

# 100V 6.6mΩ N-Ch Power MOSFET

**Features**

- Ultra Low  $R_{DS(ON)}$
- Low Gate Charge
- High Current Capability
- 100% UIS Tested, 100%  $R_g$  Tested

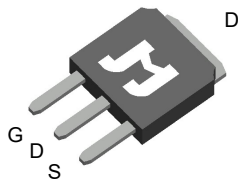
**Applications**

- Power Management in Telecom., Industrial Automation, CE
- Current Switching in DC/DC & AC/DC (SR) Sub-systems
- Motor Driving in Power Tool, E-bike

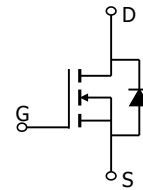
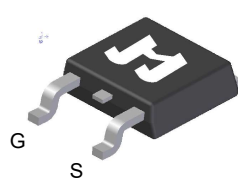
**Product Summary**

Parameter	Typ.	Unit
$V_{DS}$	100	V
$V_{GS(th)}$	1.8	V
$I_D$ (@ $V_{GS} = 10V$ )	83	A
$R_{DS(ON)}$ (@ $V_{GS} = 10V$ )	6.6	mΩ

TO251-3L Top View



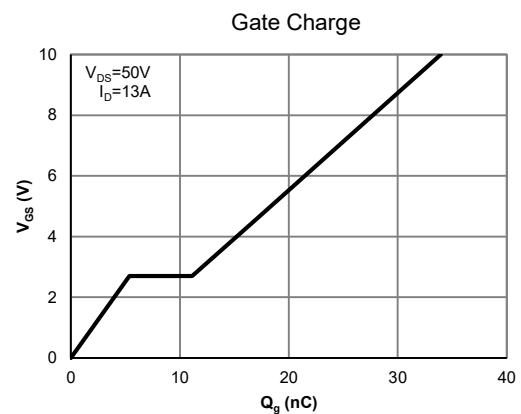
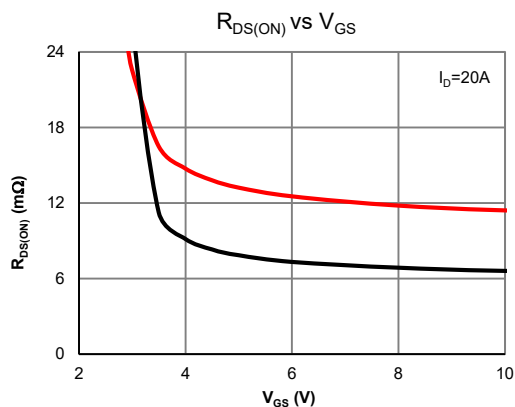
TO252-3L Top View


**Ordering Information**

Device	Package	# of Pins	Marking	MSL	$T_J$ (°C)	Media	Quantity (pcs)
JMSL1008AH-U	TO251-3L	3	SL1008A	N/A	-55~150	Tube	80
JMSL1008AK-13	TO252-3L	3	SL1008A	3	-55~150	13-inch Reel	2500

**Absolute Maximum Ratings** ( $T_A = 25^\circ\text{C}$  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	$I_D$	$T_C = 25^\circ\text{C}$	83
		$T_C = 70^\circ\text{C}$	66
Pulsed Drain Current	$I_{DM}$	300	A
Avalanche Current	$I_{AS}$	45	A
Avalanche Energy (@ $L=0.1\text{mH}$ )	$E_{AS}$	101	mJ
Power Dissipation	$P_D$	$T_C = 25^\circ\text{C}$	104
		$T_C = 70^\circ\text{C}$	67
Junction and 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 5	$\mu\text{A}$
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	$R_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 20\text{A}$ $V_{GS} = 4.5\text{V}, I_D = 15\text{A}$		6.6 8.5	8.0 11.0	$\text{m}\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS} = 5\text{V}, I_D = 20\text{A}$		51		S
Diode Forward Voltage	$V_{SD}$	$I_S = 1\text{A}, V_{GS} = 0\text{V}$		0.7	1.0	V
Diode Continuous Current	$I_S$	$T_C = 25^\circ\text{C}$			104	A

**DYNAMIC PARAMETERS**

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	$R_g$	$V_{GS} = 0\text{V}, V_{DS} = 0\text{V}, f = 1\text{MHz}$		1.8		$\Omega$

**SWITCHING PARAMETERS**

Total Gate Charge (@ $V_{GS} = 10\text{V}$ )	$Q_g$	$V_{DS} = 50\text{V}, I_D = 13\text{A}$		34		nC
Total Gate Charge (@ $V_{GS} = 4.5\text{V}$ )	$Q_g$			17		nC
Gate Source Charge	$Q_{gs}$			5.5		nC
Gate Drain Charge	$Q_{gd}$			5.7		nC
Turn-On DelayTime	$t_{D(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 50\text{V}, R_L = 3.8\Omega,$ $R_{GEN} = 6\Omega$		13		ns
Turn-On Rise Time	$t_r$			14		ns
Turn-Off DelayTime	$t_{D(off)}$			29		ns
Turn-Off Fall Time	$t_f$			17		ns
Body Diode Reverse Recovery Time	$t_{rr}$		$I_F = 13\text{A}, di/dt = 100\text{A}/\mu\text{s}$		51	
Body Diode Reverse Recovery Charge	$Q_{rr}$	$I_F = 13\text{A}, di/dt = 100\text{A}/\mu\text{s}$		90		nC

**Thermal Performance**

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	45	55	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1	1.2	$^\circ\text{C}/\text{W}$

Typical Electrical & Thermal Characteristics

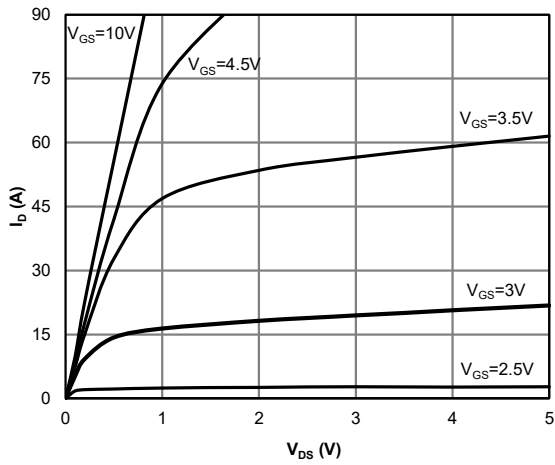


Figure 1: Saturation Characteristics

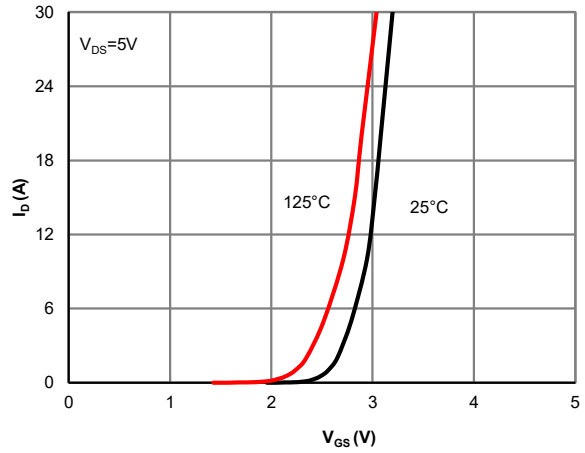


Figure 2: Transfer Characteristics

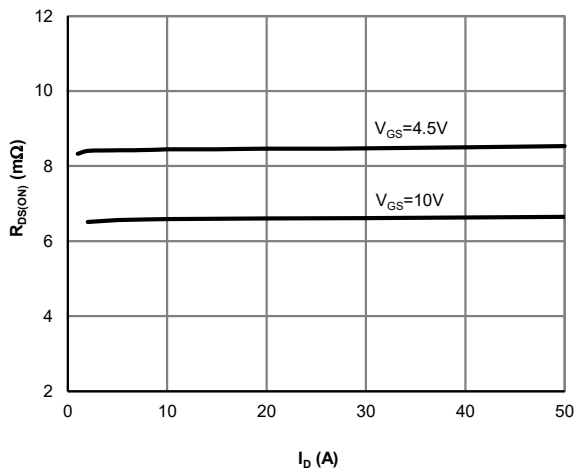


Figure 3:  $R_{DS(ON)}$  vs. Drain Current

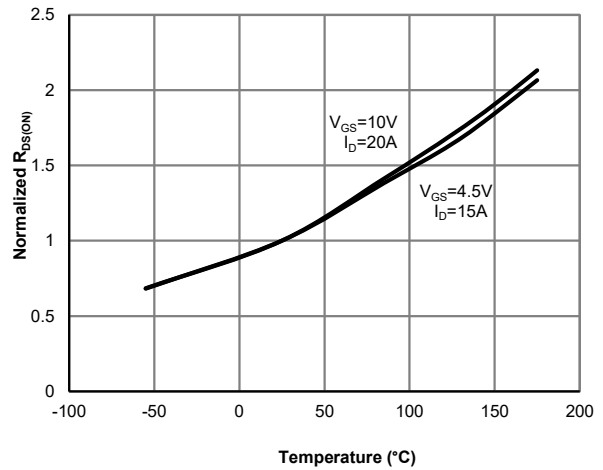


Figure 4: Normalized  $R_{DS(ON)}$  vs. Junction Temperature

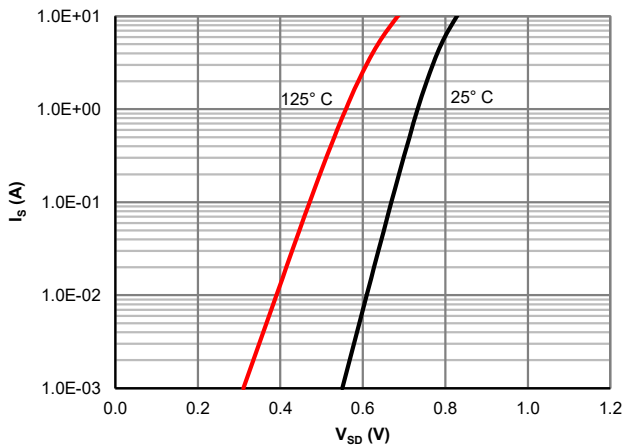


Figure 5: Body-Diode Characteristics

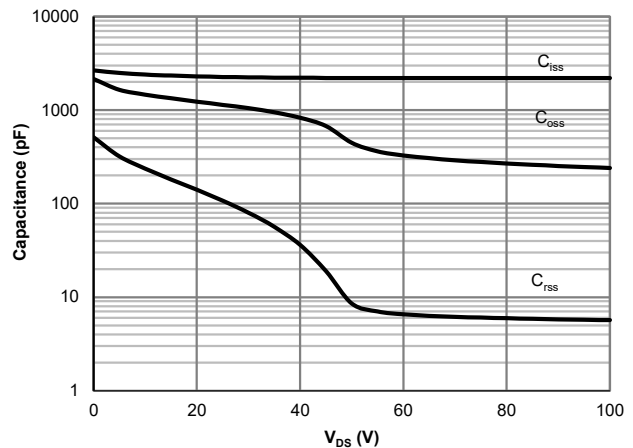


Figure 6: Capacitance Characteristics

Typical Electrical & Thermal Characteristics

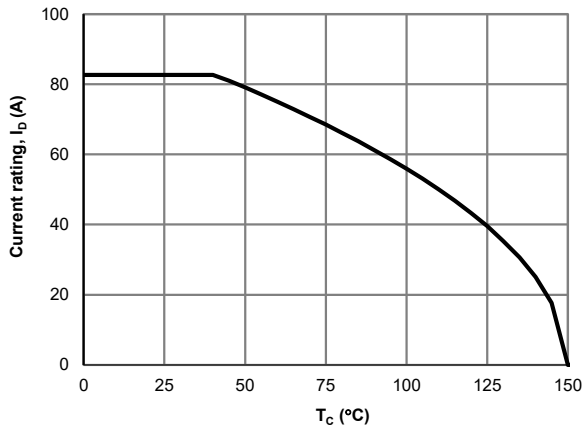


Figure 7: Current De-rating

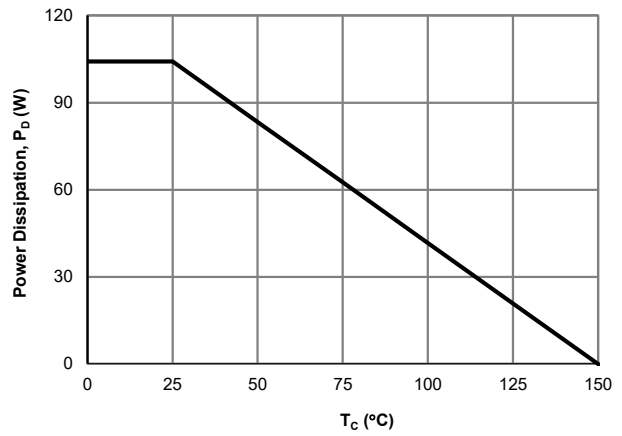


Figure 8: Power De-rating

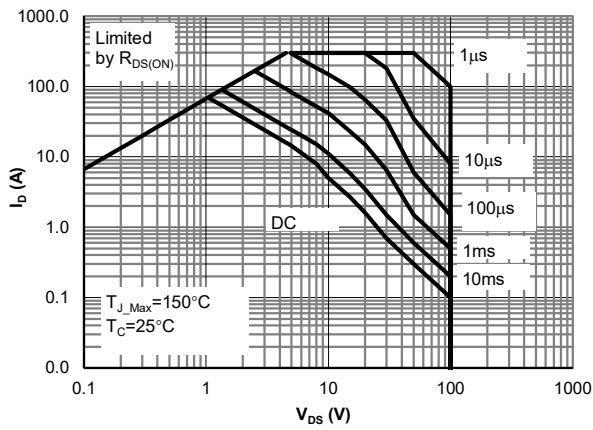


Figure 9: Maximum Safe Operating Area

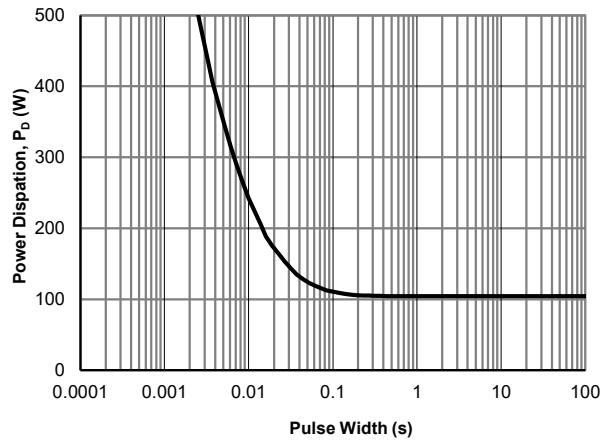


Figure 10: Single Pulse Power Rating, Junction-to-Case

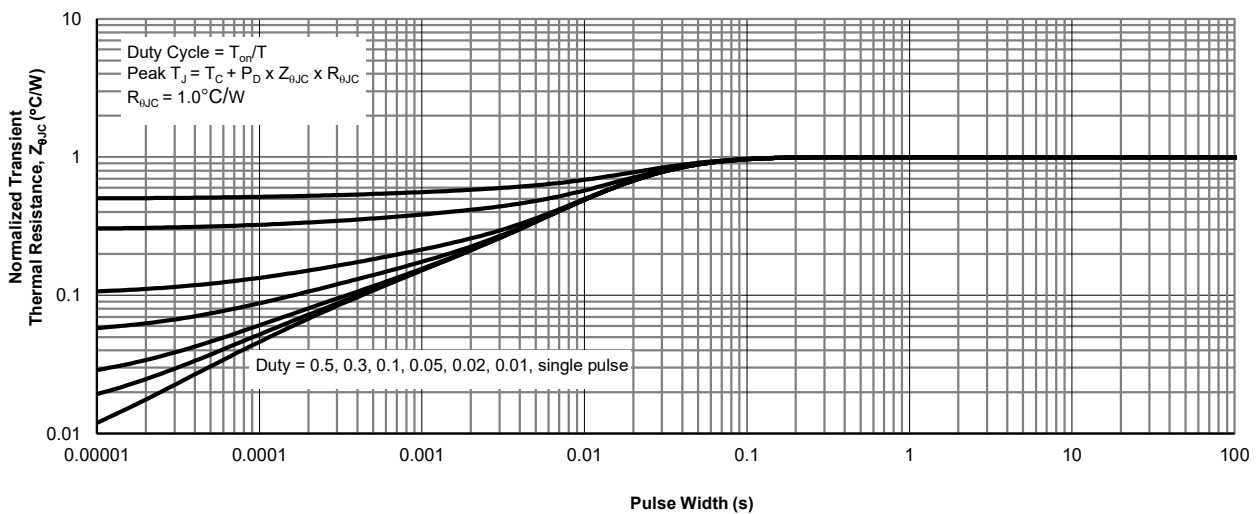
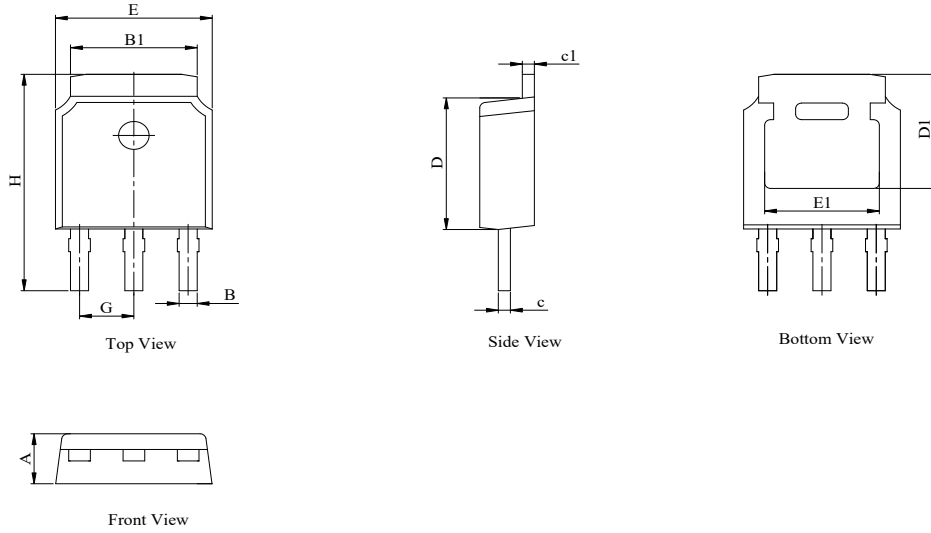


Figure 11: Normalized Maximum Transient Thermal Impedance

**TO251-3L Package Information (all units in mm)**

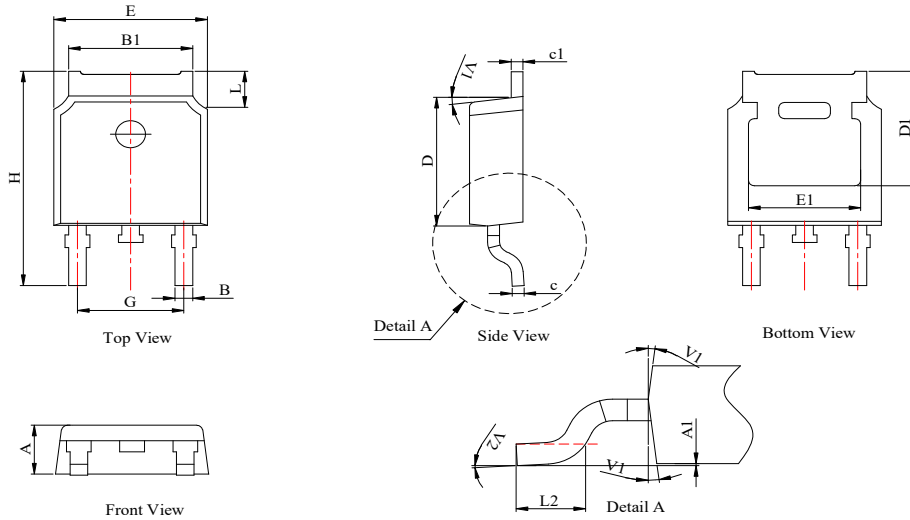
**Package Outline**



DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.10		2.50
B	0.66		0.86
B1	5.15		5.48
c	0.44		0.58
c1	0.44		0.58
D	5.90		6.30
D1	5.30 REF		
E	6.40		6.80
E1	4.83 REF		
G	2.19	2.29	2.39
H	10.60		11.80

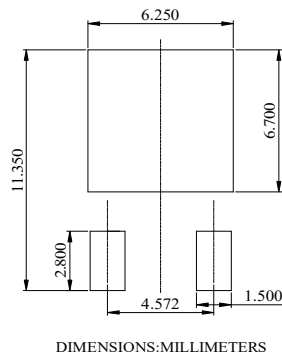
**TO252-3L Package Information (all units in mm)**

**Package Outline**



DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.10		2.50
A1	0	-	0.10
B	0.66		0.86
B1	5.18		5.48
c	0.40		0.60
c1	0.44		0.58
D	5.90		6.30
D1	5.30REF		
E	6.40		6.80
E1	4.63		
G	4.47		4.67
H	9.50		10.70
L	1.09		1.21
L2	1.35		1.65
V1		7°	
V2	0°	-	6°

**Recommend Soldering Footprint**



DIMENSIONS: MILLIMETERS