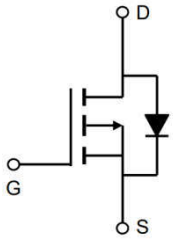
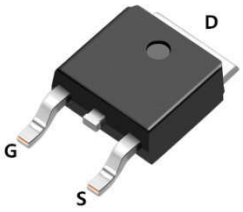
-40V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-80A
V_{DSS}	-40V
R_{DSON}-typ(@V_{GS}=-10V)	< -10mΩ(Type:7.0 mΩ)





TO-252

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW80P04AD	TO-252	YFW 80P04AD XXXXX	2500PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	-40	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V_{GS} @ -10V[1] @T_C=25℃	I_D	-80	A
Continuous Drain Current, V_{GS} @ -10V[1] @T_C=100℃	I_D	-56	A
Pulsed Drain Current [2]	I_{DM}	-280	A
Single Pulse Avalanche Energy[3]	E_{AS}	500	mJ
Avalanche Current	I_{AS}	-50	A
Total Power Dissipation[4] @T_C=25℃	P_D	52.1	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]	$R_{\theta JA}$	62	°C/W
Thermal Resistance Junction to Case[1]	$R_{\theta JC}$	2.4	°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=-250uA	BV_{DSS}	-40	-44	-	V
BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=-1mA	$\Delta BV_{DSS/\Delta TJ}$	-	-0.023	-	V/°C
Static Drain-Source On-Resistance [2]	V_{GS}=-10V, I_D=-12A	$R_{DS(ON)}$	-	7.0	10	mΩ
	V_{GS}=-4.5V, I_D=-12A		-	9.0	15	
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	$V_{GS(th)}$	-1.2	-1.8	-2.5	V
Drain-Source Leakage Current	V_{DS}=-40V , V_{GS}=0V , T_J=25℃	I_{DSS}	-	-	1	μA
	V_{DS}=-40V , V_{GS}=0V , T_J=55℃		-	-	5	
Gate –Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Forward Transconductance	V_{DS}=-15V , I_D=-12A	g_{fs}	-	20	-	S
Gate resistance	V_{GS}=0V, V_{DS}=0V, F=1MHz	R_g	-	7	14	Ω
Total Gate Charge(-4.5V)	V_{DS}=-20V V_{GS}=-10V I_D=-12A	Q_g	-	27.9	-	nC
Gate-Source Charge		Q_{gs}	-	7.7	-	
Gate-Drain Charge		Q_{gd}	-	7.5	-	
Turn-on delay time	V_{DD} =-20V V_{GS}=-10V I_D= -12A R_G=3.0Ω	$t_{d(on)}$	-	40	-	ns
Rise Time		T_r	-	35.2	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	100	-	
Fall Time		t_f	-	9.6	-	
Input Capacitance	V_{DS}=-20V V_{GS}=0V f=1MHz	C_{iss}	-	6500	-	pF
Output Capacitance		C_{oss}	-	790	-	
Reverse Transfer Capacitance		C_{rss}	-	605	-	
Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	I_S	-	-	-70	A
Diode Forward Voltage[2]	V_{GS}=0V , I_S=-1A , T_J=25℃	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 ≦ 300us , duty cycle ≦ 2%
3、The EAS data shows Max. rating . The test condition is VDD=-32V,VGS=-10V,L=0.1mH,IAS=-50A
4、The power dissipation is limited by 150℃ junction temperature
5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

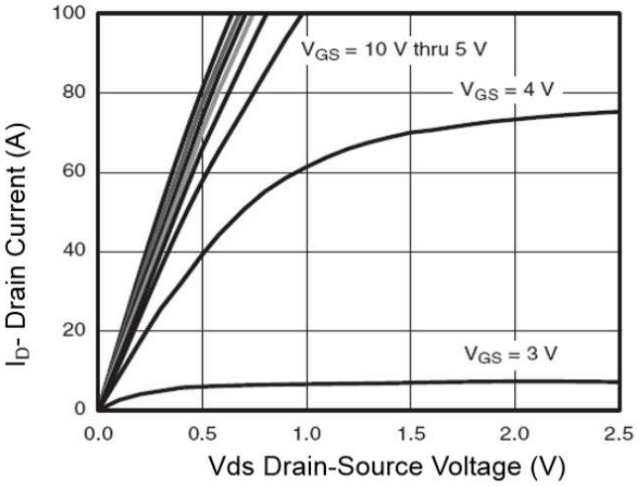


Figure 1 Output Characteristics

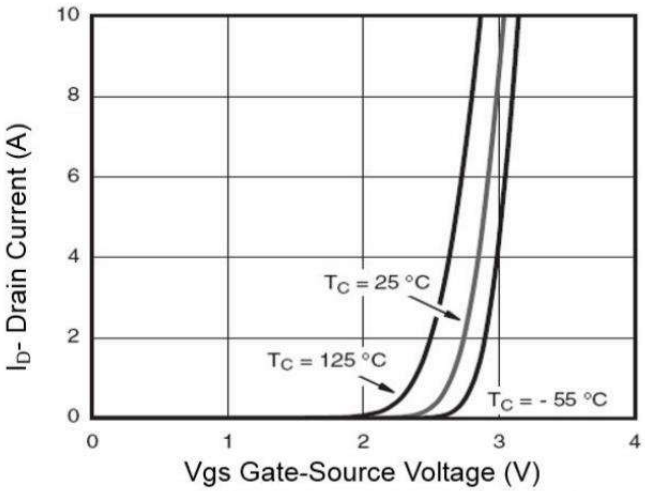


Figure 2 Transfer Characteristics

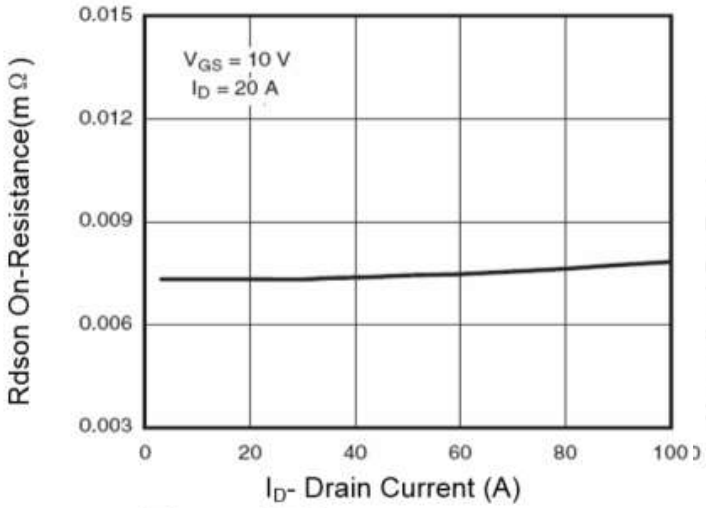


Figure 3 Rdson- Drain Current

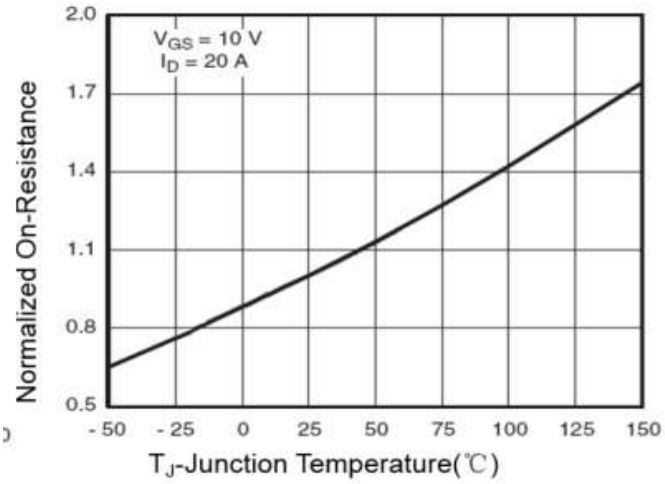


Figure 4 Rdson-Junction Temperature

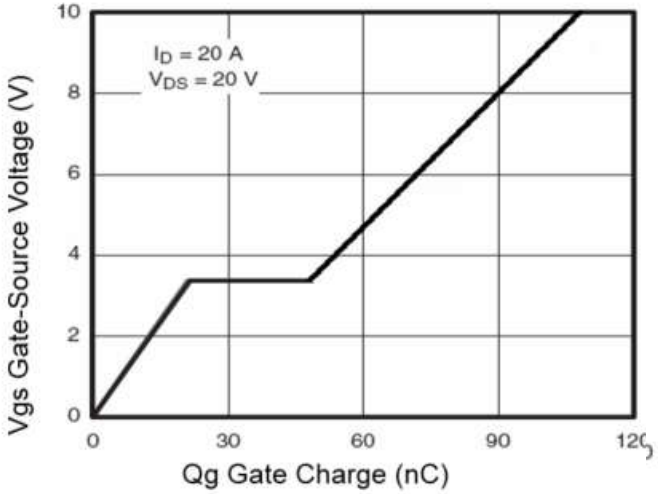


Figure 5 Gate Charge

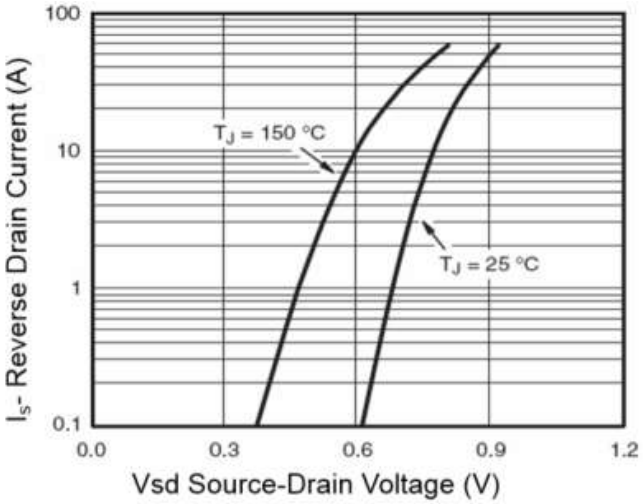


Figure 6 Source- Drain Diode Forward

Ratings and Characteristic Curves

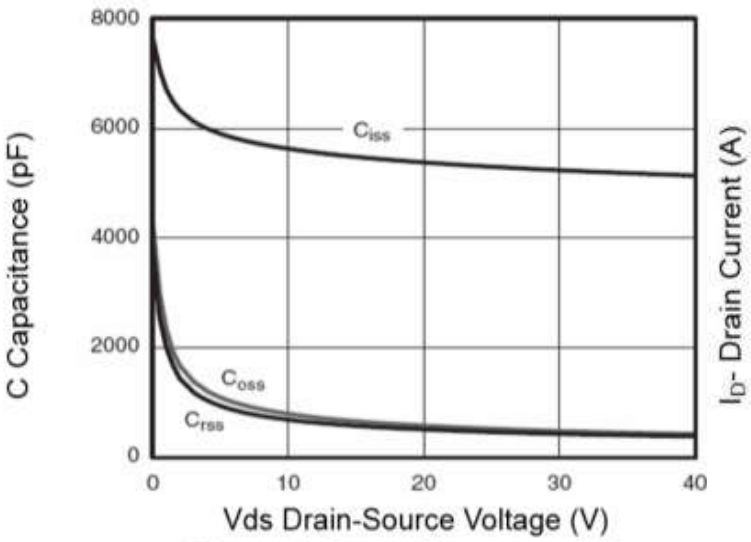


Figure 7 Capacitance vs Vds

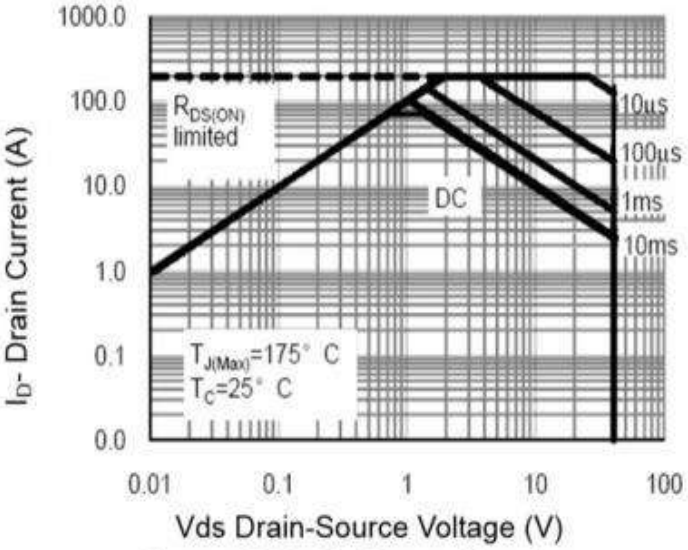


Figure 8 Safe Operation Area

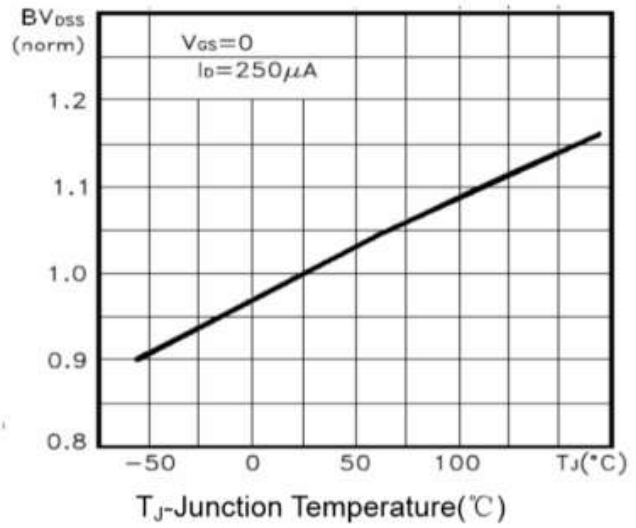


Figure 9 BV_{DSS} vs Junction Temperature

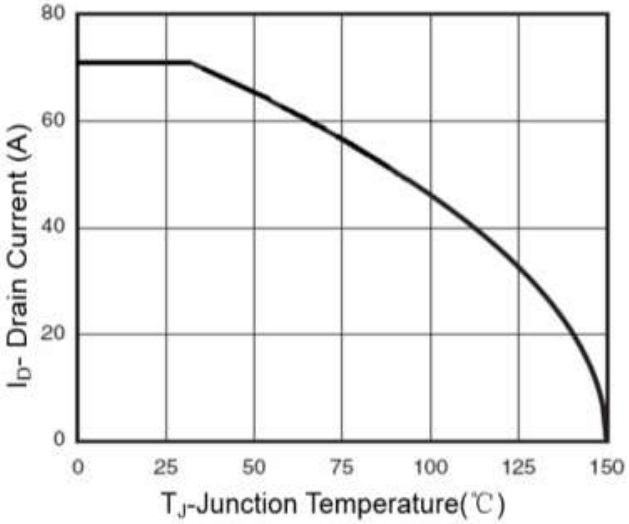


Figure 10 ID Current Derating vs Junction Temperature

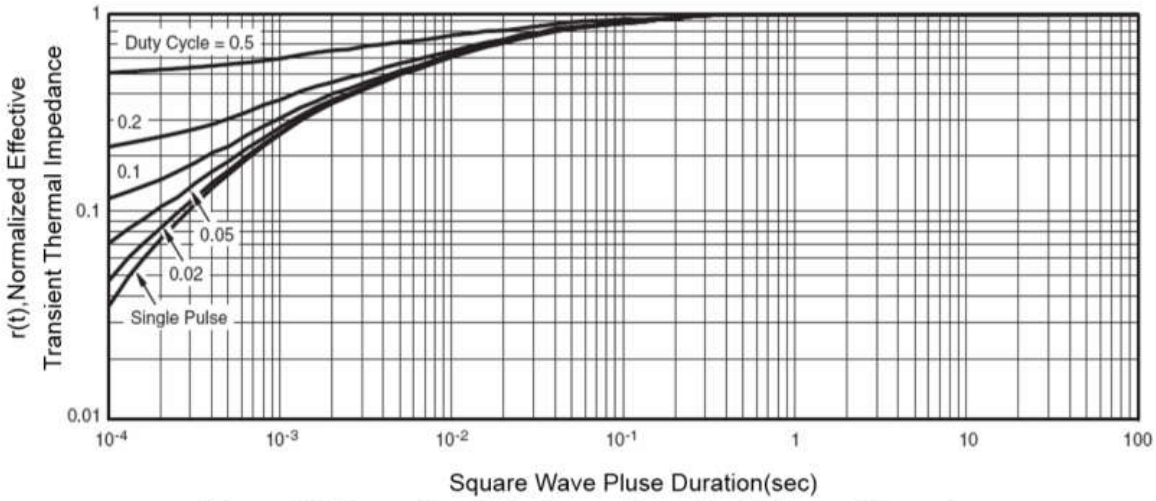
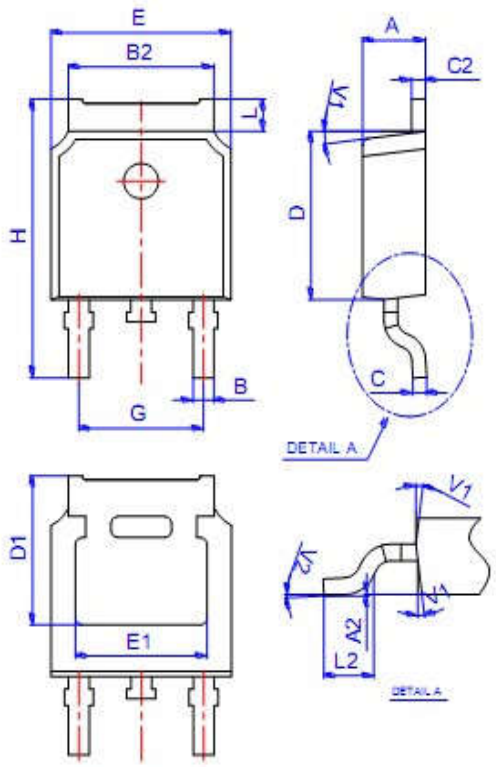


Figure 11 Normalized Maximum Transient Thermal Impedance

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