



100V 105mΩ N-Ch Power MOSFET

Features

- Low $R_{DS(ON)}$
- Low Gate Charge
- Pb-free Lead Plating
- Halogen-free and RoHS-compliant

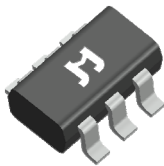
Applications

- Power Mgmt. in Mobile Computing, Industrial Automation, CE
- Current Switching in DC/DC (Buck or Boost), Point-of-Load (PoL)
- Load Switching in LED Lighting and Backlight

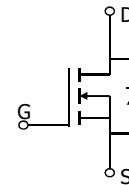
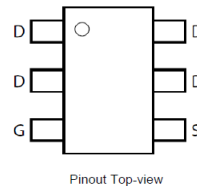
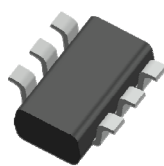
Product Summary

Parameter	Value	Unit
V_{DS}	100	V
$V_{GS(th_Typ)}$	1.9	V
I_D (@ $V_{GS} = 10V$) ⁽¹⁾	2.1	A
$R_{DS(ON)_Typ}$ (@ $V_{GS} = 10V$)	105	mΩ
$R_{DS(ON)_Typ}$ (@ $V_{GS} = 4.5V$)	135	mΩ

SOT-26 Top View



SOT-26 Bottom View

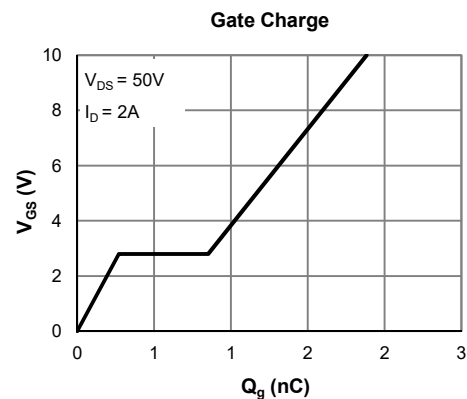
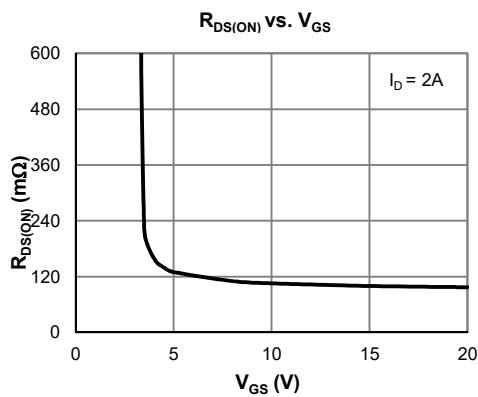


Ordering Information

Device	Package	# of Pins	Marking	MSL	T_J (°C)	Media	Quantity (pcs)
JMSL10130AM-7	SOT-26	6	1013	3	-55 to 150	7-inch Reel	3000

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}	±20	V
Continuous Drain Current ⁽¹⁾	I_D	$T_A = 25^\circ C$	2.1
		$T_A = 70^\circ C$	1.7
Pulsed Drain Current ⁽²⁾	I_{DM}	20	A
Avalanche Current ⁽³⁾	I_{AS}	4.3	A
Avalanche Energy ⁽³⁾	E_{AS}	0.9	mJ
Power Dissipation ⁽⁴⁾	P_D	$T_A = 25^\circ C$	1.0
		$T_A = 70^\circ C$	0.6
Junction & Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C



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

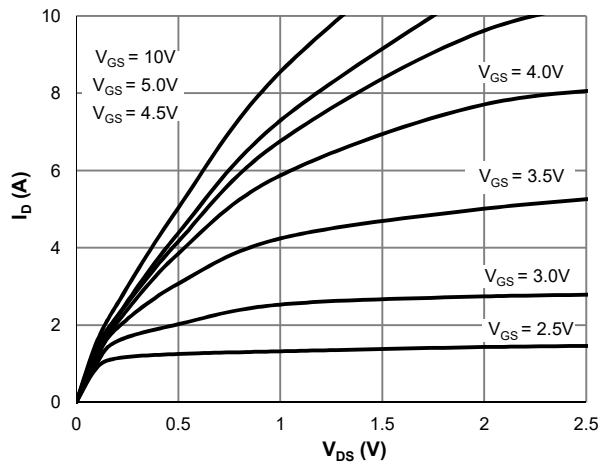
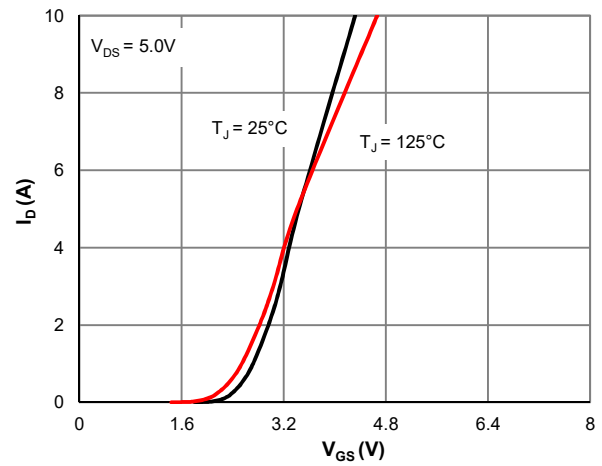
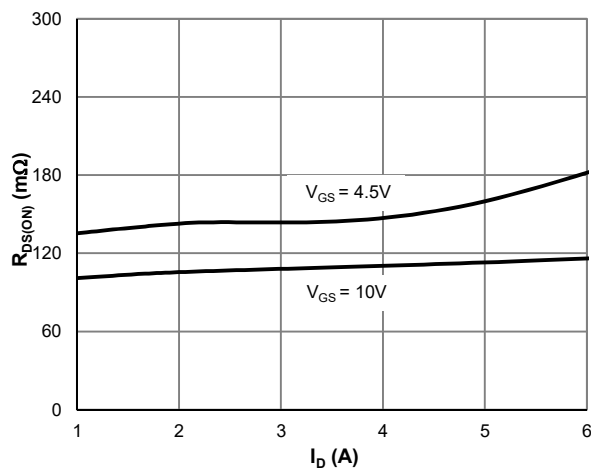
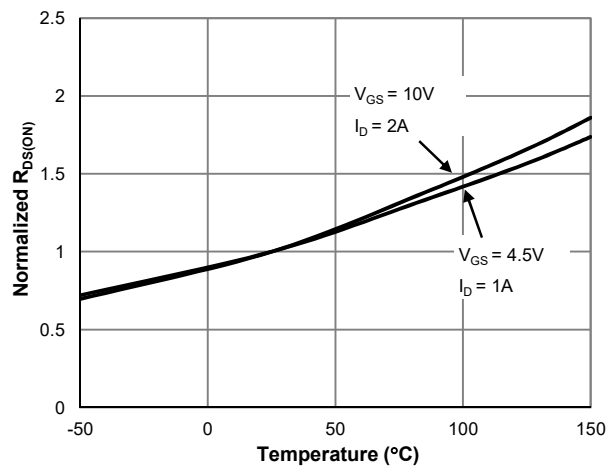
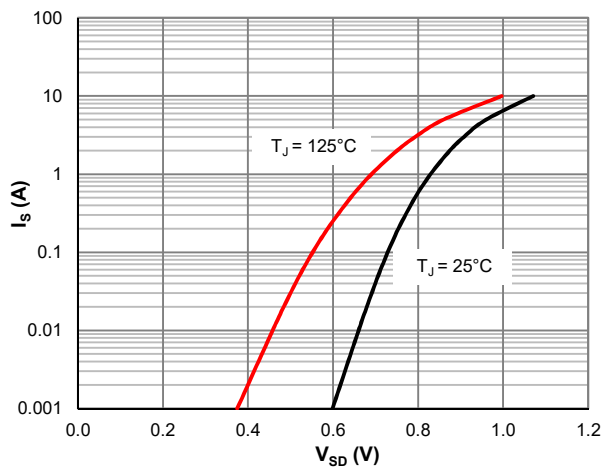
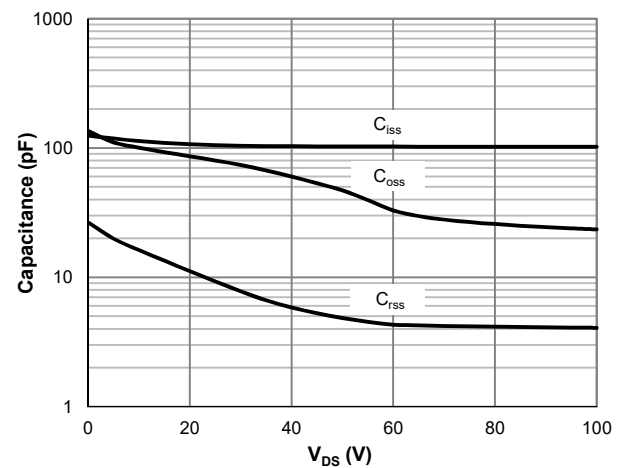
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu\text{A}, V_{GS} = 0\text{V}$	100			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 80\text{V}, V_{GS} = 0\text{V}$			1.0	μA
					5.0	
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1.2	1.9	2.5	V
Static Drain-Source ON-Resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 2\text{A}$		105	126	m Ω
	$R_{DS(on)}$	$V_{GS} = 4.5\text{V}, I_D = 1\text{A}$		135	169	m Ω
Forward Transconductance	g_{FS}	$V_{DS} = 5\text{V}, I_D = 2\text{A}$		6.8		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	$T_A = 25^\circ\text{C}$			1.0	A
DYNAMIC PARAMETERS ⁽⁵⁾						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{V}, V_{DS} = 50\text{V}, f = 1\text{MHz}$		103		pF
Output Capacitance	C_{oss}			47		pF
Reverse Transfer Capacitance	C_{rss}			4.9		pF
Gate Resistance	R_g	$V_{GS} = 0\text{V}, V_{DS} = 0\text{V}, f = 1\text{MHz}$		2.6		Ω
SWITCHING PARAMETERS ⁽⁵⁾						
Total Gate Charge (@ $V_{GS} = 10\text{V}$)	Q_g	$V_{GS} = 0 \text{ to } 10\text{V}$ $V_{DS} = 50\text{V}, I_D = 2\text{A}$		2.3		nC
Total Gate Charge (@ $V_{GS} = 4.5\text{V}$)	Q_g			1.3		nC
Gate Source Charge	Q_{gs}			0.3		nC
Gate Drain Charge	Q_{gd}			0.7		nC
Turn-On Delay Time	$t_{D(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 50\text{V}$ $R_L = 25\Omega, R_{GEN} = 6\Omega$		2.1		ns
Turn-On Rise Time	t_r			3.3		ns
Turn-Off Delay Time	$t_{D(off)}$			7.5		ns
Turn-Off Fall Time	t_f			3.2		ns
Body Diode Reverse Recovery Time	t_{rr}	$I_F = 2\text{A}, dI_F/dt = 100\text{A}/\mu\text{s}$		21		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F = 2\text{A}, dI_F/dt = 100\text{A}/\mu\text{s}$		8.0		nC

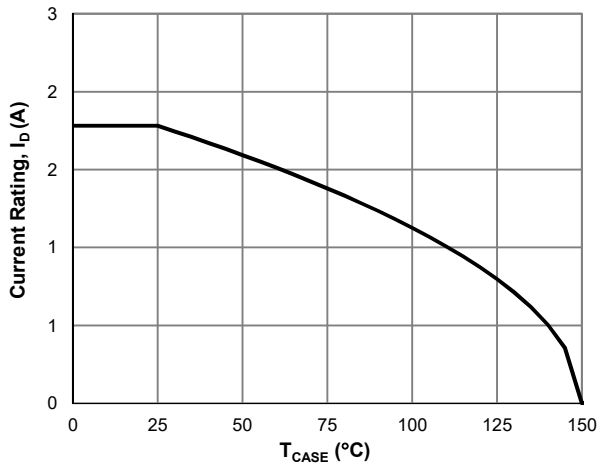
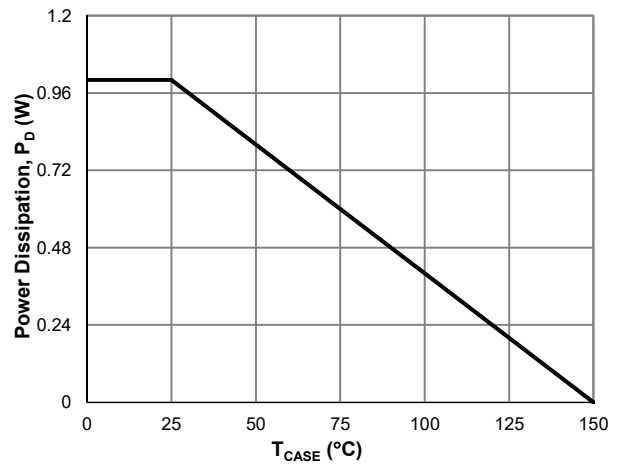
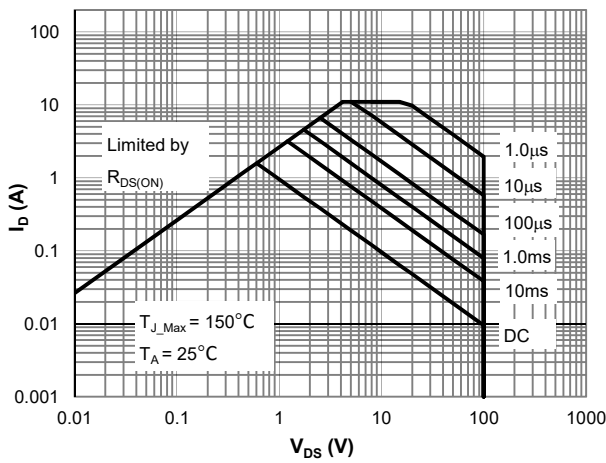
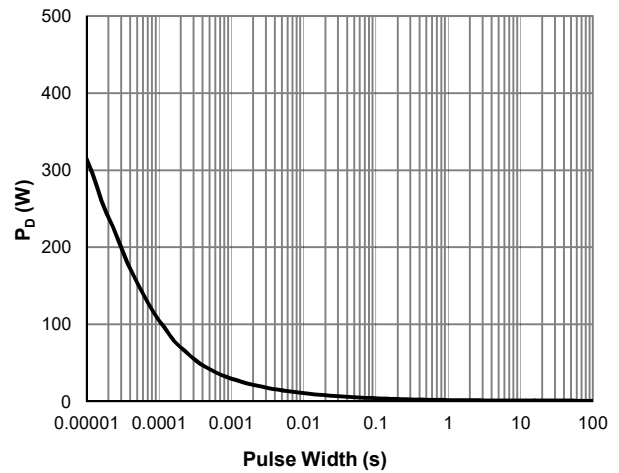
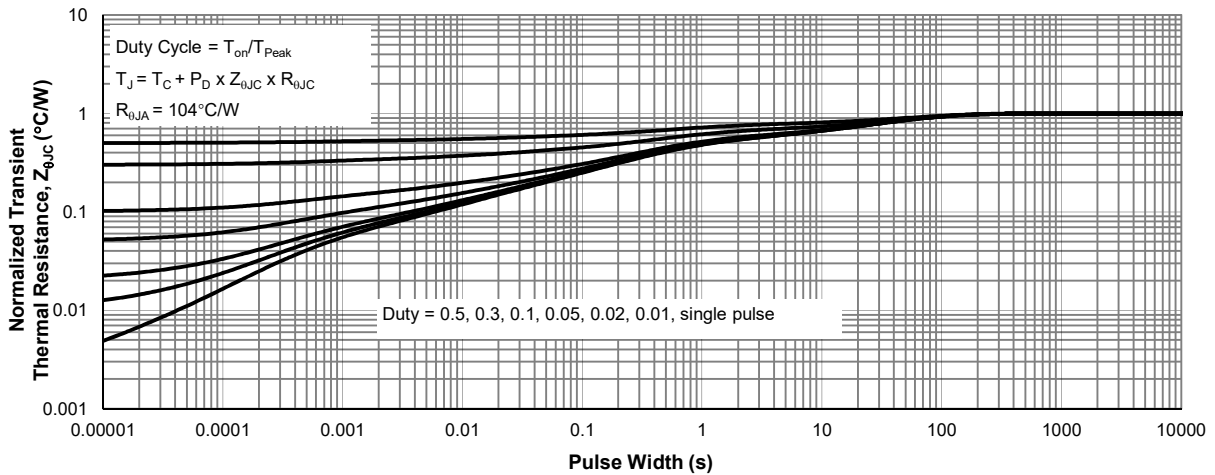
Thermal Performance

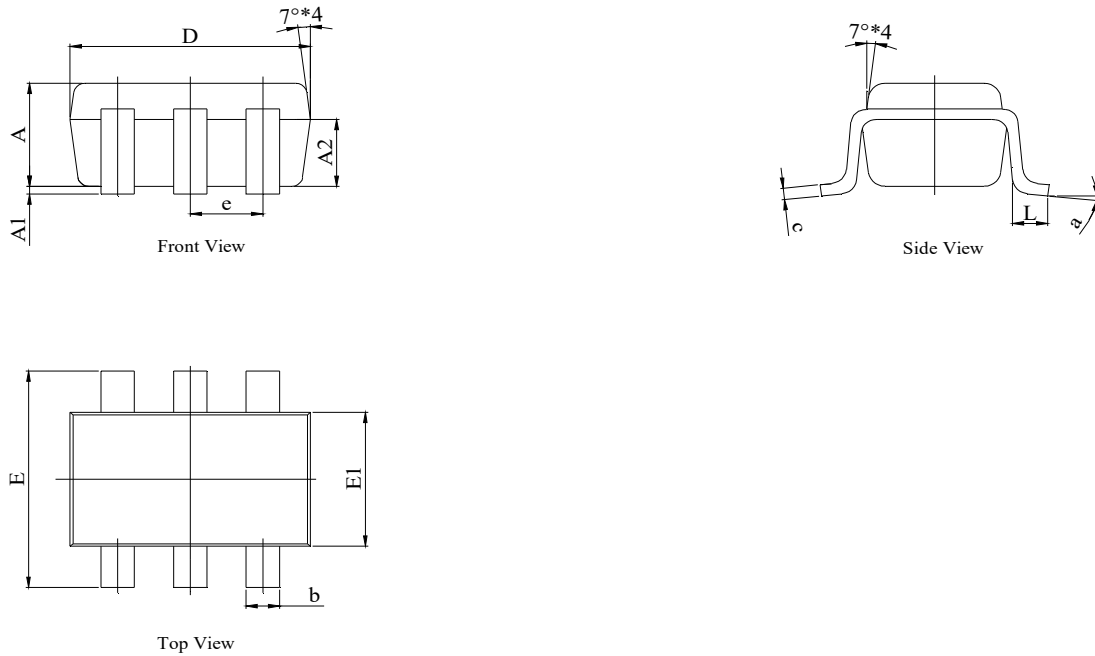
Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	104	125	$^\circ\text{C}/\text{W}$

Notes:

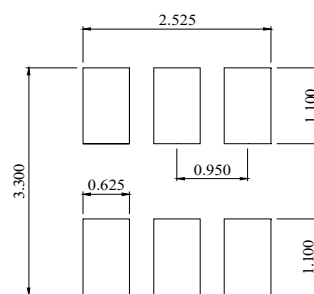
1. Computed continuous current assumes the condition of T_{J_Max} while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. This single-pulse measurement was taken under $T_{J_Max} = 150^\circ\text{C}$.
3. This single-pulse measurement was taken under the following condition [$L = 100\mu\text{H}, V_{GS} = 10\text{V}, V_{DS} = 50\text{V}$] 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 9: Maximum Safe Operating Area

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

Figure 11: Normalized Maximum Transient Thermal Impedance

SOT-26 Package Information
Package Outline


DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	1.00	1.10	1.20
A1	0.01	0.05	0.10
A2	0.70	0.75	0.80
D	2.90	3.00	3.10
E	2.70	2.80	3.00
E1	1.50	1.60	1.70
L	0.35	-	0.55
b	0.35	-	0.50
c	0.10	-	0.20
e	0.95		
a	8°		

Recommended Footprint


DIMENSIONS:MILLIMETERS