

N-Channel Enhancement Mode Power MOSFET

$V_{DS} = 20V$, $I_D = 3.2A$, $R_{DS(ON)} = 39m\Omega(max)$

Features

- Lead Free Product is Acquired
- Very Low On-Resistance RDS (ON)
- Fast Switching
- Low Crss

Applications

- PWM Applications
- Load Switch for Devices
- Power Management
- Video Monitor

Mechanical Data

- Halogen Free

Ordering Information

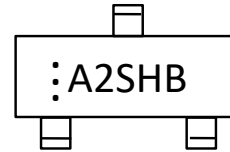
- Package :SOT23-3L
- Reel Size :7 (inches)
- Quantity Per Reel :3,000 pcs

Package Outline



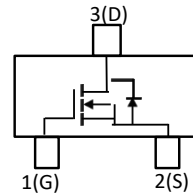
SOT23-3L Top View

Marking Information



"A2SHB" = Product Type Marking Code

Device Schematic & PIN Configuration



Pin Assignment		
1	G	Gate
2	S	Source
3	D	Drain

Maximum Ratings (@TA = +25°C, unless otherwise specified.)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous Drain Current ($T_C=25^\circ C$)	I_D	3.2	A
Continuous Drain Current ($T_C=70^\circ C$)		2.3	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	10	A
Power Dissipation	P_D	1.2	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	° C
Maximum Lead Temperature for Soldering Purpose, 1/8" From Case for 5 Seconds	T_L	300	° C

Thermal Characteristics

Thermal Resistance Junction to Ambient	$R_{\theta JA}$	90	° C/W
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Notes⁽¹⁾: This value is guaranteed by design hence it is not included in the production test.



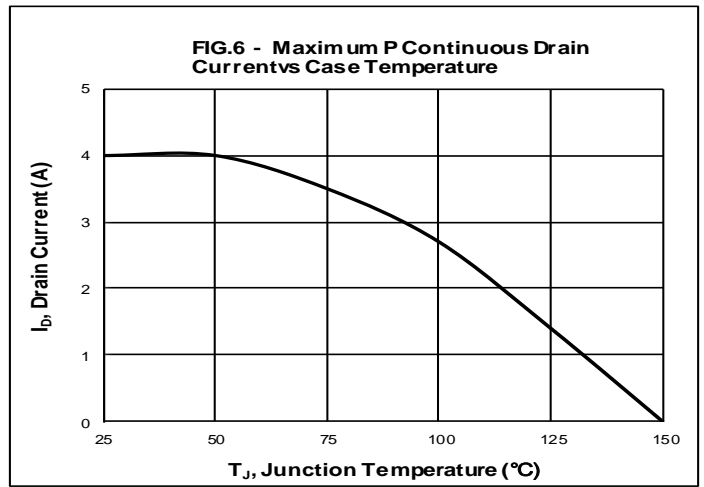
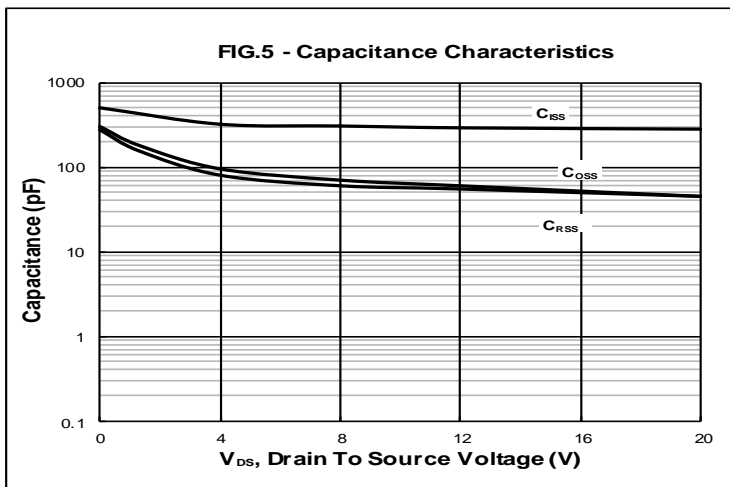
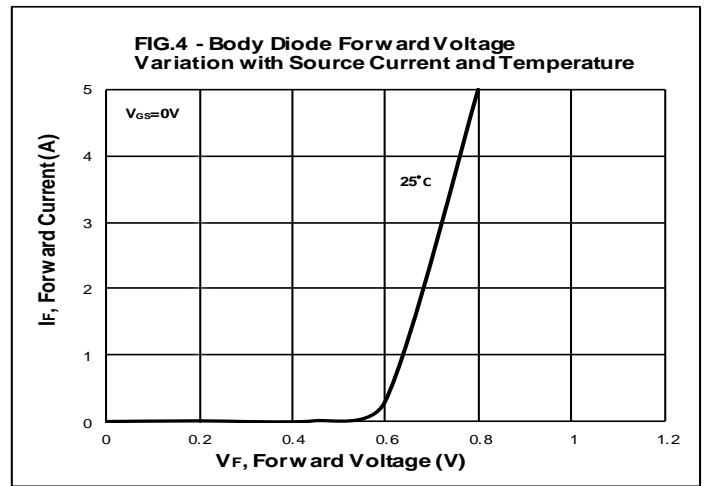
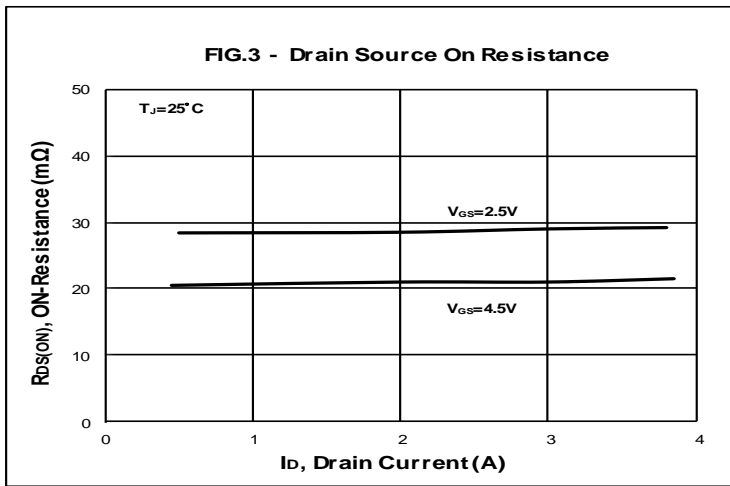
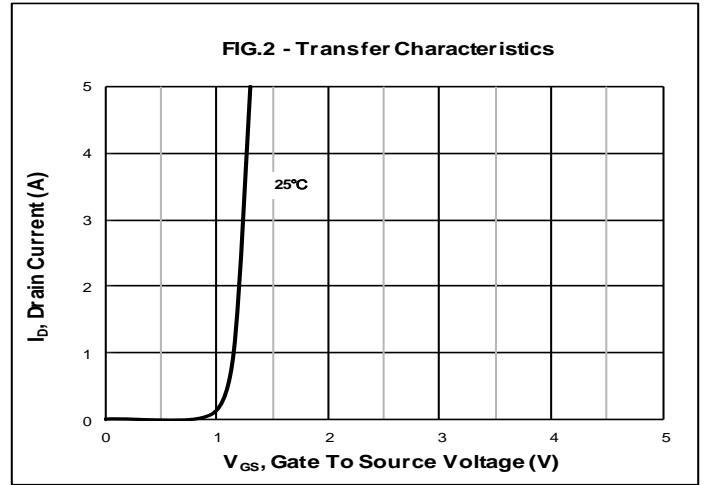
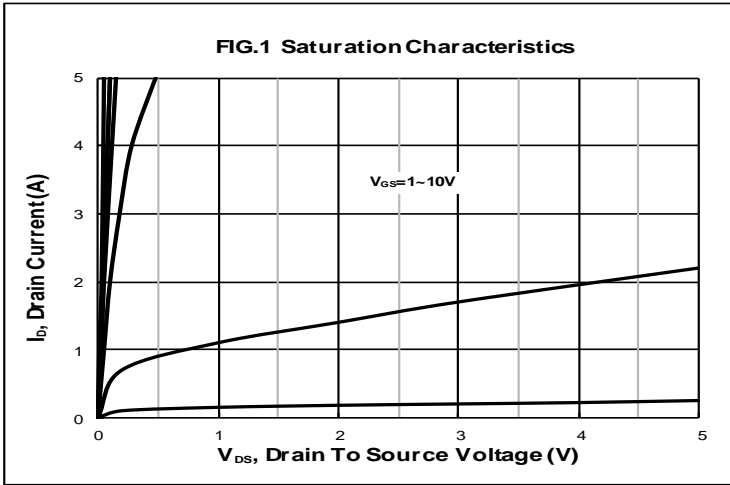
Electrical Characteristics(@TA = +25°C, unless otherwise specified.)

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	20	-	-	V
Gate-Body Leakage Current, Forward	$V_{GS}=10V, V_{DS}=0V$	I_{GSSF}	-	-	100	nA
Gate-Body Leakage Current, Reverse	$V_{GS}=-10V, V_{DS}=0V$	I_{GSSR}	-	-	-100	nA
Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
	$V_{DS}=16V, T_C=125^\circ C$		-	-	10	μA
On Characteristics						
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	0.45	-	1.1	V
Static Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=3A$	$R_{DS(ON)}$	-	21.5	30	m Ω
	$V_{GS}=2.5V, I_D=3A$		-	28.5	39	
Dynamic Characteristics						
Input Capacitance	$V_{DS}=10V, V_{GS}=0V, F=1MHz$	C_{ISS}	-	306	-	pF
Output Capacitance		C_{OSS}	-	60.5	-	pF
Reverse Transfer Capacitance		C_{RSS}	-	55.5	-	pF
Switching Characteristics						
Total Gate Charge	$V_{GS}=5V, I_D=3A, V_{DS}=10V$	Q_g	-	4.76	-	nC
Gate-Source Charge		Q_{gs}	-	4.17	-	nC
Gate-Drain Charge		Q_{gd}	-	0.6	-	nC
Turn-On Delay Time	$V_{GS}=5V, V_{DS}=10V, I_D=4A, R_L=2.7\Omega, R_G=6\Omega$	$t_{D(on)}$	-	5	-	ns
Turn-On Rise Time		t_r	-	36.0	-	ns
Turn-Off Delay Time		$t_{D(off)}$	-	15	-	ns
Turn-Off Fall Time		t_f	-	5.4	-	ns
Thermal Performance						
Maximum Continuous Drain-Source Diode Forward Current		I_S	-	-	3.2	A
Maximum Pulsed Drain-Source Diode Forward Current		I_{SM}	-	-	10.0	A
Drain to Source Diode Forward Voltage, $V_{GS}=0V, I_{SD}=3A, T_J=25^\circ C$		V_{SD}	-	-	1.2	V

Notes(*): This value is guaranteed by design hence it is not included in the production test.



Rating and Characteristic Curves





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FIG.7 - Gate Charge Characteristics

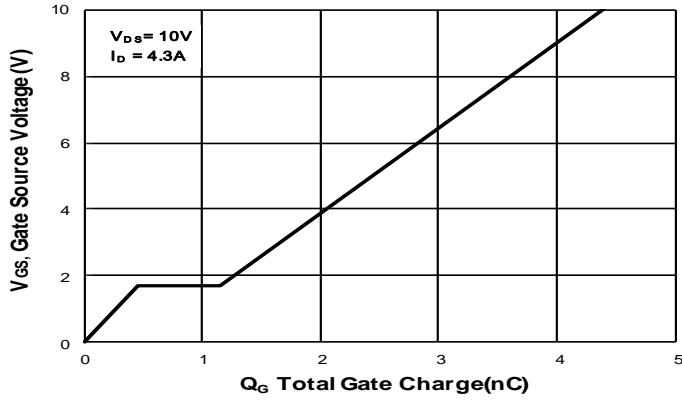


FIG.8 - Safe Operating Area

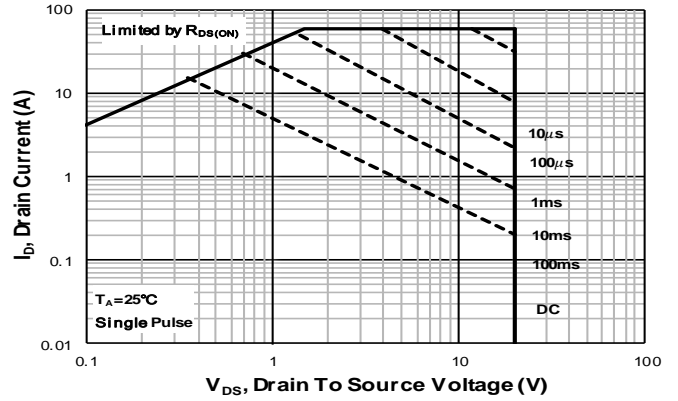


FIG.9 - Breakdown Voltage Variation vs Gate Voltage

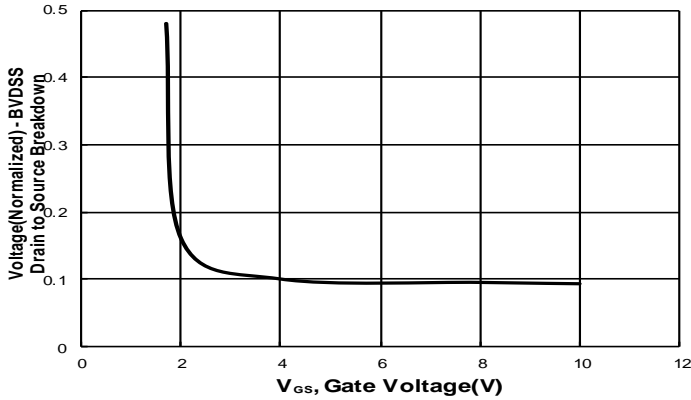
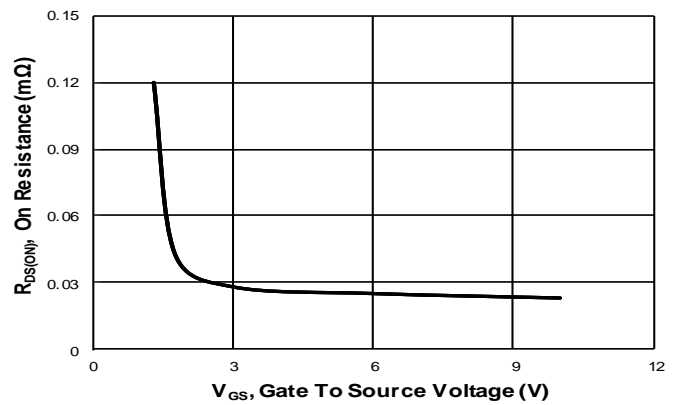
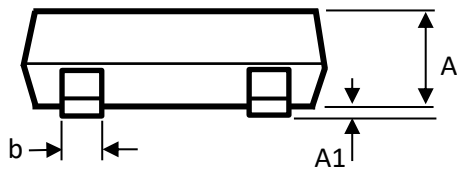
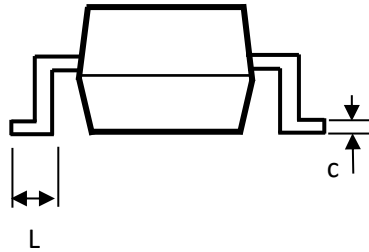
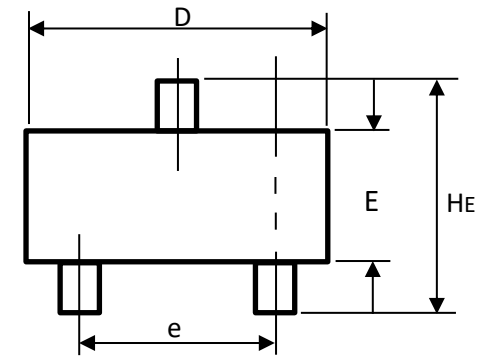


FIG.10 - On Resistance vs. Gate to Source Voltage





Package Outline Dimensions



SOT23-3L Package		
Dim	Min	Max
A	1.05	1.15
A1	0.00	0.10
b	0.30	0.50
c	0.10	0.20
D	2.82	3.02
E	1.50	1.70
e	1.80	2.00
L	0.30	0.60
HE	2.65	2.95
All Dimensions in mm		