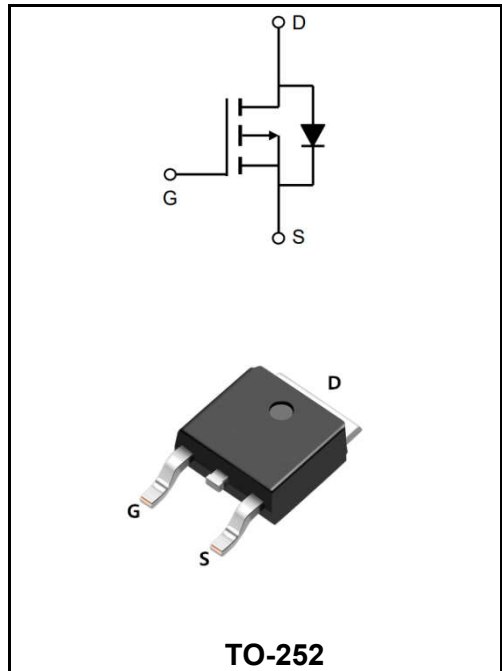


**-60V P-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	-80A
<b>V<sub>DSS</sub></b>	-60V
<b>R<sub>DS(on)-typ</sub>(@V<sub>GS</sub>=-10V)</b>	< -11mΩ <b>(Type:9 mΩ)</b>



**Application**

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

**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW80P06AD	TO-252	YFW 80P06ADXXXXX	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>	-60	<b>V</b>
Gate - Source Voltage	<b>V<sub>GS</sub></b>	±20	<b>V</b>
Continuous Drain Current, V <sub>GS</sub> @ -10V <sup>1</sup> @T <sub>c</sub> =25°C	<b>I<sub>D</sub></b>	-80	<b>A</b>
Continuous Drain Current, V <sub>GS</sub> @ -10V <sup>1</sup> @T <sub>c</sub> =100°C	<b>I<sub>D</sub></b>	-50	<b>A</b>
Pulsed Drain Current <sup>2</sup>	<b>I<sub>DM</sub></b>	-320	<b>A</b>
Single Pulse Avalanche Energy <sup>3</sup>	<b>E<sub>AS</sub></b>	450	<b>mJ</b>
Avalanche Current	<b>I<sub>AS</sub></b>	41	<b>A</b>
Total Power Dissipation <sup>4</sup> @T <sub>c</sub> =25°C	<b>P<sub>D</sub></b>	110	<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>	1.1	<b>°C/W</b>
Thermal Resistance Junction to Case <sup>1</sup>	<b>R<sub>θJC</sub></b>	60	<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	$V_{GS}=0V, I_D=-250\mu A$	$BV_{DSS}$	-60	-68	-	<b>V</b>
$BV_{DSS}$ Temperature Coefficient	Reference to 25°C , $I_D=-1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	-0.035	-	<b>V/°C</b>
Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=-10V, I_D=-20A$	$R_{DS(ON)}$	-	9.0	11	<b>mΩ</b>
	$V_{GS}=-4.5V, I_D=-15A$		-	12	16	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-1.0	-1.8	-2.5	<b>V</b>
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	4.28	-	<b>mV/°C</b>
Drain-Source Leakage Current	$V_{DS}=-60V, V_{GS}=0V, T_J=25^\circ C$	$I_{DSS}$	-	-	1	<b>μA</b>
	$V_{DS}=-60V, V_{GS}=0V, T_J=55^\circ C$		-	-	5	
Gate -Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	$I_{GSS}$	-	-	±100	<b>nA</b>
Forward Transconductance	$V_{DS}=-5V, I_D=-20A$	$g_{fs}$	-	50	-	<b>S</b>
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	$R_g$	-	2.0	-	<b>Ω</b>
Total Gate Charge(-4.5V)	$V_{DS}=-30V$ $V_{GS}=-10V$ $I_D=-20A$	$Q_g$	-	56	-	<b>nC</b>
Gate-Source Charge		$Q_{GS}$	-	11	-	
Gate-Drain Charge		$Q_{gd}$	-	9	-	
Turn-on delay time	$V_{DD}=-30V$ $V_{GS}=-10V$ $I_D=-20A$ $R_G=3\Omega$	$t_{d(on)}$	-	4.5	-	<b>ns</b>
Rise Time		$T_r$	-	2.5	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	14.5	-	
Fall Time		$t_f$	-	3.8	-	
Input Capacitance	$V_{DS}=-15V$ $V_{GS}=0V$ $f=1MHz$	$C_{iss}$	-	3500	-	<b>pF</b>
Output Capacitance		$C_{oss}$	-	600	-	
Reverse Transfer Capacitance		$C_{rss}$	-	25	-	
Continuous Source Current <sup>1,5</sup>	$V_G=V_D=0V, \text{ Force Current}$	$I_S$	-	-	-80	<b>A</b>
Pulsed Source Current <sup>2,5</sup>		$I_{SM}$	-	-	-240	<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 inch 2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width  $\cong 300\mu s$  , duty cycle  $\cong 2\%$
- 3、 The EAS data shows Max. rating . The test condition is  $V_{DD}=-48V, V_{GS}=-10V, L=0.1mH, I_{AS}=-41A$
- 4、 The power dissipation is limited by 150°C junction temperature
- 5、 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

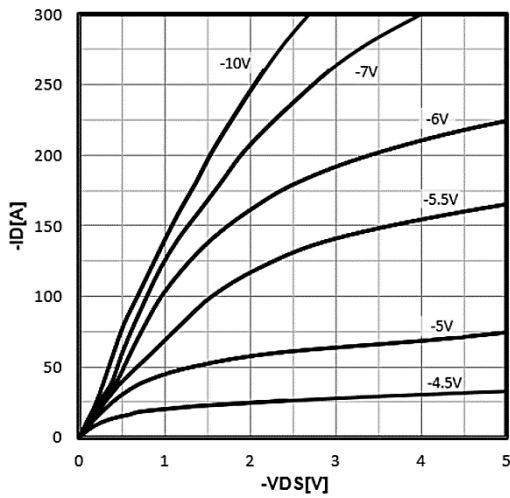


Figure 1. Type. Output Characteristics (Tj=25 °C)

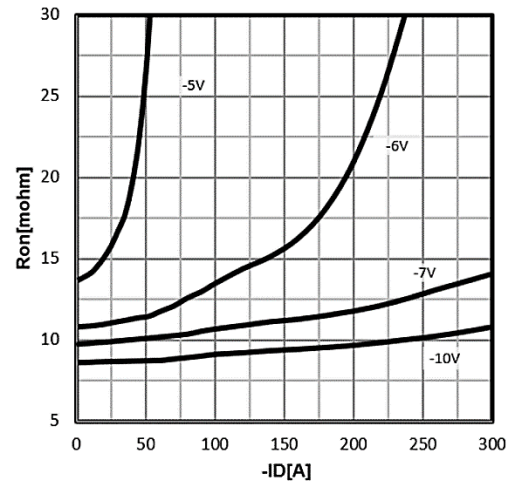


Figure 2. Type. drain-source on resistance

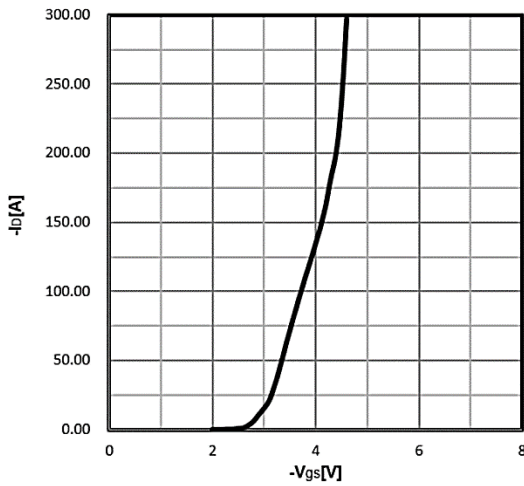


Figure 3. Type. transfer characteristics

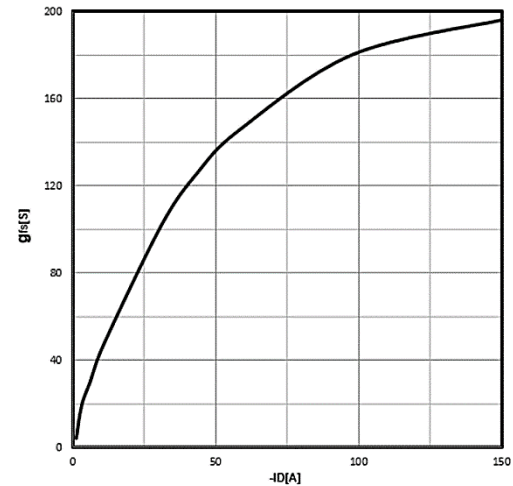


Figure 4. Type. forward transconductance

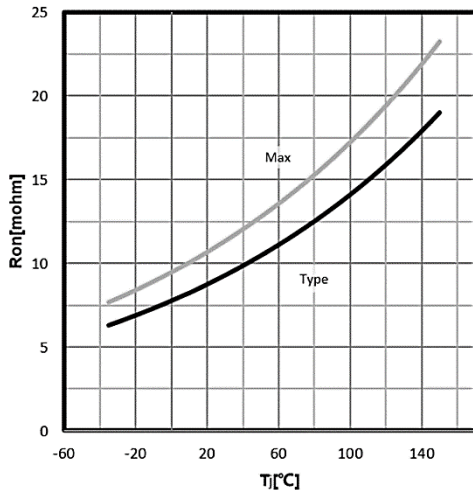


Figure 5. Drain-source on-state resistance  $R_{DS(on)} = f(T_j)$ ; ID = 80A; VGS = 10V

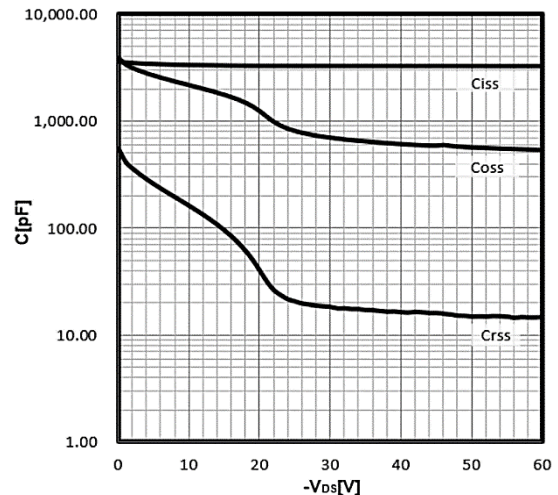
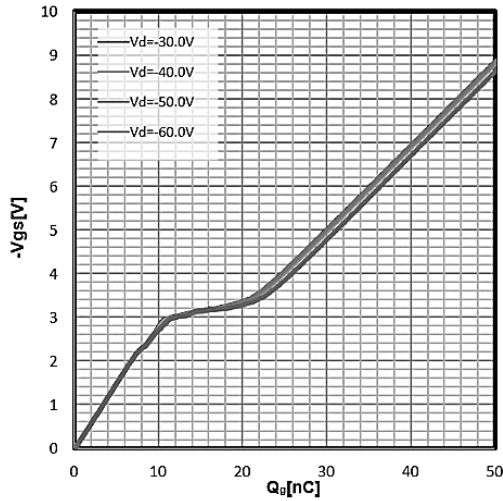
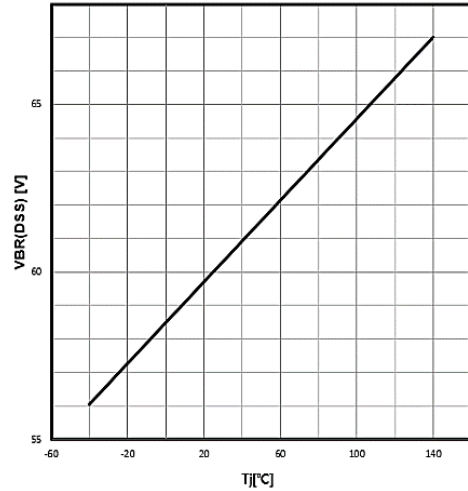


Figure 6. Body-Diode Characteristics  $C = f(V_{DS})$ ; VGS = 0V; f=1MHz

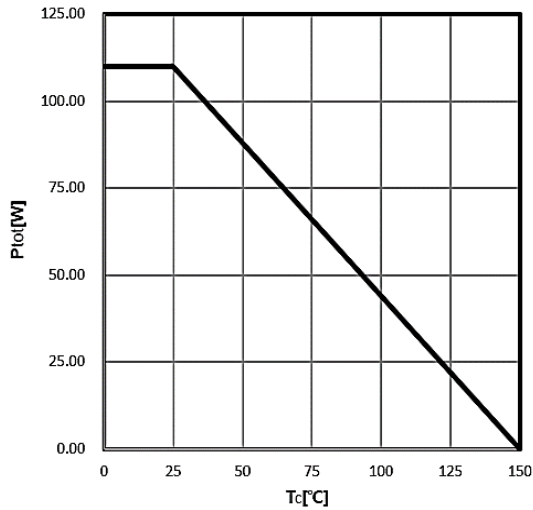
**Ratings and Characteristic Curves**



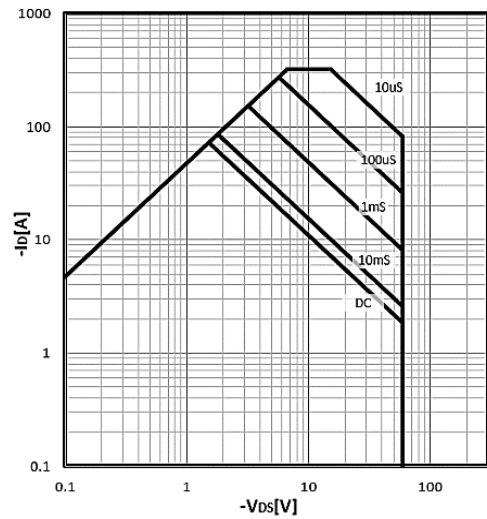
**Figure 7. Typ. gate charge**  
 $V_{GS} = f(Q_g)$ ;  $I_D = 20A$



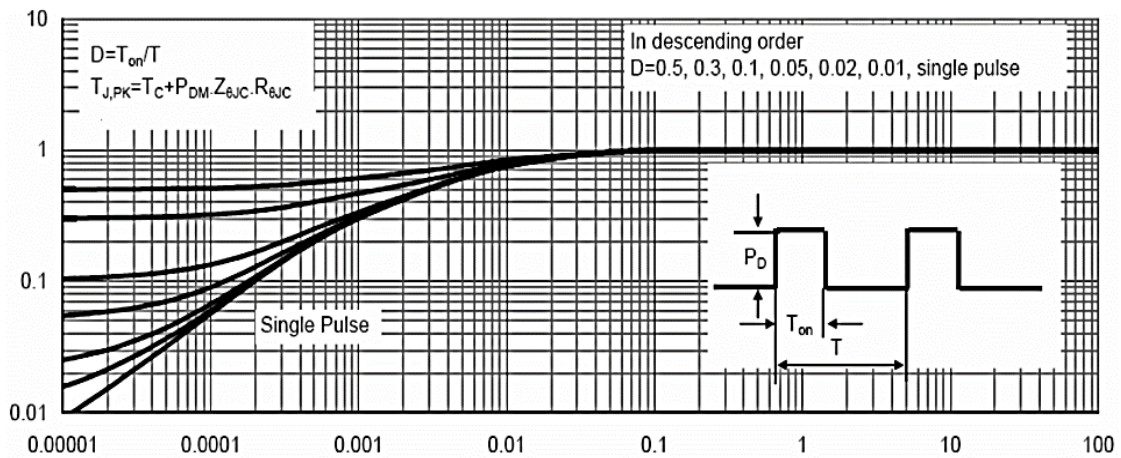
**Figure 8. Drain Current Derating**  
 $V_{BR(DSS)} = f(T_j)$ ;  $I_D = 250\mu A$



**Figure 7. Power Dissipation**



**Figure 8. Safe operating area**



**Figure 10. Max. transient thermal impedance**

$Z_{thJC} = f(t_p)$

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			

