

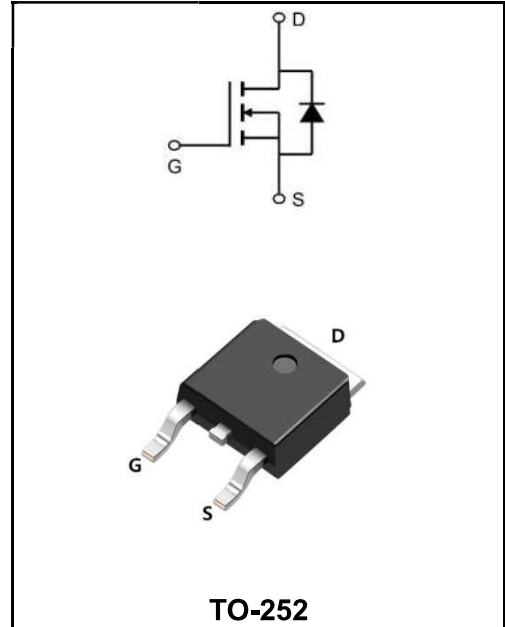
60V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	20A
V_{DSS}	60V
R_{DS(on)-typ(@V_{GS}=10V)}	< 42mΩ (Type:36 mΩ)

Application

- ◆ LED lamp
- ◆ Load switch
- ◆ Uninterruptible power supply



Product Specification Classification

Part Number	Package	Marking	Pack
YFW20N06BD	TO-252	YFW 20N06BD XXXXX	2500PCS/Tape

Maximum Ratings at T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	60	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V _{GS} @ 10V ¹ @T _C =25°C	I_D	20	A
Continuous Drain Current, V _{GS} @ 10V ¹ @T _C =100°C	I_D	11.8	A
Pulsed Drain Current	I_{DM}	60	A
Avalanche Current	I_{AS}	9.8	A
Single Pulse Avalanche Energy	E_{AS}	9.3	mJ
Power Dissipation @T _C =25°C	P_D	24	W
Operating and Storage Temperature Range	T_J , T_{STG}	-55 to +175	°C
Thermal Resistance Junction-Ambient ¹	R_{θJA}	62	°C/W
Thermal Resistance Junction-Case ¹	R_{θJC}	6.3	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	V(BR)DSS	60	65	-	V
Zero Gate Voltage Drain Current	$V_{DS}=60V, V_{GS}=0V$	I_{DSS}	-	-	1.0	μA
Gate to Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	V_{GS(th)}	1.2	1.6	2.5	V
Static Drain-Source on-Resistance	$V_{GS}=10V, I_D=15A$	R_{DS(ON)}	-	36	42	mΩ
	$V_{GS}=4.5V, I_D=10A$		-	45	63	
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	825	-	pF
Output Capacitance		C_{oss}	-	49	-	
Reverse Transfer Capacitance		C_{rss}	-	41	-	
Total Gate Charge	$V_{DS}=30V$ $V_{GS}=10V$ $I_D=4.5A$	Q_g	-	14	-	nC
Gate-Source Charge		Q_{gs}	-	2.9	-	
Gate-Drain("Miller") Charge		Q_{gd}	-	5.2	-	
Turn-on delay time	$V_{DS}=30V$ $I_D=2A$ $R_L=6.7\Omega$ $R_G=3\Omega$ $V_{GS}=10V$	t_{d(on)}	-	5	-	ns
Turn-on Rise Time		T_r	-	2.6	-	
Turn-Off Delay Time		t_{d(OFF)}	-	16.1	-	
Turn-Off Fall Time		t_f	-	2.3	-	
Maximum Continuous Drain to Source Diode Forward Current		I_S	-	-	15	A
Maximum Pulsed Drain to Source Diode Forward Current		I_{SM}	-	-	60	A
Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=15A$	V_{SD}	-	-	1.2	V
Body Diode Reverse Recovery Time	$T_J=25^\circ C, I_F=15A, dI/dt=100A/\mu s$	t_{rr}	-	35	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}	-	53	-	nC

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 .The EAS data shows Max. rating .
- 3、 The test cond ≅ 300us duty cycle ≅ 2%, duty cycle ition is $T_J=25^\circ C, V_{DD}=48V, V_G=10V, R_G=25\Omega, L=0.1mH, I_{AS}=9.8A$
- 4、 The power dissipation is limited by 175°C 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

Typical Characteristics

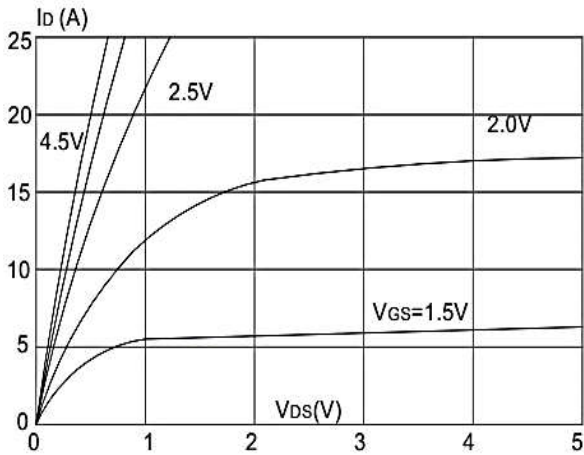


Figure 1: Output Characteristics

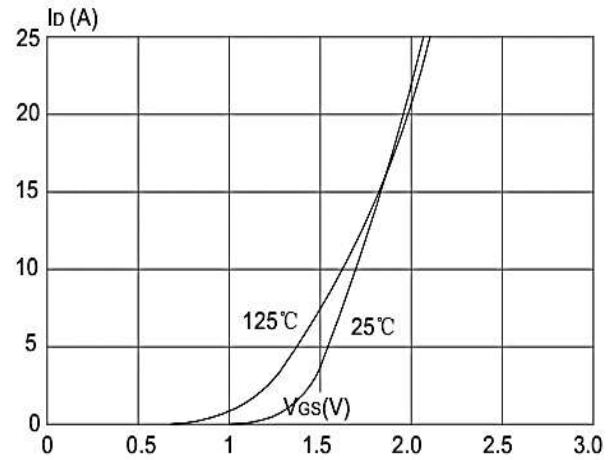


Figure 2: Typical Transfer Characteristics

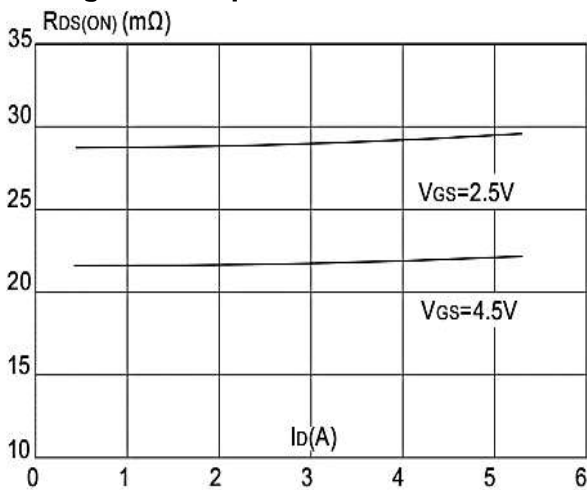


Figure 3: On-resistance vs. Drain Current

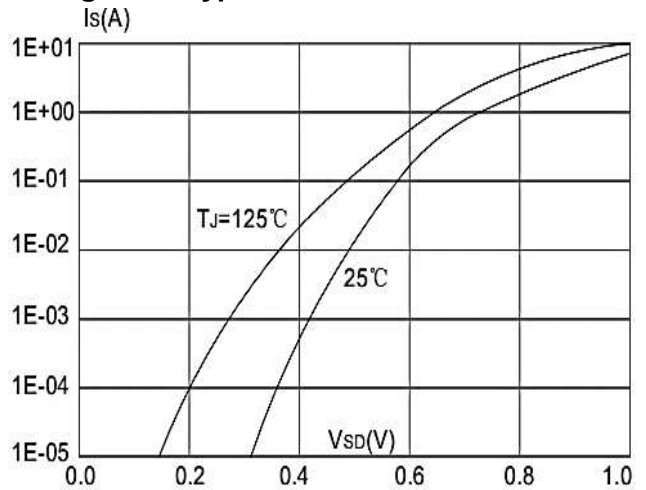


Figure 4: Body Diode Characteristics

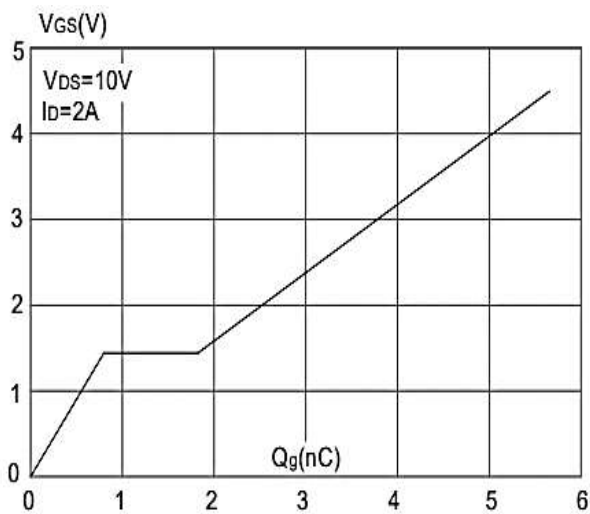


Figure 5: Gate Charge Characteristics

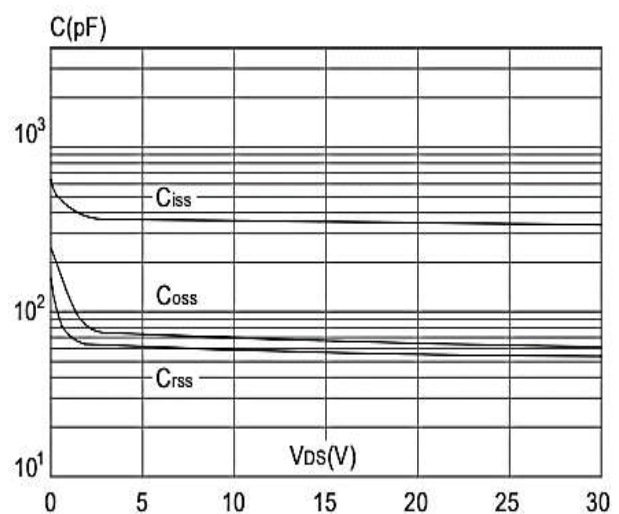


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

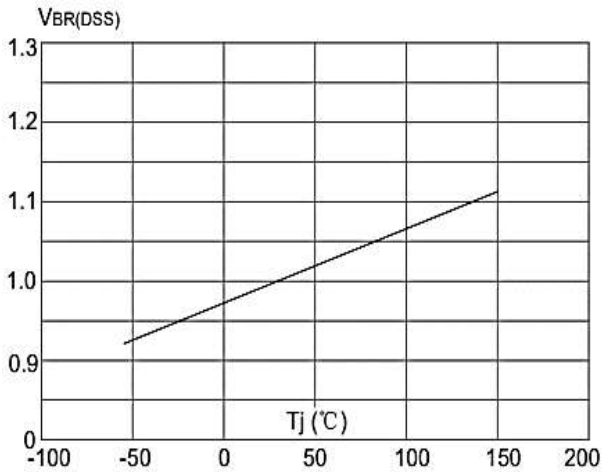


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

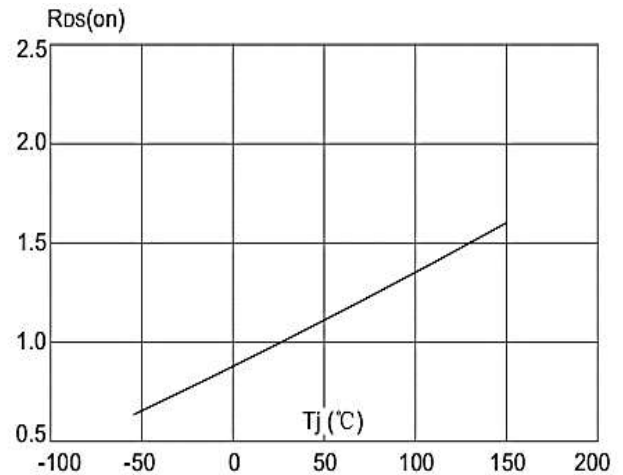


Figure 8: Normalized on Resistance vs. Junction Temperature

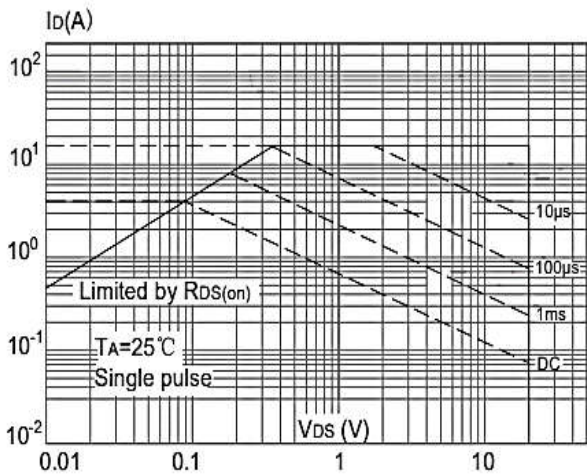


Figure 9: Maximum Safe Operating Area

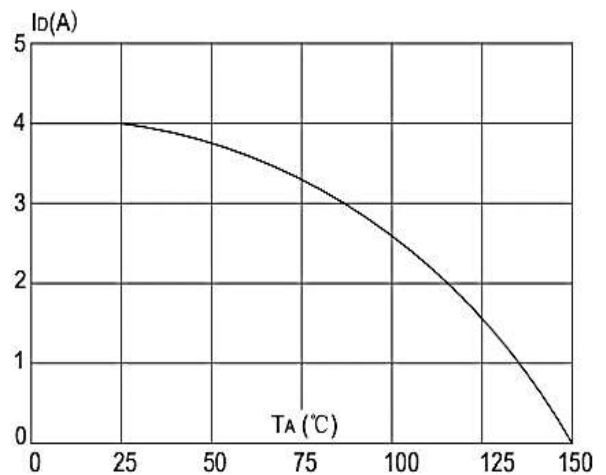


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

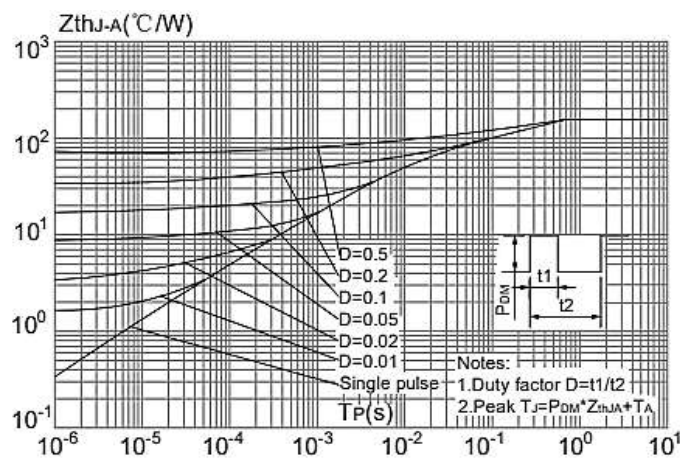


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

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			

