

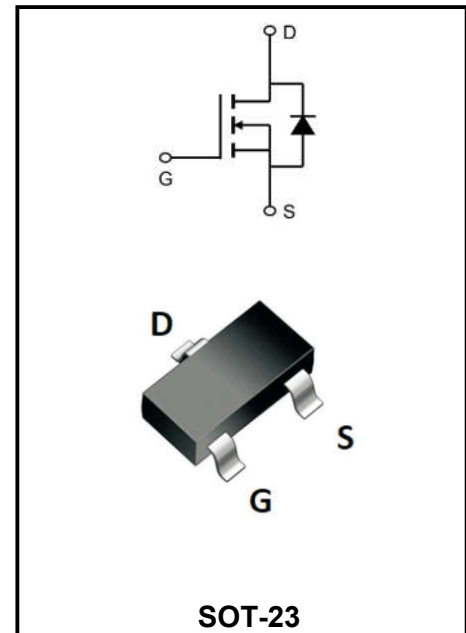
20V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	6.0A
V_{DSS}	20V
$R_{DS(on)-typ}(@V_{GS}=4.5V)$	< 30mΩ (Type:22 mΩ)

Application

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



Marking Code	
YFW2300-6A	2300.

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	20	V
Gate - Source Voltage	V_{GS}	±12	V
Continuous Drain Current, V_{GS} @ 4.5V ¹ @T _A =25°C	I_D	6.0	A
Continuous Drain Current, V_{GS} @ 4.5V ¹ @T _A =70°C	I_D	2.8	A
Pulsed Drain Current ²	I_{DM}	14.4	A
Total Power Dissipation ³ @T _A =25°C	P_D	1	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction-ambient ¹	$R_{\theta JA}$	125	°C/W
Thermal Resistance Junction Case ¹	$R_{\theta JC}$	80	°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	-	V
Static Drain-Source On-Resistance ²	$V_{GS}=4.5V, I_D=3A$	$R_{DS(ON)}$	-	22	30	mΩ
	$V_{GS}=2.5V, I_D=2A$		-	28	35	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	0.5	0.75	1.2	V
Drain-Source Leakage Current	$V_{DS}=16V, V_{GS}=0V, T_J=25^{\circ}C$	I_{DSS}	-	-	1	μA
	$V_{DS}=16V, V_{GS}=0V, T_J=55^{\circ}C$		-	-	5	
Gate-Source Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Forward Transconductance	$V_{DS}=5V, I_D=3A$	g_{fs}	-	10.5	-	S
Total Gate Charge(4.5V)	$V_{DS}=15V$ $V_{GS}=4.5V$ $I_D=3A$	Q_g	-	4.6	-	nC
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	-	ns
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	-	pF
Output Capacitance		C_{oss}	-	49	-	
Reverse Transfer Capacitance		C_{rss}	-	35	-	
Continuous Source Current ^{1,4}	$V_G=V_D=0V$, Force Current	I_S	-	-	3.6	A
Diode Forward Voltage ²	$V_{GS}=0V, I_S=1A, T_J=25^{\circ}C$	V_{SD}	-	-	1.2	V

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 $\leq 300\mu s$, 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.

Ratings and Characteristic Curves

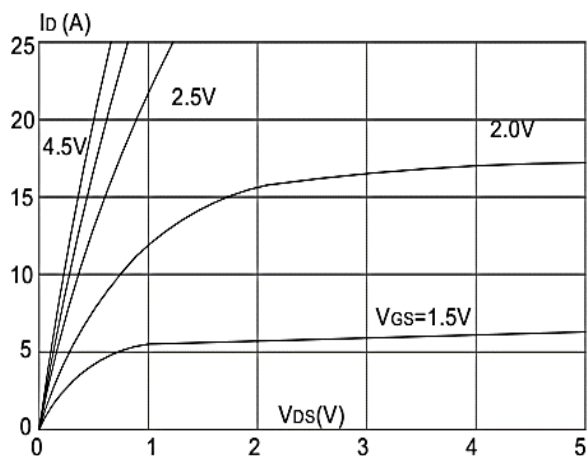


Figure1: Output Characteristics

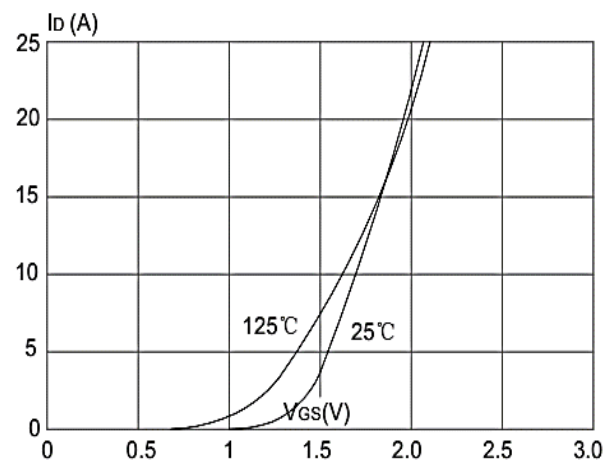


Figure 2: Typical Transfer Characteristics

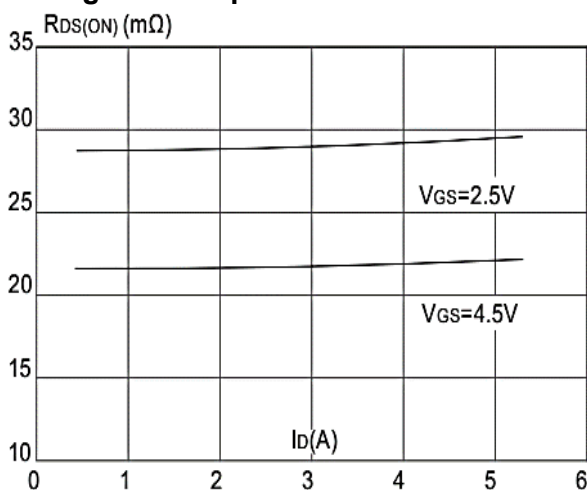


Figure 3: On-resistance vs. Drain Current

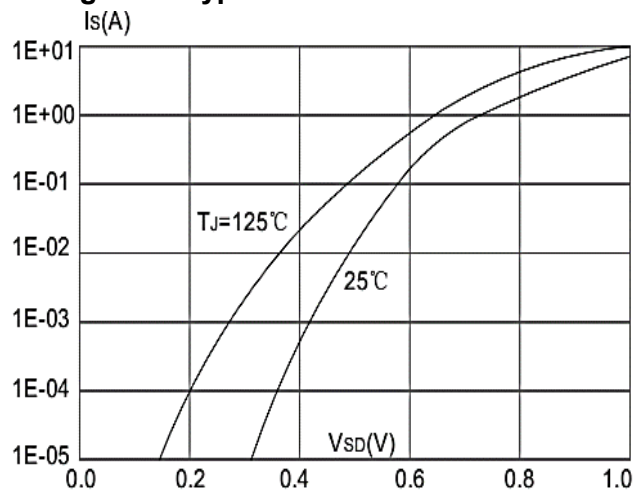


Figure 4: Body Diode Characteristics

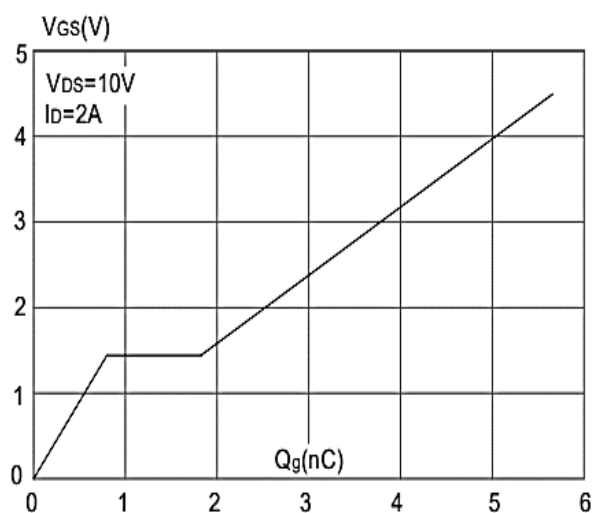


Figure 5: Gate Charge Characteristics

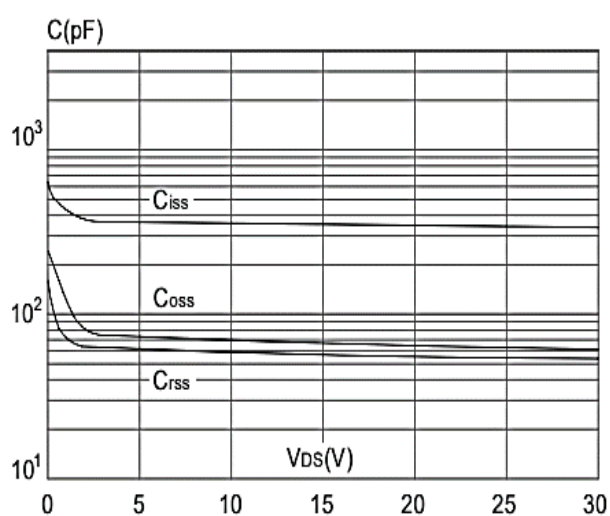


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

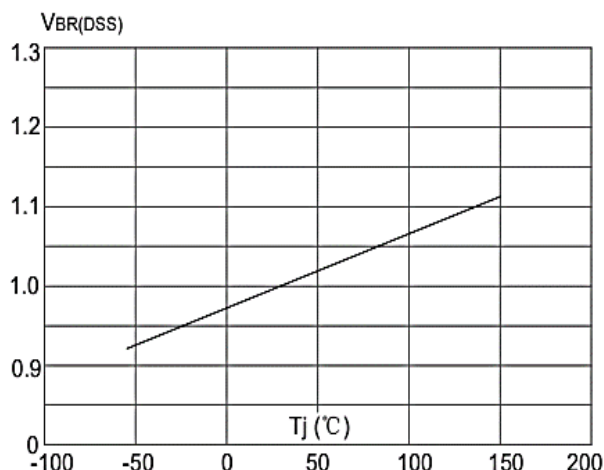


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

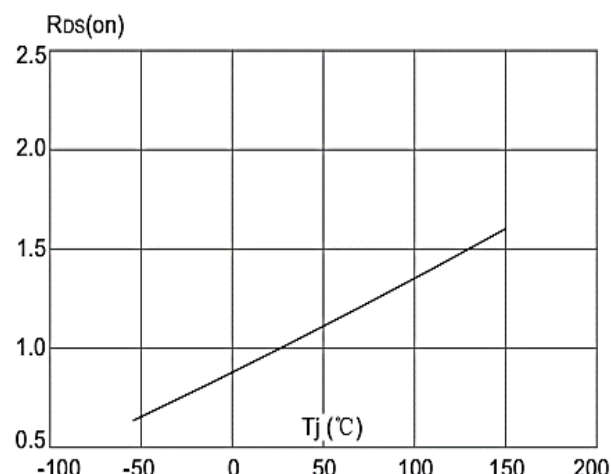


Figure 8: Normalized on Resistance vs. Junction Temperature

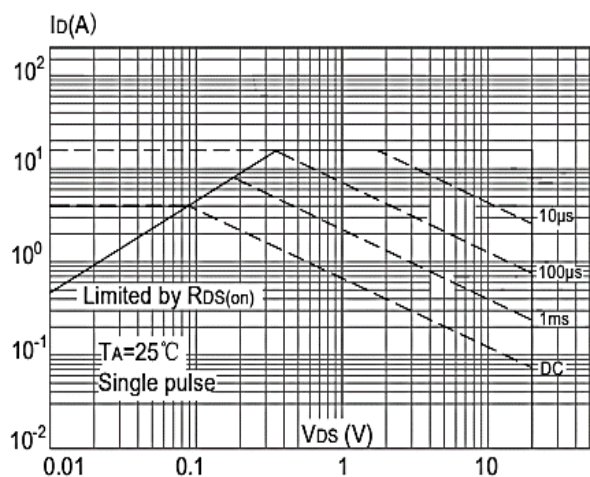


Figure 9: Maximum Safe Operating Area

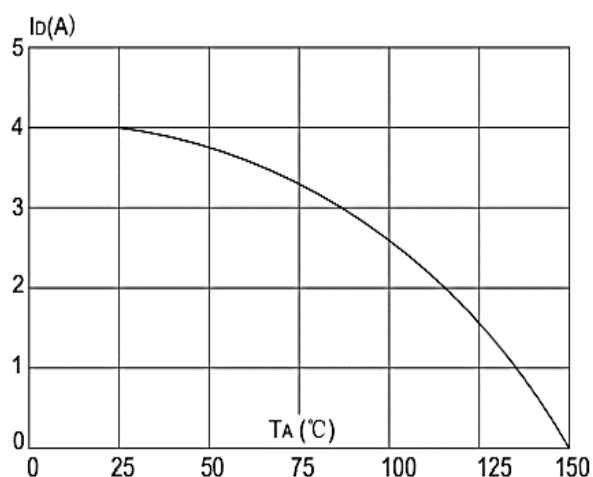


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

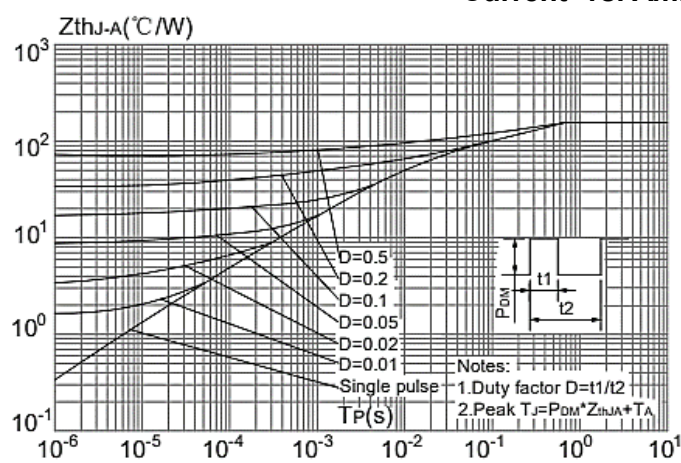


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

Ordering information

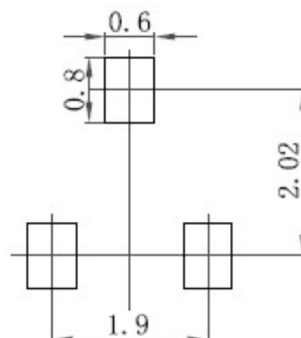
Package	Packing Description	Base Quantity	Packing Quantity
SOT-23	Tape/Reel, 7" reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

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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