

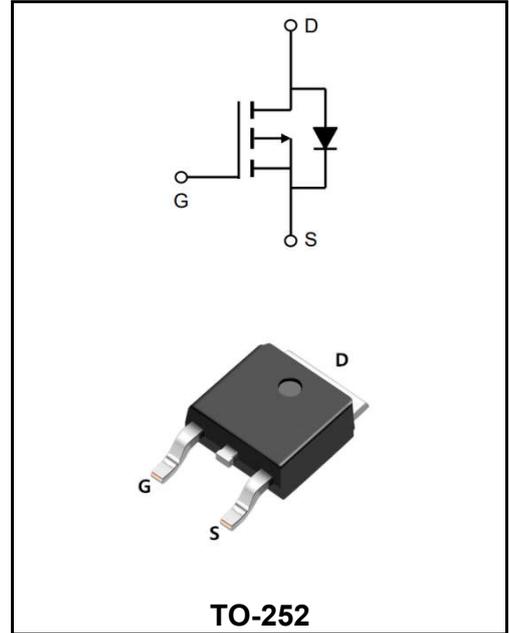
**-150V P-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

$I_D$	-7A
$V_{DSS}$	-150V
$R_{DS(on)-typ}(@V_{GS}=-10V)$	< 780mΩ (Type:620mΩ)

**Application**

- ◆ Brushless motor
- ◆ Load switch
- ◆ Uninterruptible power supply



**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW7P15AD	TO-252	YFW 7P15AD XXXXX	2500PCS/Tape

**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Symbols	Value	Units
Drain-Source Voltage	$V_{DS}$	-150	V
Gate - Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current, $V_{GS} @ -10V^1 @ T_A=25^\circ C$	$I_D$	-7.0	A
Continuous Drain Current, $V_{GS} @ -10V^1 @ T_A=70^\circ C$	$I_D$	-4.8	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	-28	A
Single Pulse Avalanche Energy <sup>3</sup>	$E_{AS}$	56.5	mJ
Avalanche Current	$I_{AS}$	5	A
Total Power Dissipation <sup>4</sup> @ $T_A=25^\circ C$	$P_D$	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 <sup>1</sup>	$R_{\theta JA}$	62	°C/W
Thermal Resistance Junction-Case <sup>1</sup>	$R_{\theta JC}$	40	°C/W

**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	$BV_{DSS}$	-150	-168	-	V
Static Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-1A$	$R_{DS(ON)}$	-	620	780	mΩ
	$V_{GS}=-6V, I_D=-0.5A$		-	700	980	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-2.0	-3.0	-4.0	V
Drain -Source Leakage Current	$V_{DS}=120V, V_{GS}=0V, T_J=25^\circ C$	$I_{DSS}$	-	-	1	μA
	$V_{DS}=120V, V_{GS}=0V, T_J=85^\circ C$		-	-	30	
Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	$I_{GSS}$	-	-	±100	nA
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	$R_g$	-	12	-	Ω
Total Gate Charge	$V_{DS}=-75V$ $V_{GS}=-10V$ $I_D=-1A$	$Q_g$	-	10.8	-	nC
Gate-Source Charge		$Q_{gs}$	-	3.1	-	
Gate-Drain Charge		$Q_{gd}$	-	2.2	-	
Turn-on delay time	$V_{DD}=-30V$ $V_{GS}=-10V$ $R_G=6\Omega$ $I_D=-1A$	$t_{d(on)}$	-	21	-	nS
Rise Time		$T_r$	-	16	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	40	-	
Fall Time		$t_f$	-	18	-	
Input Capacitance	$V_{DS}=-75V$ $V_{GS}=0V$ $f=1.0MHz$	$C_{iss}$	-	706	-	pF
Output Capacitance		$C_{oss}$	-	23	-	
Reverse Transfer Capacitance		$C_{rss}$	-	13	-	

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 EAS data shows Max. rating . The test condition is  $V_{DD}=-50V, V_{GS}=-10V, L=0.5mH, I_{AS}=-5A$
- 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.

Ratings and Characteristic Curves

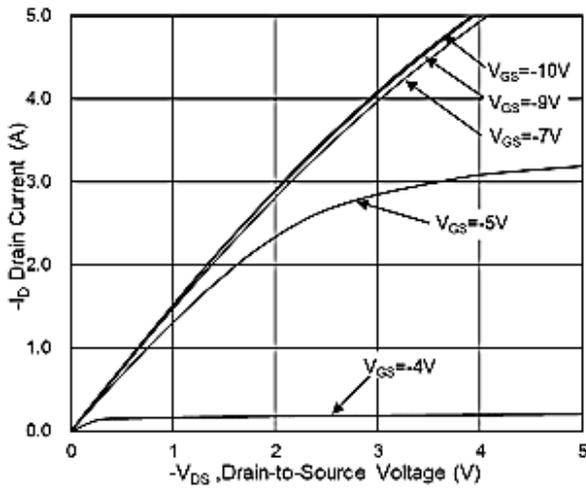


Fig.1 Typical Output Characteristics

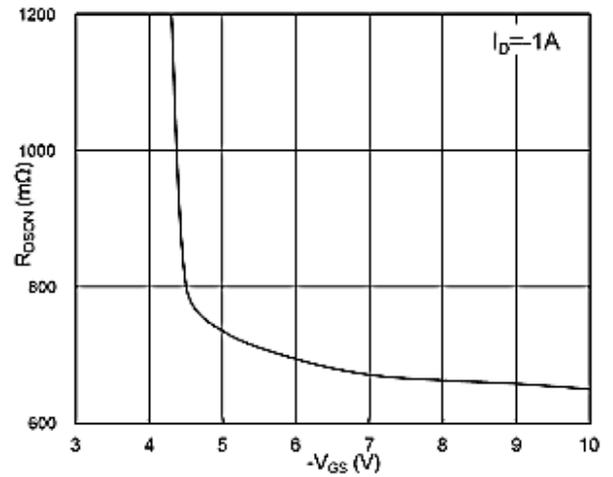


Fig.2 On-Resistance vs G-S Voltage

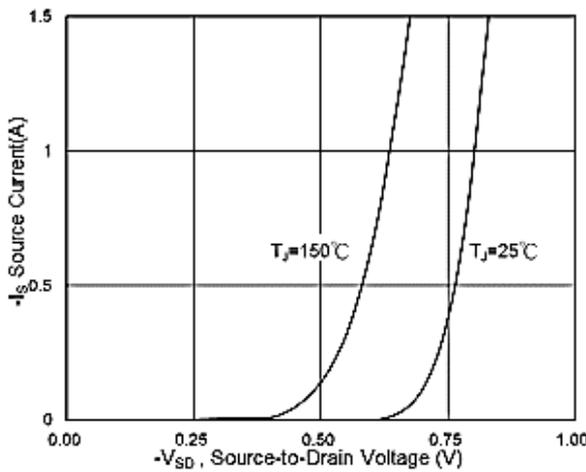


Fig.3 Source Drain Forward Characteristics

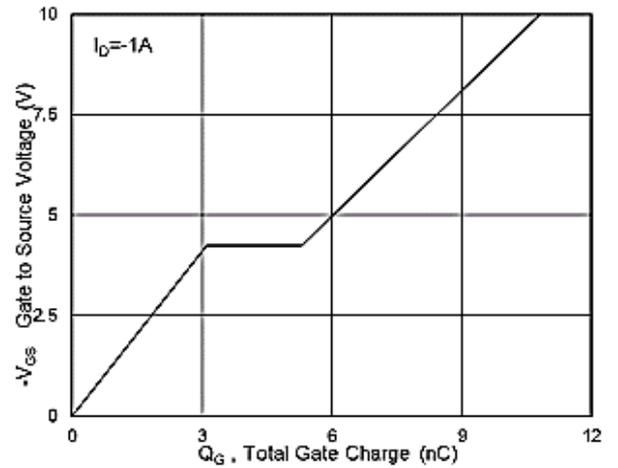


Fig.4 Gate-Charge Characteristics

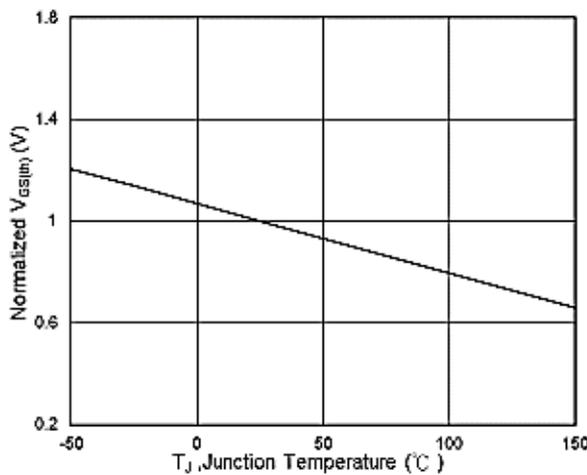


Fig.5 Normalized  $V_{GS(th)}$  vs  $T_J$

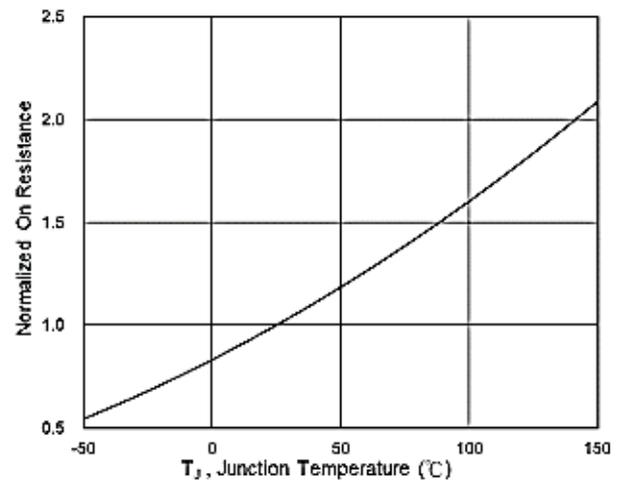


Fig.6 Normalized  $R_{DS(on)}$  vs  $T_J$

Ratings and Characteristic Curves

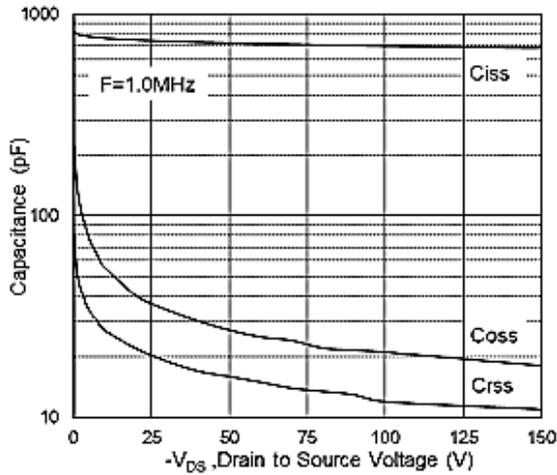


Fig.7 Capacitance

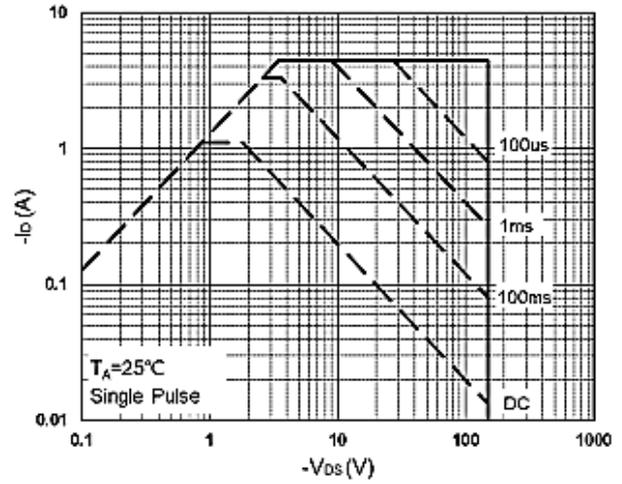


Fig.8 Safe Operating Area

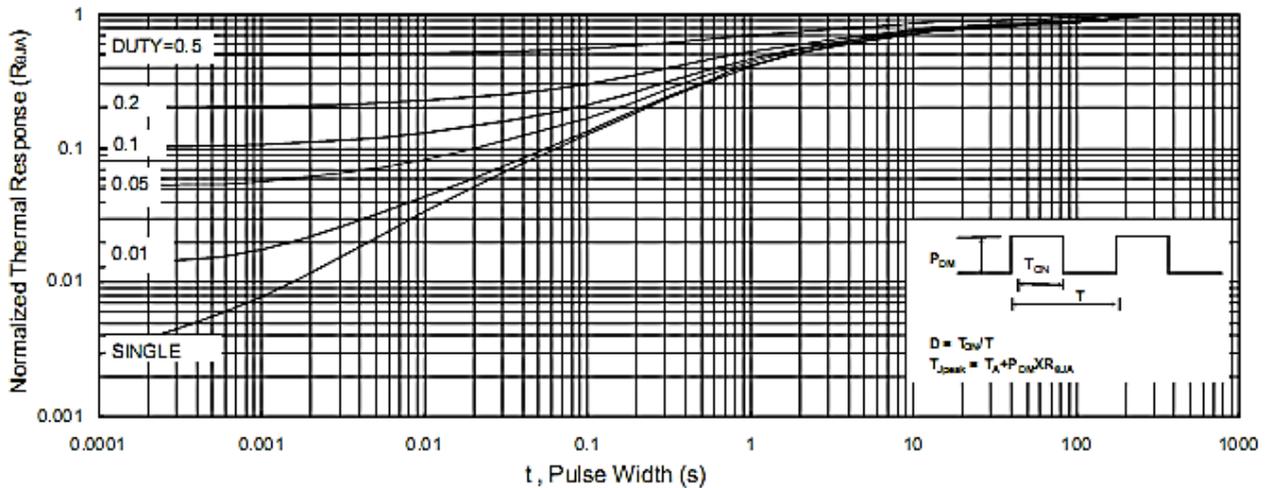


Fig.9 Normalized Maximum Transient Thermal Impedance

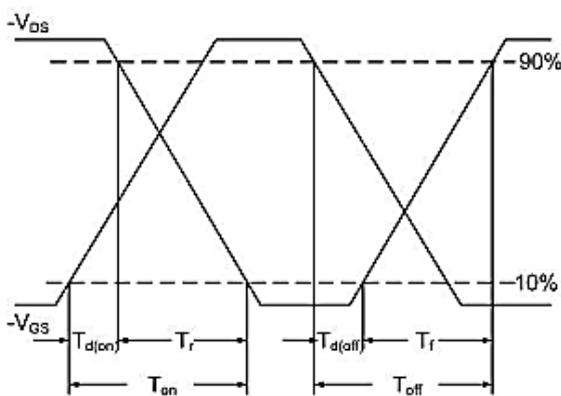


Fig.10 Switching Time Waveform

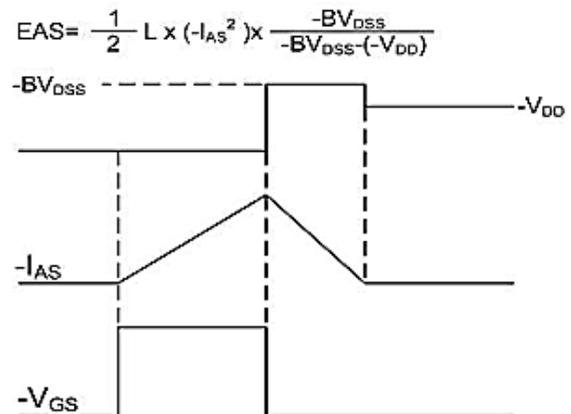


Fig.11 Unclamped Inductive Waveform

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			

