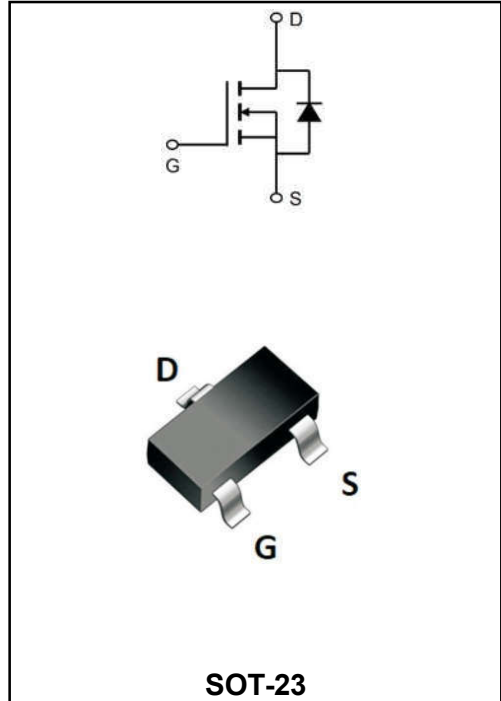


20V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

<b>I<sub>D</sub></b>	6.8A
<b>V<sub>DSS</sub></b>	20V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=4.5V)</sub></b>	< 18mΩ ( <b>Type: 12 mΩ</b> )



Application

- ◆ Lithium battery protection
- ◆ Wireless impact
- ◆ Mobile phone fast charging

Product Specification Classification

Part Number	Package	Marking	Pack
YFW2312A	SOT-23	AE9T	3000PCS/Tape

Maximum Ratings at T<sub>c</sub>=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V <sub>DS</sub>	20	V
Gate - Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current @T <sub>A</sub> =25°C	I <sub>D</sub>	6.8	A
Continuous Drain Current @T <sub>A</sub> =70°C	I <sub>D</sub>	6.0	A
Pulsed Drain Current <sup>2</sup>	I <sub>DM</sub>	30	A
Total Power Dissipation <sup>3</sup> @T <sub>A</sub> =25°C	P <sub>D</sub>	1.5	W
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to +150	°C
Thermal Resistance Junction-ambient <sup>1</sup>	R <sub>θJA</sub>	125	°C/W
Thermal Resistance Junction-ambient <sup>1</sup>	R <sub>θJC</sub>	85	°C/W

**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	$BV_{DSS}$	20	22	-	<b>V</b>
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	0.5	0.65	1.0	<b>V</b>
Static Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=7.6A$	$R_{DS(on)}$	-	12	18	<b>mΩ</b>
	$V_{GS}=2.5V, I_D=3.5A$		-	15.5	20	
Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$	$I_{DSS}$	-	-	1	<b>μA</b>
Gate-Body Leakage Current	$V_{GS}=\pm 10V, V_{DS}=0V$	$I_{GSS}$	-	-	$\pm 100$	<b>nA</b>
Input Capacitance	$V_{DS}=10V$ $V_{GS}=0V$ $f=1.0MHz$	$C_{iss}$	-	888	-	<b>μF</b>
Output Capacitance		$C_{oss}$	-	133	-	
Reverse Transfer Capacitance		$C_{rss}$	-	117	-	
Total Gate Charge	$V_{GS}=4.5V$ $V_{DS}=10V$ $I_D=6.8A$	$Q_g$	-	11.05	-	<b>nC</b>
Gate-Source Charge		$Q_{gs}$	-	1.73	-	
Gate-Drain Charge		$Q_{gd}$	-	3.1	-	
Turn-on delay time	$V_{GS}=4.5V$ $V_{DS}=10V$ $I_D=6.8A$ $R_{GEN}=3\Omega$	$t_{d(on)}$	-	7	-	<b>ns</b>
Turn-on Rise Time		$T_r$	-	46	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	30	-	
Turn-Off Fall Time		$t_f$	-	52	-	
Diode Forward Voltage	$V_{GS}=0V, I_S=7.6A$	$V_{SD}$	-	-	1.2	<b>V</b>

Note :

- 1、 The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$
- 3、 The power dissipation is limited by 150°C junction temperature
- 4、 The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation

Typical Characteristics

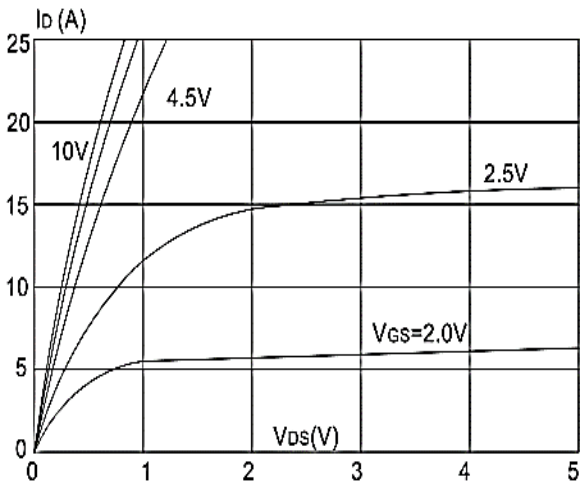


Figure 1: Output Characteristics

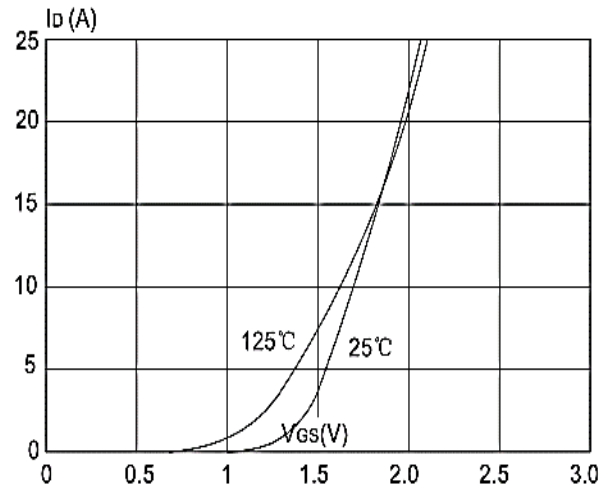


Figure 2: Typical Transfer Characteristics

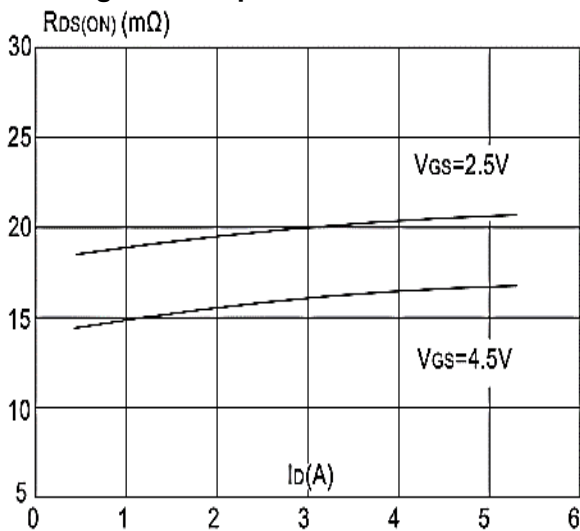


Figure 3: On-resistance vs. Drain Current

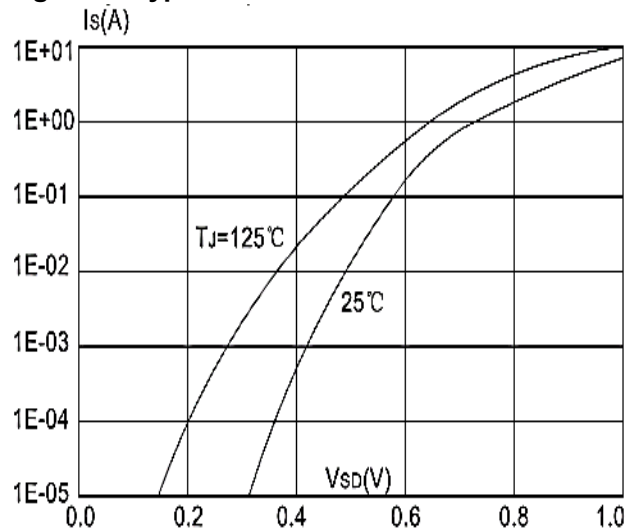


Figure 4: Body Diode Characteristics

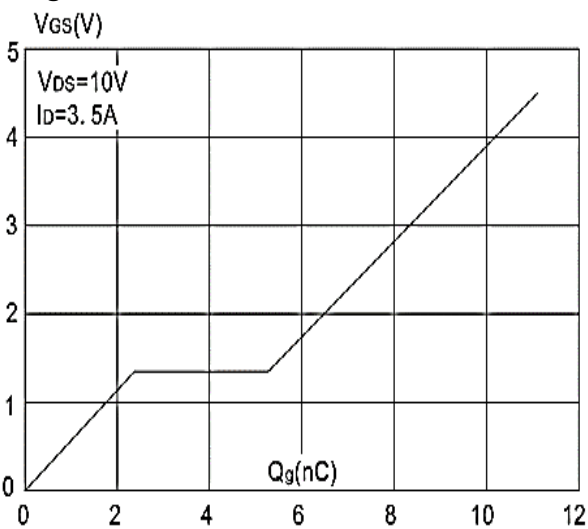


Figure 5: Gate Charge Characteristics

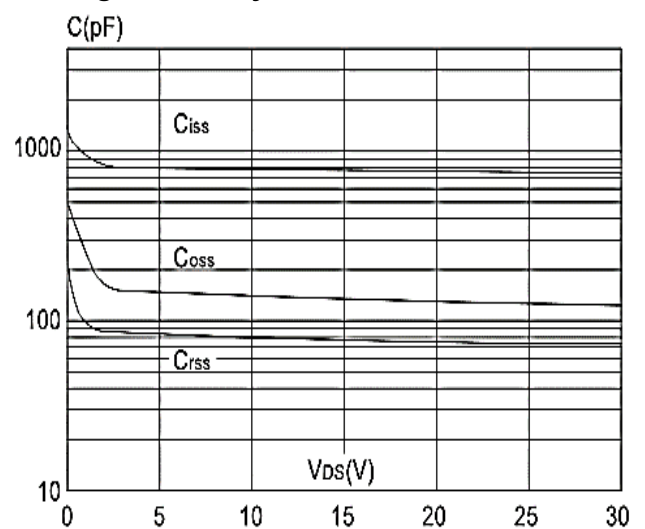


Figure 6: Capacitance Characteristics

Typical Characteristics

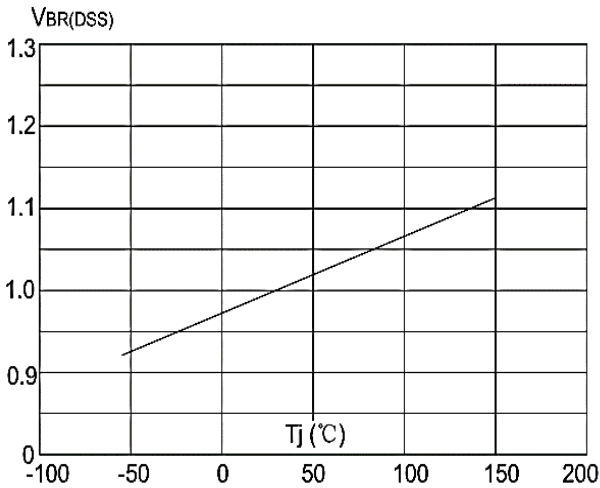


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

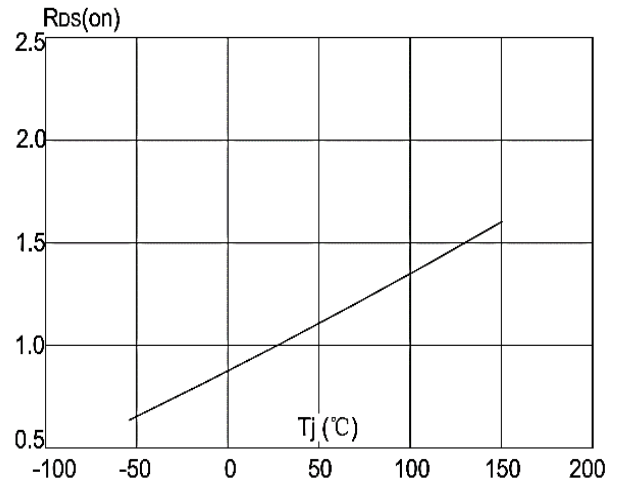


Figure 8: Normalized on Resistance vs. Junction Temperature

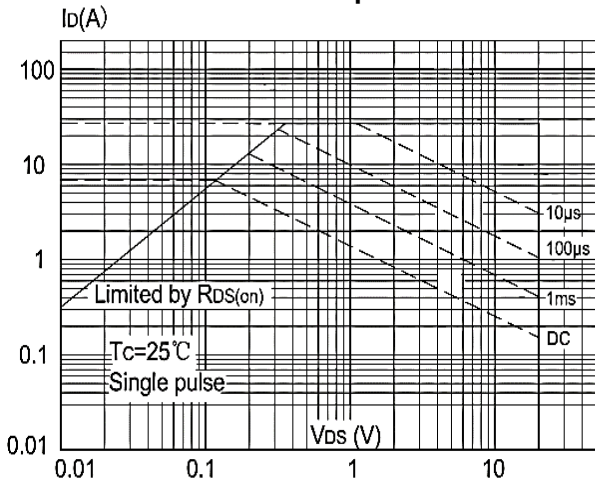


Figure 9: Maximum Safe Operating Area vs. Case Temperature

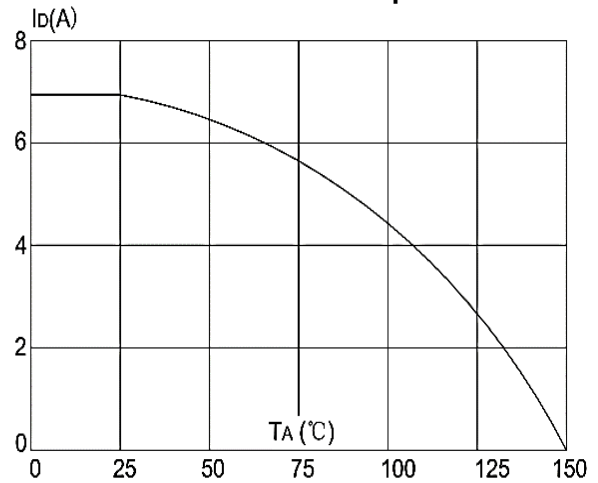


Figure 10: Maximum Continuous Drain Current

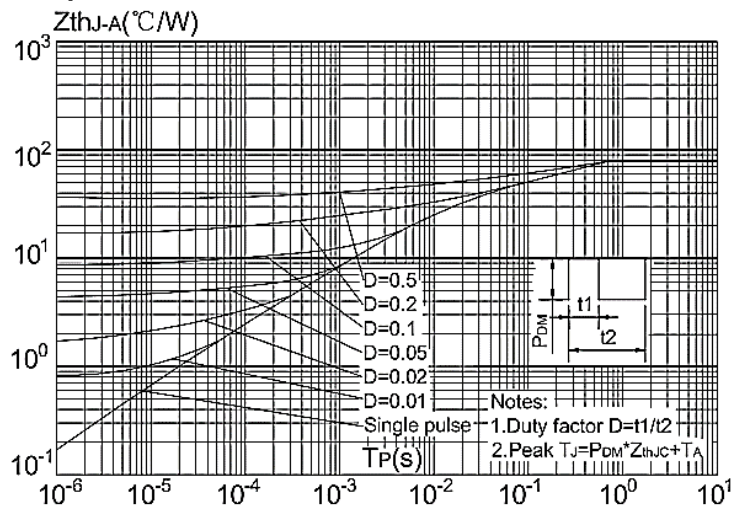
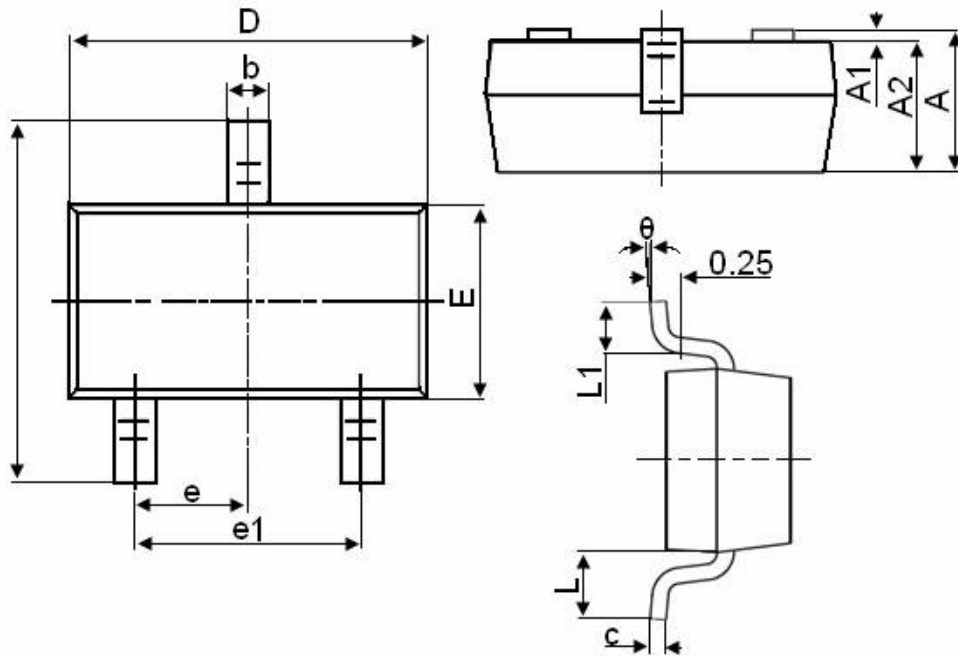


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

Package Outline

SOT-23



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
theta	0°	8°