100V 105mΩ N-Ch Power MOSFET

Features

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

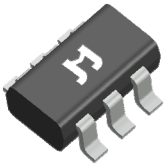
Product Summary

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

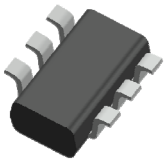
Applications

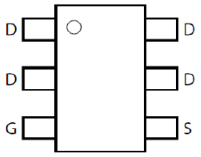
- Power Mgmt. in Mobile Computing, Industrial Automation, CE
- Current Switching in DC/DC (Buck or Boost), Point-of-Load (PoL)
- Load Switching in LED Lighting and Backlight

SOT-26 Top View

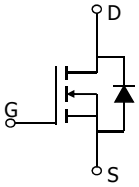


SOT-26 Bottom View





Pinout Top-view

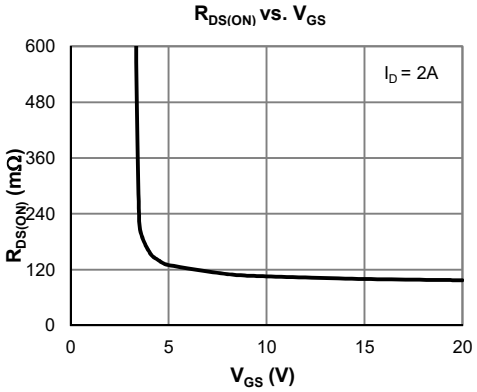


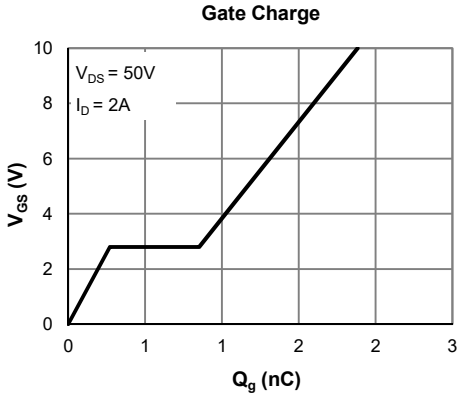
Ordering Information

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°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_A = 25°C	I_D	2.1	A
	T_A = 70°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)	T_A = 25°C	P_D	1.0	W
	T_A = 70°C		0.6	
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 = 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	1.9	2.5	V
Static Drain-Source ON-Resistance	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 2A		105	126	mΩ
	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 1A		135	169	mΩ
Forward Transconductance	g_{FS}	V_{DS} = 5V, I_D = 2A		6.8		S
Diode Forward Voltage	V_{SD}	I_S = 1A, V_{GS} = 0V		0.70	1.0	V
Diode Continuous Current	I_S	T_A = 25°C			1.0	A
DYNAMIC PARAMETERS [5]						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 50V, f = 1MHz		103		pF
Output Capacitance	C_{oss}			47		pF
Reverse Transfer Capacitance	C_{rss}			4.9		pF
Gate Resistance	R_g	V_{GS} = 0V, V_{DS}= 0V, f = 1MHz		2.6		Ω
SWITCHING PARAMETERS [5]						
Total Gate Charge (@ V_{GS} = 10V)	Q_g	V_{GS} = 0 to 10V V_{DS} = 50V, I_D = 2A		2.3		nC
Total Gate Charge (@ V_{GS} = 4.5V)	Q_g			1.3		nC
Gate Source Charge	Q_{gs}			0.3		nC
Gate Drain Charge	Q_{gd}			0.7		nC
Turn-On DelayTime	$t_{D(on)}$	V_{GS} = 10V, V_{DS} = 50V R_L = 25Ω, R_{GEN} = 6Ω		2.1		ns
Turn-On Rise Time	t_r			3.3		ns
Turn-Off DelayTime	$t_{D(off)}$			7.5		ns
Turn-Off Fall Time	t_f			3.2		ns
Body Diode Reverse Recovery Time	t_{rr}	I_F = 2A, dI_F/dt = 100A/μs		21		ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F = 2A, dI_F/dt = 100A/μs		8.0		nC

Thermal Performance

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	104	125	°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} = 50V] 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

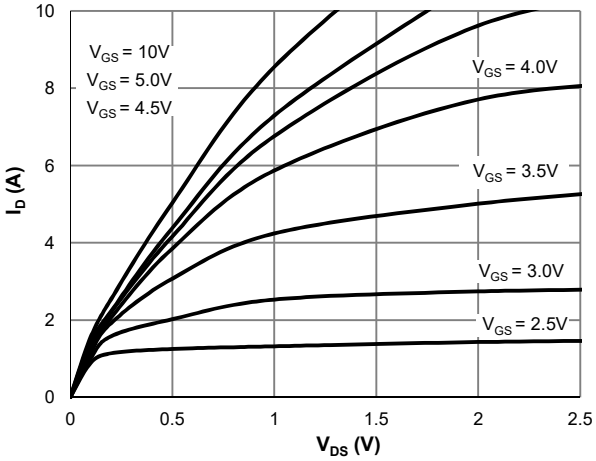


Figure 1: Saturation Characteristics

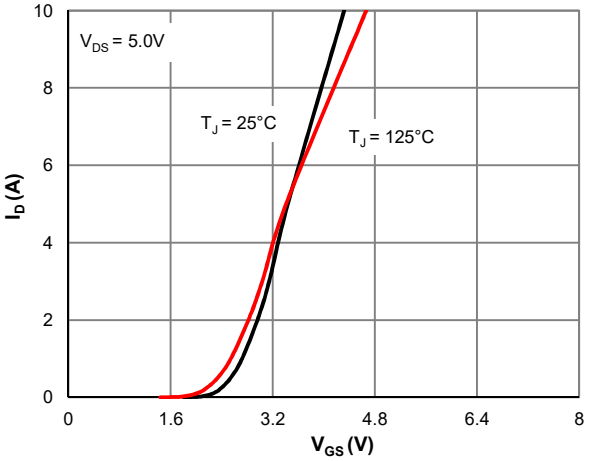


Figure 2: Transfer Characteristics

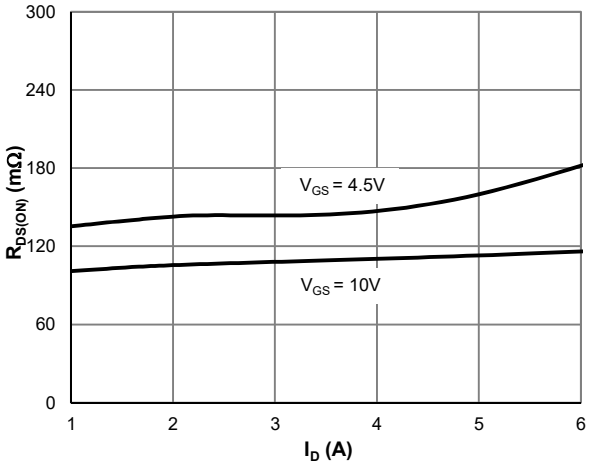


Figure 3: $R_{DS(ON)}$ vs. Drain Current

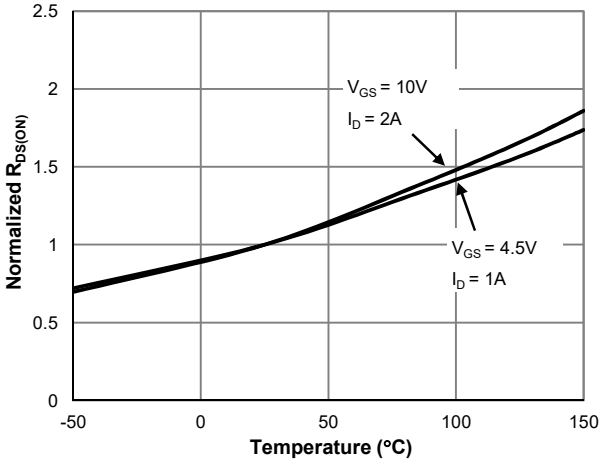


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

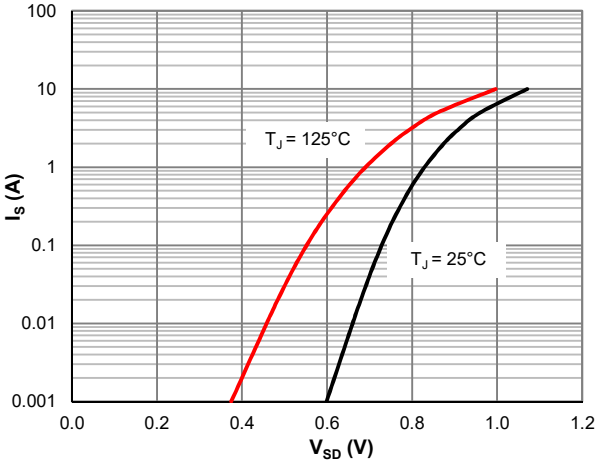


Figure 5: Body-Diode Characteristics

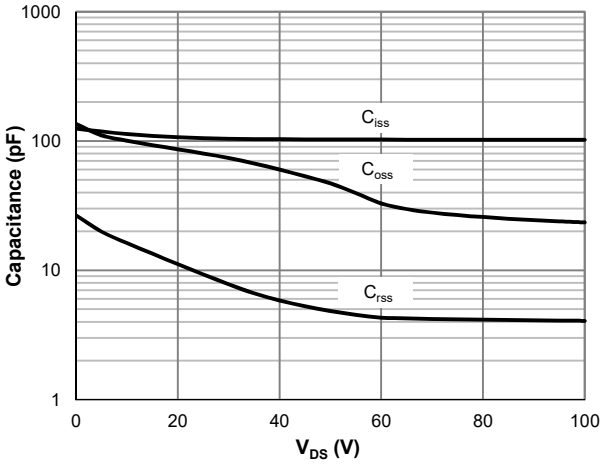


Figure 6: Capacitance Characteristics

Typical Electrical & Thermal Characteristics

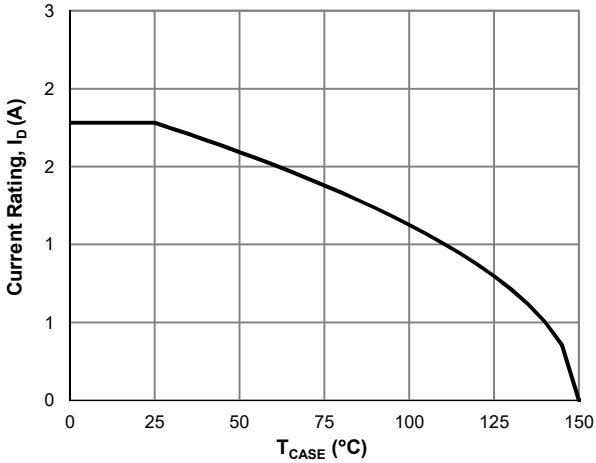


Figure 7: Current De-rating

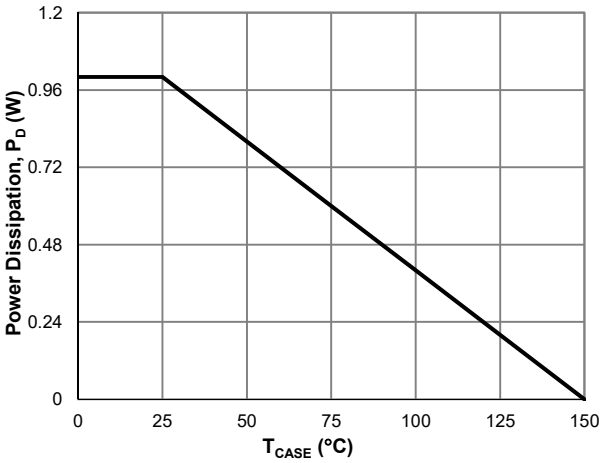


Figure 8: Power De-rating

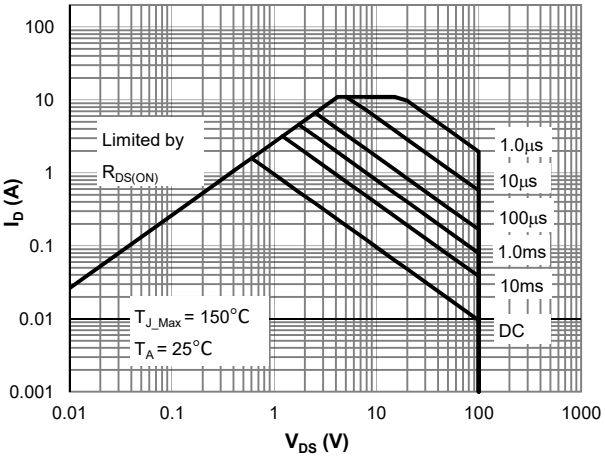


Figure 9: Maximum Safe Operating Area

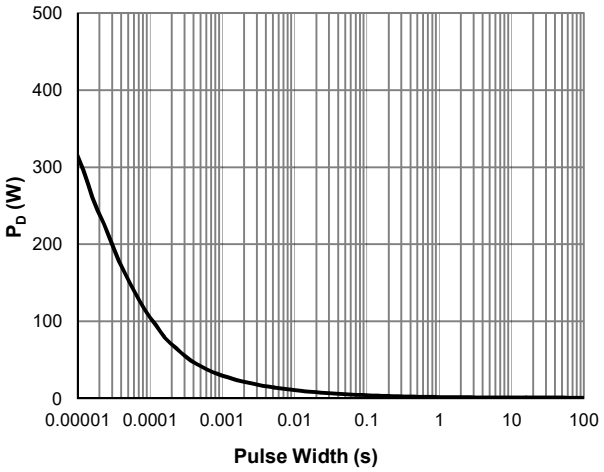


Figure 10: Single Pulse Power Rating, Junction-to-Case

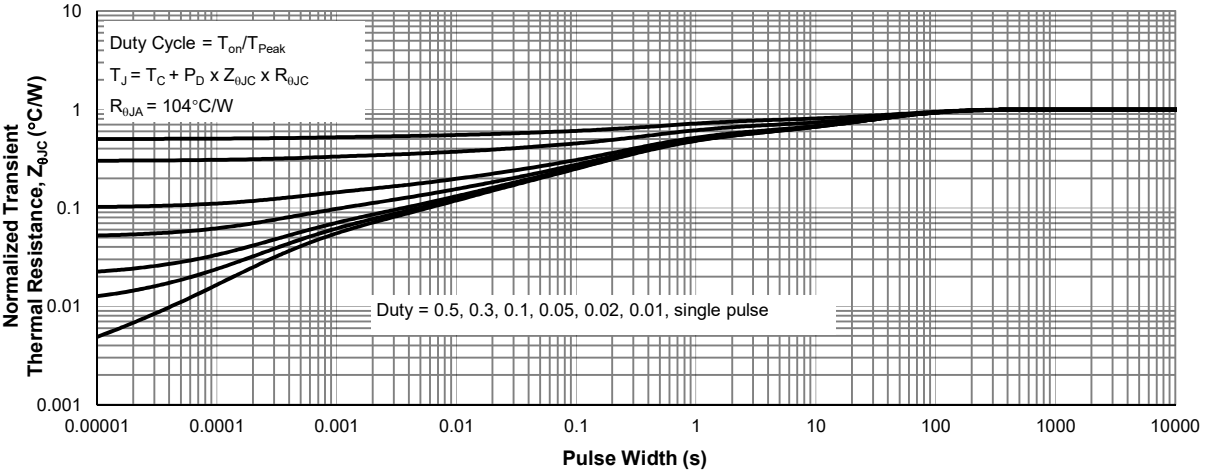
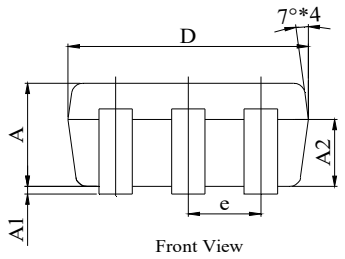


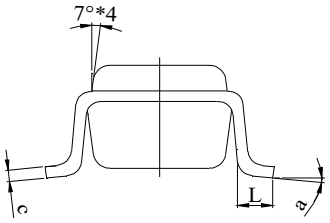
Figure 11: Normalized Maximum Transient Thermal Impedance

SOT-26 Package Information

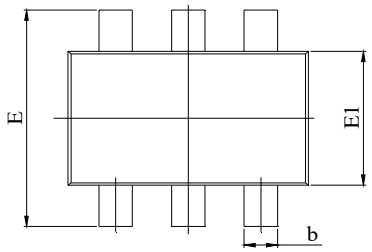
Package Outline



Front View



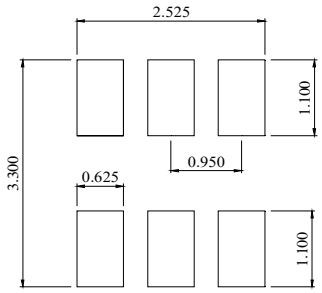
Side View



Top View

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