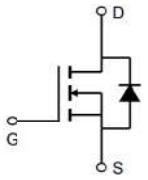
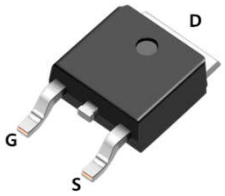
20V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	60A
V_{DSS}	20V
R_{DSON}-typ(@V_{GS}=4.5V)	< 5.5mΩ(Type:4.1 mΩ)





TO-252

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW60N02AD	TO-252	YFW 60N02AD XXXXX	2500PCS/Tape

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 @T_A=25℃	I_D	60	A
Continuous Drain Current, V_{GS} @ 4.5V @T_A=70℃	I_D	42	A
Pulsed Drain Current note1	I_{DM}	210	A
Single Pulse Avalanche Energy note2	E_{AS}	56.2	mJ
Power Dissipation @T_A=25℃	P_D	57	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	2.63	°C/W
Operating and Storage Temperature Range	T_J ,T_{STG}	-55 to +175	°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=250uA	**V(BR)DSS**	20	24	-	**V**
Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V	**I_{DSS}**	-	-	1.0	**μA**
Gate - Body Leakage Current	V_{GS}=±12V, V_{DS}=0V	**I_{GSS}**	-	-	±100	**nA**
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	**$V_{GS(th)}$**	0.5	0.7	1.2	**V**
Static Drain-Source on-Resistance note3	V_{GS}=4.5V, I_D=30A	**$R_{DS(ON)}$**	-	4.1	5.5	**mΩ**
	V_{GS}=2.5V, I_D=20A		-	7.4	9.0	
Input Capacitance	V_{DS}=10V V_{GS}=0V f=1.0MHz	**C_{iss}**	-	2500	-	**pF**
Output Capacitance		**C_{oss}**	-	407	-	
Reverse Transfer Capacitance		**C_{rss}**	-	386	-	
Total Gate Charge	V_{DS}=10V I_D=30A V_{GS}=4.5V	**Q_g**	-	32	-	**nC**
Gate-Source Charge		**Q_{gs}**	-	3	-	
Gate-Drain(“Miller”) Charge		**Q_{gd}**	-	11	-	
Turn-on delay time	V_{DS} =10V I_D= 30A R_{GEN} = 3Ω V_{GS}=4.5V	**$t_{D(on)}$**	-	17	-	**ns**
Turn-on Rise Time		**T_r**	-	49	-	
Turn-Off Delay Time		**$t_{d(OFF)}$**	-	74	-	
Turn- Off Fall Time		**t_f**	-	26	-	
Maximum Continuous Drain to Source Diode Forward Current		**I_S**	-	-	75	**A**
Maximum Pulsed Drain to Source Diode Forward Current		**I_{SM}**	-	-	300	**A**
Drain to Source Diode Forward Voltage	V_{GS}=0V , I_S=30A	**V_{SD}**	-	-	1.2	**V**

Notes:
1、Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2、The test condition is, VDD=10V, VG=4.5V, L=0.5mH, RG=25Ω, IAS=15A
3、The data tested by pulsed Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%
4、The power dissipation is limited by 150℃ junction temperature

Ratings and Characteristic Curves

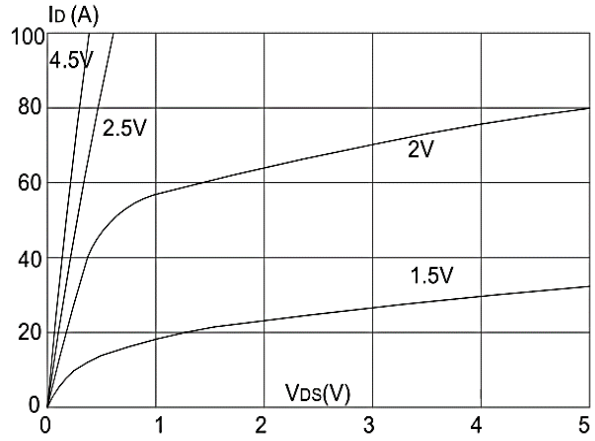


Figure1: Output Characteristics

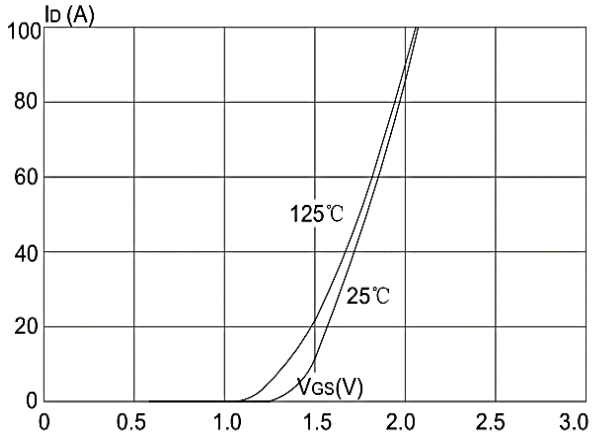


Figure 2: Typical Transfer Characteristics

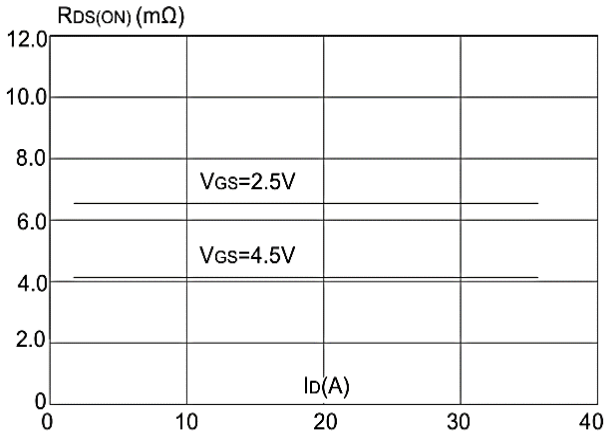


Figure 3:On-resistance vs. Drain Current

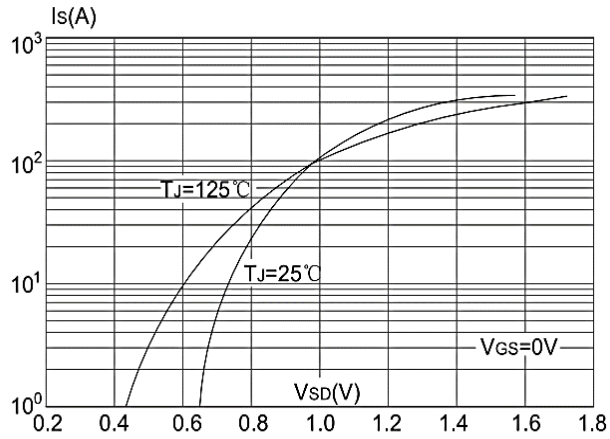


Figure 4: Body Diode Characteristics

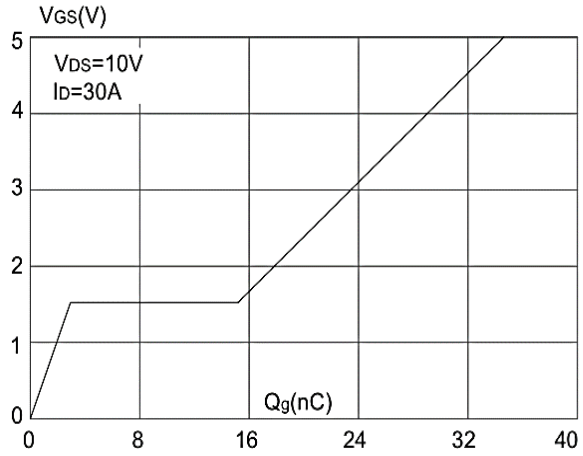


Figure 5: Gate Charge Characteristics

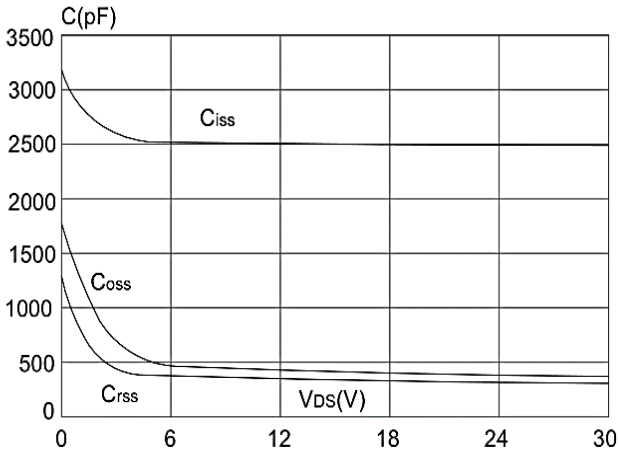


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

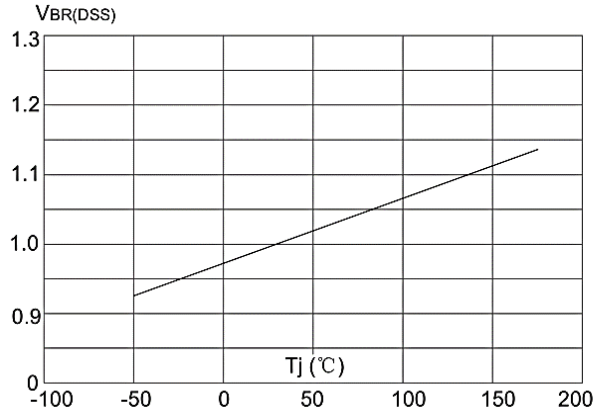


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

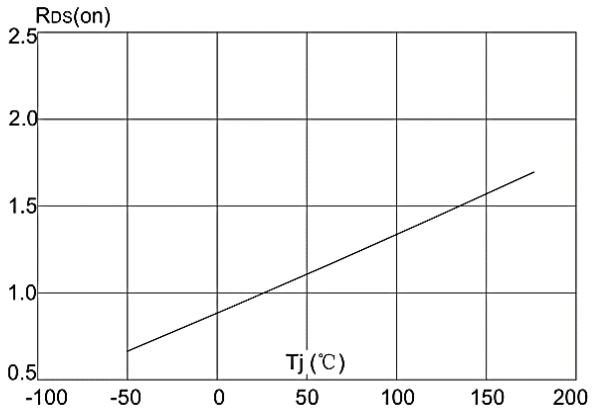


Figure 8: Normalized on Resistance vs Junction Temperature

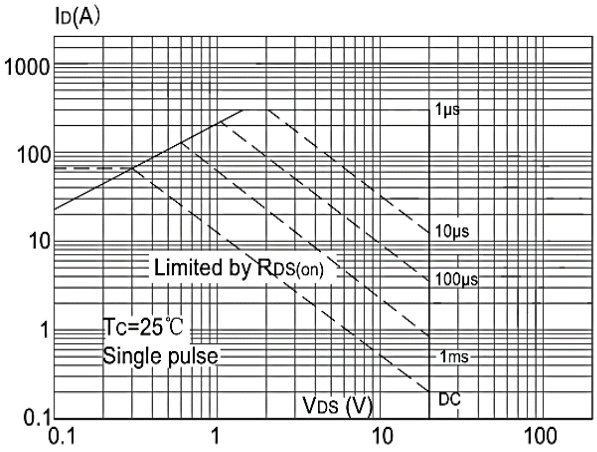


Figure 9: Maximum Safe Operating Area Current Temperature

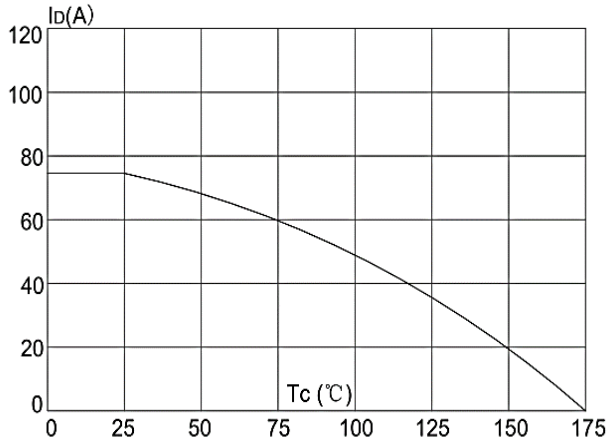


Figure 10: Maximum Continuous Drain vs. Case

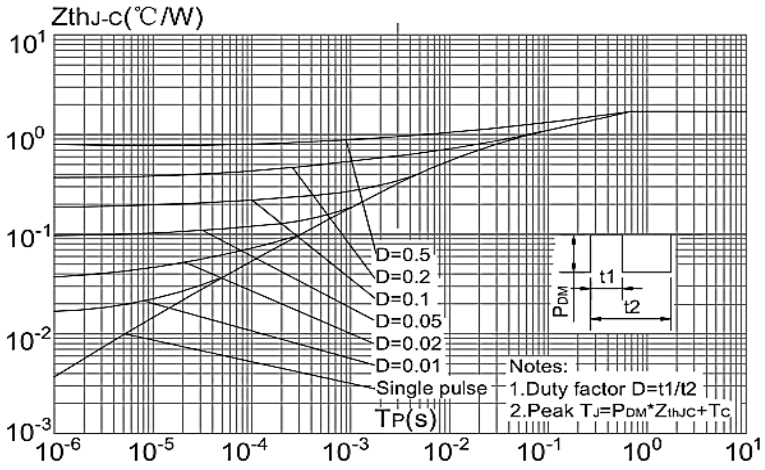
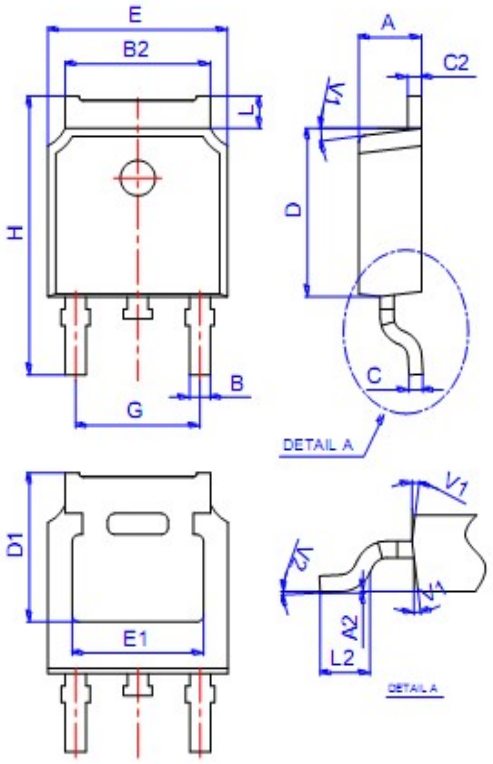


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

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