

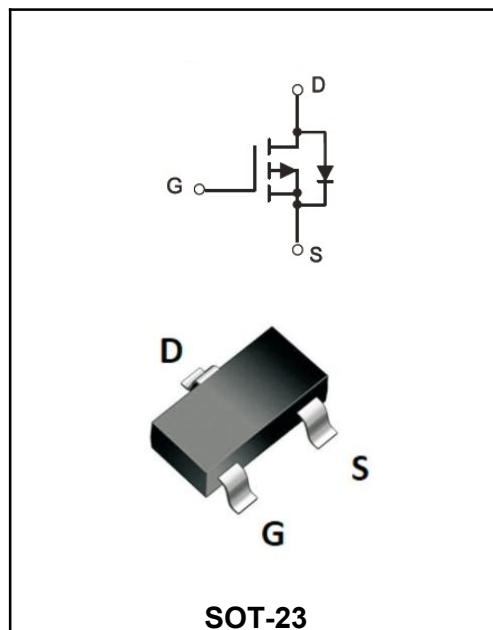
**-30V P-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

$I_D$	-4.8A
$V_{DSS}$	-30V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 50mΩ (Type:40 mΩ)
$R_{DS(on)-typ}(@V_{GS}=4.5V)$	< 55mΩ (Type:45 mΩ)

**Application**

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



**Marking Code**

YFW3401A

A19T

**Maximum Ratings at  $T_c=25^{\circ}\text{C}$  unless otherwise specified**

Characteristics	Symbols	Value	Units
Drain-Source Voltage	$V_{DS}$	-30	V
Gate - Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current, $V_{GS} @ -10V^1$ @ $T_c=25^{\circ}\text{C}$	$I_D$	-4.8	A
Continuous Drain Current, $V_{GS} @ -10V^1$ @ $T_c=100^{\circ}\text{C}$	$I_D$	-3.3	A
Pulsed Drain Current <sup>note1</sup>	$I_{DM}$	-20.4	A
Power Dissipation $T_A=25^{\circ}\text{C}$	$P_D$	2.15	W
Thermal Resistance Junction-Ambient <sup>1</sup>	$R_{\theta JA}$	125	$^{\circ}\text{C/W}$
Thermal Resistance Junction-Case <sup>1</sup>	$R_{\theta JC}$	104	$^{\circ}\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^{\circ}\text{C}$

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

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	<b>V(BR)DSS</b>	-30	-34	-	<b>V</b>
Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V$	<b>I<sub>DSS</sub></b>	-	-	1	<b><math>\mu A</math></b>
Gate to Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	<b>I<sub>GSS</sub></b>	-	-	$\pm 100$	<b>nA</b>
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	<b>V<sub>GS(th)</sub></b>	-0.5	-1.0	-1.5	<b>V</b>
Static Drain-Source on-Resistance note2	$V_{GS}=-10V, I_D=-5A$	<b>R<sub>DS(ON)</sub></b>	-	40	50	<b>m<math>\Omega</math></b>
	$V_{GS}=-4.5V, I_D=-4A$		-	45	55	
	$V_{GS}=-2.5V, I_D=-1A$		-	55	80	
Input Capacitance	$V_{DS}=-15V$ $V_{GS}=0V$ $f=1MHz$	<b>C<sub>iss</sub></b>	-	745	-	<b>pF</b>
Output Capacitance		<b>C<sub>oss</sub></b>	-	70	-	
Reverse Transfer Capacitance		<b>C<sub>rss</sub></b>	-	57	-	
Total Gate Charge	$V_{DS}=-15V$ $V_{GS}=-10V$ $I_D=-5.1A$	<b>Q<sub>g</sub></b>	-	8	-	<b>nC</b>
Gate-Source Charge		<b>Q<sub>gs</sub></b>	-	1.8	-	
Gate-Drain("Miller") Charge		<b>Q<sub>gd</sub></b>	-	2.7	-	
Turn-on delay time	$V_{DD}=-15V$ $V_{GS}=-10V$ $I_D=-1A$ $R_{GEN}=2.5\Omega$	<b>t<sub>d(on)</sub></b>	-	7	-	<b>ns</b>
Turn-on Rise Time		<b>T<sub>r</sub></b>	-	3	-	
Turn-Off Delay Time		<b>t<sub>d(OFF)</sub></b>	-	30	-	
Turn-Off Fall Time		<b>t<sub>f</sub></b>	-	12	-	
Maximum Continuous Drain to Source Diode Forward Current		<b>I<sub>S</sub></b>	-	-	-4.8	<b>A</b>
Maximum Pulsed Drain to Source Diode Forward Current		<b>I<sub>SM</sub></b>	-	-	-16.4	<b>A</b>
Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=-5.1A$	<b>V<sub>SD</sub></b>	-	-0.8	-1.2	<b>V</b>

Note :

- 1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 20Z 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

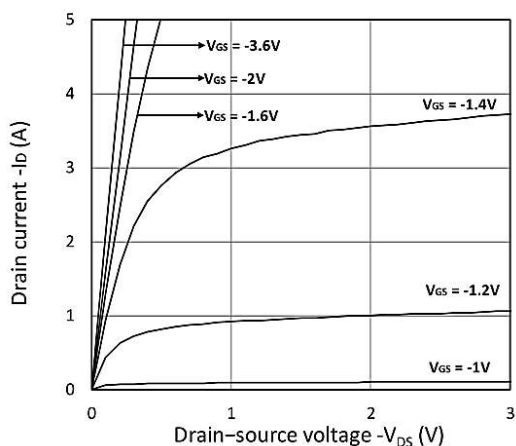


Figure 1. Output Characteristics

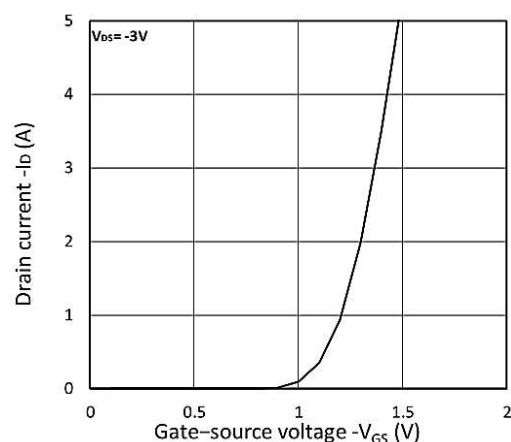


Figure 2. Transfer Characteristics

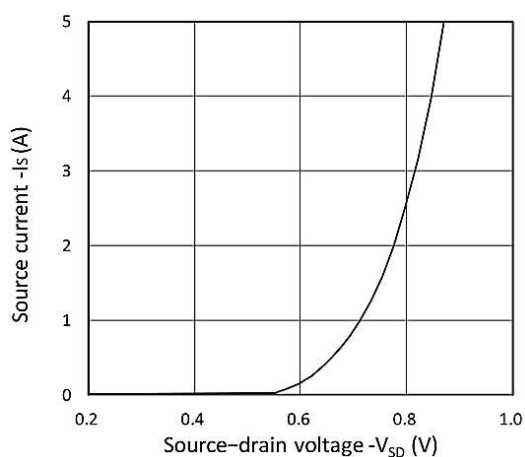


Figure 3. Forward Characteristics of Reverse

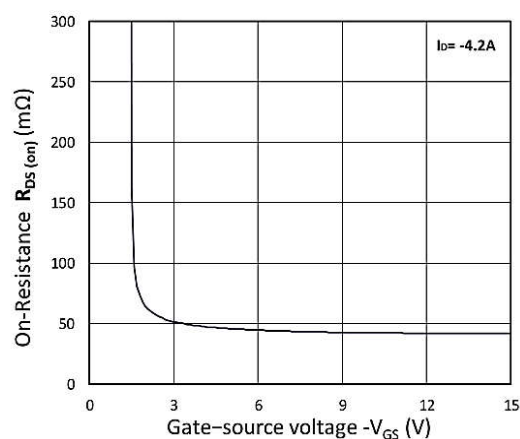


Figure 4. R\_DS(ON) vs. V\_GS

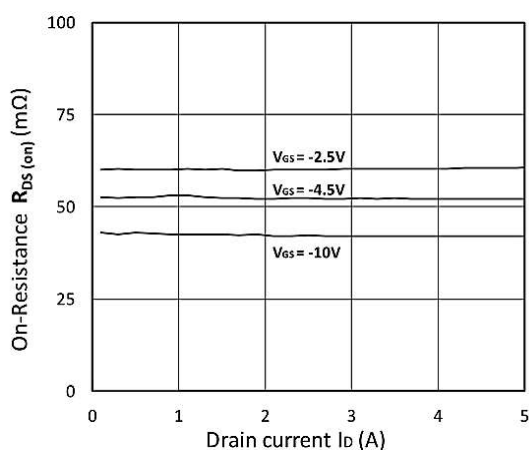


Figure 5. R\_DS(ON) vs. I\_D

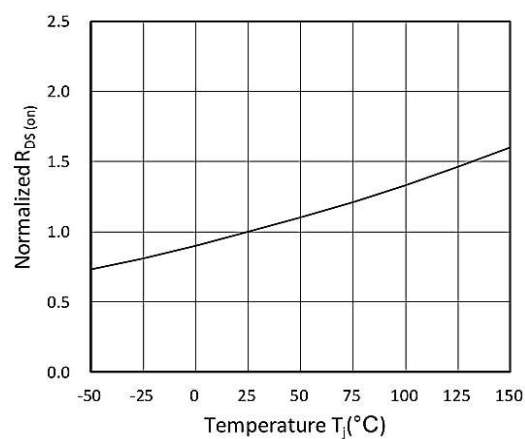


Figure 6. Normalized R\_DS(on) vs. Temperature

## Ratings and Characteristic Curves

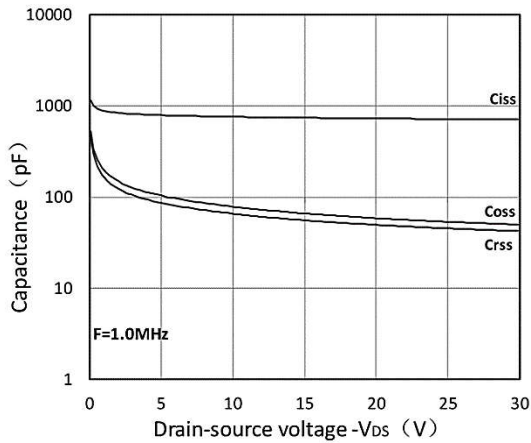


Figure 7. Capacitance Characteristics

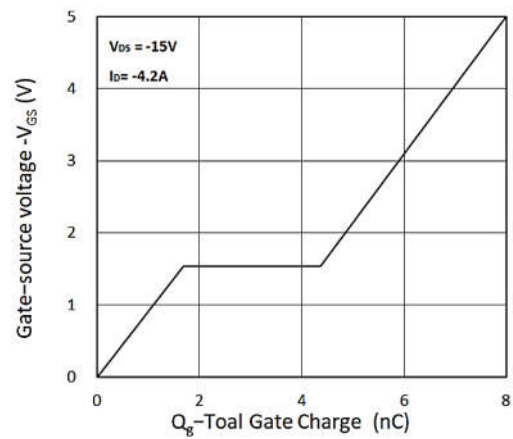


Figure 8. Gate Charge Characteristics

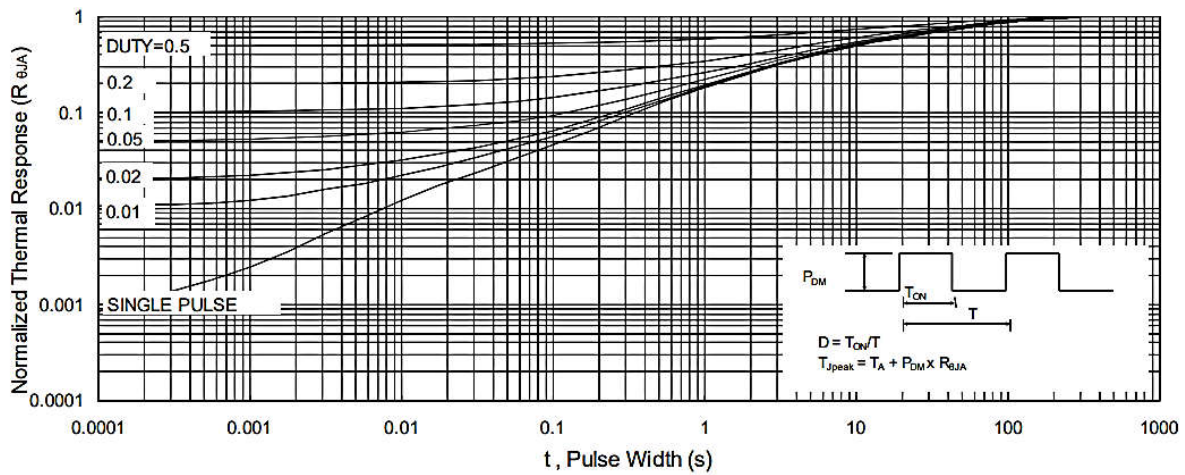


Figure 9 Normalized Maximum Transient Thermal Impedance

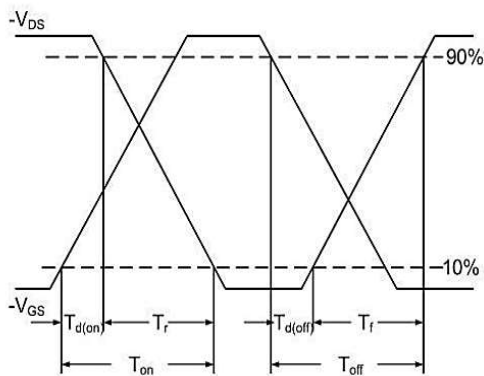


Figure.10 Switching Time Waveform

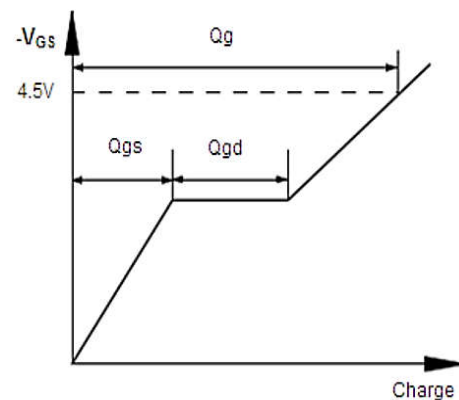


Figure.11 Gate Charge Waveform

## Ordering information

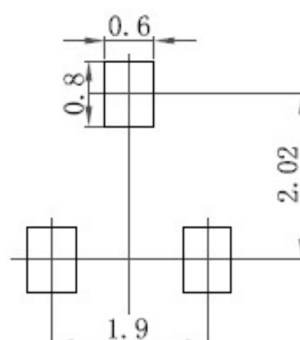
Package	Packing Description	Base Quantity	Packing Quantity
SOT-23	Tape/Reel, 7" reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

## 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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