

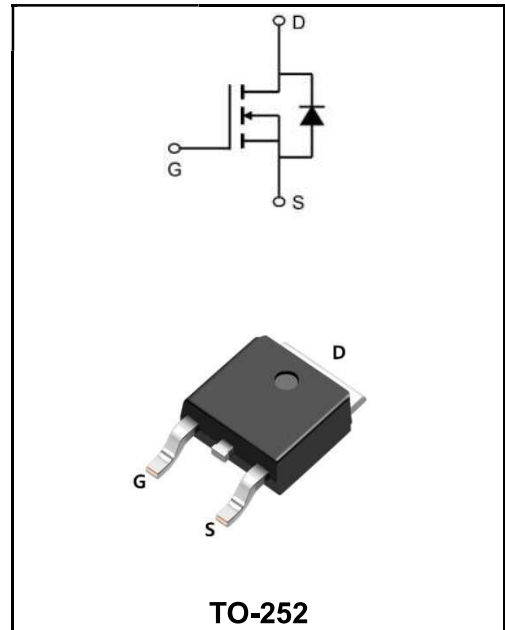
100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	10A
V_{DSS}	100V
R_{DS(on)-typ(@V_{GS}=10V)}	< 280mΩ (Type:240 mΩ)

Application

- ◆Automotive lighting
- ◆Load switch
- ◆Uninterruptible power supply



Product Specification Classification

Part Number	Package	Marking	Pack
YFW10N10AD	TO-252	YFW 10N10AD XXXXX	2500PCS/Tape

Maximum Ratings at T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	100	V
Gate - Source Voltage	V_{GS}	±20	V
Drain Current, V _{GS} @ 10V @T _C =25°C	I_D	10	A
Drain Current, V _{GS} @ 10V @T _C =100°C	I_D	6.5	A
Pulsed Drain Current ¹	I_{DM}	24	A
Total Power Dissipation @T _C =25°C	P_D	30	W
Total Power Dissipation ³ @T _A =25°C	P_D	2.7	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Maximum Thermal Resistance, Junction ambient	R_{θJA}	62.5	°C/W
Maximum Thermal Resistance, Junction-case	R_{θJC}	80	°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	100	120	-	V
Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$	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	1.85	2.5	V
Static Drain-Source on-Resistance note3	$V_{GS}=10V, I_D=5A$	R_{DS(ON)}	-	240	280	mΩ
	$V_{GS}=4.5V, I_D=5A$		-	260	300	
Forward Transconductance	$V_{DS}=5V, I_D=5A$	g_{FS}	-	14	-	S
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	R_g	-	3	-	Ω
Input Capacitance	$V_{DS}=15V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	508	-	pF
Output Capacitance		C_{oss}	-	29	-	
Reverse Transfer Capacitance		C_{rss}	-	16.4	-	
Total Gate Charge	$V_{DS}=50V$ $V_{GS}=10V$ $I_D=5A$	Q_g	-	9.7	-	nC
Gate-Source Charge		Q_{gs}	-	1.6	-	
Gate-Drain("Miller") Charge		Q_{gd}	-	1.7	-	
Turn-on delay time	$V_{DS}=30V$ $I_D=5A$ $R_G=1.8\Omega$ $V_{GS}=10V$	t_{d(on)}	-	1.6	-	ns
Turn-on Rise Time		T_r	-	19	-	
Turn-Off Delay Time		t_{d(OFF)}	-	13.6	-	
Turn-Off Fall Time		t_f	-	19	-	
Continuous Source Current ^{1,5}	$V_G=V_D=0V$, Force Current	I_S	-	-	7.2	A
Pulsed Source Current ^{2,5}		I_{SM}	-	-	21	A
Diode Forward Voltage ²	$V_{GS}=0V, I_S=10A$	V_{SD}	-	-	1.3	V

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 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

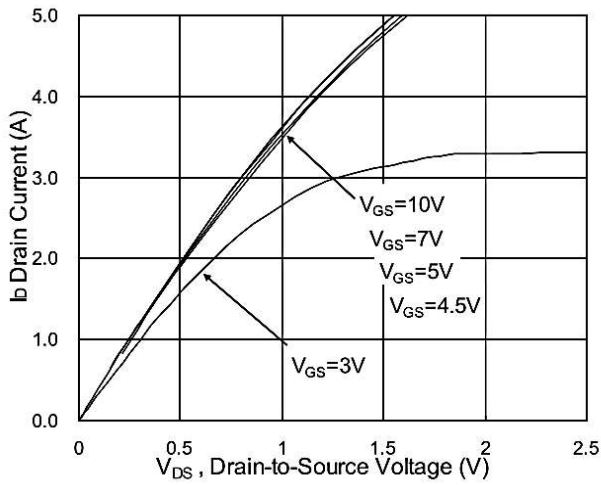


Fig.1 Typical Output Characteristics

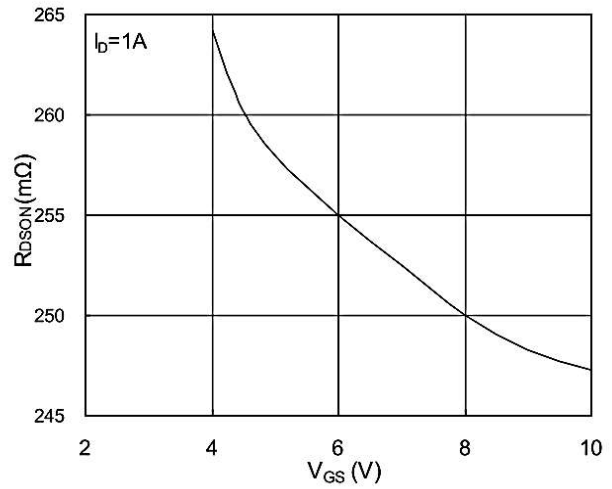


Fig.2 On-Resistance vs. Gate-Source

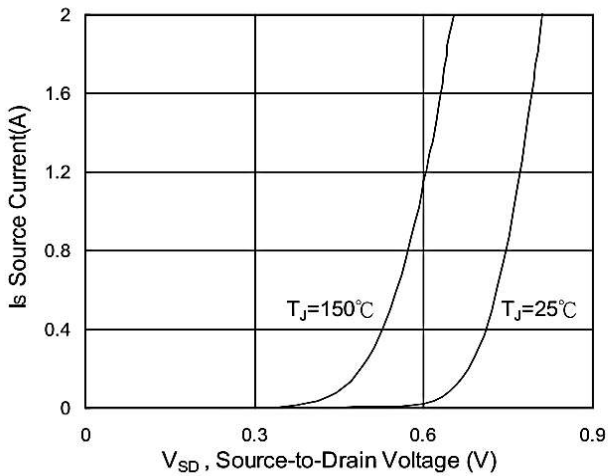


Fig.3 Forward Characteristics of Reverse

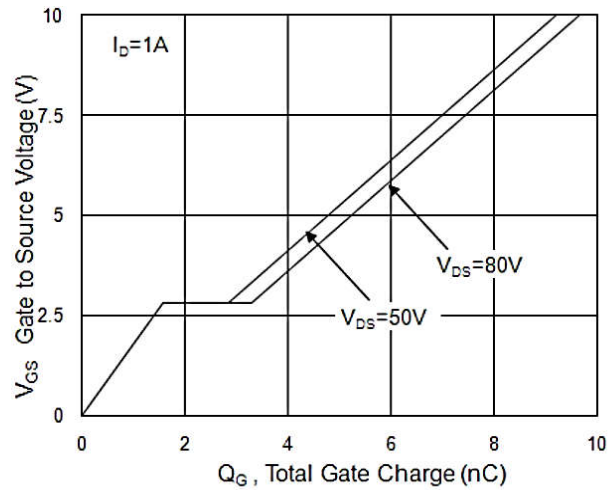


Fig.4 Gate-Charge Characteristics

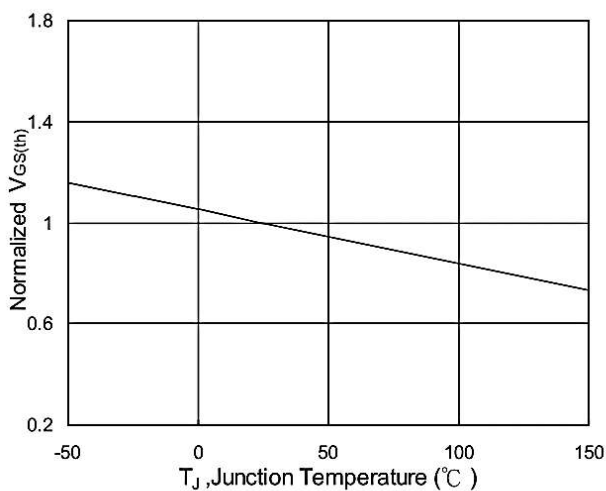


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

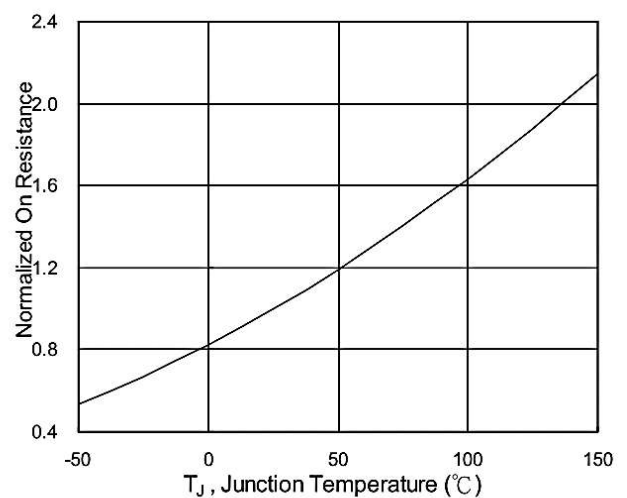


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

Ratings and Characteristic Curves

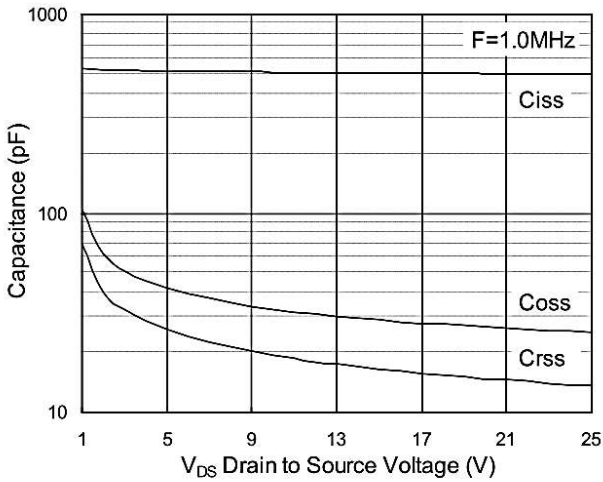


Fig.7 Capacitance

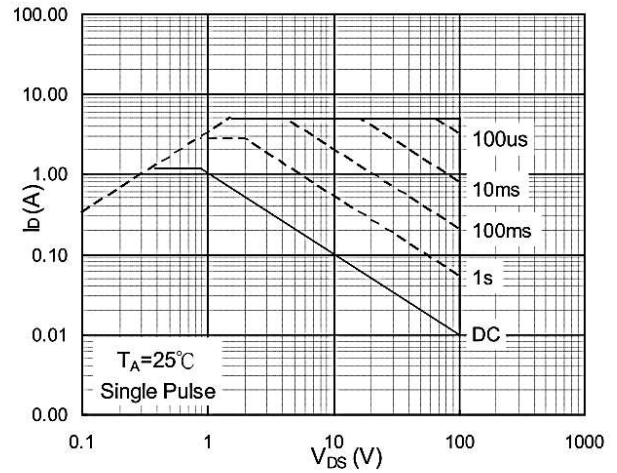


Fig.8 Safe Operating Area

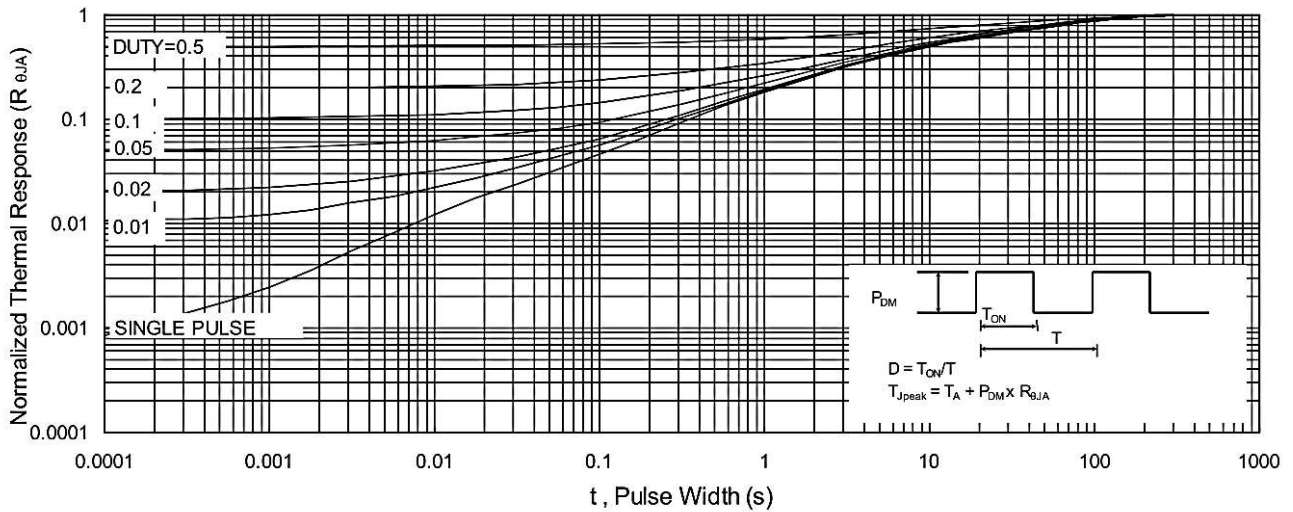


Fig.9 Normalized Maximum Transient Thermal Impedance

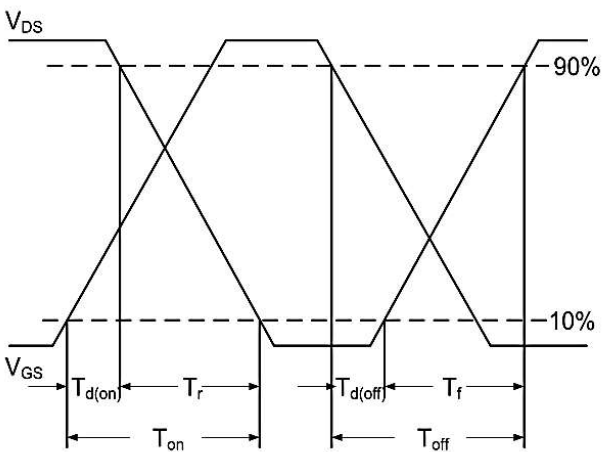


Fig.10 Switching Time Waveform

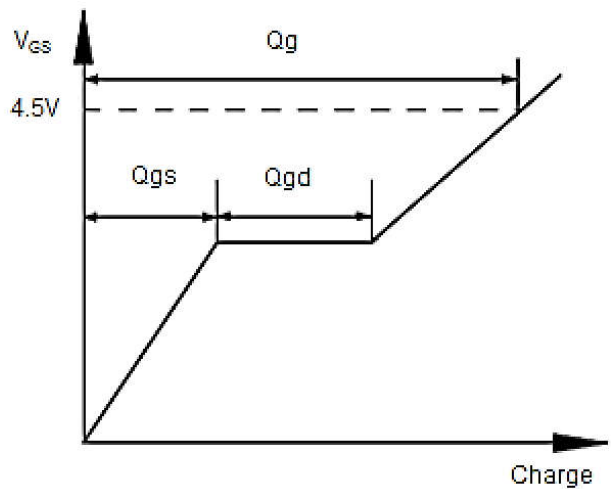


Fig.11 Gate Charge Waveform

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			

