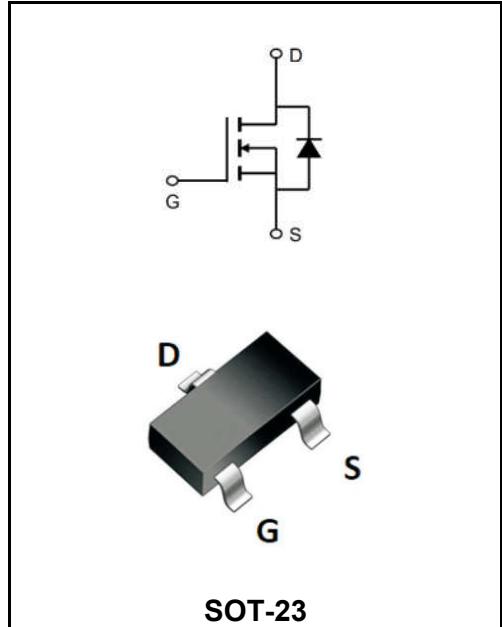


**20V N-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	4.5A
<b>V<sub>DSS</sub></b>	20V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=4.5V)</sub></b>	< 30mΩ ( <b>Type:22 mΩ</b> )



**Application**

- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply

<b>Marking Code</b>	
YFW2300A	2300

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

Characteristics	Symbols	Value	Units
Drain-Source Voltage	<b>V<sub>DS</sub></b>	20	<b>V</b>
Gate - Source Voltage	<b>V<sub>GS</sub></b>	±12	<b>V</b>
Continuous Drain Current, V <sub>GS</sub> @ 4.5V <sup>1</sup> @T <sub>A</sub> =25°C	<b>I<sub>D</sub></b>	4.5	<b>A</b>
Continuous Drain Current, V <sub>GS</sub> @ 4.5V <sup>1</sup> @T <sub>A</sub> =70°C	<b>I<sub>D</sub></b>	2.8	<b>A</b>
Pulsed Drain Current <sup>2</sup>	<b>I<sub>DM</sub></b>	14.4	<b>A</b>
Total Power Dissipation <sup>3</sup> @T <sub>A</sub> =25°C	<b>P<sub>D</sub></b>	1	<b>W</b>
Storage Temperature Range	<b>T<sub>STG</sub></b>	-55 to +150	<b>°C</b>
Operating Junction Temperature Range	<b>T<sub>J</sub></b>	-55 to +150	<b>°C</b>
Thermal Resistance Junction-ambient <sup>1</sup>	<b>R<sub>θJA</sub></b>	125	<b>°C/W</b>
Thermal Resistance Junction Case <sup>1</sup>	<b>R<sub>θJC</sub></b>	80	<b>°C/W</b>

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

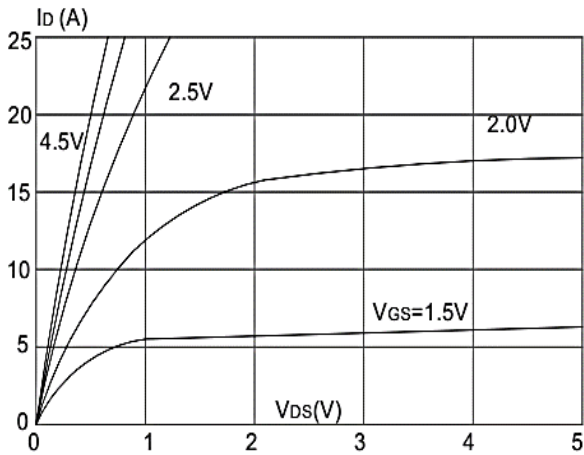
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	$BV_{DSS}$	20	22	-	<b>V</b>
Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=4.5V, I_D=3A$	$R_{DS(ON)}$	-	22	30	<b>mΩ</b>
	$V_{GS}=2.5V, I_D=2A$		-	28	35	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	0.5	0.75	1.2	<b>V</b>
Drain-Source Leakage Current	$V_{DS}=16V, V_{GS}=0V, T_J=25^\circ C$	$I_{DSS}$	-	-	1	<b>μA</b>
	$V_{DS}=16V, V_{GS}=0V, T_J=55^\circ C$		-	-	5	
Gate-Source Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	$I_{GSS}$	-	-	±100	<b>nA</b>
Forward Transconductance	$V_{DS}=5V, I_D=3A$	$g_{fs}$	-	10.5	-	<b>S</b>
Total Gate Charge(4.5V)	$V_{DS}=15V$ $V_{GS}=4.5V$ $I_D=3A$	$Q_g$	-	4.6	-	<b>nC</b>
Gate-Source Charge		$Q_{gs}$	-	0.7	-	
Gate-Drain Charge		$Q_{gd}$	-	1.5	-	
Turn-on delay time	$V_{DD}=10V$ $V_{GS}=4.5V$ $R_G=3.3\Omega$ $I_D=3A$	$t_{d(on)}$	-	1.6	-	<b>ns</b>
Rise Time		$T_r$	-	42	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	14	-	
Fall Time		$t_f$	-	7	-	
Input Capacitance	$V_{DS}=15V$ $V_{GS}=0V$ $f=1.0MHz$	$C_{iss}$	-	310	-	<b>μF</b>
Output Capacitance		$C_{oss}$	-	49	-	
Reverse Transfer Capacitance		$C_{rss}$	-	35	-	
Continuous Source Current <sup>1,4</sup>	$V_G=V_D=0V$ , Force Current	$I_S$	-	-	3.6	<b>A</b>
Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	$V_{SD}$	-	-	1.2	<b>V</b>

Note :

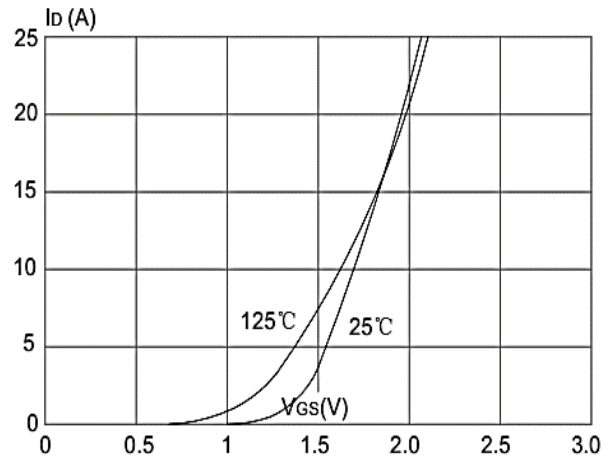
- 1、 The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width  $\cong 300\mu s$  , duty cycle  $\cong 2\%$
- 3、 The power dissipation is limited by 150°C junction temperature
- 4、 The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

**Ratings and Characteristic Curves**

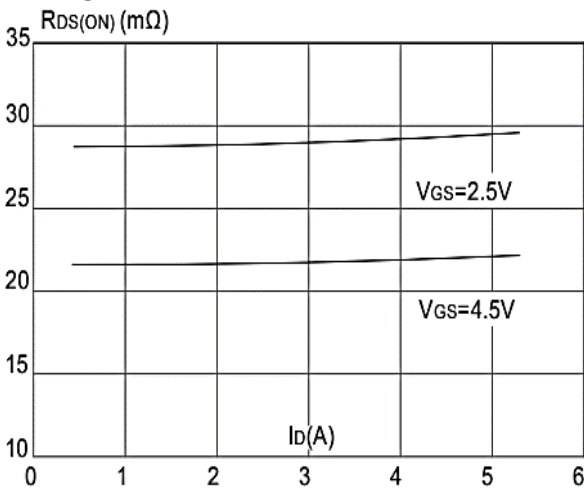
**Typical Characteristics**



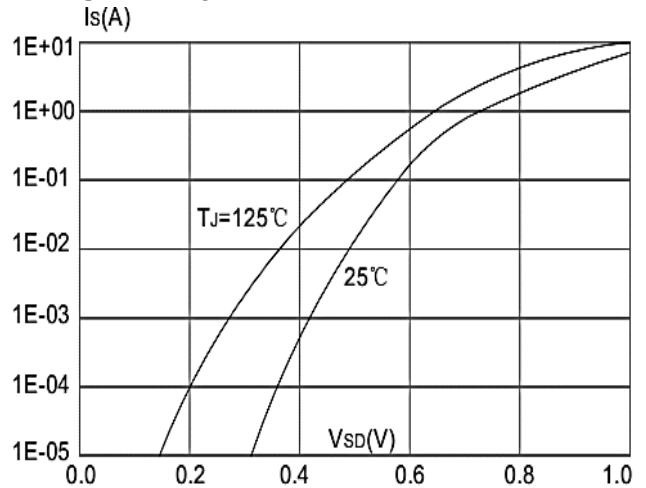
**Figure 1: Output Characteristics**



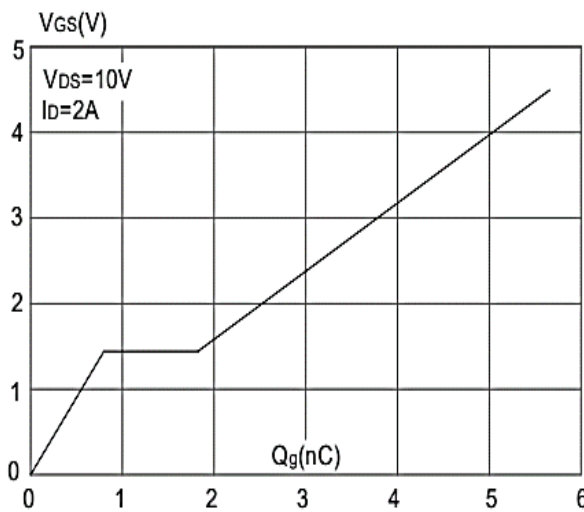
**Figure 2: Typical Transfer Characteristics**



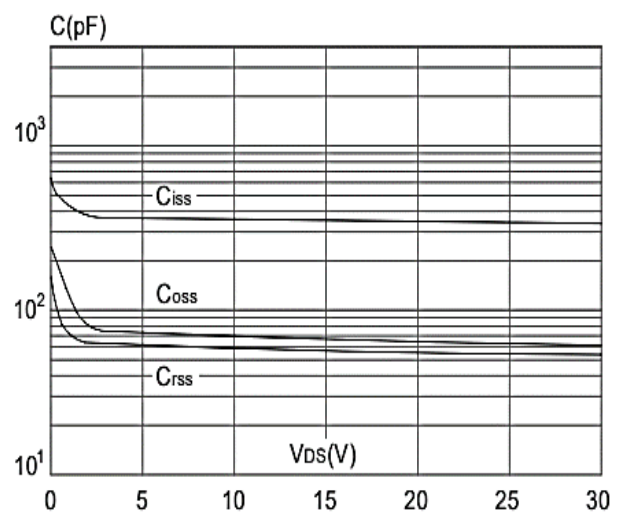
**Figure 3: On-resistance vs. Drain Current**



**Figure 4: Body Diode Characteristics**

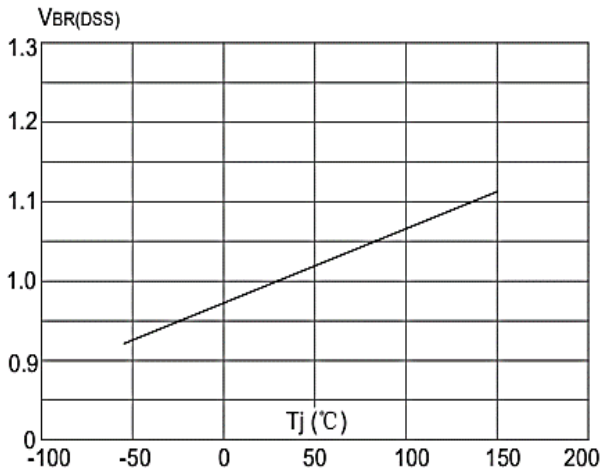


**Figure 5: Gate Charge Characteristics**

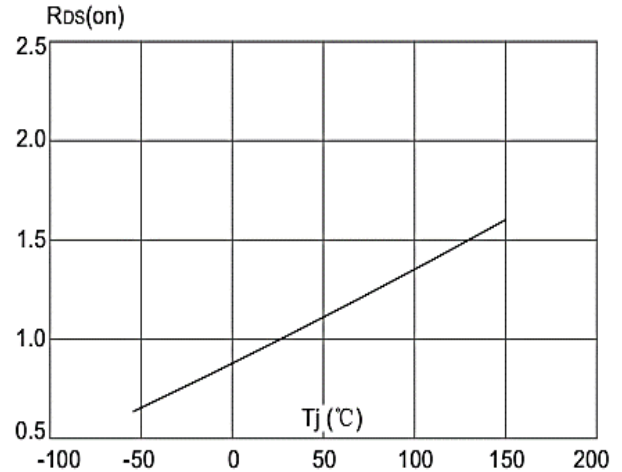


**Figure 6: Capacitance Characteristics**

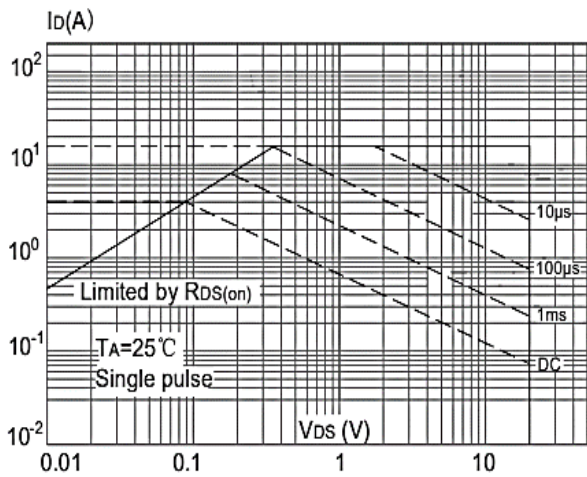
**Ratings and Characteristic Curves**



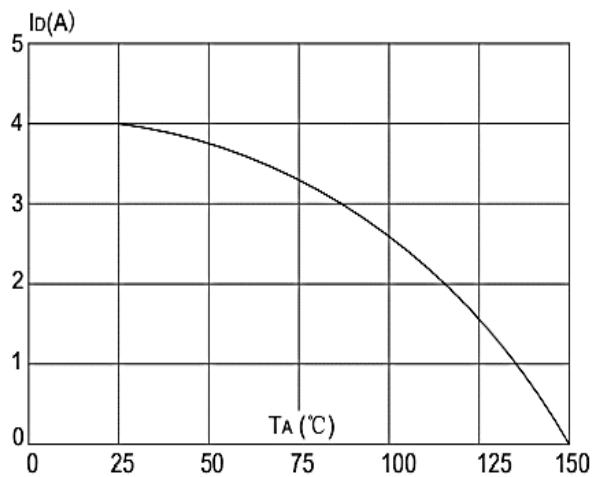
**Figure 7: Normalized Breakdown Voltage vs Junction Temperature**



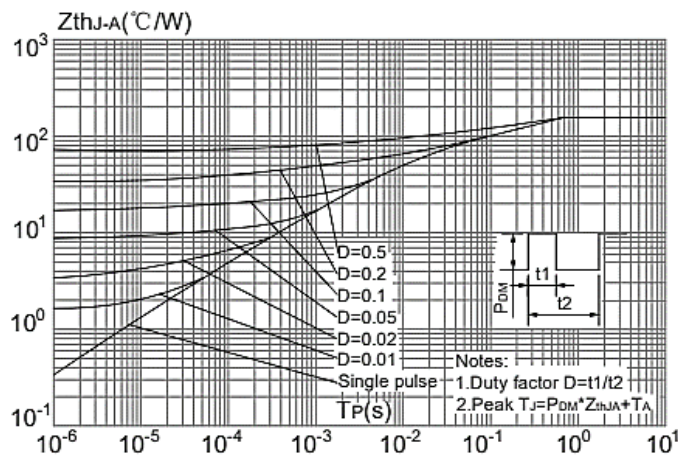
**Figure 8: Normalized on Resistance vs. Junction Temperature**



**Figure 9: Maximum Safe Operating Area**



**Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature**



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

**Ordering information**

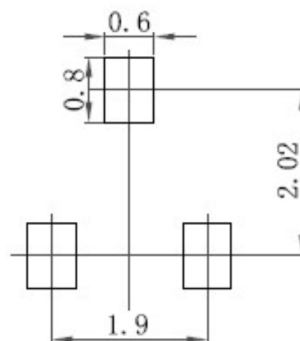
Package	Packing Description	Base Quantity	Packing Quantity
SOT-23	Tape/Reel,7"reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

**Package Dimensions**

**SOT-23**

Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	0.9	1.15	35	45
A1	0.1		3.9	
bp	0.38	0.48	15	19
C	0.09	0.15	3.54	5.9
D	2.8	3.0	110	118
E	1.2	1.4	47	55
E	1.9		75	
E1	0.95		37	
HE	2.1	2.55	83	100
Lp	0.15	0.45	5.9	18
Q	0.45	0.55	18	22
v	0.2		7.9	
W	0.1		4	

**The recommended mounting pad size**



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