

## Features

- High power and current handing capability
- Lead free product is acquired
- Surface mount package

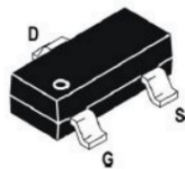
## Application

- Battery protection
- Load switch
- Power management

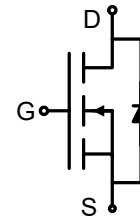
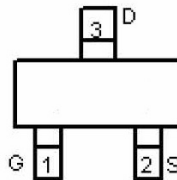


## Product Summary

$V_{DS}$	20	V
$R_{DS(on),TYP} @ V_{GS}=4.5 V$	22	m $\Omega$
$I_D$	4.5	A



SOT-23 top view



## Absolute Maximum Ratings ( $T_A=25^{\circ}C$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		$V_{DS}$	20	V
Gate-Source Voltage		$V_{GS}$	$\pm 12$	V
Continuous Drain Current	$T_A = 25^{\circ}C$	$I_D$	4.5	A
	$T_A = 70^{\circ}C$		3.6	
Drain Current-Pulsed (Note 1)		$I_{DM}$	13.5	A
Maximum Power Dissipation		$P_D$	1.25	W
Operating Junction and Storage Temperature Range		$T_J, T_{STG}$	-55 To 150	$^{\circ}C$

## Thermal Characteristic

Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	100	$^{\circ}C/W$
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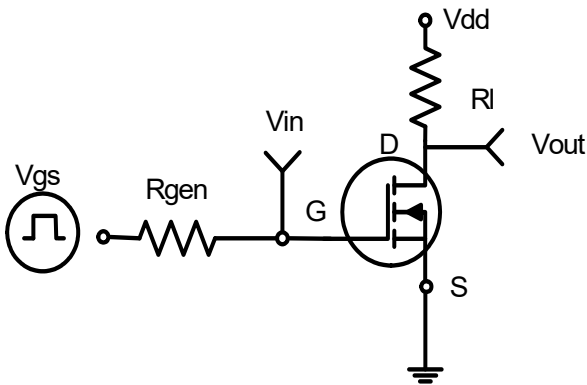
**Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	20		-	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =16V, V <sub>GS</sub> =0V	-	-	1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V	-	-	±100	nA
<b>On Characteristics (Note 3)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.45	0.65	1	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =2.5V, I <sub>D</sub> =3.5 A	-	27.8	38	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =4.5A	-	22	27	mΩ
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =4A	-	10	-	S
<b>Dynamic Characteristics (Note4)</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =8V, V <sub>GS</sub> =0V, F=1.0MHz	-	500	-	PF
Output Capacitance	C <sub>oss</sub>		-	300	-	PF
Reverse Transfer Capacitance	C <sub>rss</sub>		-	140	-	PF
<b>Switching Characteristics (Note 4)</b>						
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =10V, I <sub>D</sub> =1A V <sub>GS</sub> =4.5V, R <sub>GEN</sub> =6Ω	-	20	40	nS
Turn-on Rise Time	t <sub>r</sub>		-	18	40	nS
Turn-Off Delay Time	t <sub>d(off)</sub>		-	60	108	nS
Turn-Off Fall Time	t <sub>f</sub>		-	28	56	nS
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =3A, V <sub>GS</sub> =4.5V	-	10	15	nC
Gate-Source Charge	Q <sub>gs</sub>		-	2.3	-	nC
Gate-Drain Charge	Q <sub>gd</sub>		-	2.9	-	nC
<b>Drain-Source Diode Characteristics</b>						
Diode Forward Voltage (Note 3)	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =1A	-	-	1.2	V
Diode Forward Current (Note 2)	I <sub>S</sub>		-	-	1	A

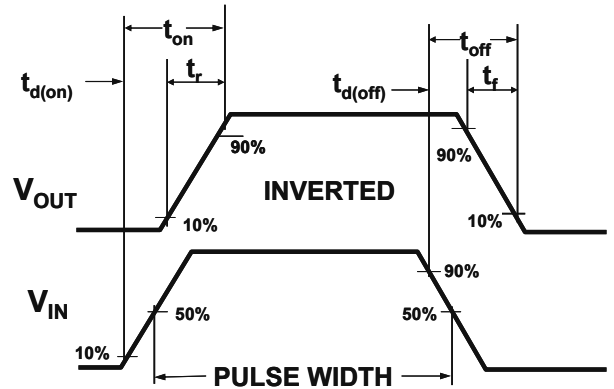
**Notes:**

1. Repetitive rating: pulse width limited by maximum junction temperature.
2. Surface mounted on FR4 Board, t ≤ 10 sec.
3. Pulse test: pulse width ≤ 300μs, duty cycle ≤ 2%.
4. Guaranteed by design, not subject to production

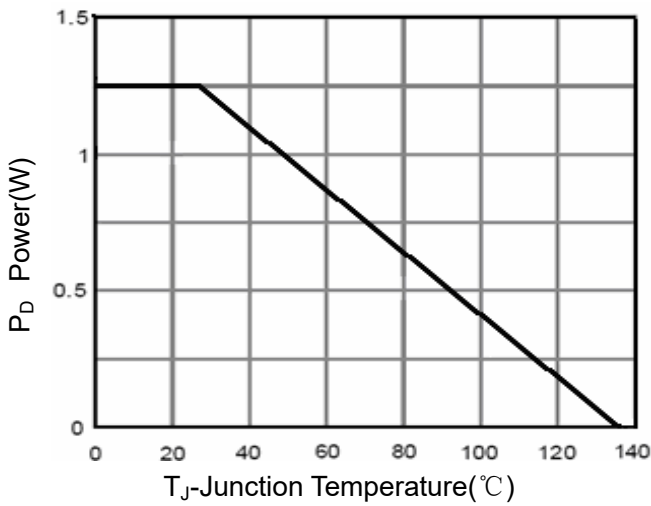
**Typical Electrical and Thermal Characteristics**



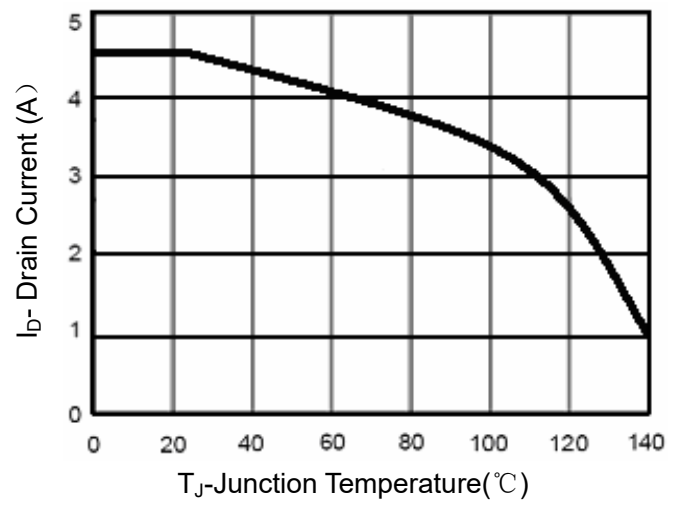
**Figure 1: Switching Test Circuit**



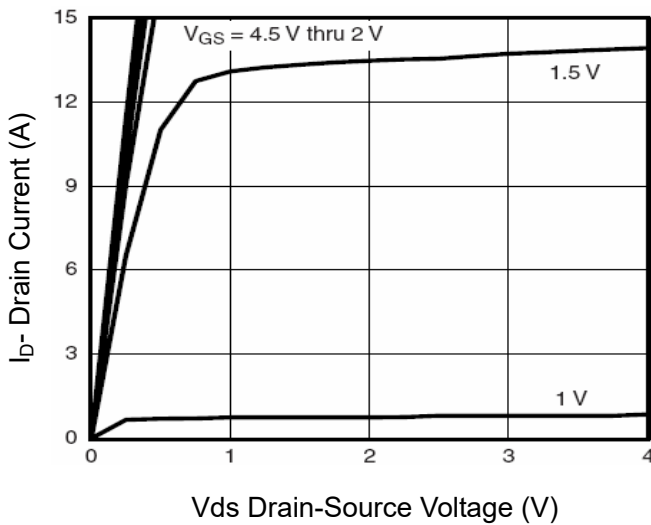
**Figure 2: Switching Waveforms**



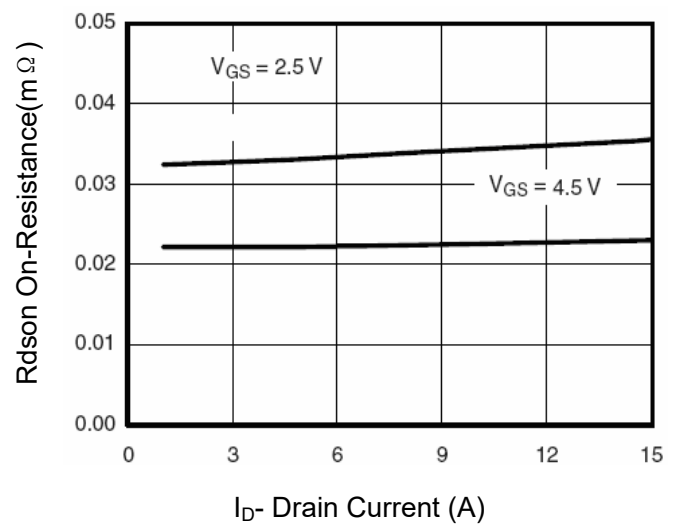
**Figure 3 Power Dissipation**



**Figure 4 Drain Current**



**Figure 5 Output CHARACTERISTICS**



**Figure 6 Drain-Source On-Resistance**

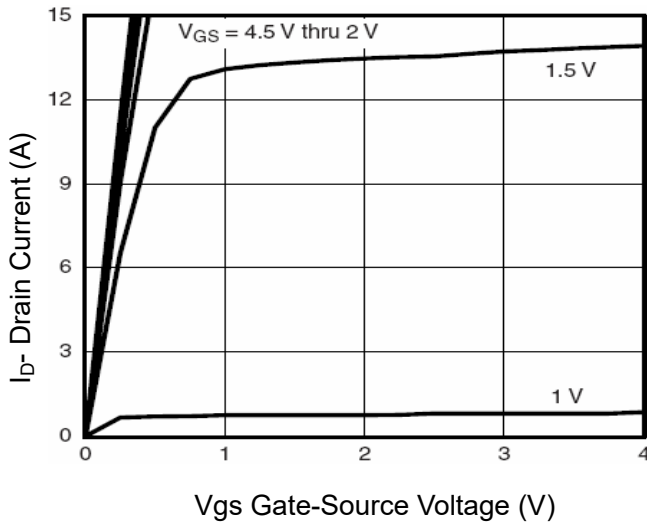


Figure 7 Transfer Characteristics

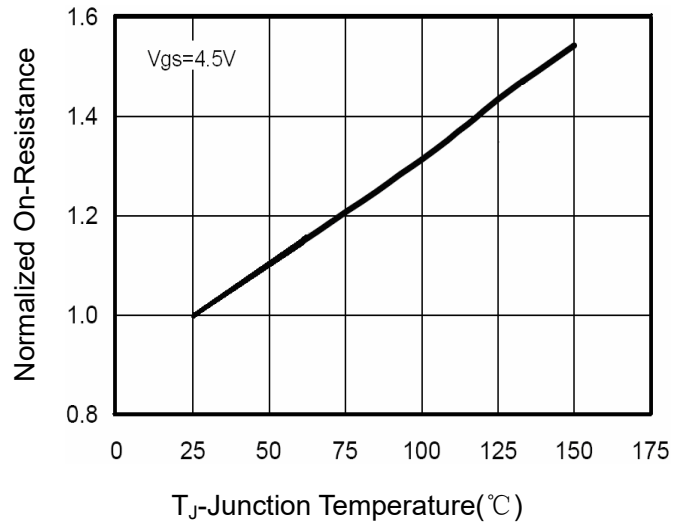


Figure 8 Drain-Source On-Resistance

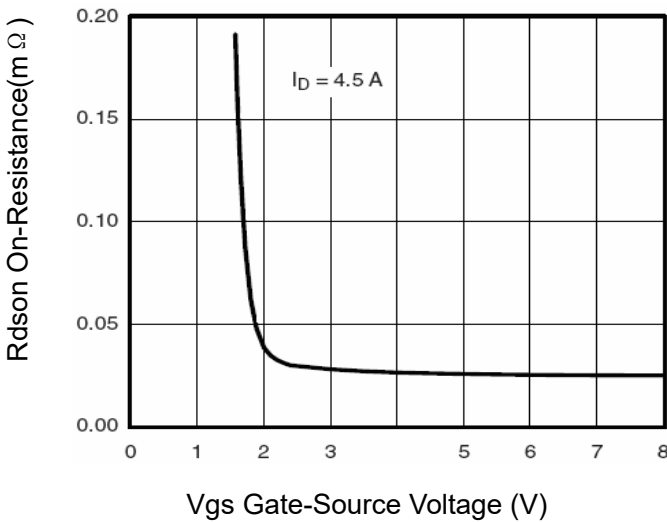


Figure 9 Rdson vs Vgs

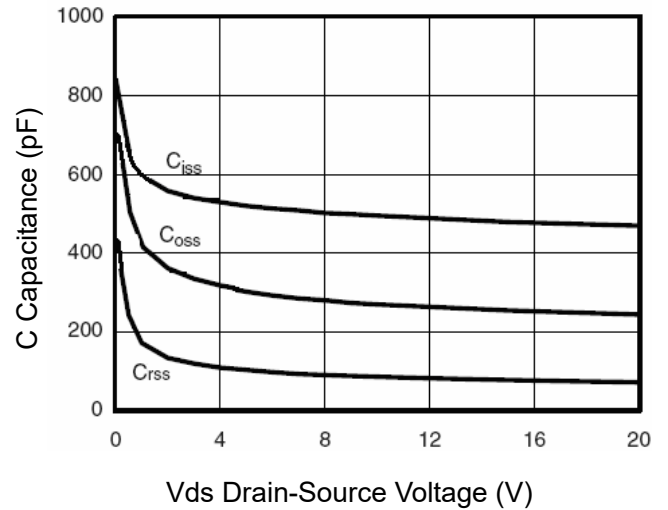


Figure 10 Capacitance vs Vds

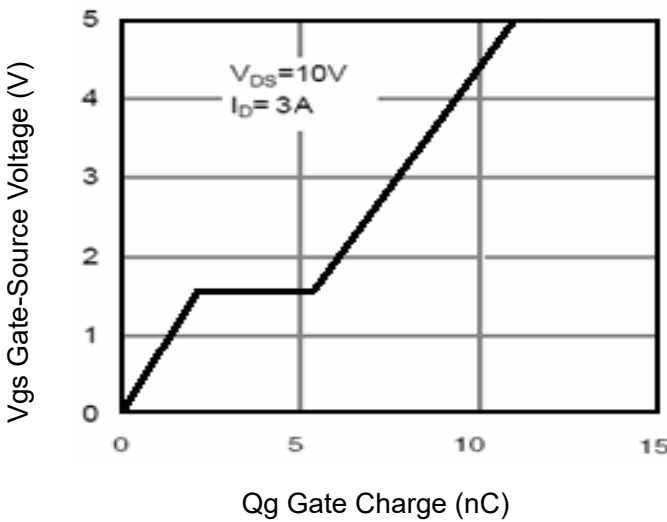


Figure 11 Gate Charge

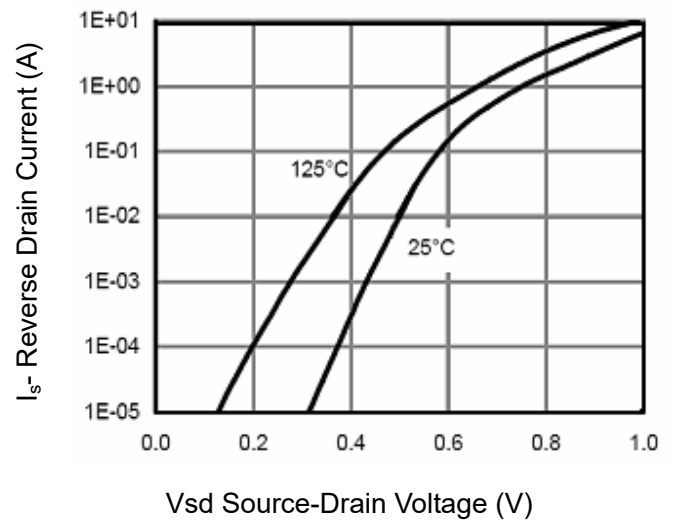


Figure 12 Source- Drain Diode Forward

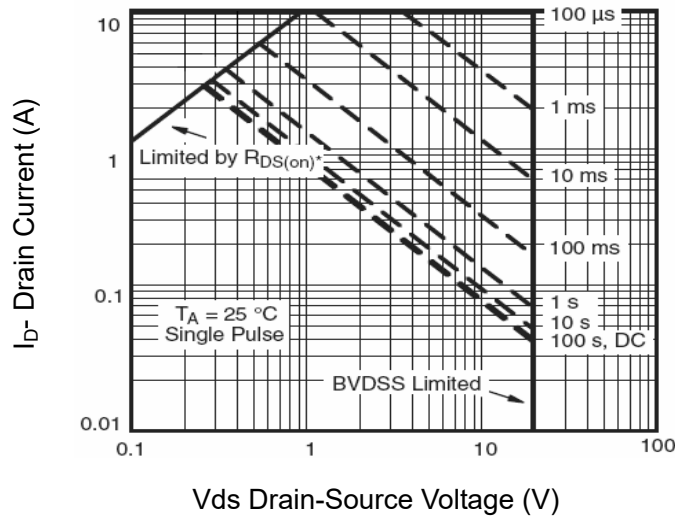


Figure 13 Safe Operation Area

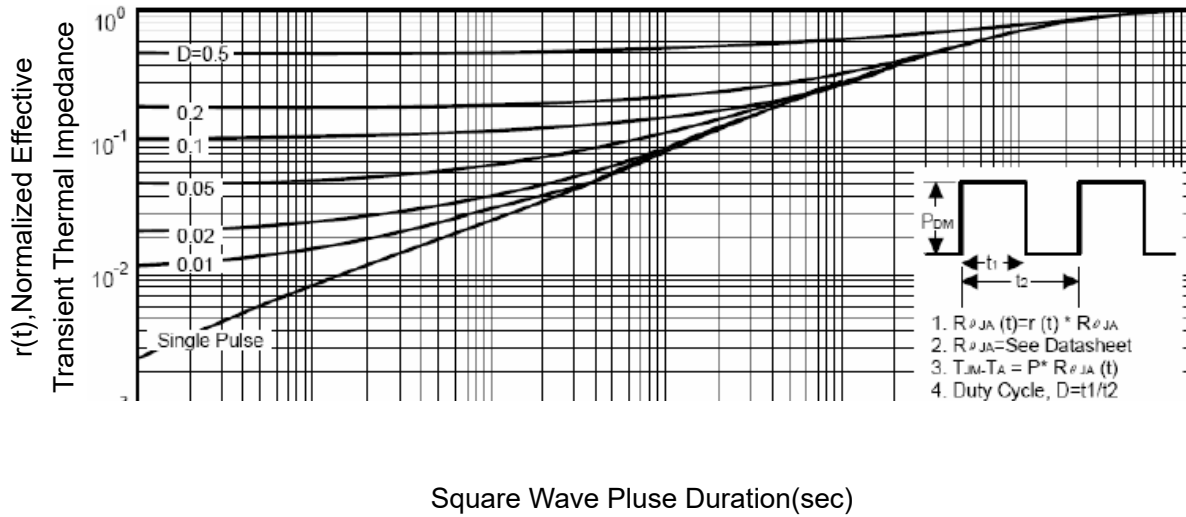
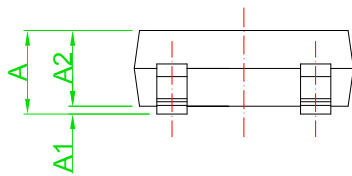
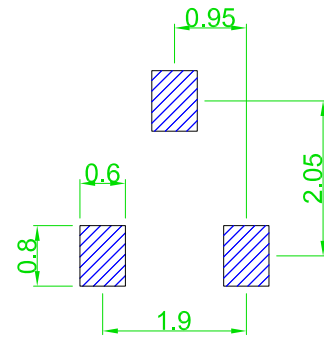
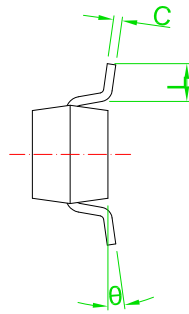
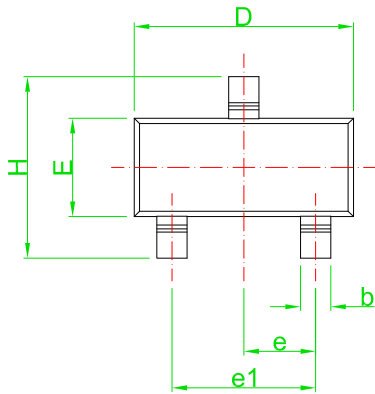


Figure 14 Normalized Maximum Transient Thermal Impedance

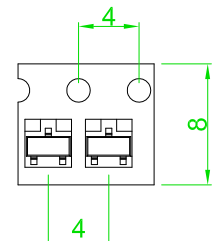
## Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM2300ZA-R	A0SHB	SOT23	Tape&Reel	3000/Reel

PACKAGE	MARKING
SOT23	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <b>A0SHB</b> </div>


**Recommended Land Pattern**

Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	0.90	1.15	0.035	0.045
A1	0.00	0.10	0.000	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.55	0.012	0.022
C	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
e	0.95 TYP		0.037 TYP	
e1	1.80	2.00	0.071	0.079
H	2.25	2.55	0.089	0.100
L	0.30	0.50	0.012	0.020
θ	0°	8°	0°	8°



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