

100V N-CHANNEL ENHANCEMENT MODE MOSFET

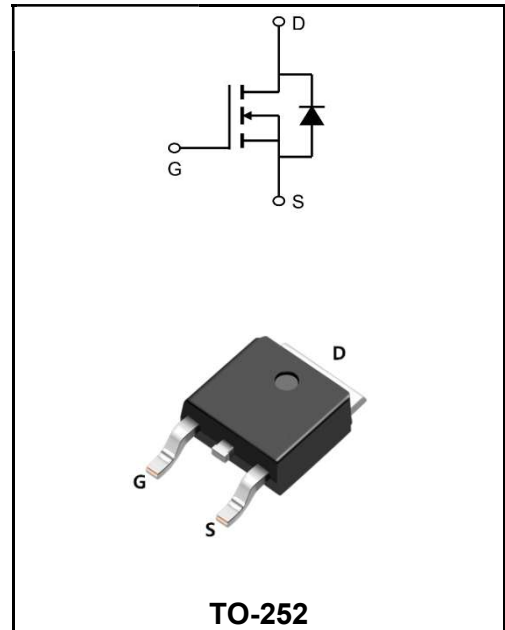
MAIN CHARACTERISTICS

I_D	14.1A
V_{DSS}	100V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 105mΩ (Type:88 mΩ)



Application

- ◆ Load Switch
- ◆ PWM Application
- ◆ Power management



Product Specification Classification

Part Number	Package	Marking	Pack
YFW15N10AD	TO-252	YFW 15N10AD XXXXX	2500PCS/Tape

Maximum Ratings at Tc=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 @Tc=25°C	I_D	14.1	A
Drain Current, V_{GS} @ 10V @Tc=100°C	I_D	8.1	A
Pulsed Drain Current ¹	I_{DM}	28	A
Total Power Dissipation @Tc=25°C	P_D	20.8	W
Total Power Dissipation ³ @Ta=25°C	P_D	2	W
Single Pulse Avalanche Energy ⁴	E_{AS}	8	mJ
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Maximum Thermal Resistance, Junction-case	R_{thj-c}	6	°C/W
Maximum Thermal Resistance, Junction ambient	R_{thj-a}	62.5	°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	107	-	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)}	1.0	1.5	2.5	V
Static Drain-Source on-Resistance note3	$V_{GS}=10V, I_D=10A$	R_{DS(ON)}	-	88	105	mΩ
	$V_{GS}=4.5V, I_D=8A$		-	93	125	
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	610	-	μF
Output Capacitance		C_{oss}	-	40	-	
Reverse Transfer Capacitance		C_{rss}	-	25	-	
Total Gate Charge	$V_{DS}=30V$ $V_{GS}=10V$ $I_D=10A$	Q_g	-	12	-	nC
Gate-Source Charge		Q_{gs}	-	2.2	-	
Gate-Drain("Miller") Charge		Q_{gd}	-	2.5	-	
Turn-on delay time	$V_{DS}=30V$ $I_D=5A$ $R_G=1.8\Omega$ $V_{GS}=10V$	t_{d(on)}	-	7	-	ns
Turn-on Rise Time		T_r	-	5	-	
Turn-Off Delay Time		t_{d(OFF)}	-	16	-	
Turn-Off Fall Time		t_f	-	6	-	
Continuous Source Current ^{1,5}	$V_G=V_D=0V, \text{ Force Current}$	I_S	-	-	10	A
Pulsed Source Current ^{2,5}		I_{SM}	-	-	40	A
Diode Forward Voltage ²	$V_{GS}=0V, I_S=10A$	V_{SD}	-	-	1.2	V
Body Diode Reverse Recovery Time	$I_F=10A, di/dt=100A/\mu s$	t_{rr}	-	21	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}	-	21	-	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 $\cong 300\mu s$, duty cycle $\cong 2\%$
- 3.The EAS data shows Max. rating . The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=11A$
- 4.The power dissipation is limited by 150°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

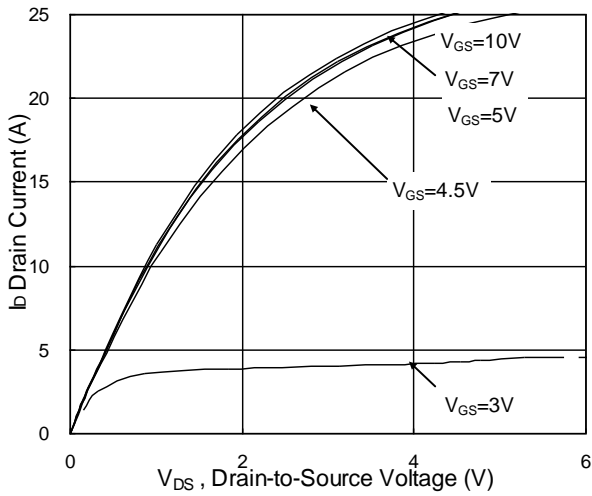


Fig.1 Typical Output Characteristics

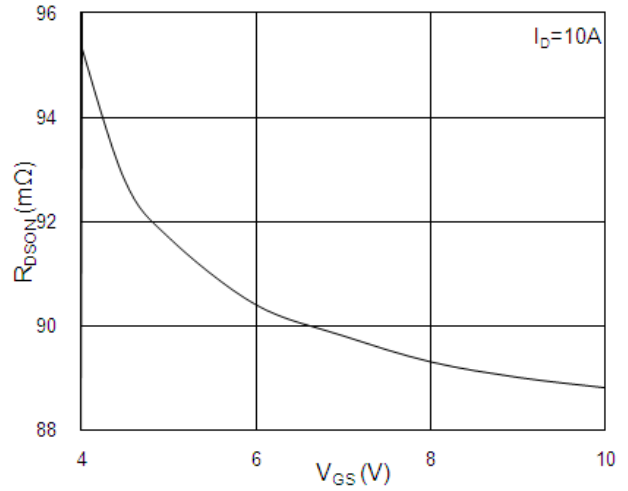


Fig.2 On-Resistance vs. Gate-Source

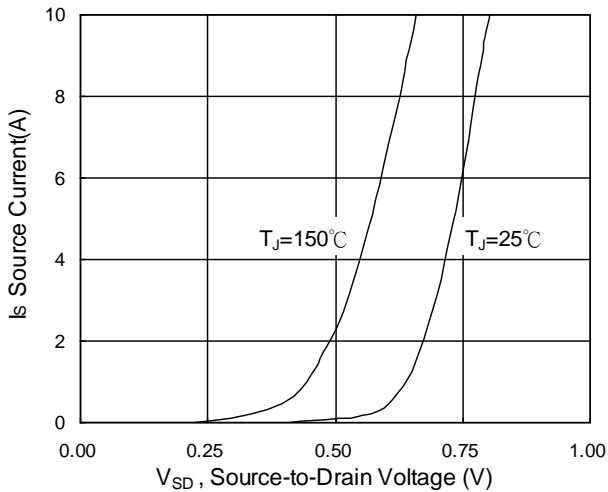


Fig.3 Forward Characteristics Of Reverse

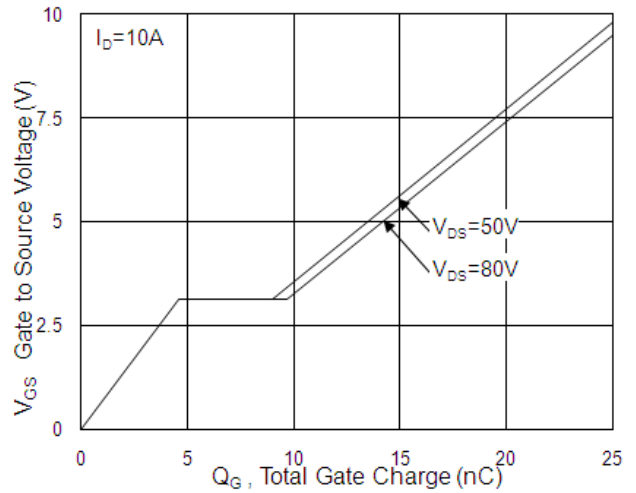


Fig.4 Gate-Charge Characteristics

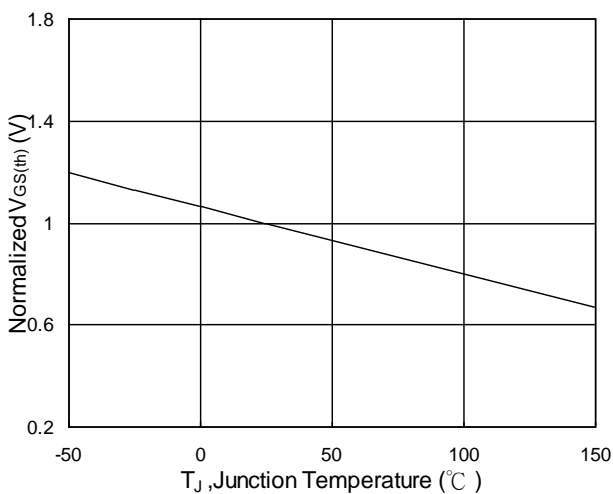


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

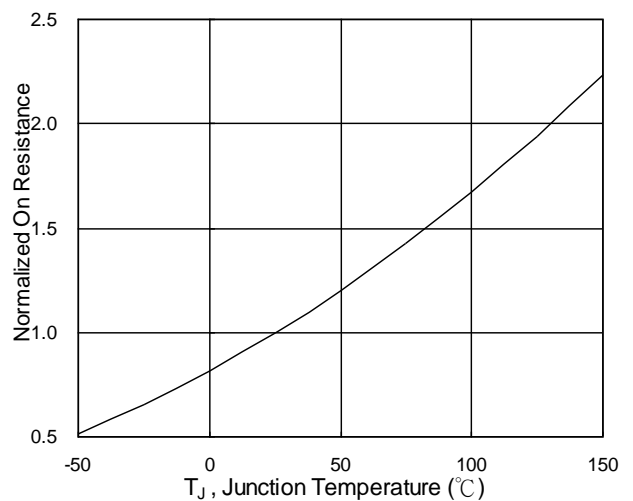


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

Ratings and Characteristic Curves

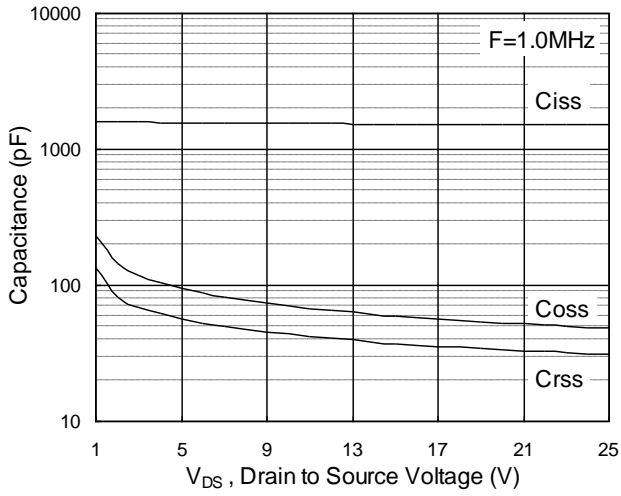


Fig.7 Capacitance

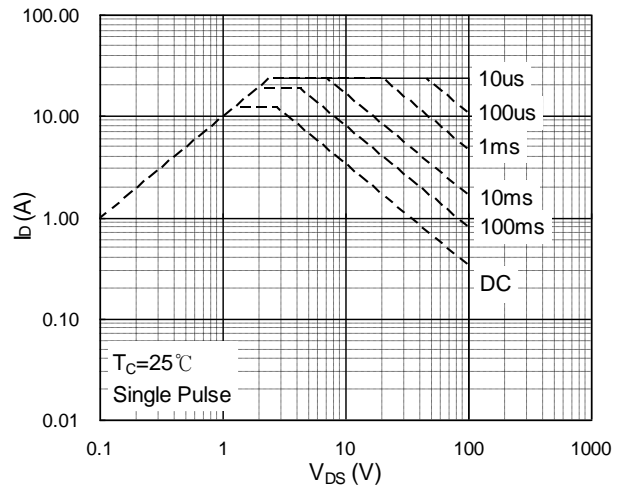


Fig.8 Safe Operating Area

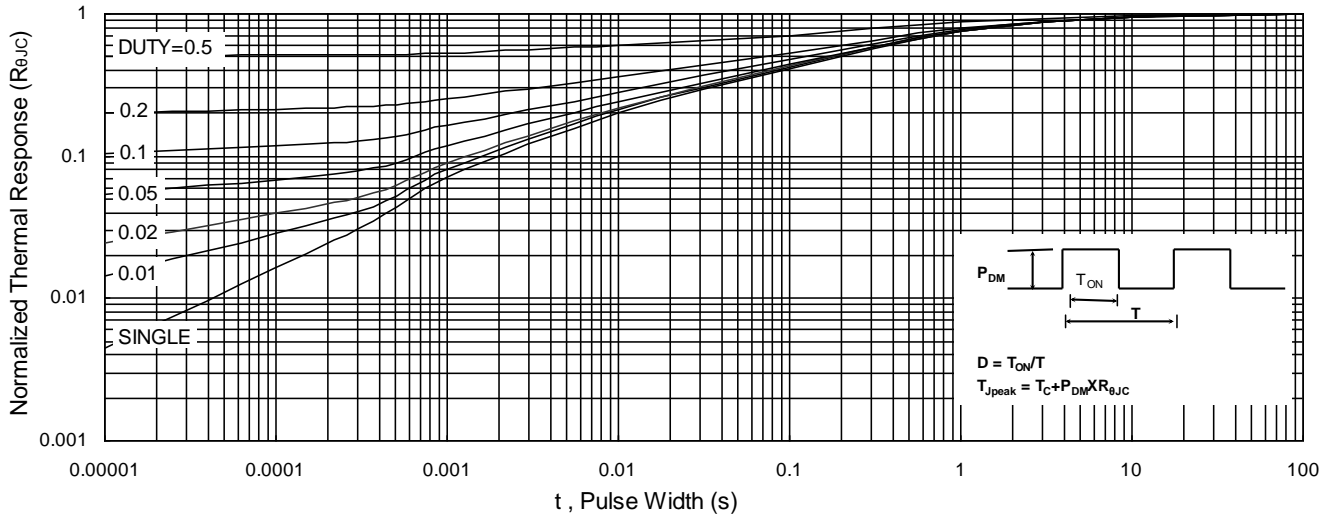


Fig.9 Normalized Maximum Transient Thermal Impedance

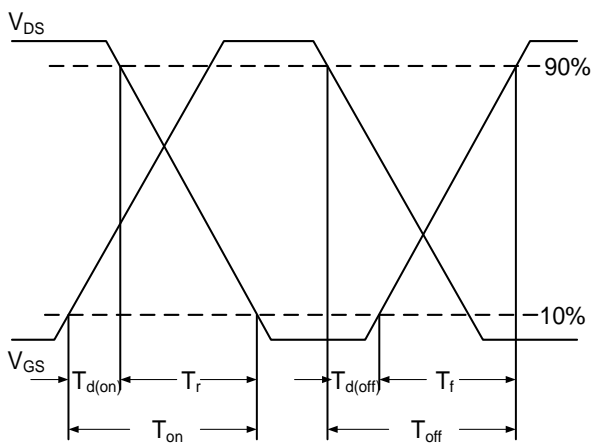


Fig.10 Switching Time Waveform

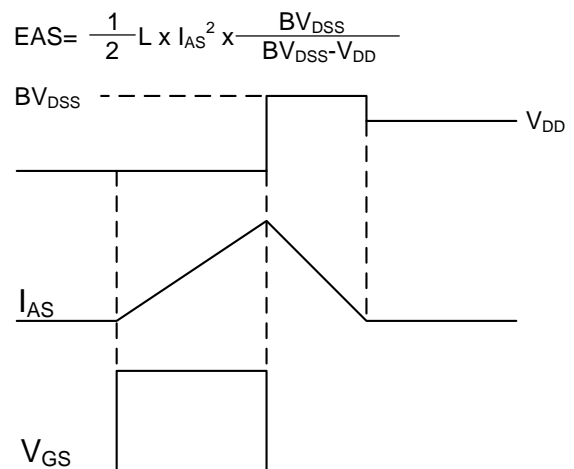


Fig.11 Unclamped Inductive Switching Waveform

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			

