- 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

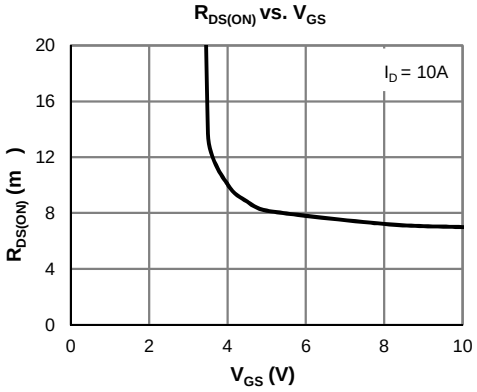
	Value	Unit
	60	V
	1.7	V
$I_{/}$ (0 I mp ħ	10	A
	7.0	m
	9.5	m

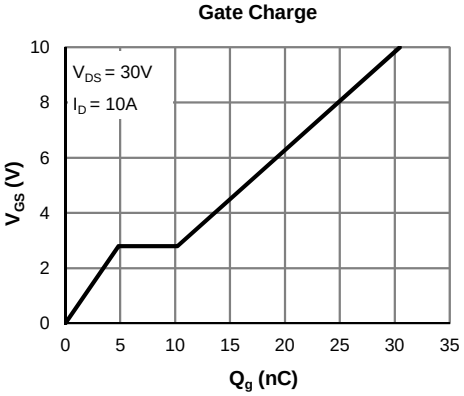
- Power Management in Computing, CE, IE 4.0, Communications
- Current Switching in DC/DC & AC/DC (SR) Sub-systems
- Load Switching, Quick/Wireless Charging, Motor Driving

	Package	# of Pins	Marking	MSL	T_J (°C)	Media	Quantity (pcs)
JMSL0609APD-13	SOP-8L	8	SL0609AD	3	-55 to 150	13-inch Reel	2500

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

Parameter		Symbol	Value	Unit
Drain-to-Source Voltage		V_{DS}	60	V
Gate-to-Source Voltage		V_{GS}	±20	V
Continuous Drain Current (1)	T_A = 25°C	I_D	10	A
	T_A = 70°C		8	
Pulsed Drain Current (2)		I_{DM}	40	A
Avalanche Current (3)		I_{AS}	24	A
Avalanche Energy (3)		E_{AS}	29	mJ
Power Dissipation (4)	T_A = 25°C	P_D	1.7	W
	T_A = 70°C		1.1	
Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C





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 = 250 A, V_{GS} = 0V	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 48V, V_{GS} = 0V			1.0	A
		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 = 250 A	1.2	1.7	2.5	V
Static Drain-Source ON-Resistance	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 10A		7.0	9.2	m
	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 8.5A		9.5	12.5	m
Forward Transconductance	g_{FS}	V_{DS} = 5V, I_D = 10A		85		S
Diode Forward Voltage	V_{SD}	I_S = 1A, V_{GS} = 0V		0.71	1.0	V
Diode Continuous Current	I_S	T_C = 25°C			2	A
DYNAMIC PARAMETERS (5)						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 30V, f = 1MHz		2122		pF
Output Capacitance	C_{oss}			440		pF
Reverse Transfer Capacitance	C_{rss}			4.4		pF
Gate Resistance	R_g	V_{GS} = 0V, V_{DS}= 0V, f = 1MHz		1.4		
SWITCHING PARAMETERS (5)						
Total Gate Charge (@ V_{GS} = 10V)	Q_g	V_{GS} = 0 to 10V V_{DS} = 30V, I_D = 10A		31		nC
Total Gate Charge (@ V_{GS} = 4.5V)	Q_g			14		nC
Gate Source Charge	Q_{gs}			4.8		nC
Gate Drain Charge	Q_{gd}			5.4		nC
Turn-On DelayTime	$t_{D(on)}$	V_{GS} = 10V, V_{DS} = 30V R_L = 3 , R_{GEN} = 6		8.0		ns
Turn-On Rise Time	t_r			5.1		ns
Turn-Off DelayTime	$t_{D(off)}$			38		ns
Turn-Off Fall Time	t_f			14.8		ns
Body Diode Reverse Recovery Time	t_{rr}	I_F = 10A, dI_F/dt = 100A/ s		37		ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F = 10A, dI_F/dt = 100A/ s		43		nC

Thermal Performance

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient (t ≤ 10s)	R_{JA}	60	75	°C/W
Thermal Resistance, Junction-to-Ambient (steady state)	R_{JA}	100	120	°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 = 100 H, V_{GS} = 10V, V_{DS} = 30V] 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

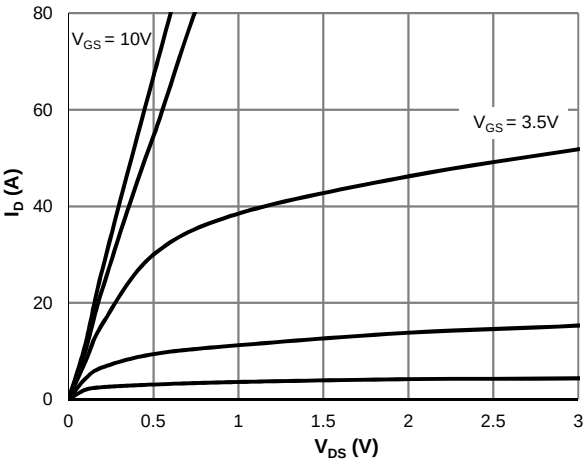
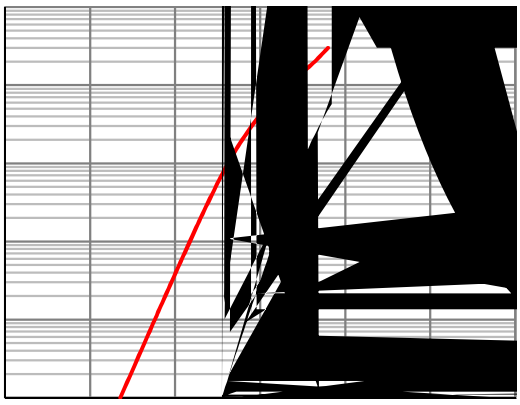


Figure 1: Saturation Characteristics



Typical Electrical & Thermal Characteristics

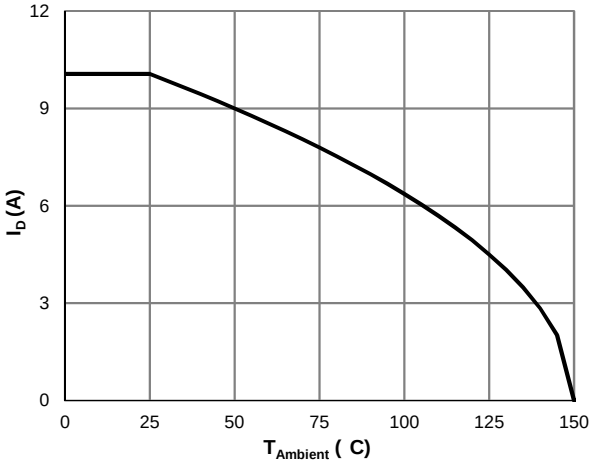


Figure 7: Current De-rating

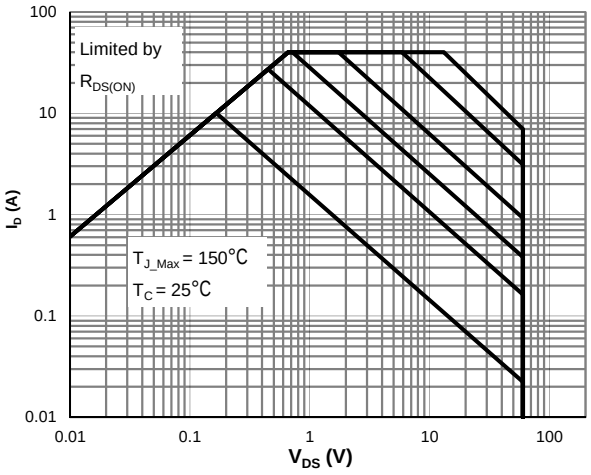
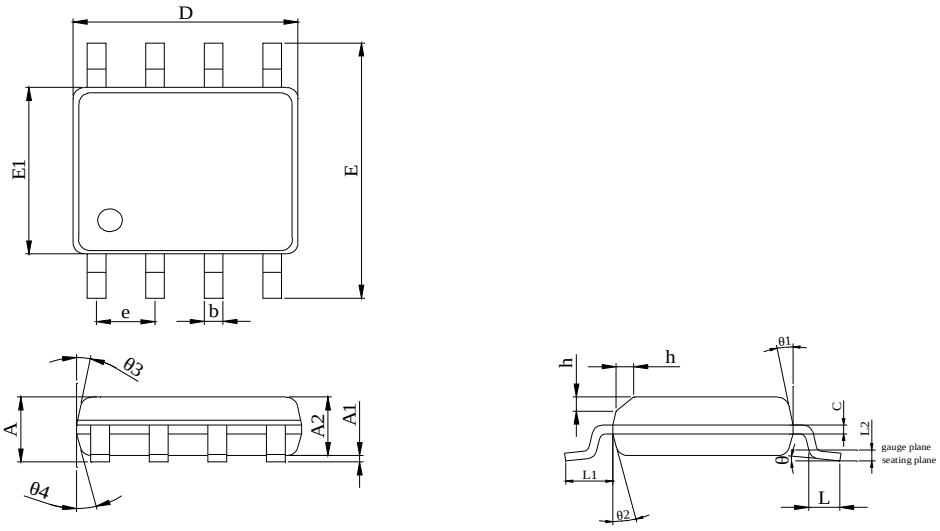


Figure 9: Maximum Safe Operating Area

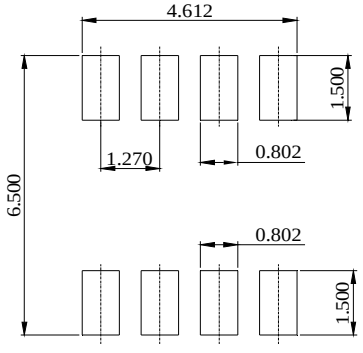
SOP-8L Package Information

Package Outline



DIM	MILLIMETER		
	MIN.	NOM.	MAX.
A	1.35	1.50	1.65
A1	0.05	0.10	0.15
A2	1.35	1.40	1.50
b	0.38	--	0.50
c	0.17	--	0.25
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00

Recommend Soldering Footprint



DIMENSIONS:MILLIMETERS