

N-Channel 40V(D-S) MOSFET

GENERAL DESCRIPTION

The HM2318 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

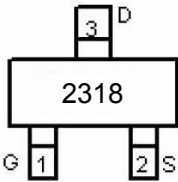
- $R_{DS(ON)}$ [30mΩ(Typ)@ $V_{GS}=10V$
- $R_{DS(ON)}$ [40mΩ(Typ)@ $V_{GS}=4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- Capable doing Cu wire bonding

APPLICATIONS

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

Absolute Maximum Ratings (TA=25°C Unless Otherwise Noted)

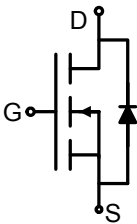
Parameter	Symbol	Maximum Ratings	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V



Marking and pin Assignment



SOT-23-3L top view



Schematic diagram

N-Channel 40V(D-S) MOSFET

Electrical Characteristics ($T_j=25^{\circ}\text{C}$ Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	40			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.5	2.2	V
I_{GSS}	Gate Body Leakage	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=40V, V_{GS}=0V$			1	μA
$R_{DS(ON)}$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=4.0A$		30	40	m Ω
		$V_{GS}=4.5V, I_D=3.5A$		40	60	
V_{SD}	Diode Forward Voltage	$I_S=1A$		0.8	1.2	V
DYNAMIC						
Q_g	Total Gate Charge	$V_{DS}=20V, V_{GS}=10V, I_D=4A$		16		nC
Q_g	Total Gate Charge	$V_{DS}=20V, V_{GS}=4.5V, I_D=4A$		8.2		
Q_{gs}	Gate-Source Charge			3.6		
Q_{gd}	Gate-Drain Charge			3.9		
C_{iss}	Input capacitance	$V_{DS}=20V, V_{GS}=0V, f=1MHz$		560		pF
C_{oss}	Output Capacitance			70		
C_{rss}	Reverse Transfer Capacitance			22		
R_g	Gate Resistance	$f=1MHz$		0.7		Ω
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=20V, R_L=20\Omega$ $I_D=1A, V_{GEN}=10V$ $R_G=1\Omega$		12		ns
t_r	Turn-On Rise Time			12		
$t_{d(off)}$	Turn-Off Delay Time			37		
t_f	Turn-Off Fall Time			4		

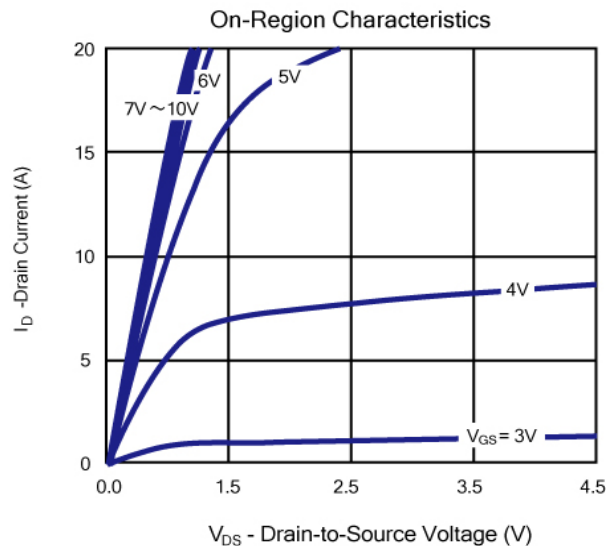
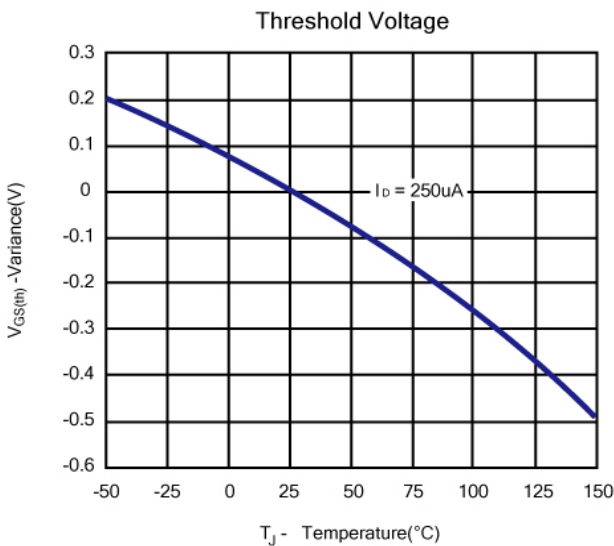
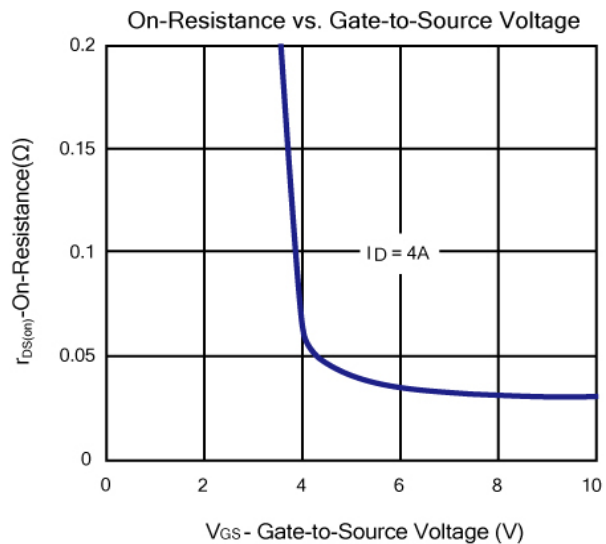
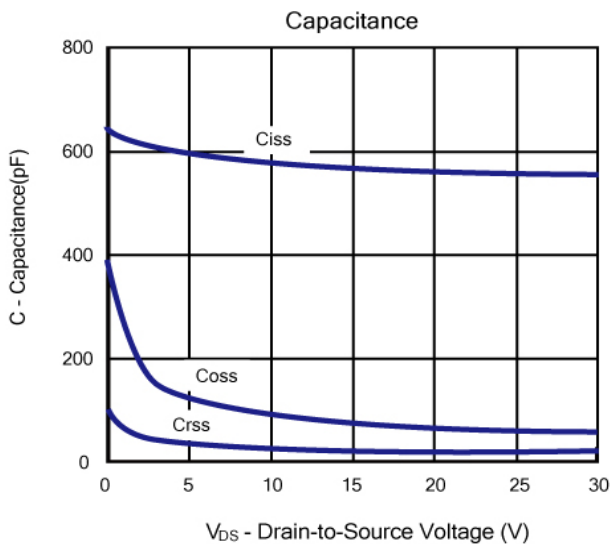
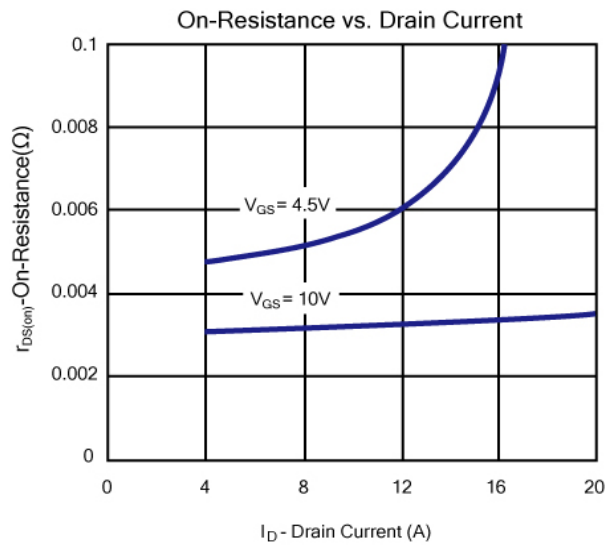
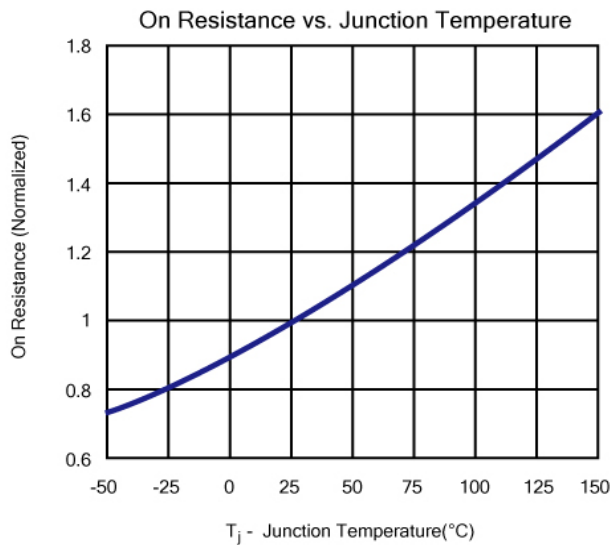
Notes: a. Based on epoxy or solder paste and bond wire Cu 2mil×3(S), Au 1mil ×1(G) on each die of SOT-23 package.

b. Pulse test; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

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

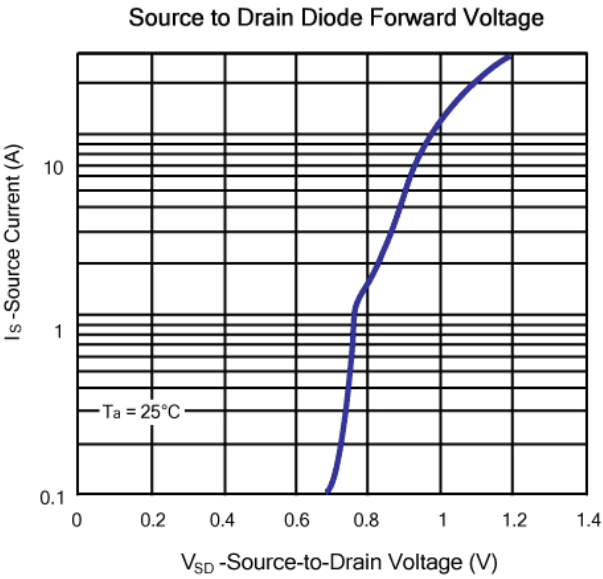
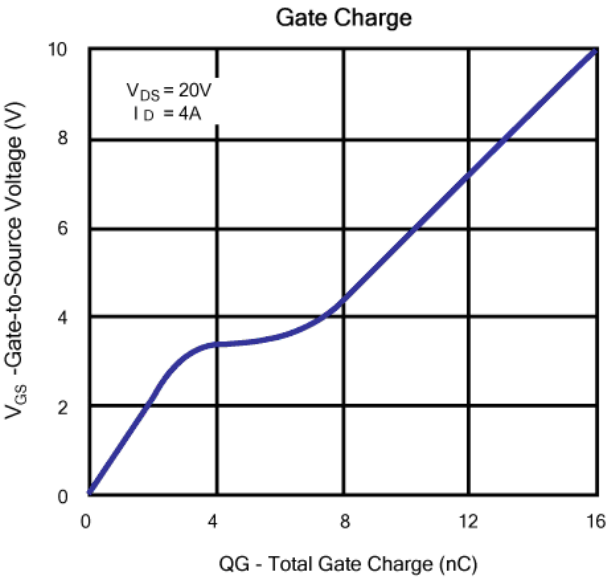
Typical Characteristics (T_J =25°C Noted)

N-Channel 40V(D-S) MOSFET

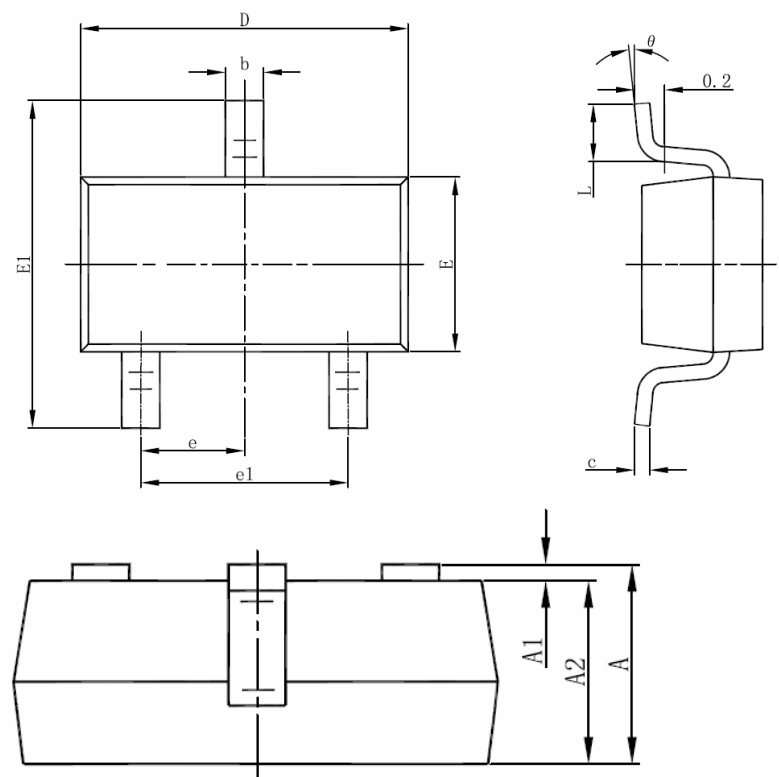


N-Channel 40V(D-S) MOSFET

Typical Characteristics (T_J = 25°C Noted)



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.