

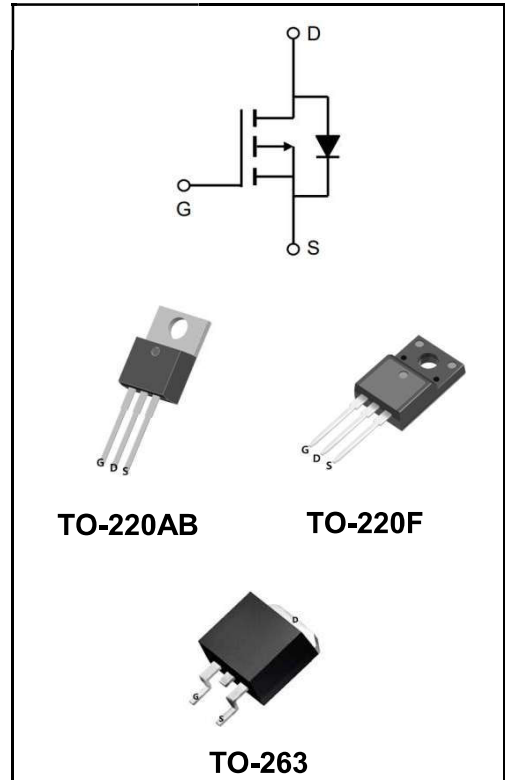
**-100V P-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	-30A
<b>V<sub>DSS</sub></b>	-100V
<b>R<sub>DS(on)-typ</sub>(@V<sub>GS</sub>=-10V)</b>	< -110mΩ <b>(Type:86 mΩ)</b>

**Application**

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



**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW30P10AT	TO-220AB	YFW 30P10AT XXXXX	1000PCS/Box
YFW30P10AF	TO-220F	YFW 30P10AF XXXXX	1000PCS/Box
YFW30P10AS	TO-263	YFW 30P10AS XXXXX	800PCS/Reel

**Maximum Ratings at T<sub>c</sub>=25°C unless otherwise specified**

Characteristics	Symbols	Value	Units
Drain-Source Voltage	<b>V<sub>DS</sub></b>	-100	<b>V</b>
Gate - Source Voltage	<b>V<sub>GS</sub></b>	±20	<b>V</b>
Continuous Drain Current @T <sub>c</sub> =25°C	<b>I<sub>D</sub></b>	-30	<b>A</b>
Continuous Drain Current @T <sub>c</sub> =100°C	<b>I<sub>D</sub></b>	-16	<b>A</b>
Pulsed Drain Current <sup>2</sup>	<b>I<sub>DM</sub></b>	-75	<b>A</b>
Single Pulse Avalanche Energy <sup>3</sup>	<b>E<sub>AS</sub></b>	157.2	<b>mJ</b>
Avalanche Current	<b>I<sub>AS</sub></b>	25	<b>A</b>
Total Power Dissipation <sup>4</sup> @T <sub>c</sub> =25°C	<b>P<sub>D</sub></b>	96	<b>W</b>
Storage Temperature Range	<b>T<sub>STG</sub></b>	-55 to +150	<b>°C</b>
Operating Junction Temperature Range	<b>T<sub>J</sub></b>	-55 to +150	<b>°C</b>
Thermal Resistance Junction-Ambient <sup>1</sup>	<b>R<sub>θJA</sub></b>	62	<b>°C/W</b>
Thermal Resistance Junction to Case <sup>1</sup>	<b>R<sub>θJC</sub></b>	1.3	<b>°C/W</b>

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

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	$BV_{DSS}$	-100	-	-	V
Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=-10V, I_D=-10A$	$R_{DS(ON)}$	-	78	95	mΩ
	$V_{GS}=-4.5V, I_D=-8A$		-	86	110	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-1.2	1.7	-2.5	V
Drain-Source Leakage Current	$V_{DS}=-100V, V_{GS}=0V, T_J=25^\circ C$	$I_{DSS}$	-	-	-50	μA
Gate -Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	$I_{GSS}$	-	-	±100	nA
Forward Transconductance	$V_{DS}=-10V, I_D=-10A$	$g_{fs}$	-	24	-	S
Total Gate Charge	$V_{DS}=-50V$ $V_{GS}=-10V$ $I_D=-20A$	$Q_g$	-	44.5	-	nC
Gate-Source Charge		$Q_{gs}$	-	9.13	-	
Gate-Drain Charge		$Q_{gd}$	-	5.93	-	
Turn-on delay time	$V_{DD}=-50V$ $V_{GS}=-10V$ $I_D=-10A$ $R_G=3.3\Omega$	$t_{d(on)}$	-	12	-	ns
Rise Time		$T_r$	-	27.4	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	79	-	
Fall Time		$t_f$	-	53.6	-	
Input Capacitance	$V_{DS}=-20V$ $V_{GS}=0V$ $f=1MHz$	$C_{iss}$	-	3029	-	pF
Output Capacitance		$C_{oss}$	-	129	-	
Reverse Transfer Capacitance		$C_{rss}$	-	76	-	
Continuous Source Current <sup>1,5</sup>	$V_G=V_D=0V, \text{Force Current}$	$I_S$	-	-	-18	A
Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=-1A, T_J=25^\circ C$	$V_{SD}$	-	-	-1.2	V
Reverse Recovery Time	$I_F=-8A, dI/dt=100A/\mu s, T_J=25^\circ C$	$t_{rr}$	-	38.7	-	ns
Reverse Recovery Charge		$Q_{rr}$	-	22.4	-	nC

Note :

- 1、 The data tested by surface mounted on a 1 inch<sup>2</sup> 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  $V_{DD}=-72V, V_{GS}=-10V, L=0.1mH, I_{AS}=-25A$
- 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

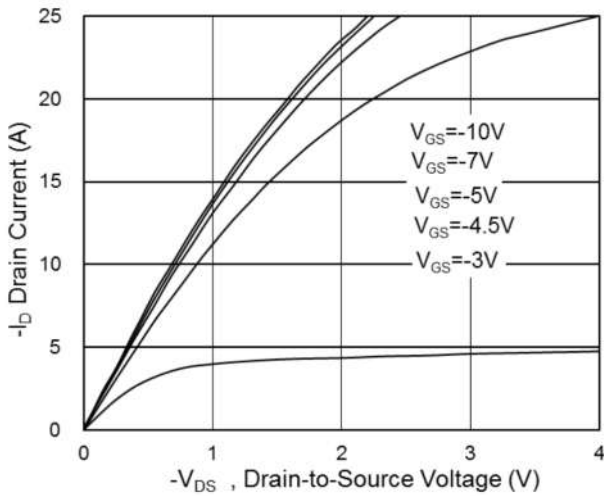


Fig.1 Typical Output Characteristics

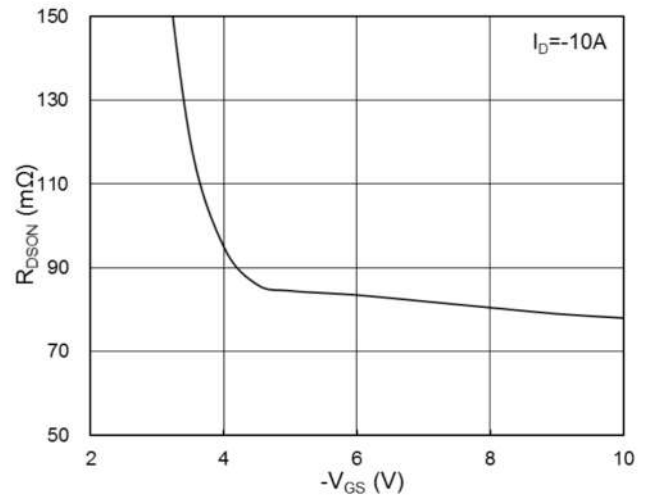


Fig.2 On-Resistance vs G-S Voltage

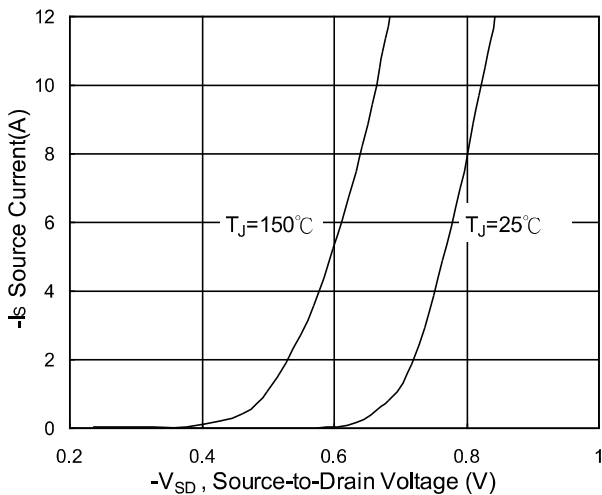


Fig.3 Typical S-D Diode Forward Voltage

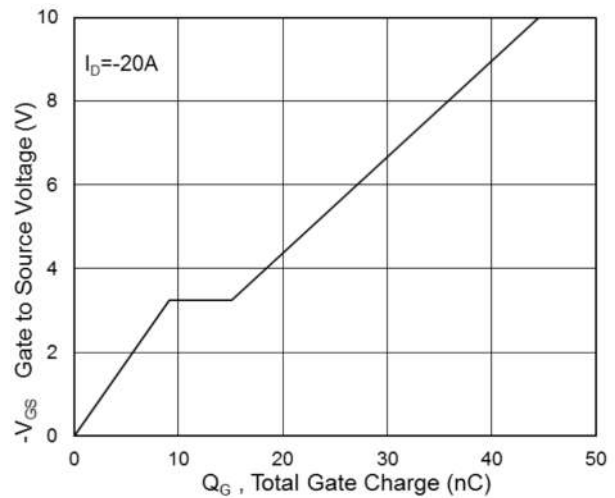


Fig.4 Gate-Charge Characteristics

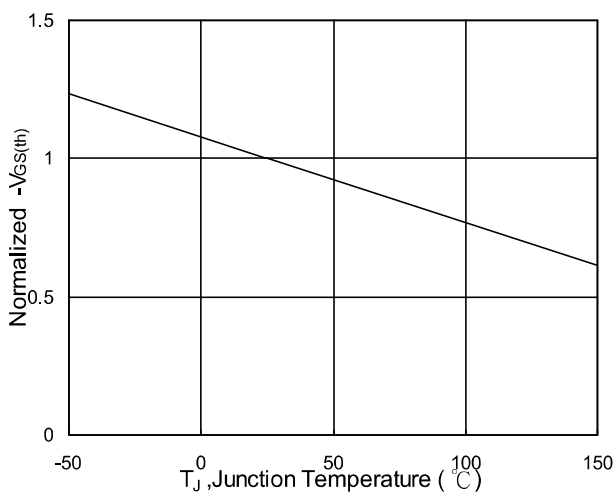


Fig.5 Normalized  $V_{GS(th)}$  vs  $T_J$

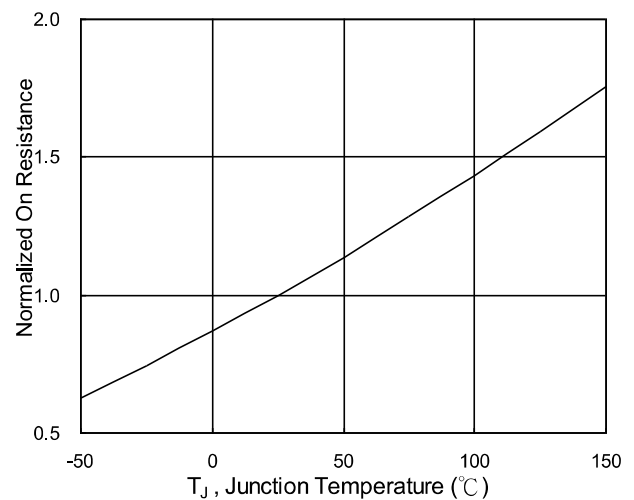


Fig.6 Normalized  $R_{DS(on)}$  vs  $T_J$

Ratings and Characteristic Curves

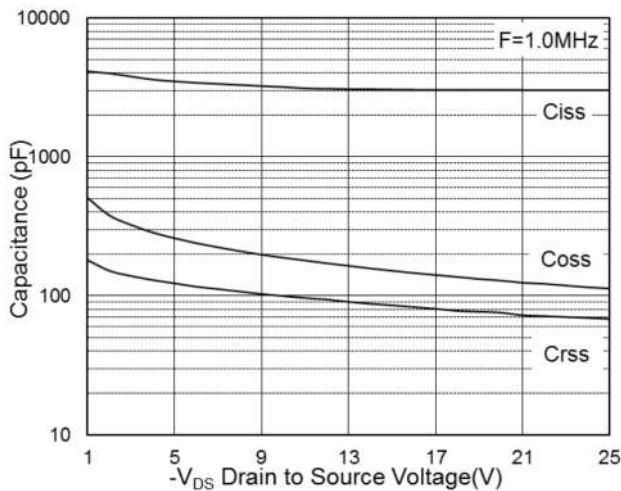


Fig.7 Capacitance

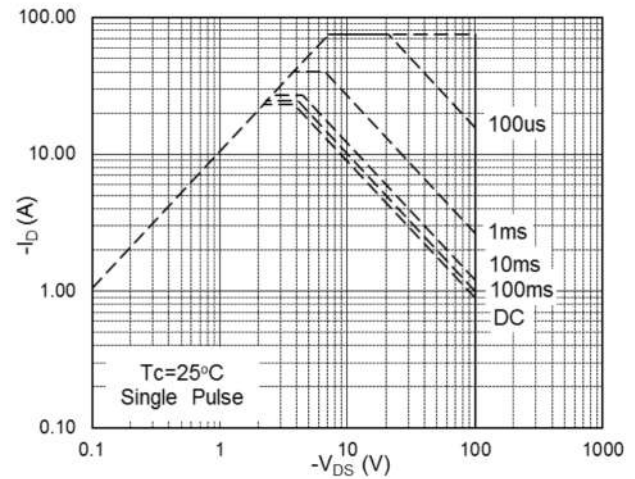


Fig.8 Safe Operating Area

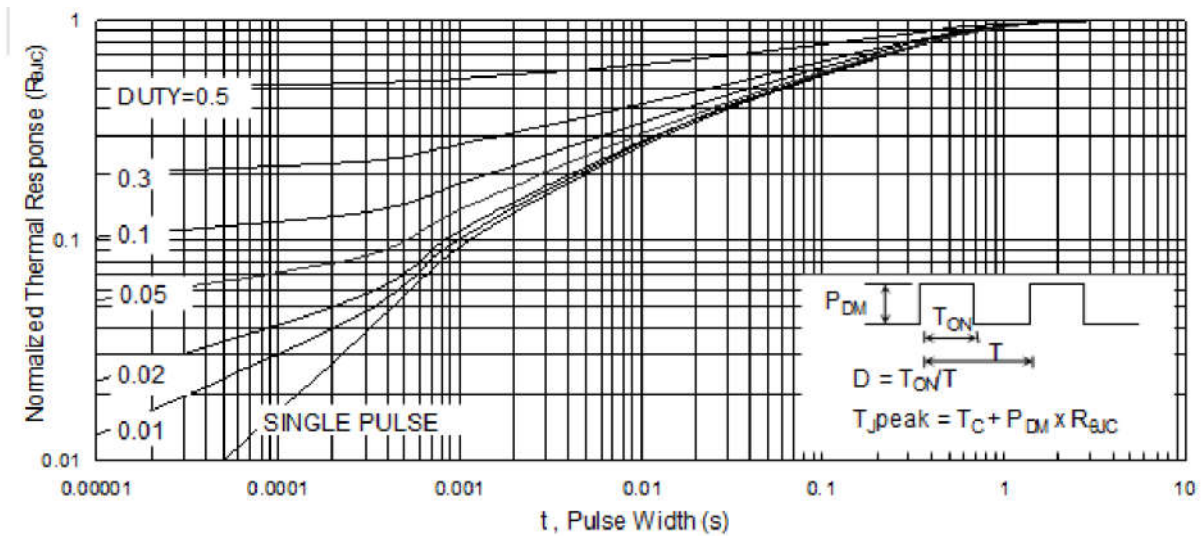


Fig.9 Normalized Maximum Transient Thermal Impedance

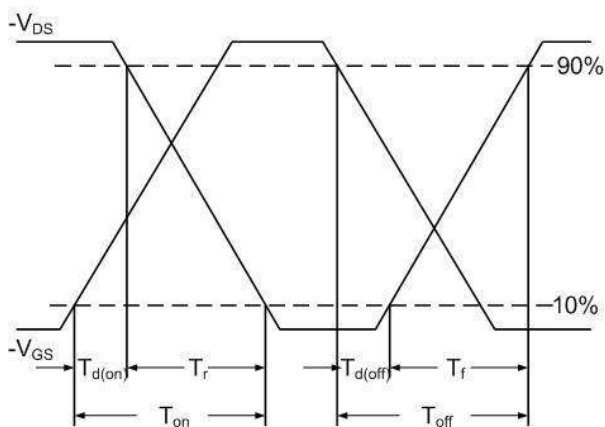


Fig.10 Switching Time Waveform

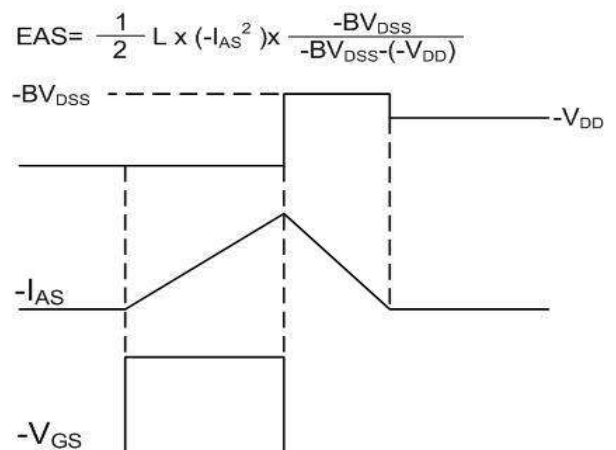


Fig.11 Unclamped Inductive Waveform

Package Outline Dimensions Millimeters

TO-220AB

Dim.	Min.	Max.
A	10.15	10.35
B	2.65	2.95
C	3.70	3.90
D	28.5	29.5
E	1.30	1.45
F	6.35	6.55
G	2.9	3.3
H	15.0	16.0
I	0.38	0.42
J	4.45	4.55
K	1.25	1.35
L	Typ 5.08	
M	Typ 2.54	
N	3.1	3.3
O	0.76	0.84
All Dimensions in millimeter		

TO-220F

Dim.	Min.	Max.
A	9.95	10.25
B	2.95	3.25
C	1.25	1.45
D	12.95	13.25
E	0.50	0.65
F	3.1	3.3
G	1.30	1.45
H	Typ 2.54	
I	Typ 5.08	
J	4.60	4.75
K	2.50	2.65
L	6.35	6.55
M	15.4	16.0
N	2.75	3.05
O	0.48	0.52
P	0.76	0.84
All Dimensions in millimeter		

Package Outline Dimensions Millimeters

TO-263

	Dim.	Min.	Max.
	A	10.1	10.2
	B	7.4	7.6
	C	1.3	1.5
	D	0.55	0.75
	E	5.0	6.0
	F	1.4	1.6
	G	0.78	0.86
	H	1.2	1.3
	I	Typ2.54	
	J	8.4	8.6
	K	4.45	4.55
	L	1.25	1.35
	M	0.02	0.1
N	2.4	2.8	
O	0.36	0.40	
All Dimensions in millimeter			