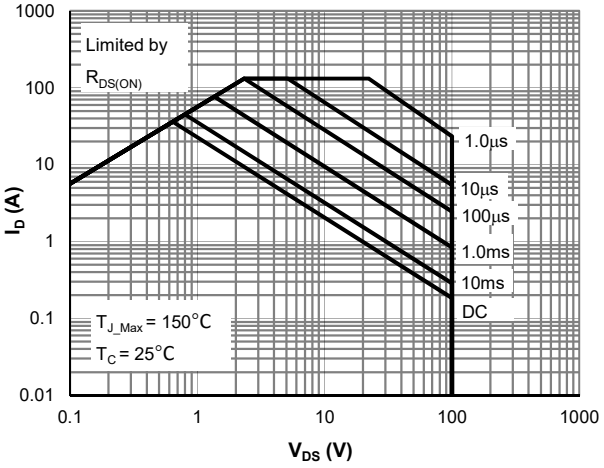


Figure 8: Power De-rating



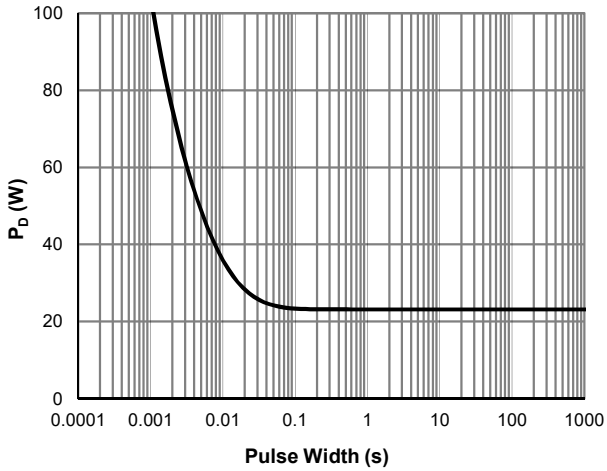


Figure 10: Single Pulse Power Rating, Junction-to-Case

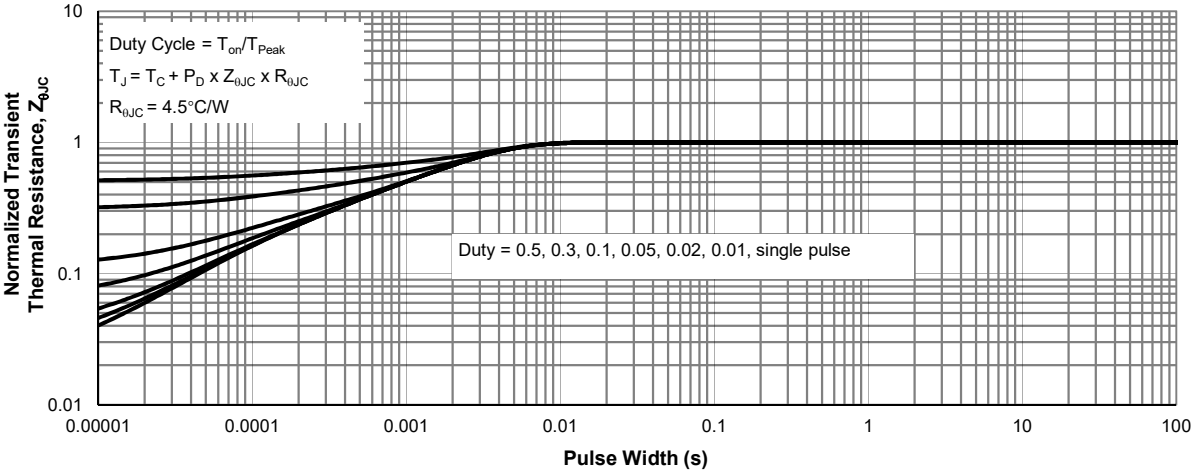
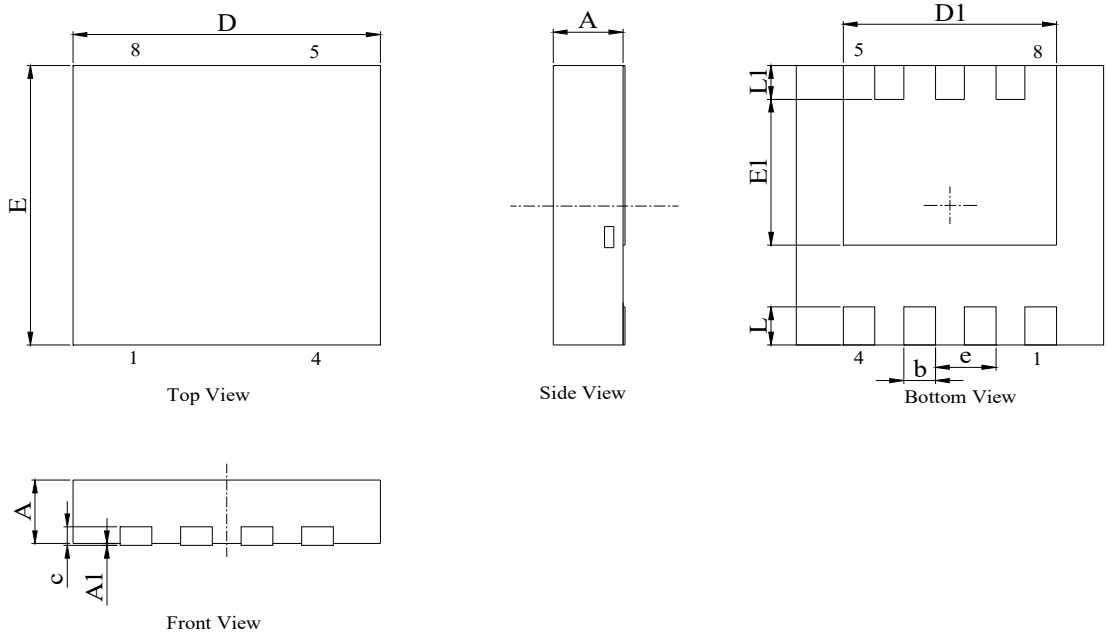


Figure 11: Normalized Maximum Transient Thermal Impedance

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