

GENERAL DESCRIPTION

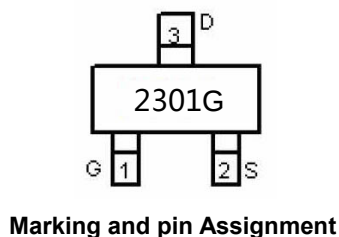
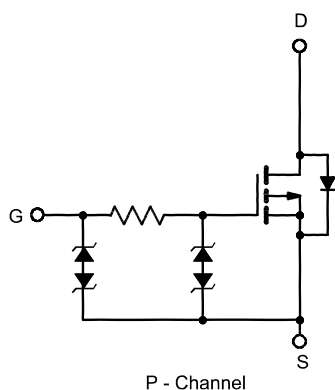
The HM2301D is the P-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance.

APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System

FEATURES

- $R_{DS(ON)} = 0.48\Omega$ @ $V_{GS} = -4.5V$
- $R_{DS(ON)} = 0.67\Omega$ @ $V_{GS} = -2.5V$
- $R_{DS(ON)} = 0.95\Omega$ @ $V_{GS} = -1.8V$
- $R_{DS(ON)} = 2.20\Omega$ @ $V_{GS} = -1.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- Capable doing Cu wire bonding



Absolute Maximum Ratings ($T_A = 25^\circ C$ Unless Otherwise Noted)

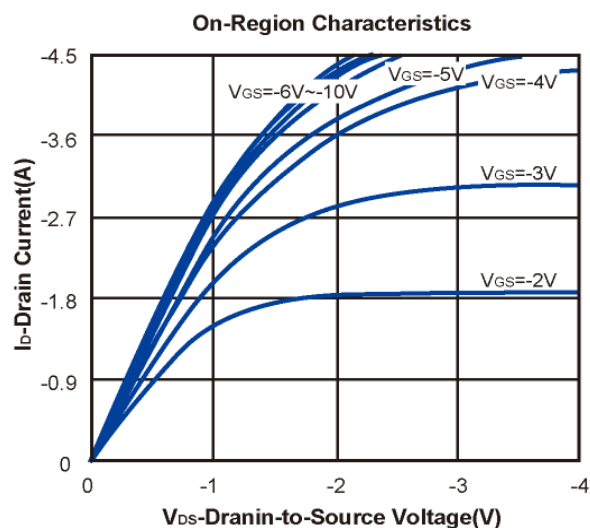
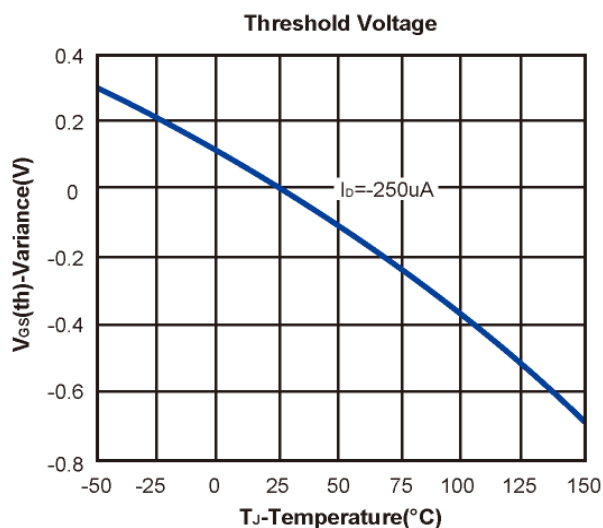
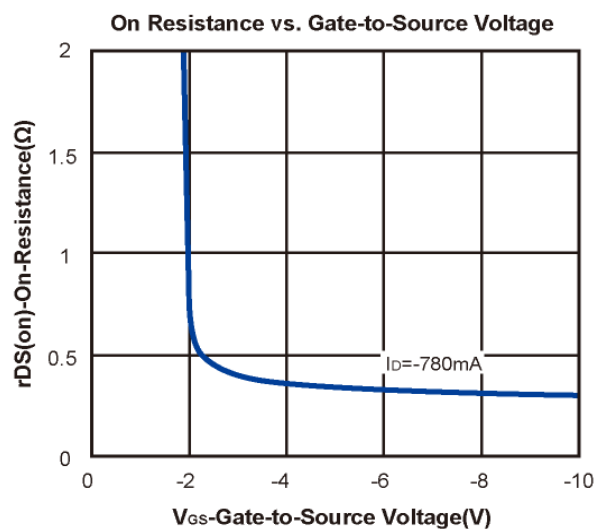
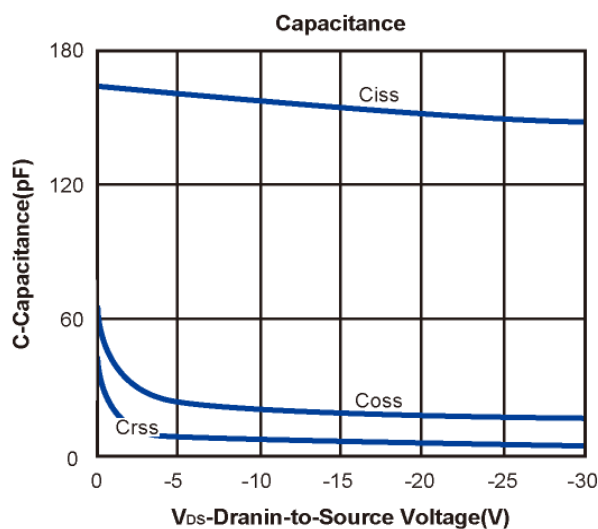
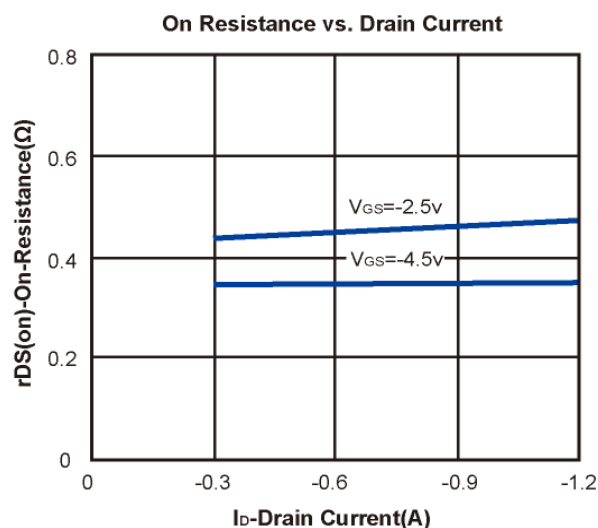
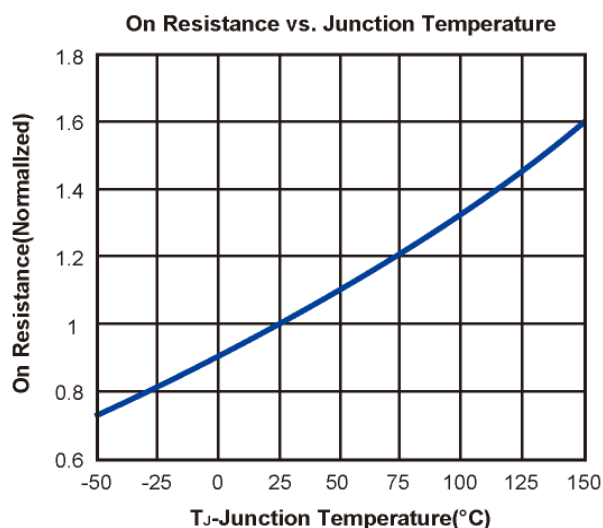
Parameter	Symbol	Maximum Ratings	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 6	V

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

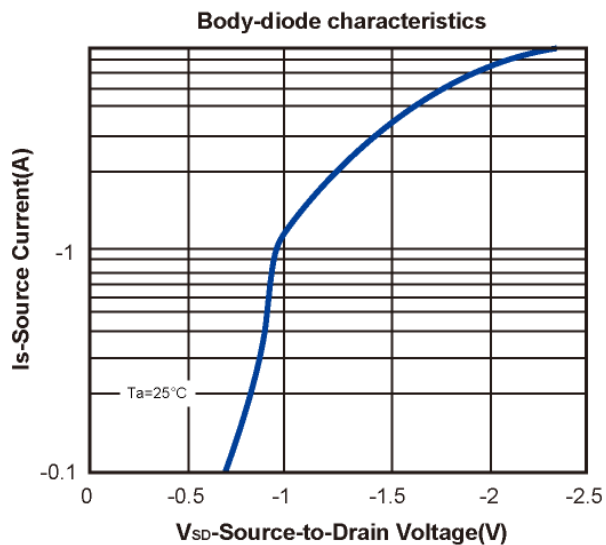
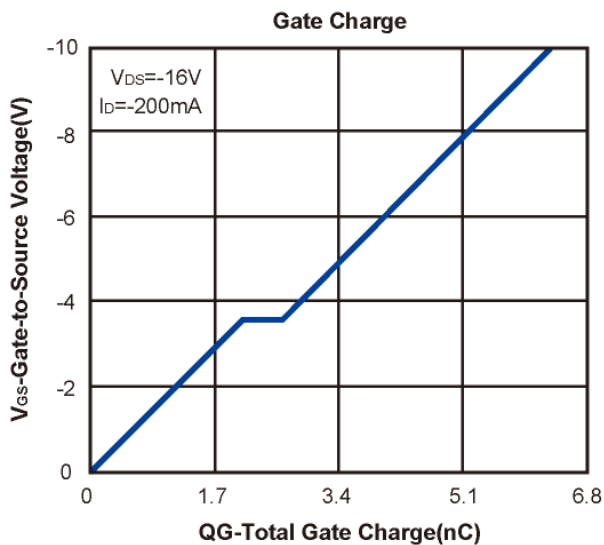
Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-20			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.45		-1.2	V
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 4.5V$			± 10	μA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-16V, V_{GS}=0V$			-1	μA
$R_{DS(on)}$	Drain-Source On-Resistance ^a	$V_{GS}=-4.5V, I_D=-780mA$		0.35	0.48	Ω
		$V_{GS}=-2.5V, I_D=-660mA$		0.44	0.67	
		$V_{GS}=-1.8V, I_D=-100mA$		0.55	0.95	
		$V_{GS}=-1.5V, I_D=-100mA$		0.78	2.20	
V_{SD}	Diode Forward Voltage	$I_S=-350mA, V_{GS}=0V$		-0.8	-1.2	V
DYNAMIC						
C_{iss}	Input Capacitance	$V_{DS}=-16V, V_{GS}=0V, f=1MHz$		152		pF
C_{oss}	Output Capacitance			18.5		
C_{rss}	Reverse Transfer Capacitance			6		
Q_g	Total Gate Charge	$V_{DS}=-16V, V_{GS}=-4.5V, I_D=-200mA$		2.8		nC
Q_{gs}	Gate-Source Charge			2.1		
Q_{gd}	Gate-Drain Charge			0.5		
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=-10V, R_L=50\Omega$ $V_{GEN}=-5V, R_G=10\Omega$ $I_D=-200mA$		51.3		ns
t_r	Turn-On Rise Time			24.2		
$t_{d(off)}$	Turn-Off Delay Time			246		
t_f	Turn-Off Fall Time			81.2		

- Notes: a. Based on Eutectic paste and bond wire Cu wire 1mil×1(S), Cu wire 1mil×1(G) on each die of SOT-523 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)

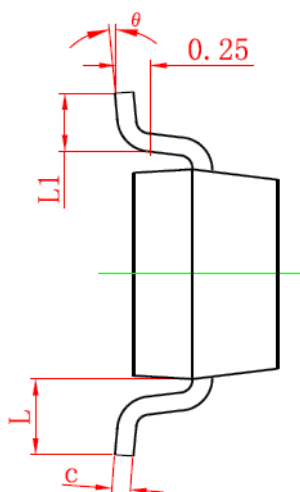
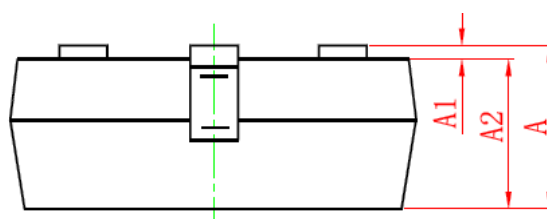
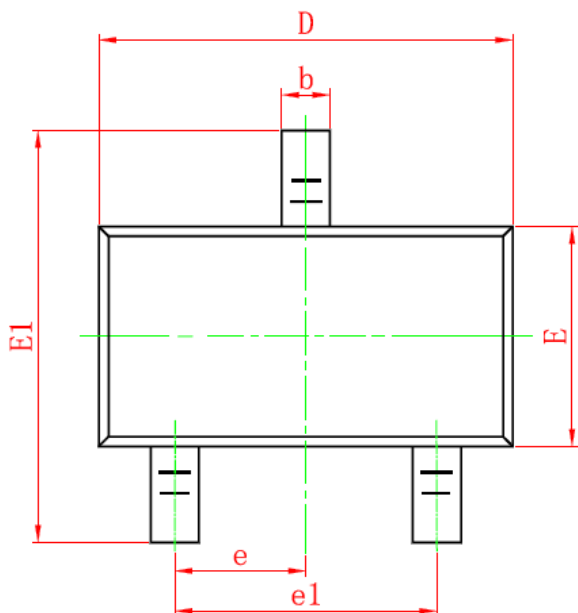


Typical Characteristics (T_J =25°C Noted)



SOT-23 PACKAGE INFORMATION

Dimensions in Millimeters (UNIT:mm)



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

NOTES

1. All dimensions are in millimeters.
2. Tolerance $\pm 0.10\text{mm}$ (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.