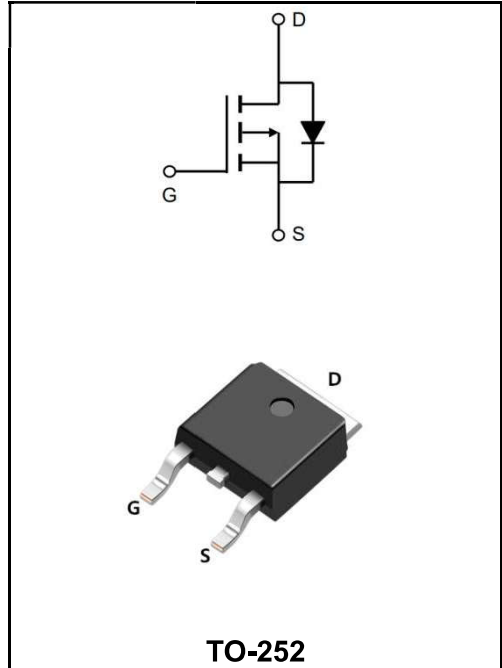


**-20V P-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	-100A
<b>V<sub>DSS</sub></b>	-20V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=-4.5V)</sub></b>	< 6.5mΩ ( <b>Type:4.5 mΩ</b> )



**Application**

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

**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW100P02AD	TO-252	YFW 100P02AD XXXXX	2500PCS/Tape

**Maximum Ratings at T<sub>c</sub>=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>C</sub> =25°C	<b>I<sub>D</sub></b>	-100	<b>A</b>
Continuous Drain Current, V <sub>GS</sub> @ -4.5V <sup>1</sup> @T <sub>C</sub> =70°C	<b>I<sub>D</sub></b>	-40	<b>A</b>
Pulsed Drain Current <sup>2</sup>	<b>I<sub>DM</sub></b>	-300	<b>A</b>
Total Power Dissipation <sup>3</sup> @T <sub>C</sub> =25°C	<b>P<sub>D</sub></b>	30	<b>W</b>
Total Power Dissipation <sup>3</sup> @T <sub>C</sub> =70°C	<b>P<sub>D</sub></b>	19	<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>	62.5	<b>°C/W</b>
Thermal Resistance Junction to Case <sup>1</sup>	<b>R<sub>θJC</sub></b>	1.1	<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	-	V
$BV_{DSS}$ Temperature Coefficient	Reference to 25°C, $I_D=-1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	-0.012	-	V/°C
Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=-4.5V, I_D=-15A$	$R_{DS(ON)}$	-	4.5	6.5	mΩ
	$V_{GS}=-2.5V, I_D=-10A$		-	6.0	8.0	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-0.45	-0.65	-1.2	V
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	2.94	-	mV/°C
Drain-Source Leakage Current	$V_{DS}=-20V, V_{GS}=0V, T_J=25^\circ C$	$I_{DSS}$	-	-	1	μA
Gate -Source Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	$I_{GSS}$	-	-	±100	nA
Forward Transconductance	$V_{DS}=-5V, I_D=-10A$	$g_{fs}$	-	-	-	S
Total Gate Charge(-4.5V)	$V_{DS}=-15V$ $V_{GS}=-4.5V$ $I_D=-10A$	$Q_g$	-	43	-	nC
Gate-Source Charge		$Q_{GS}$	-	63	-	
Gate-Drain Charge		$Q_{gd}$	-	9.1	-	
Turn-on delay time	$V_{DD}=-10V$ $V_{GS}=-4.5V$ $I_D=-10A$ $R_G=3.3\Omega$	$t_{d(on)}$	-	13	-	ns
Rise Time		$T_r$	-	15.8	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	76.8	-	
Fall Time		$t_f$	-	193	-	
Input Capacitance	$V_{DS}=-15V$ $V_{GS}=0V$ $f=1MHz$	$C_{iss}$	-	186.4	-	pF
Output Capacitance		$C_{oss}$	-	5783	-	
Reverse Transfer Capacitance		$C_{rss}$	-	509	-	
Continuous Source Current <sup>1,4</sup>	$V_G=V_D=0V, \text{Force Current}$	$I_S$	-	431	-10.7	A
Pulsed Source Current <sup>2,4</sup>		$I_{SM}$	-	-	-60	A
Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=-1A, T_J=25^\circ C$	$V_{SD}$	-	-	-1.2	V
Reverse Recovery Time	$I_F=-10A, dI/dt=100A/\mu s,$ $T_J=25^\circ C$	$t_{rr}$	-	27	-	ns
Reverse Recovery Charge		$Q_{rr}$	-	17.8	-	nC

Note :

- 1、 The data tested by surface mounted on a 1 inch 2 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 I D and I DM , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

Typical Characteristics

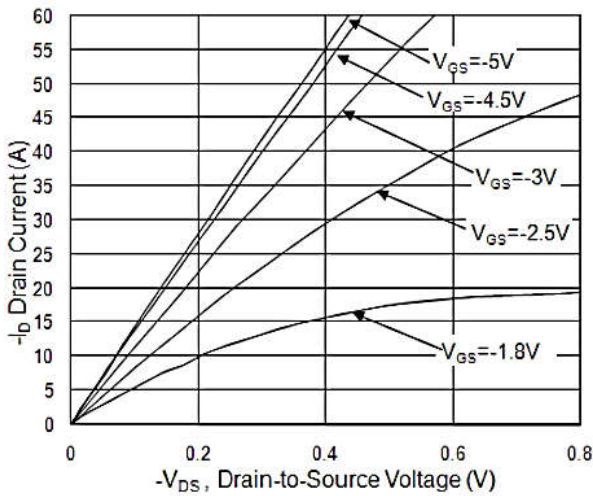


Fig.1 Typical Output Characteristics

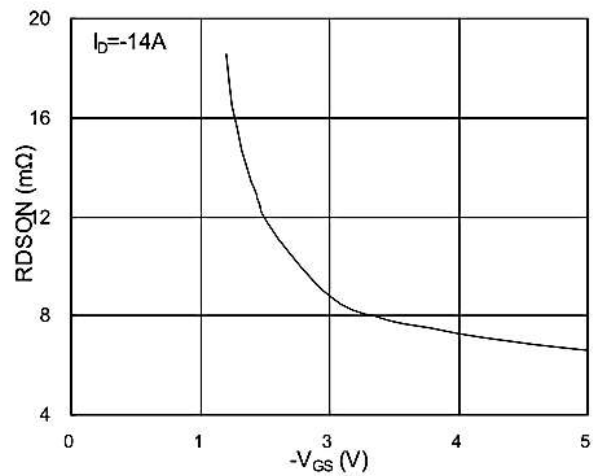


Fig.2 On-Resistance vs. G-S Voltage

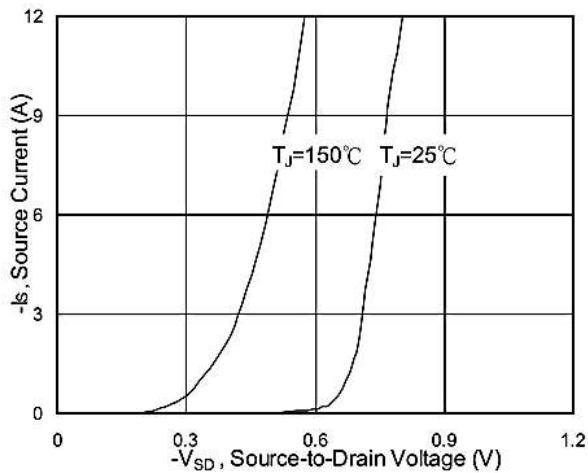


Fig.3 Forward Characteristics of Reverse

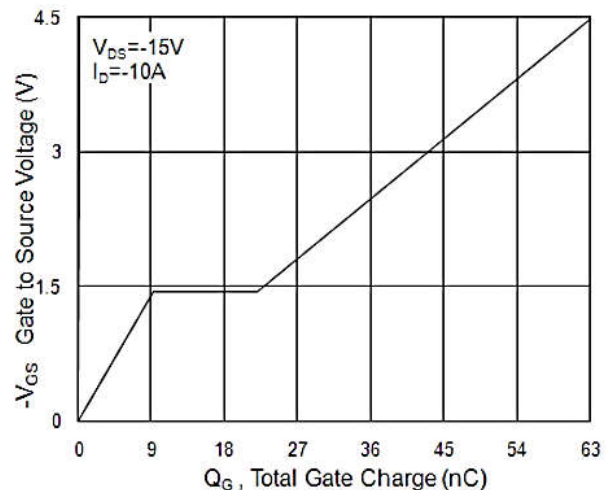


Fig.4 Gate-charge Characteristics

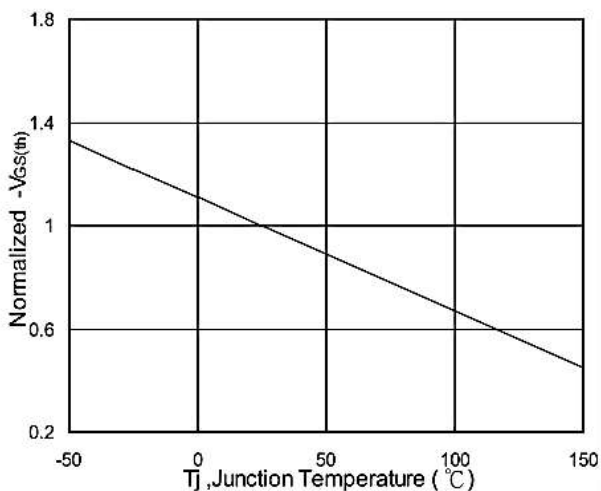


Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$

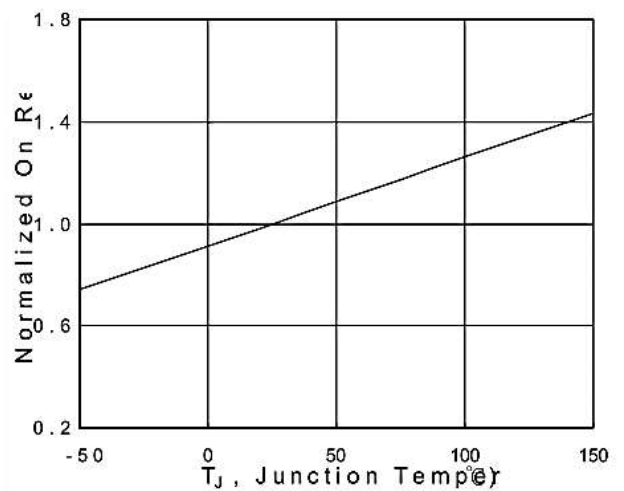
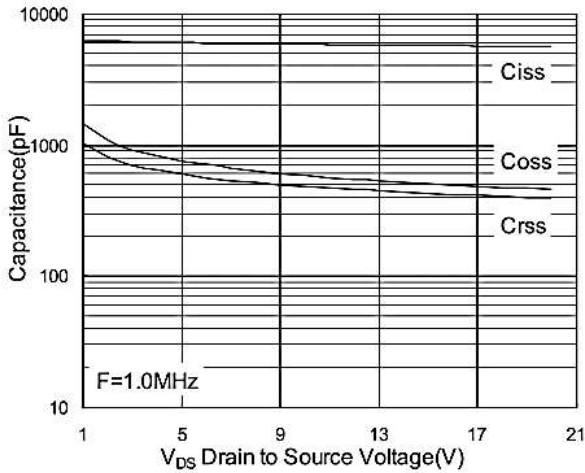
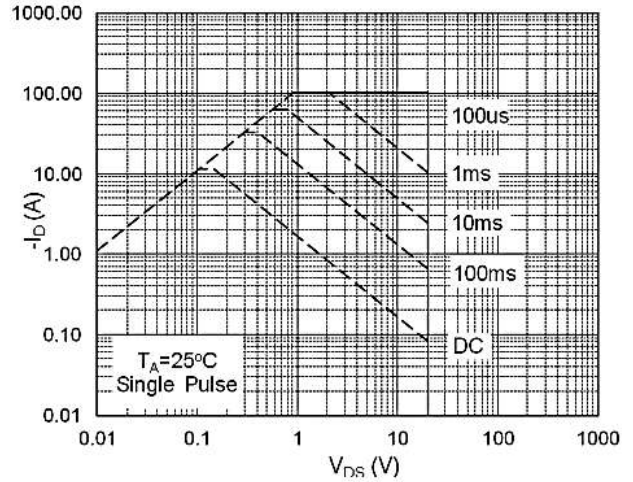


Fig.6 Normalized  $R_{DS(on)}$  vs.  $T_J$

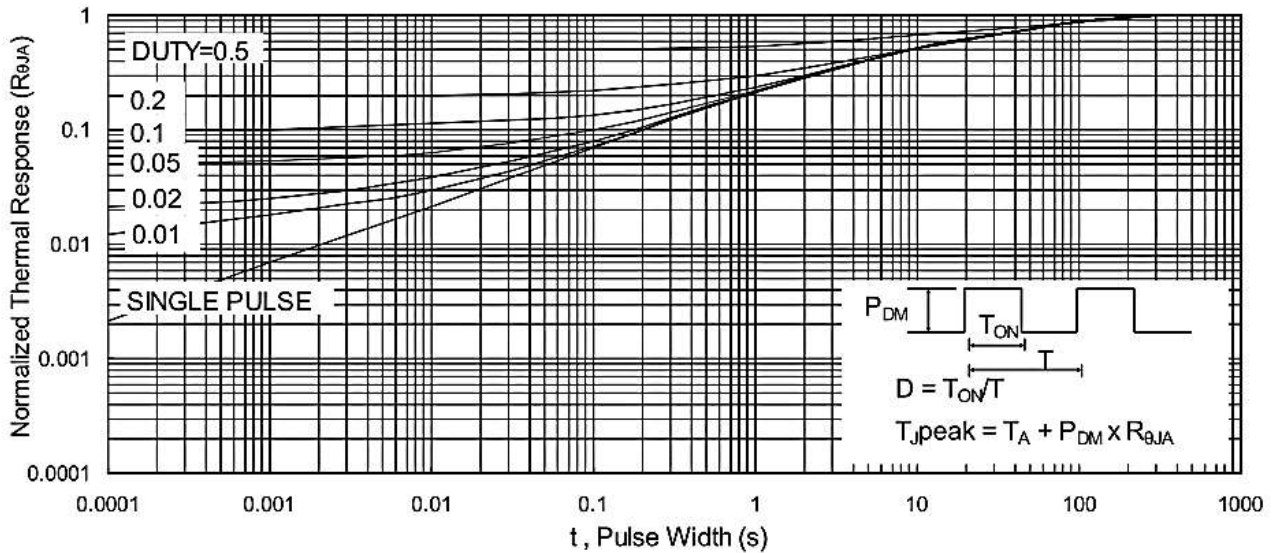
**Ratings and Characteristic Curves**



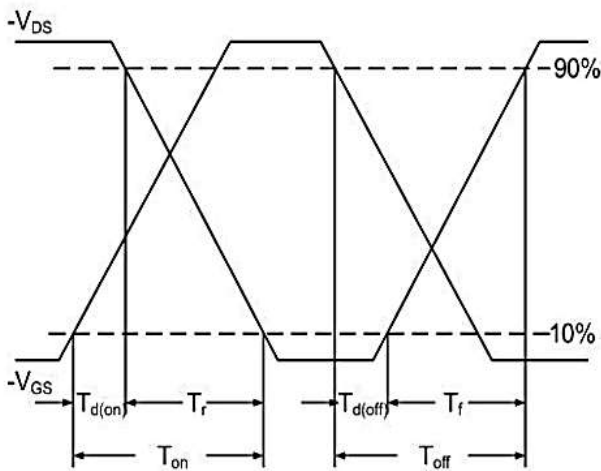
**Fig.7 Capacitance**



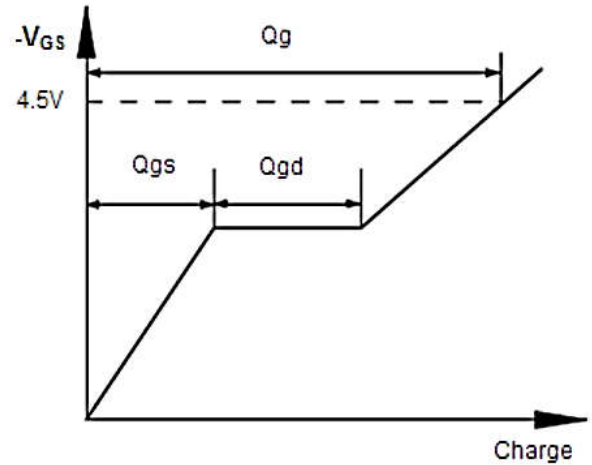
**Fig.8 Safe Operating Area**



**Fig.9 Normalized Maximum Transient Thermal Impedance**



**Fig.10 Switching Time Waveform**



**Fig.11 Gate Charge Waveform**

Package Outline Dimensions Millimeters

TO-252

Dim.	Min.	Typ.	Max.
A	2.10	-	2.50
A2	0	-	0.10
B	0.66	-	0.86
B2	5.18	-	5.48
C	0.40	-	0.60
C2	0.44	-	0.58
D	5.90	-	6.30
D1	5.30REF		
E	6.40	-	6.80
E1	4.63	-	-
G	4.47	-	4.67
H	9.50	-	10.70
L	1.09	-	1.21
L2	1.35	-	1.65
V1	-	7°	-
V2	0°	-	6°
All Dimensions in millimeter			

