HM2318A

N-Channel 40V(D-S) MOSFET

GENERAL DESCRIPTION

The HM2318A is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance.

FEATURES

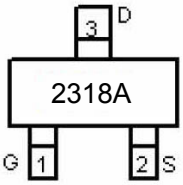
- $R_{DS(ON)}$ ≦28mΩ@V_{GS}=10V
- $R_{DS(ON)}$ ≦38mΩ@V_{GS}=4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- Capable doing Cu wire bonding

APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- Load Switch
- DSC

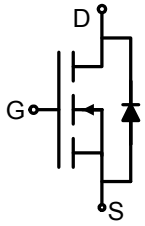
Absolute Maximum Ratings (T_A=25℃ Unless Otherwise Noted)

Parameter	Symbol	Maximum Ratings	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V



Marking and pin Assignment

SOT-23-3L top view



Schematic diagram

HM2318A

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Electrical Characteristics (T_j =25℃ Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	40			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1.0		2.5	V
I_{GSS}	Gate Body Leakage	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=40V, V_{GS}=0V			1	μA
$R_{DS(ON)}$	Drain-Source On-Resistance	V_{GS}=10V, I_D= 5.0A			28	mΩ
		V_{GS}=4.5V, I_D= 3.5A			38	
V_{SD}	Diode Forward Voltage	I_S=1A		0.8	1.2	V
DYNAMIC						
Qg	Total Gate Charge	V_{DS}=20V, V_{GS}=10V, I_D=5A		16		nC
Qg	Total Gate Charge	V_{DS}=20V, V_{GS}=4.5V, I_D=5A		8.2		
Qgs	Gate-Source Charge			3.6		
Qgd	Gate-Drain Charge			3.9		
Ciss	Input capacitance	V_{DS}=20V, V_{GS}=0V, f=1MHz		560		pF
Coss	Output Capacitance			70		
Crss	Reverse Transfer Capacitance			22		
Rg	Gate Resistance	f =1MHz		0.7		Ω
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=20V, R_L =20Ω I_D=1A, V_{GEN}=10V R_G=1Ω		12		ns
t_r	Turn-On Rise Time			12		
$t_{d(off)}$	Turn-Off Delay Time			37		
t_f	Turn-Off Fall Time			4		

Notes: a. Based on epoxy or solder paste and bond wire Cu 2mil×3(S), Au 1mil ×1(G) on each die of SOT-23 package.

b. Pulse test; pulse width ≦ 300us, duty cycle≦ 2%.

c. H&M SEMI reserves the right to improve product design, functions and reliability without notice.

Typical Characteristics (T_J =25℃ Noted)

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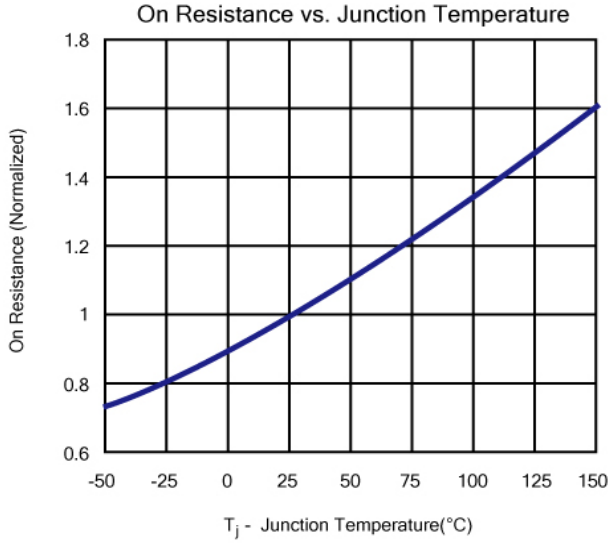
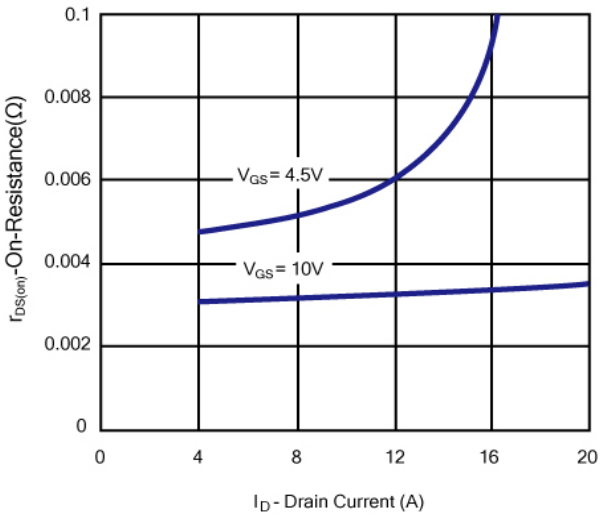
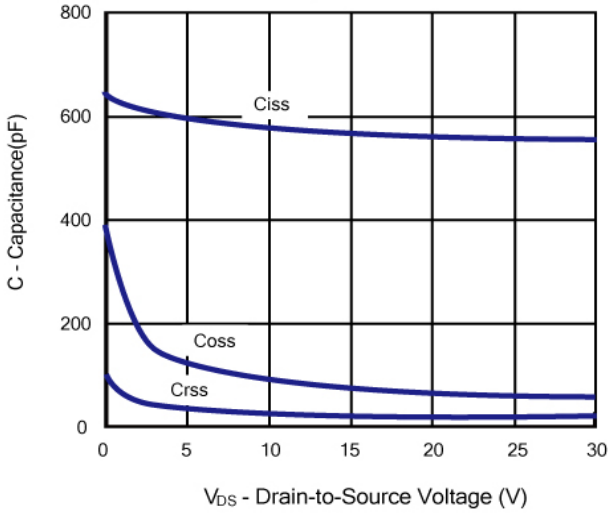
On Resistance vs. Junction Temperature



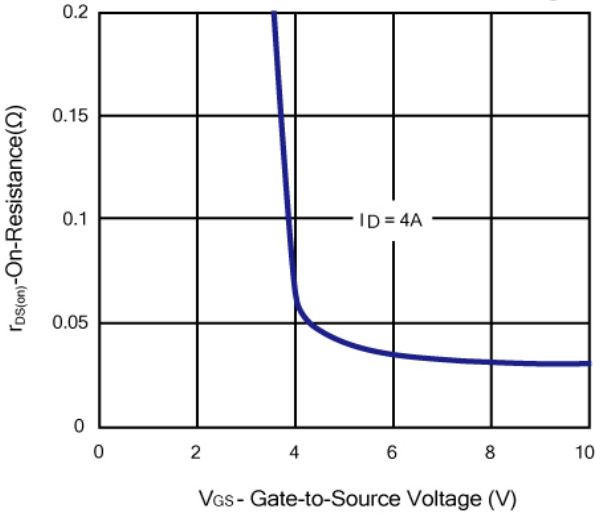
On-Resistance vs. Drain Current



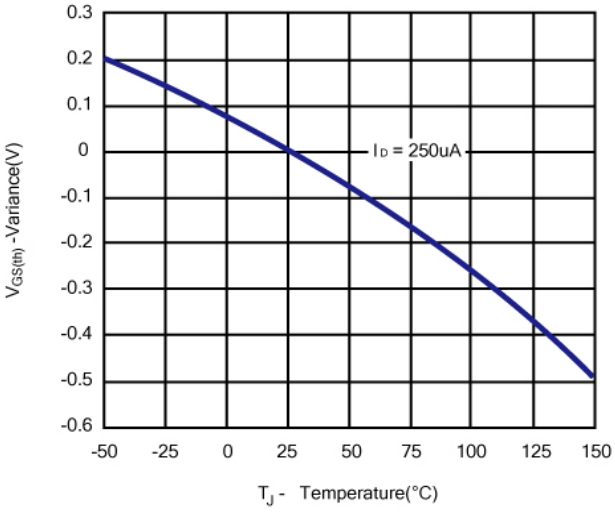
Capacitance



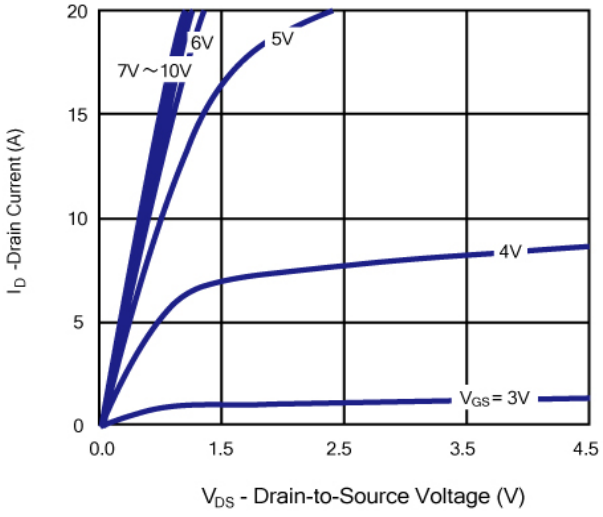
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



On-Region Characteristics



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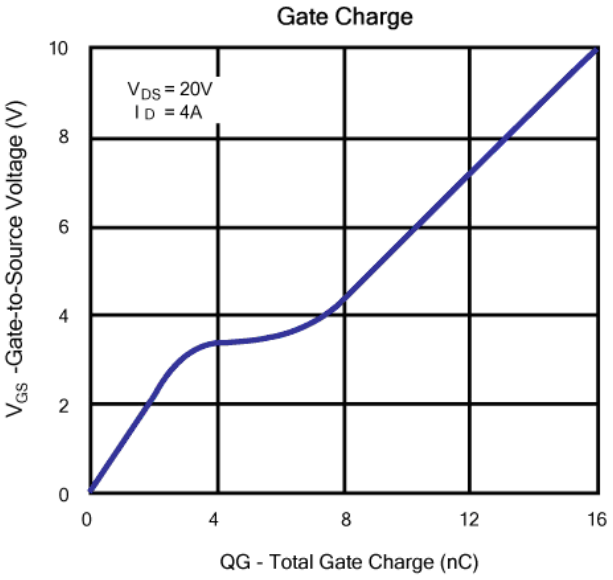
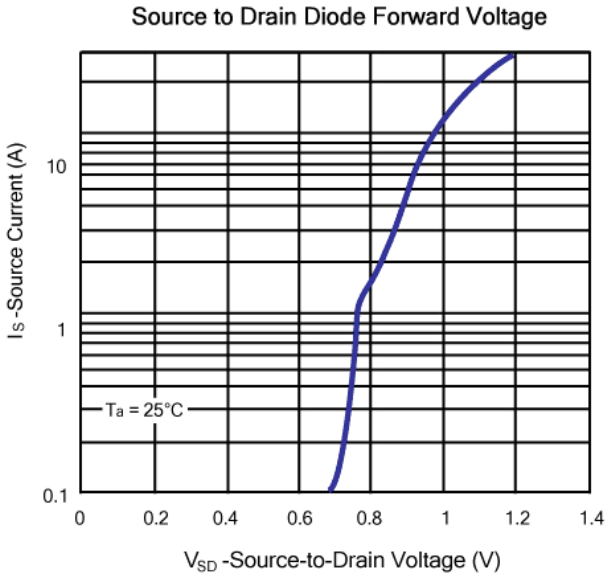
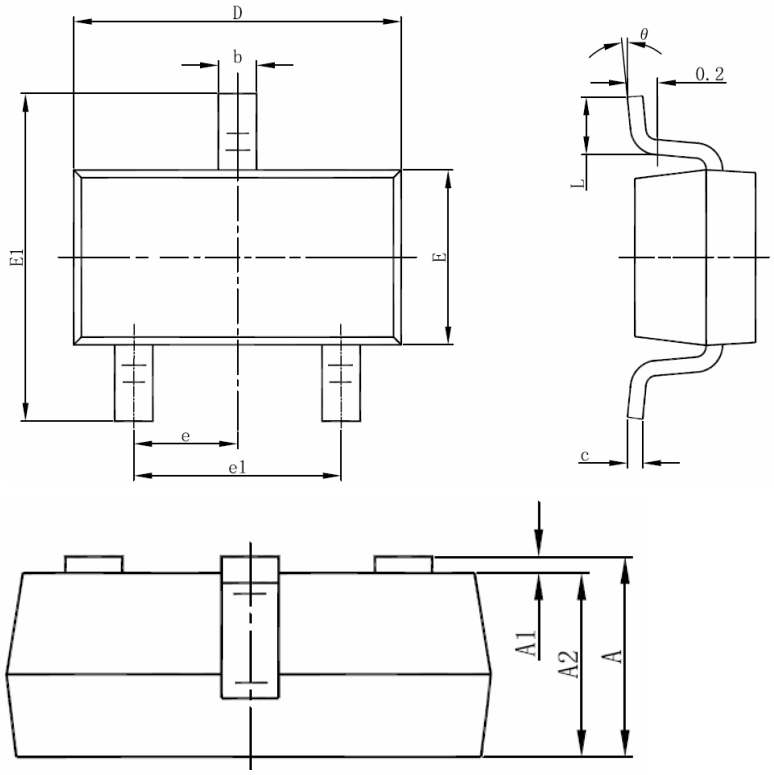




SOT-23-3L PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

NOTES

1. All dimensions are in millimeters.
2. Tolerance ±0.10mm (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.