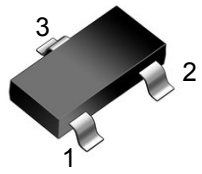
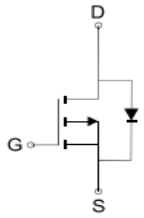
SOT-23



MARKING: A1SHB



P-Channel MOSFET

Features

Advanced trench process technology
High density cell design for Ultra Low On-Resistance
Halogen free and RoHS compliant

Mechanical Data

SOT-23 Small Outline Plastic Package
Epoxy UL: 94V-0

Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
SOT-23	Tape/Reel,7" reel	3000	EIA-481-1

Maximum Ratings & Thermal Characteristics

(Ratings at 25℃ ambient temperature unless otherwise specified.)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±10	
Continuous Drain Current		I_D	-3	A
Pulsed Drain Current [1]		I_{DM}	-10	
Maximum Power Dissipation [2]	TA = 25°C	P_D	1.25	W
	TA = 75°C		0.8	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Junction-to-Ambient Thermal Resistance (PCB mounted) [2]		R_{thJA}	100	°C/W
Junction-to-Ambient Thermal Resistance (PCB mounted) [3]			166	

Notes
1) Pulse width limited by maximum junction temperature.
2) Surface Mounted on FR4 Board, t ≤ 5 sec.
3) Surface Mounted on FR4 Board.

Electrical Characteristics

(Ratings at 25℃ ambient temperature unless otherwise specified).

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = -250uA	-20			V
Drain-Source On-State Resistance [1]	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -3.0A		64	110	mΩ
		V_{GS} = -2.5V, I_D = -2.0A		89	140	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250uA	-0.4		-1	V
Zero Gate Voltage Drain Current 0	I_{DSS}	V_{DS} = -20V, V_{GS} = 0V			-1	uA
		V_{DS} = -16V, V_{GS} = 0V TJ=55°C			-10	
Gate Body Leakage	I_{GSS}	V_{GS} = ± 10V, V_{DS} = 0V			±100	nA
Forward Transconductance [1]	g_{fs}	V_{DS} = -5V, I_D = -2.8A		6.5	—	S

Electrical Characteristics

（Ratings at 25℃ ambient temperature unless otherwise specified).

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Dynamic						
Total Gate Charge	Q_g	V_{DS} = -6V, I_D ≅ -2.3A		5.8	10	nC
Gate-Source Charge	Q_{gs}	V_{GS} = -4.5V		0.85		
Gate-Drain Charge	Q_{gd}			1.7		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -6V, RL=6Ω		13	25	ns
Turn-On Rise Time	t_r	I_D ≅ -1.A, V_{GEN} = -4.5V		36	60	
Turn-Off Delay Time	$t_{d(off)}$	R_G = 6Ω		42	70	
Turn-Off Fall Time	t_f			34	60	
Input Capacitance	C_{iss}	V_{DS} = -6V, V_{GS} = 0V		415		pF
Output Capacitance	C_{oss}	f = 1.0 MHz		223		
Reverse Transfer Capacitance	C_{rss}			87		
Source-Drain Diode						
Max. Diode Forward Current	I_S				-1.6	A
Diode Forward Voltage	V_{SD}	I_S = -1.0A, V_{GS} = 0V		-0.8	-1.2	V

1) Pulse test: pulse width <= 300us, duty cycle<= 2%

Ratings and Characteristic Curves

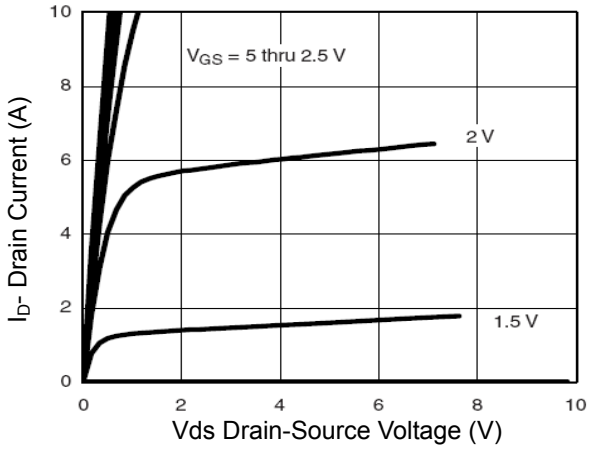


Figure 1 Output CHARACTERISTICS

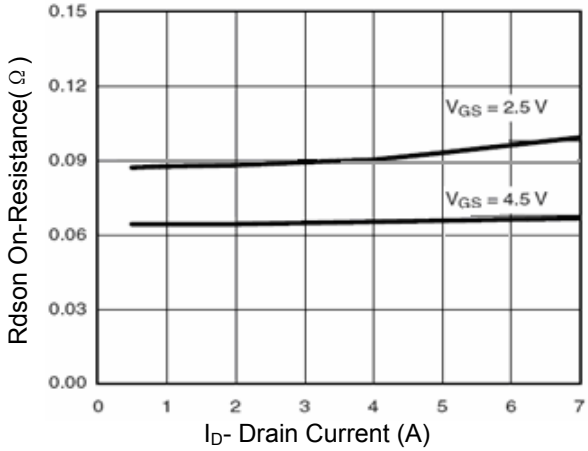


Figure 2 Drain-Source On-Resistance

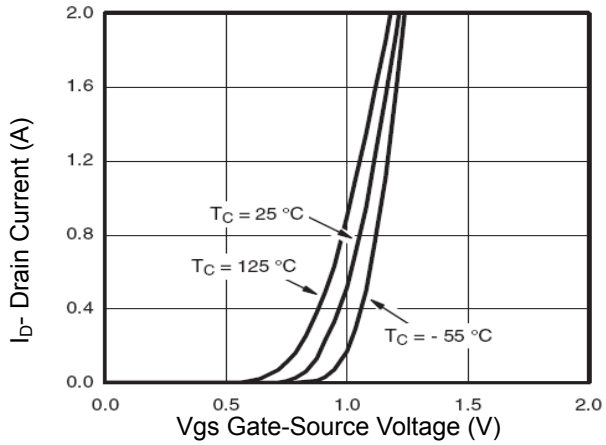


Figure 3 Transfer Characteristics

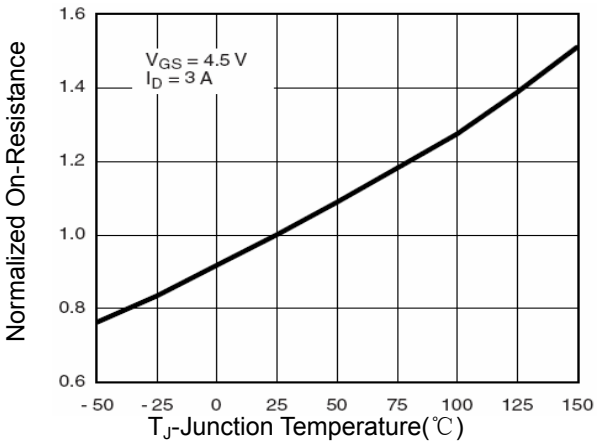


Figure 4 Drain-Source On-Resistance

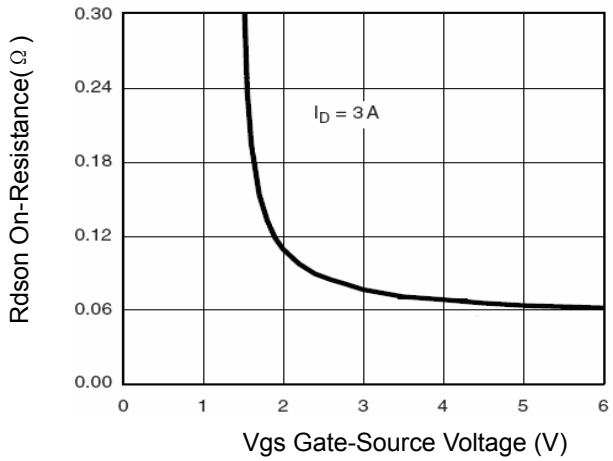


Figure 5 Rdson vs Vgs

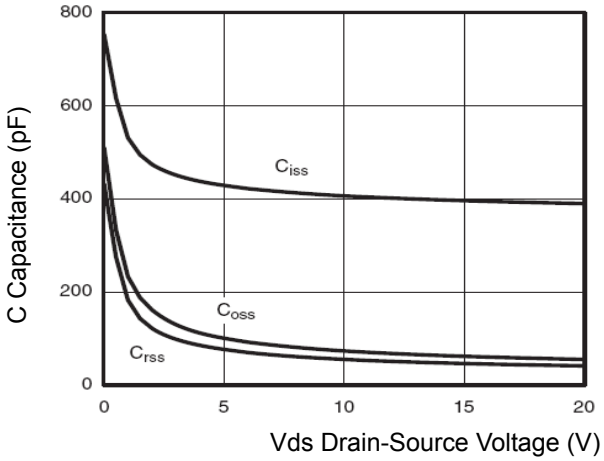


Figure 6 Capacitance vs Vds

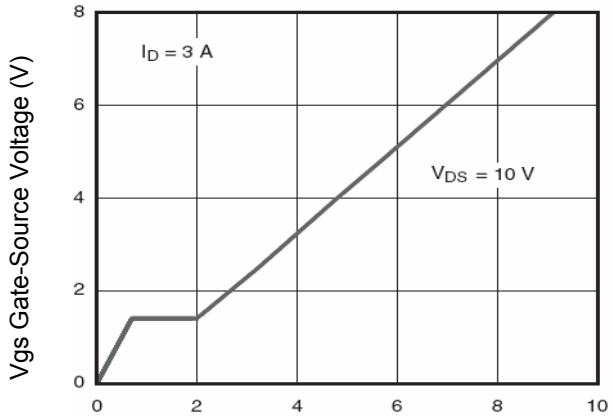


Figure 7 Gate Charge

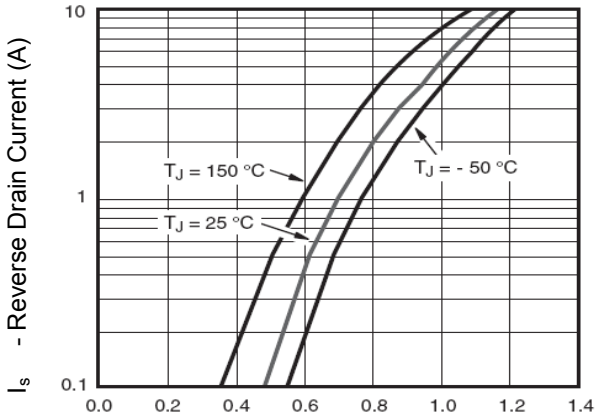
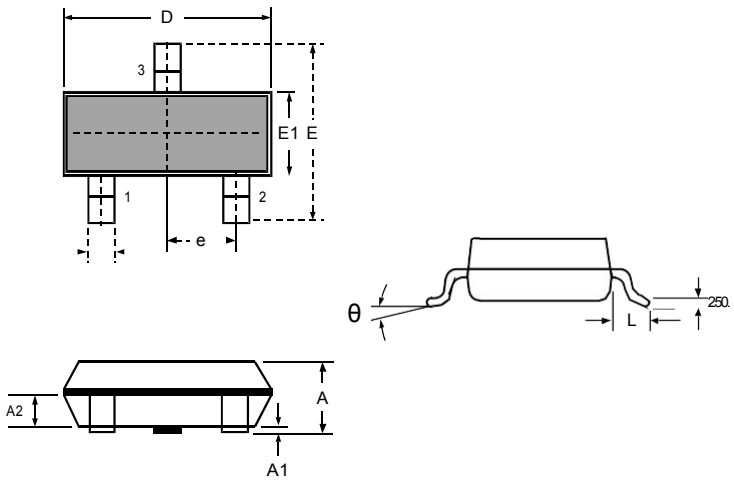


Figure 8 Source- Drain Diode Forward

Package Outline Dimensions: SOT-23



DIMENSIONS

SYMBOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
D	2.800	3.000	0.110	0.118
b	0.300	0.500	0.012	0.020
E	2.250	2.550	0.089	0.100
E1	1.200	1.400	0.047	0.055
e	0.950 BSC		0.037 BSC	
L	0.300	0.500	0.012	0.020
θ	0	8°	0	8°