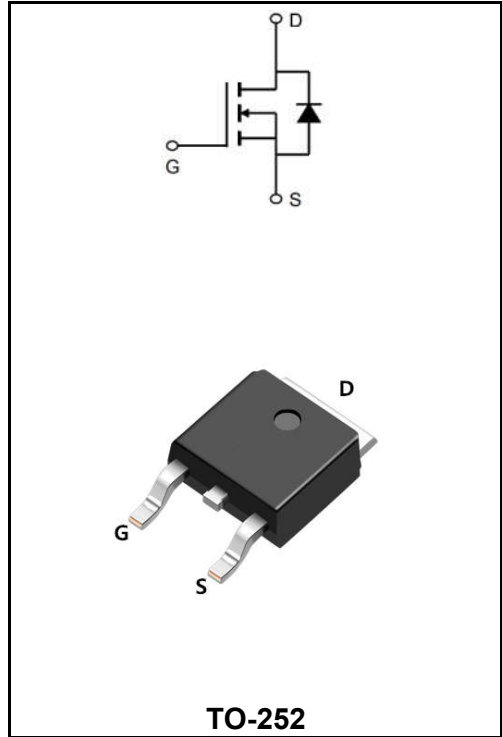


30V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	150A
V_{DSS}	30V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 3mΩ (Type: 2.2 mΩ)



Application

- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW150N03AD	TO-252	YFW 150N03AD XXXXX	2500PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	30	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, $V_{GS} @ 10V^{1.6}$ @Tc=25°C	I_D	155	A
Continuous Drain Current, $V_{GS} @ 10V^{1.6}$ @Tc=100°C	I_D	110	A
Pulsed Drain Current ²	I_{DM}	450	A
Single Pulse Avalanche Energy ³	E_{AS}	246	mJ
Avalanche Current	I_{AS}	70.2	A
Total Power Dissipation ⁴ @Tc=25°C	P_D	89.3	W
Storage Temperature Range	T_{STG}	-55 to +175	°C
Operating Junction Temperature Range	T_J	-55 to +175	°C
Thermal Resistance, Junction-Ambient ¹	$R_{\theta JA}$	62	°C/W
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	1.4	°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}	30	-	-	V
BVDSS Temperature Coefficient	Reference to 25°C, $I_D=1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	0.022	-	V/°C
Static Drain-Source On-Resistance ²	$V_{GS}=10V, I_D=30A$	$R_{DS(ON)}$	-	2.2	3	mΩ
	$V_{GS}=4.5V, I_D=15A$		-	3.2	4	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1	-	2.5	V
VGS(th) Temperature Coefficient		$\Delta V_{GS(th)}$	-	-6.1	-	mV/°C
Drain-Source Leakage Current	$V_{DS}=24V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	2	μA
	$V_{DS}=24V, V_{GS}=0V, T_J=55^\circ C$		-	-	10	
Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Forward Transconductance	$V_{DS}=5V, I_D=30A$	g_{FS}	-	60	-	S
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	R_g	-	0.9	-	
Total Gate Charge(4.5V)	$V_{DS}=15V$ $V_{GS}=10V$ $I_D=15A$	Q_g	-	56.9	-	nC
Gate-Source Charge		Q_{gs}	-	13.8	-	
Gate-Drain Charge		Q_{gd}	-	23.5	-	
Turn-on delay time	$V_{DD}=15V$ $V_{GS}=10V$ $R_G=3.3$ $I_D=1A$	$t_{d(on)}$	-	20.1	-	ns
Rise Time		T_r	-	6.3	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	124.6	-	
Fall Time		t_f	-	15.8	-	
Input Capacitance	$V_{DS}=15V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	5935	-	pF
Output Capacitance		C_{oss}	-	725	-	
Reverse Transfer Capacitance		C_{rss}	-	538	-	
Continuous Source Current ^{1,5}	$V_G=V_D=0V, \text{Force Current}$	I_S	-	-	155	A
Pulsed Source Current ^{2,5}		I_{SM}	-	-	310	A
Diode Forward Voltage ²	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	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 $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The EAS data shows Max. rating. The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=70.2A$
4. The power dissipation is limited by 150°C junction temperature
5. The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.
6. Package limitation current is 85A.

Ratings and Characteristic Curves

Typical Characteristics

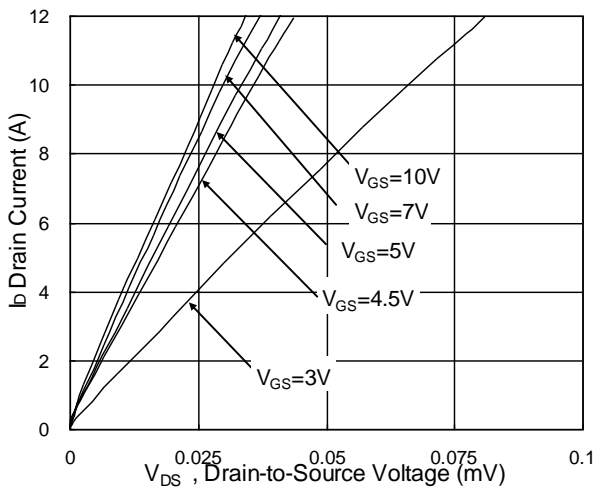


Fig.1 Typical Output Characteristics

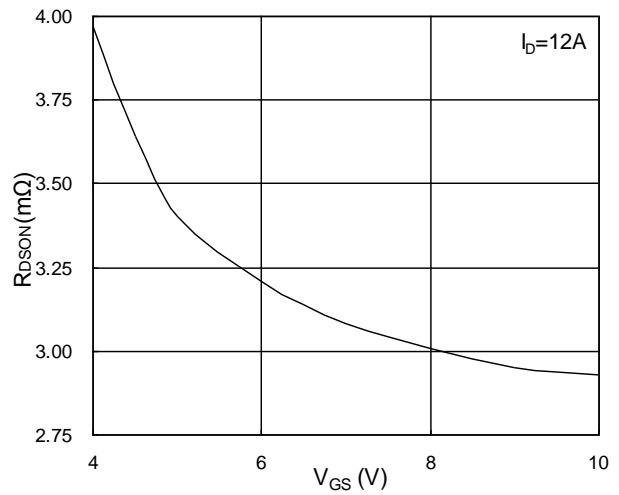


Fig.2 On-Resistance v.s Gate-Source

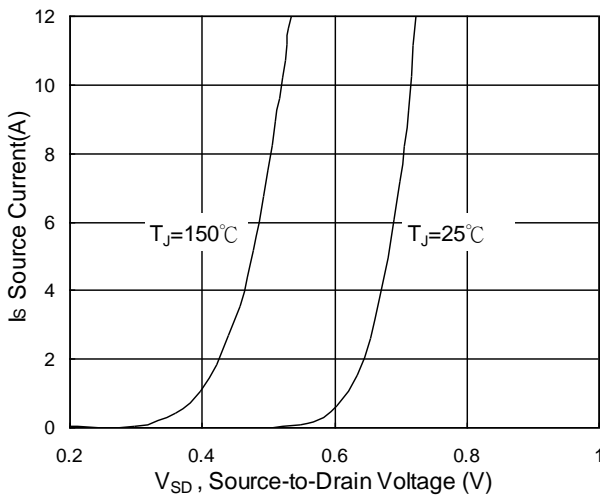


Fig.3 Forward Characteristics of Reverse

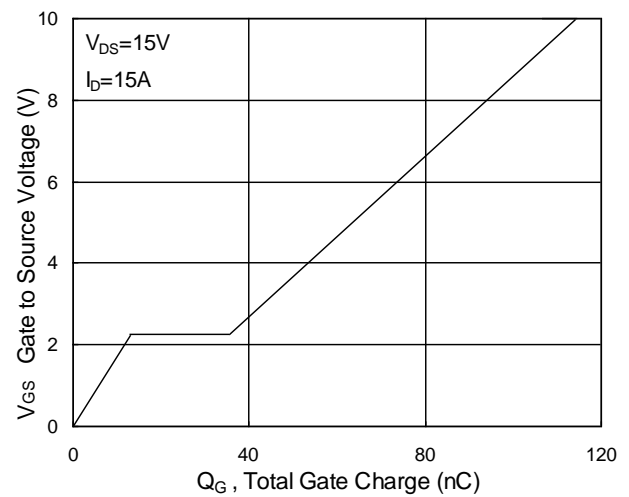


Fig.4 Gate-Charge Characteristics

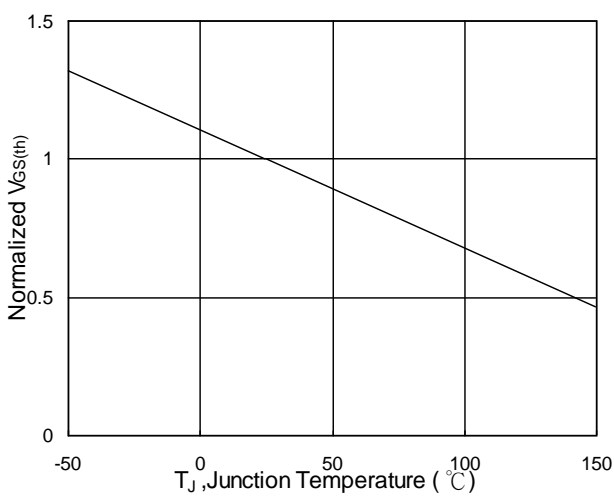


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

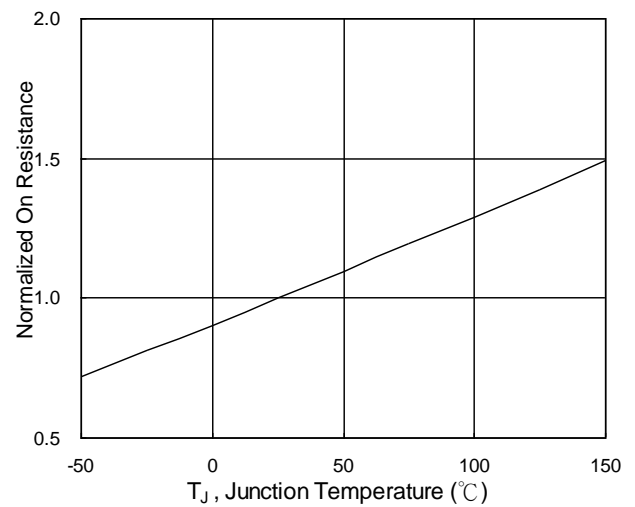


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

Ratings and Characteristic Curves

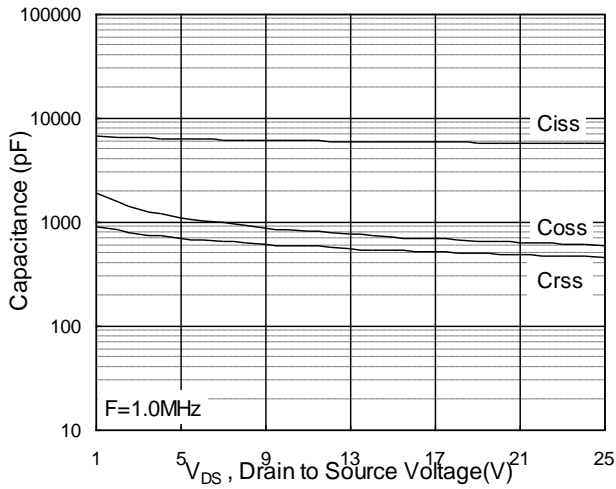


Fig.7 Capacitance

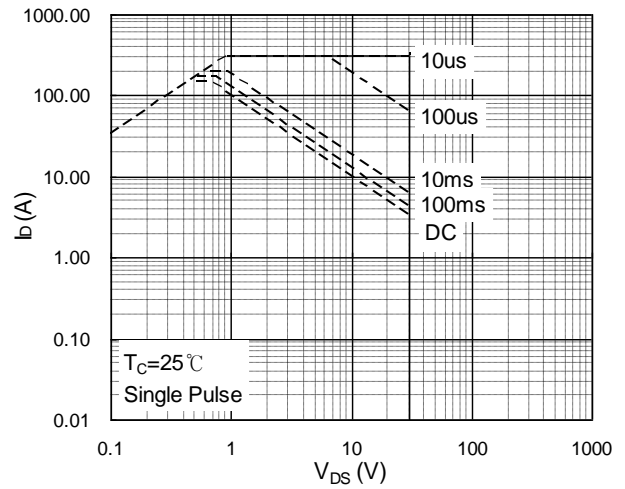


Fig.8 Safe Operating Area

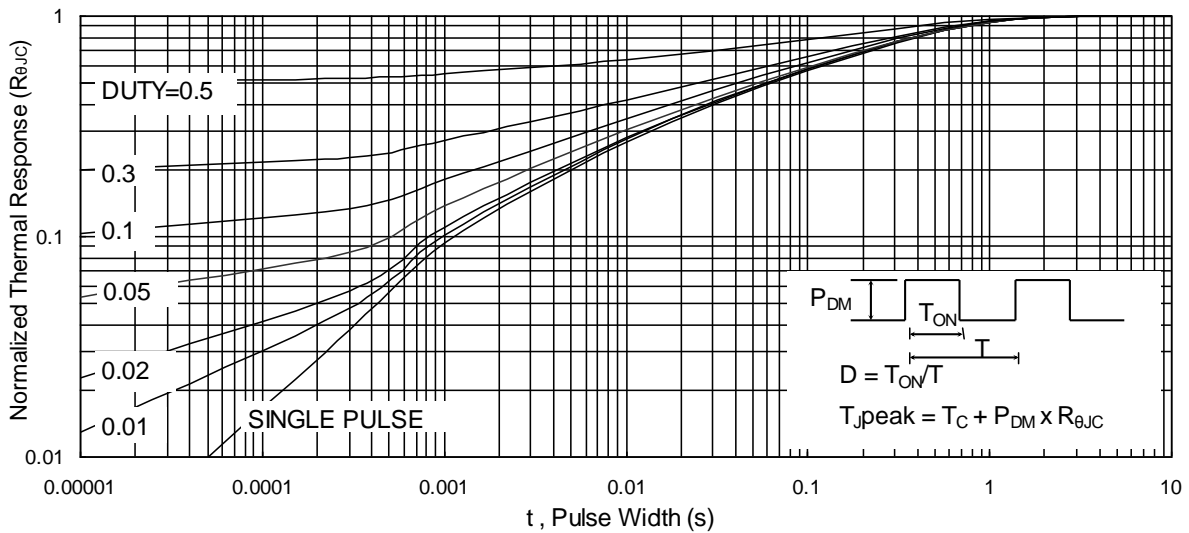


Fig.9 Normalized Maximum Transient Thermal Impedance

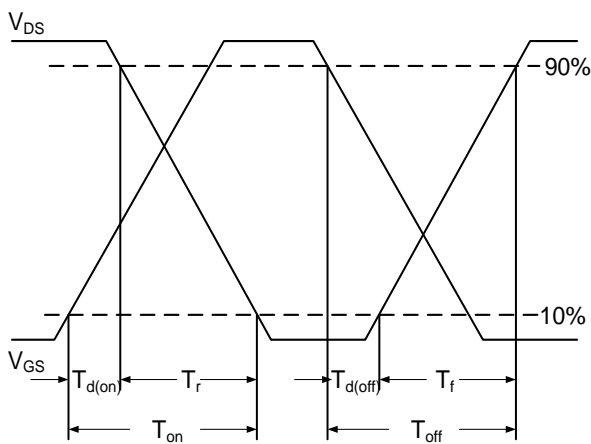


Fig.10 Switching Time Waveform

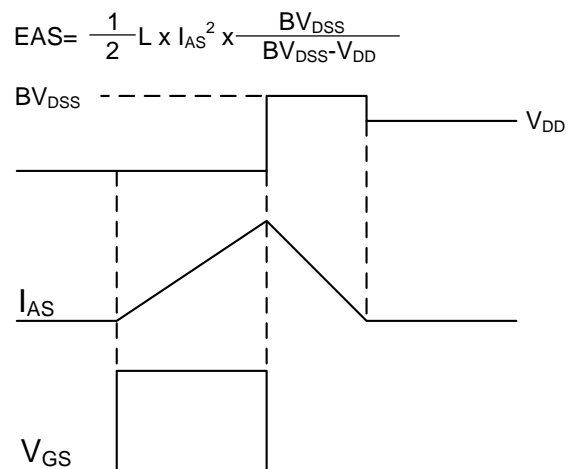


Fig.11 Unclamped Inductive Waveform

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			

