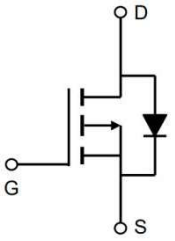
-30V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-30A
V_{DSS}	-30V
R_{DSON}-typ(@V_{GS}=-10V)	< 20mΩ(Type:18 mΩ)



TO-252

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW30P03AD	TO-252	YFW 30P03AD XXXXX	2500PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value		Units
		10s	Steady State	
Drain-Source Voltage	V_{DS}	-30		V
Gate - Source Voltage	V_{GS}	±20		V
Continuous Drain Current, V_{GS} @ -10V[1] @T_C=25℃	I_D	-30		A
Continuous Drain Current, V_{GS} @ -10V[1] @T_C=100℃	I_D	-22		A
Continuous Drain Current, V_{GS} @ -10V[1] @T_A=25℃	I_D	-13.4	-8.5	A
Continuous Drain Current, V_{GS} @ -10V[1] @T_A=70℃	I_D	-10.7	-6.8	A
Pulsed Drain Current [2]	I_{DM}	-70		A
Single Pulse Avalanche Energy[3]	E_{AS}	72.2		mJ
Avalanche Current	I_{AS}	-38		A
Total Power Dissipation[4] @T_C=25℃	P_D	34.7		W
Total Power Dissipation[4] @T_A=25℃	P_D	5	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]	$R_{\theta JA}$	62		°C/W
Thermal Resistance Junction-Ambient [1] (t ≤10s)	$R_{\theta JA}$	25		°C/W
Thermal Resistance Junction to Case[1]	$R_{\theta JC}$	3.6		°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=-250uA	BV_{DSS}	-30	-	-	V
BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=-1mA	$\Delta BV_{DSS/\Delta TJ}$	-	-0.022	-	V/°C
Static Drain-Source On-Resistance [2]	V_{GS}=-10V, I_D=-15A	$R_{DS(ON)}$	-	18	20	mΩ
	V_{GS}=-4.5V, I_D=-10A		-	25	32	
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	$V_{GS(th)}$	-1.0	-	-2.5	V
V_{GS}(th) Temperature Coefficient		$\Delta V_{GS(th)}$	-	4.6	-	mV/°C
Drain-Source Leakage Current	V_{DS}=-24V , V_{GS}=0V , T_J=25℃	I_{DSS}	-	-	-1	μA
	V_{DS}=-24V , V_{GS}=0V , T_J=55℃		-	-	-5	
Gate –Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Forward Transconductance	V_{DS}=-5V , I_D=-10A	g_{fs}	-	5	-	S
Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	R_g	-	13	-	Ω
Total Gate Charge(-4.5V)	V_{DS}=-15V V_{GS}=-4.5V I_D=-15A	Q_g	-	12.5	-	nC
Gate-Source Charge		Q_{gs}	-	5.4	-	
Gate-Drain Charge		Q_{gd}	-	5	-	
Turn-on delay time	V_{DD} =-15V V_{GS}=-10V I_D= -15A R_G=3.3	$t_{d(on)}$	-	4.4	-	ns
Rise Time		T_r	-	11.2	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	34	-	
Fall Time		t_f	-	18	-	
Input Capacitance	V_{DS}=-15V V_{GS}=0V f=1MHz	C_{iss}	-	1345	-	pF
Output Capacitance		C_{oss}	-	194	-	
Reverse Transfer Capacitance		C_{rss}	-	158	-	
Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	I_S	-	-	-35	A
Pulsed Source Current[2,5]		I_{SM}	-	-	-70	A
Diode Forward Voltage[2]	V_{GS}=0V , I_S=-1A , T_J=25℃	V_{SD}	-	-	-1.2	V
Reverse Recovery Time	I_F=-15A, dI/dt=100A/μs, T_J=25℃	t_{rr}	-	12.4	-	ns
Reverse Recovery Charge		Q_{rr}	-	5	-	nC

Ratings and Characteristic Curves

Typical Characteristics

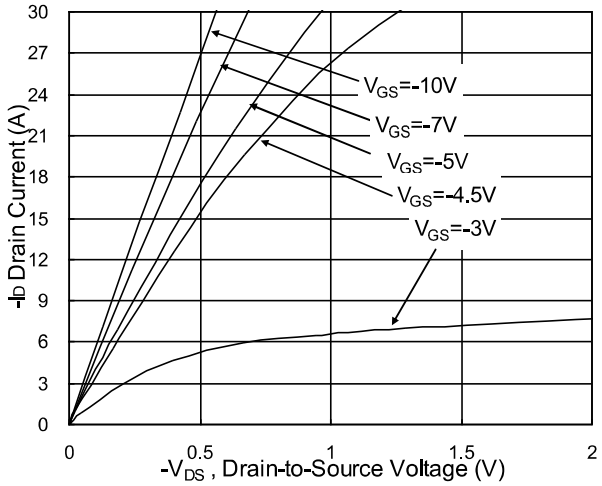


Fig.1 Typical Output Characteristics

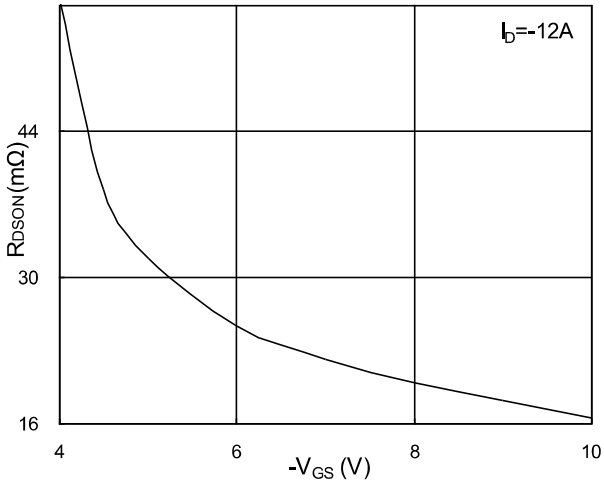


Fig.2 On-Resistance v.s Gate-Source

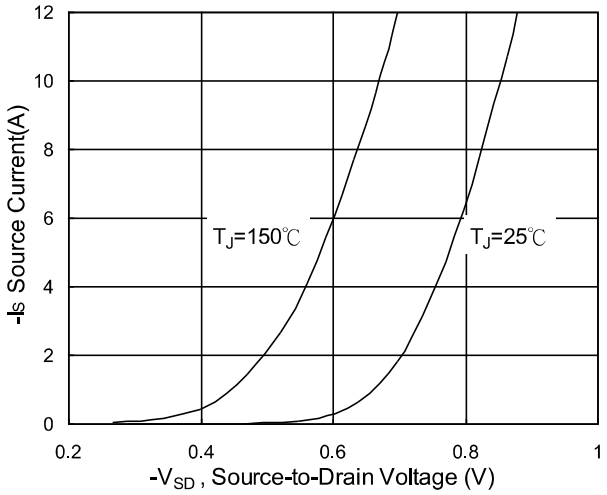


Fig.3 Forward Characteristics of Reverse

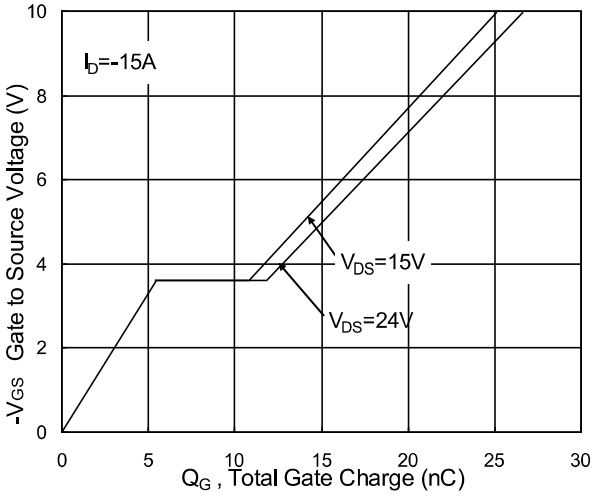


Fig.4 Gate-Charge Characteristics

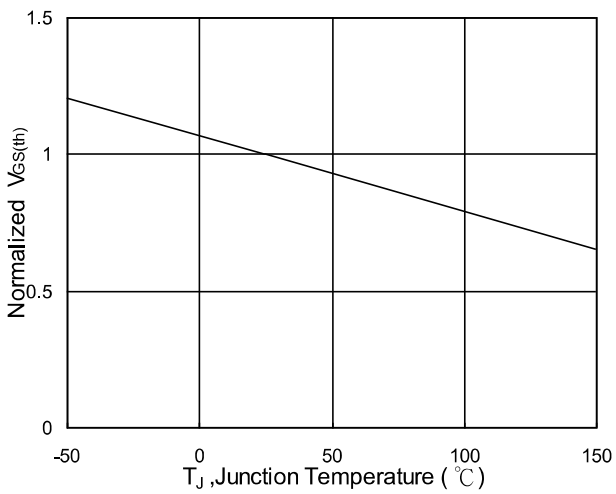


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

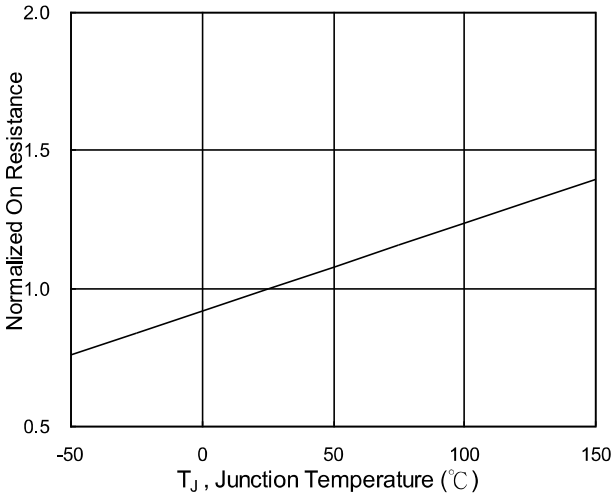


Fig.6 Normalized R_{DSON} v.s T_J

Ratings and Characteristic Curves

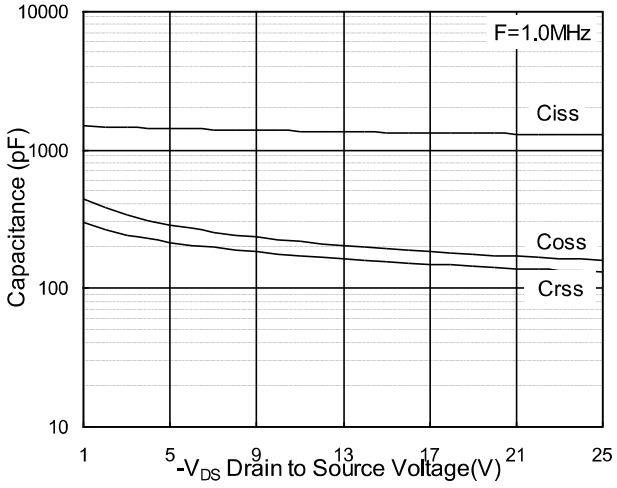


Fig.7 Capacitance

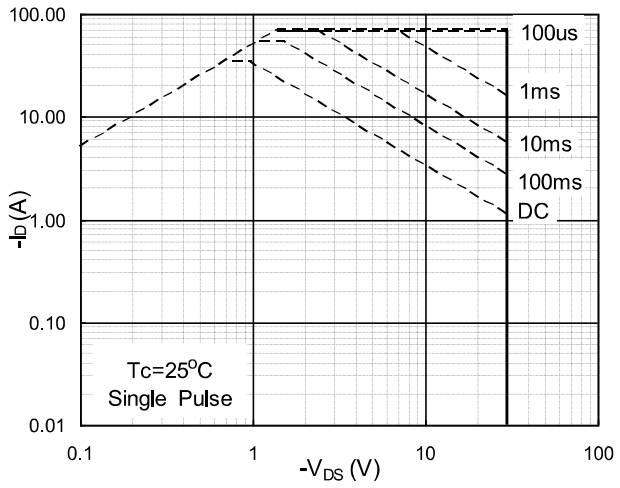


Fig.8 Safe Operating Area

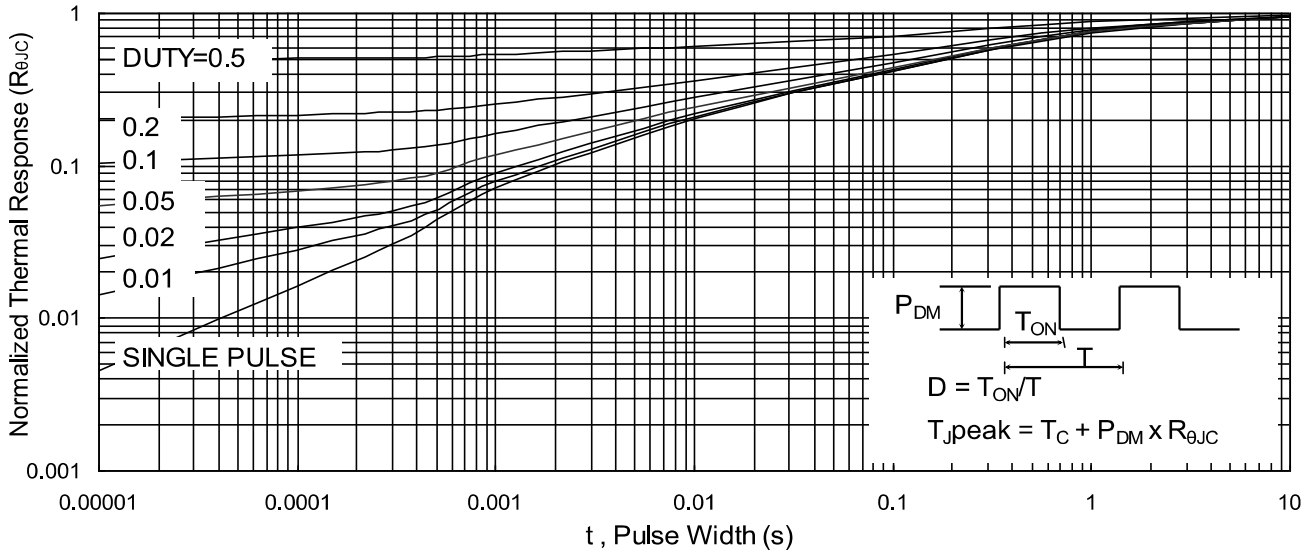


Fig.9 Normalized Maximum Transient Thermal Impedance

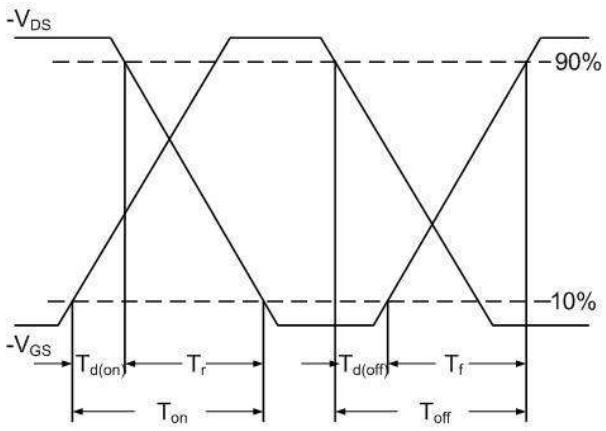


Fig.10 Switching Time Waveform

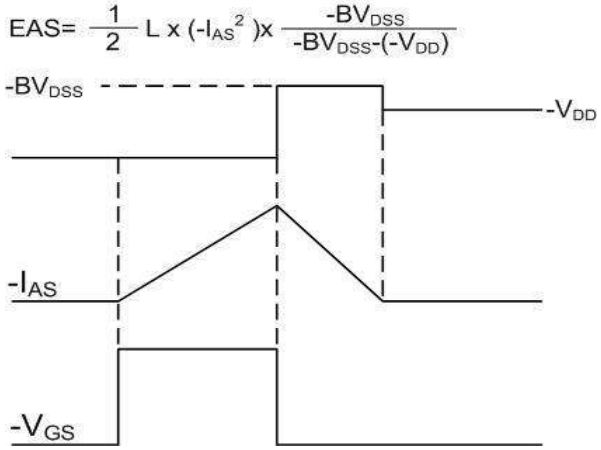
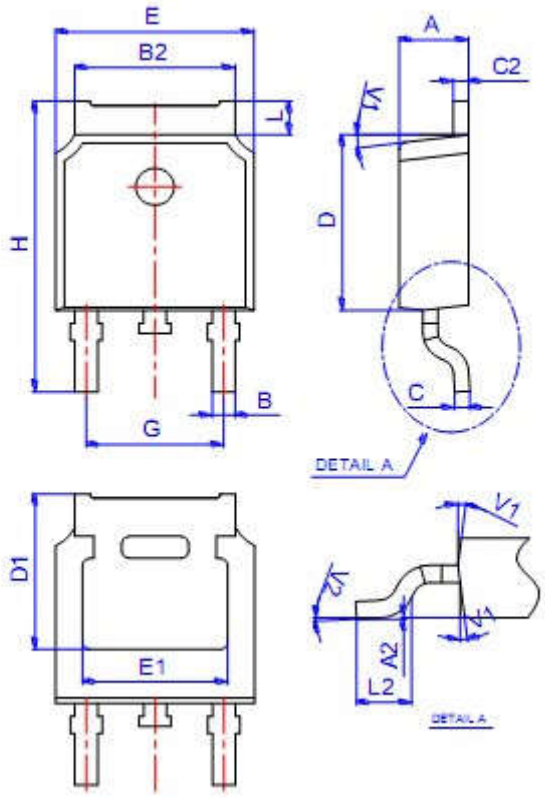


Fig.11 Unclamped Inductive Switching Waveform

Package Outline Dimensions Millimeters

TO-252



Dim.	Min.	Typ.	Ma .
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