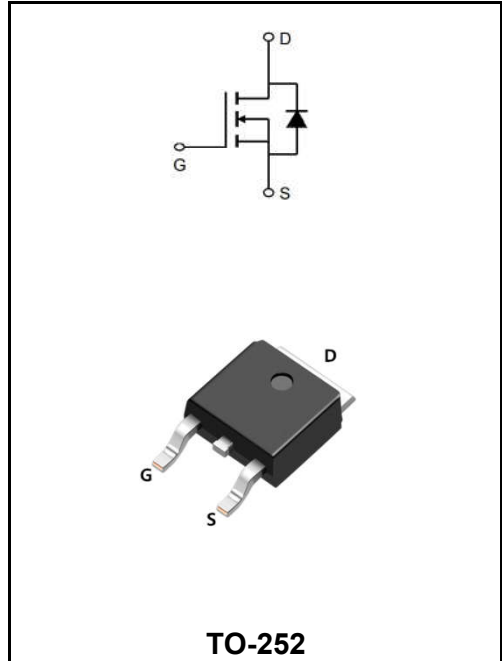


20V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	30A
V_{DSS}	20V
R_{DS(on)-typ}(@V_{GS}=4.5V)	< 15mΩ (Type:11 mΩ)



Application

- ◆ Solar road lights
- ◆ Load switch
- ◆ Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW30N02AD	TO-252	YFW 30N02AD XXXXX	2500PCS/Tape

Maximum Ratings at T_c=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} @ 10V ¹ @T _C =25°C	I_D	30	A
Continuous Drain Current, V _{GS} @ 10V ¹ @T _C =100°C	I_D	13	A
Continuous Drain Current, V _{GS} @ 10V ¹ @T _A =25°C	I_D	6.3	A
Continuous Drain Current, V _{GS} @ 10V ¹ @T _A =70°C	I_D	5.8	A
Pulsed Drain Current ²	I_{DM}	50	A
Single Pulse Avalanche Energy ³	E_{AS}	8.1	mJ
Avalanche Current	I_{AS}	12.7	A
Total Power Dissipation ⁴ @T _C =25°C	P_D	20.8	W
Total Power Dissipation ⁴ @T _A =25°C	P_D	2	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_{θJA}	62	°C/W
Thermal Resistance Junction-Case ¹	R_{θJC}	6	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	20	22	-	V
BVDSS Temperature Coefficient	Reference to 25°C, $I_D=1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	0.018	-	V/°C
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	0.5	0.65	1.0	V
Static Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=7.6A$	$R_{DS(on)}$	-	11	15	mΩ
	$V_{GS}=2.5V, I_D=3.5A$		-	15.5	20	
	$V_{GS}=1.8V, I_D=2.5A$		-	20.5	35	
Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate - Body Leakage Current	$V_{GS}=\pm 10V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Input Capacitance	$V_{DS}=10V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	888	-	pF
Output Capacitance		C_{oss}	-	133	-	
Reverse Transfer Capacitance		C_{rss}	-	117	-	
Total Gate Charge	$V_{GS}=4.5V$ $V_{DS}=10V$ $I_D=6.8A$	Q_g	-	11.05	-	nC
Gate-Source Charge		Q_{gs}	-	1.73	-	
Gate-Drain Charge		Q_{gd}	-	3.1	-	
Turn-on delay time	$V_{GS}=4.5V$ $V_{DS}=10V$ $I_D=6.8A$ $R_{GEN}=3\Omega$	$t_{D(on)}$	-	7	-	ns
Turn-on Rise Time		T_r	-	46	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	30	-	
Turn- Off Fall Time		t_f	-	52	-	
Diode Forward Voltage	$V_{GS}=0V, I_S=7.6A$	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 $\cong 300\mu s$, duty cycle $\cong 2\%$
- 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

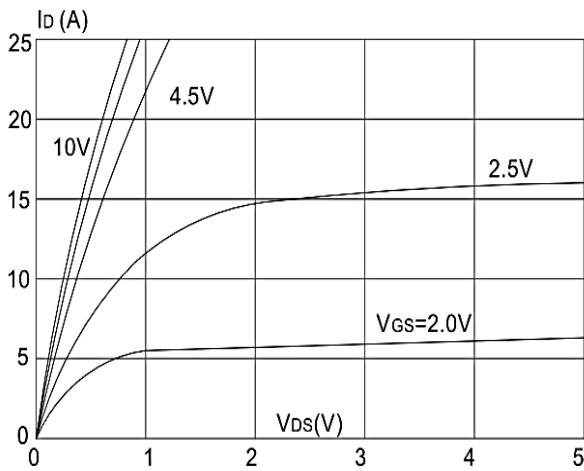


Figure 1: Output Characteristics

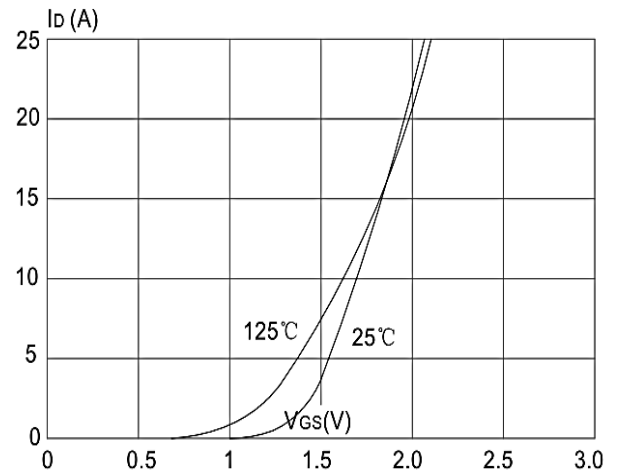


Figure 2: Typical Transfer Characteristics

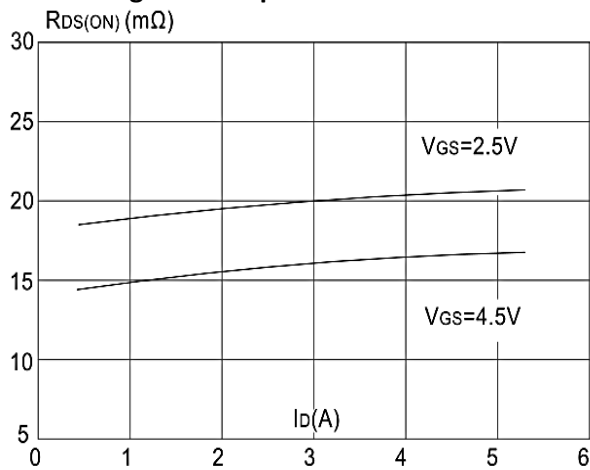


Figure 3: On-resistance vs. Drain Current

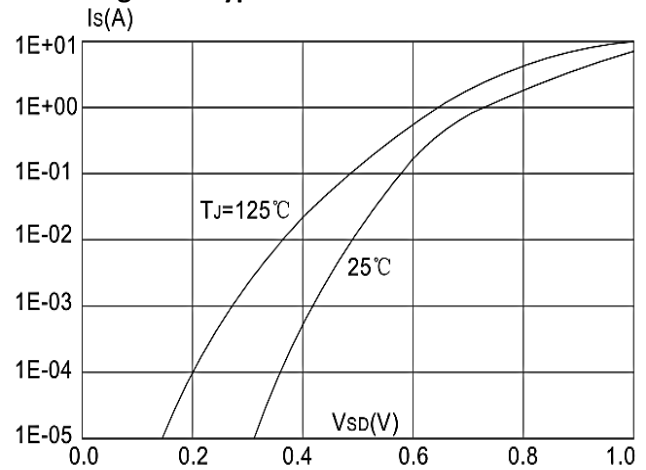


Figure 4: Body Diode Characteristics

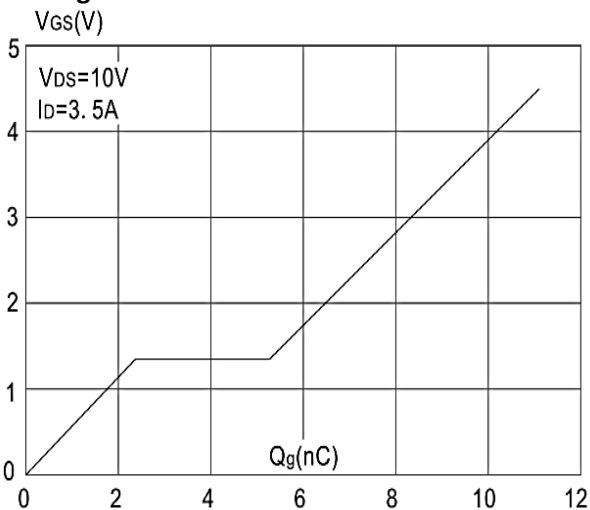


Figure 5: Gate Charge Characteristics

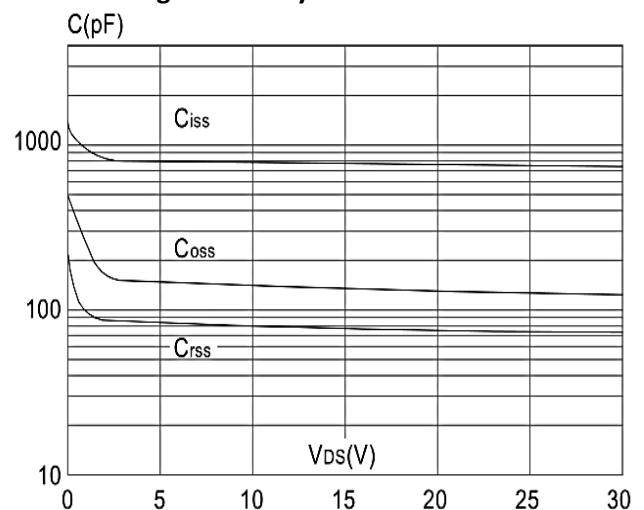


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

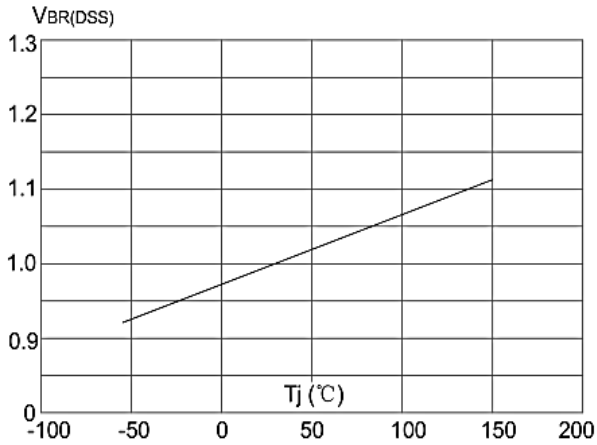


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

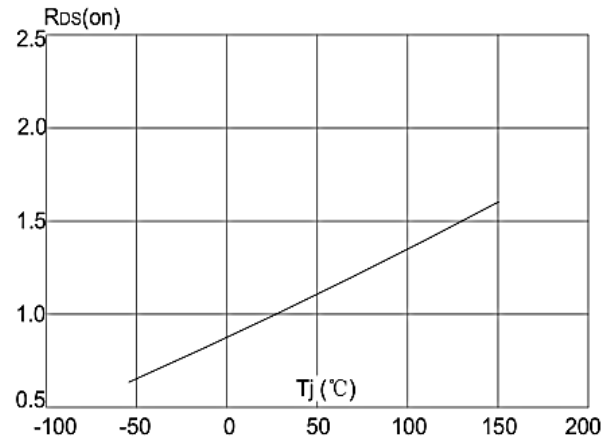


Figure 8: Normalized on Resistance vs. Junction Temperature

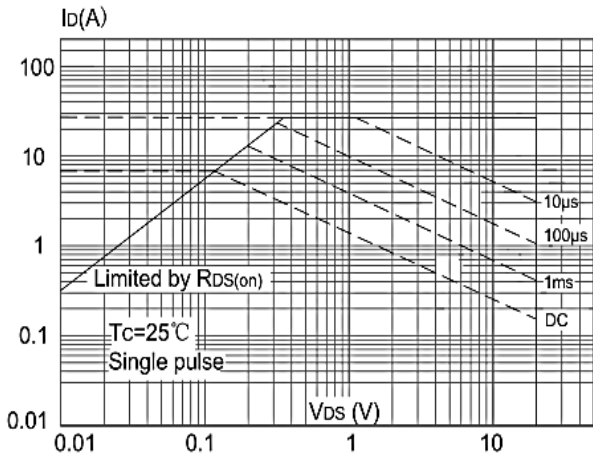


Figure 9: Maximum Safe Operating Area vs. Case Temperature

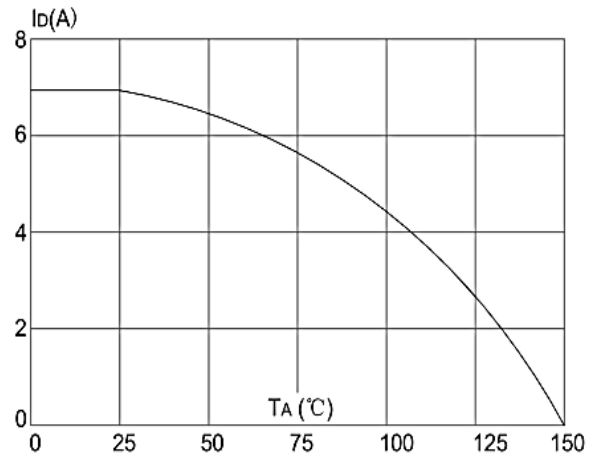


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

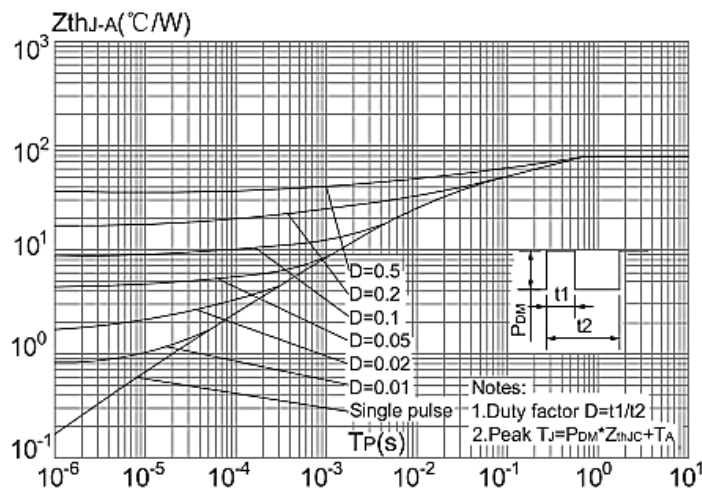


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

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			

