

**600V N-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

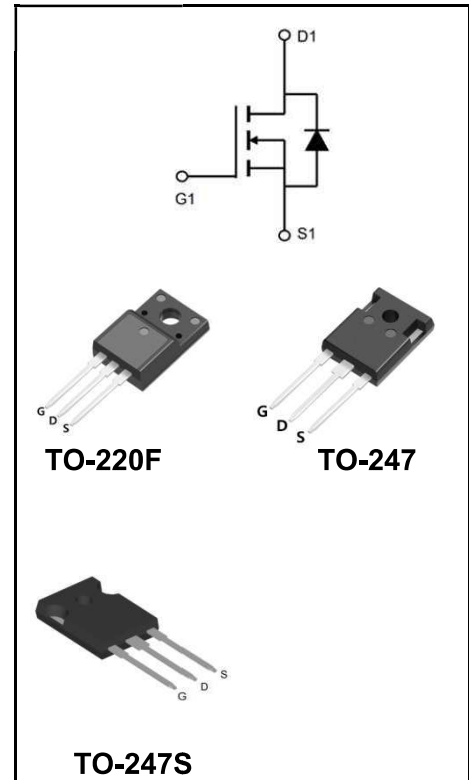
<b>I<sub>D</sub></b>	16A
<b>V<sub>DSS</sub></b>	600V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=10V)</sub></b>	<0.48Ω <b>(Type:0.4Ω)</b>

**Features**

- ◆Fast Switching
- ◆Low ON Resistance
- ◆Low Gate Charge
- ◆100% Single Pulse avalanche energy Test
- ◆LeadfreeincomplywithEURoHS2011/65/EUdirectives

**Mechanical Data**

- ◆Case: Molded plastic
- ◆Mounting Position: Any
- ◆Molded Plastic: UL Flammability Classification Rating 94V-0
- ◆Solder bath temperature275℃maximum,10s per JESD22-106



**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW16N60AF	TO-220F(1.3mm)	YFW 16N60AF XXXXX	50PCS/Tube
YFW16N60AP	TO-247	YFW 16N60AP XXXXX	30PCS/Tube
YFW16N60APS	TO-247S	YFW 16N60APS XXXXX	30PCS/Tube

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

Characteristics	Symbols	Value		Units
		220F	247/247S	
Drain-Source Voltage	$V_{DS}$	600		V
Gate-Source Voltage	$V_{GS}$	±30		V
Continue Drain Current	$I_D$	16		A
-Continuous (TC = 100°C)		10		
Power Dissipation	$P_D$	70	180	W
-Derate above 25°C		0.51	1.25	W/°C
Single Pulse Avalanche Energy (Note2)	$E_{AS}$	800		mJ
Avalanche Current (Note 1)	$I_{AR}$	16		A
Repetitive Avalanche Energy (Note 1)	$E_{AS}$	28		mJ
Operating Temperature Range	$T_J$	150		°C
Storage Temperature Range	$T_{STG}$	-55 to +150		°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.95	0.7	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	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	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	$BV_{DSS}$	600	-	-	V
Breakdown Voltage Temperature Coefficient	$I_D = 250\ \mu\text{A}$ (Referenced to 25°C)	$\frac{\Delta BV_{DSS}}{\Delta T_J}$	-	0.5	-	V/°C
Drain-Source Leakage Current	$V_{DS} = 600\text{ V}, V_{GS} = 0\text{ V}$	$I_{DSS}$	-	-	1	uA
	$V_{DS} = 480\text{ V}, T_C = 125^\circ\text{C}$		-	-	10	
Gate Leakage Current	$V_{GS} = \pm 30\text{ V}, V_{DS} = 0\text{ V}$	$I_{GSS}$	-	-	±100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	$V_{GS} = 10\text{ V}, I_D = 8\text{ A}$	$R_{DS(on)}$	-	0.4	0.48	Ω
Forward Transconductance	$V_{DS} = 15\text{ V}, I_D = 8\text{ A}$	$g_{fs}$	-	15	-	S
Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$	$C_{iss}$	-	2250	-	pF
Output Capacitance		$C_{oss}$	-	208	-	
Reverse Transfer Capacitance		$C_{rss}$	-	17	-	
Turn-on Delay Time	$I_D = 16\text{ A}, V_{DD} = 300\text{ V}, R_G = 10\ \Omega$ (Note3,4)	$td(ON)$	-	30	-	nS
Rise Time		$tr$	-	70	-	
Turn-Off Delay Time		$td(OFF)$	-	145	-	
Fall Time		$tf$	-	74	-	
Total Gate Charge	$I_D = 16\text{ A}, V_{DD} = 480\text{ V}, V_{GS} = 10\text{ V}$ (Note3,4)	$Q_G$	-	71	-	nC
Gate to Source Charge		$Q_{GS}$	-	15	-	
Gate to Drain Charge		$Q_{GD}$	-	22	-	

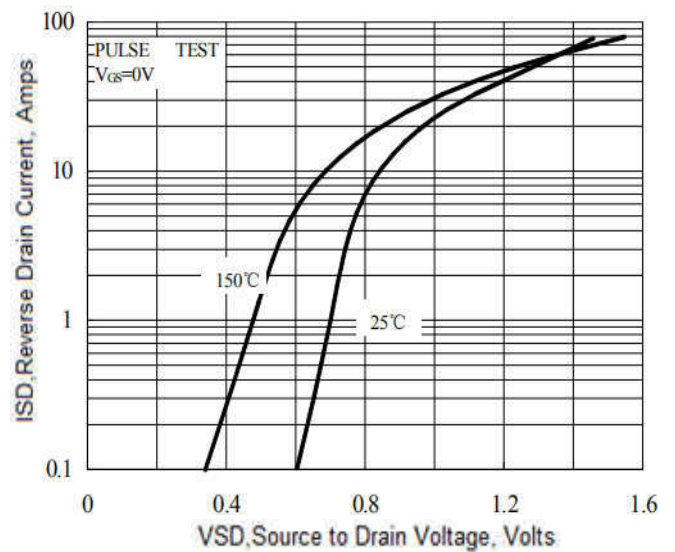
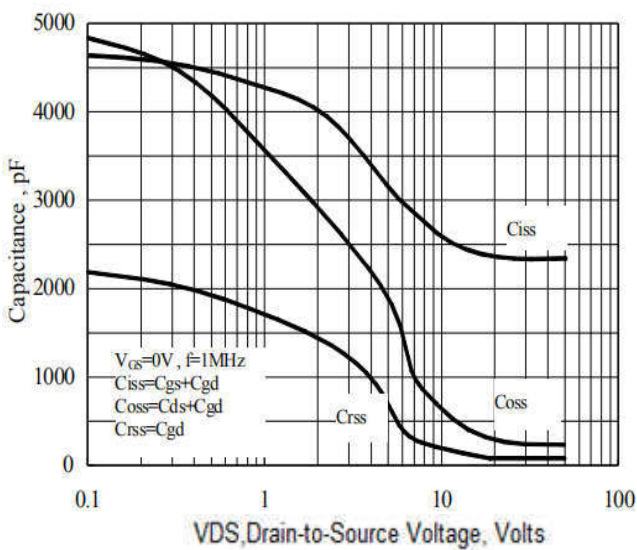
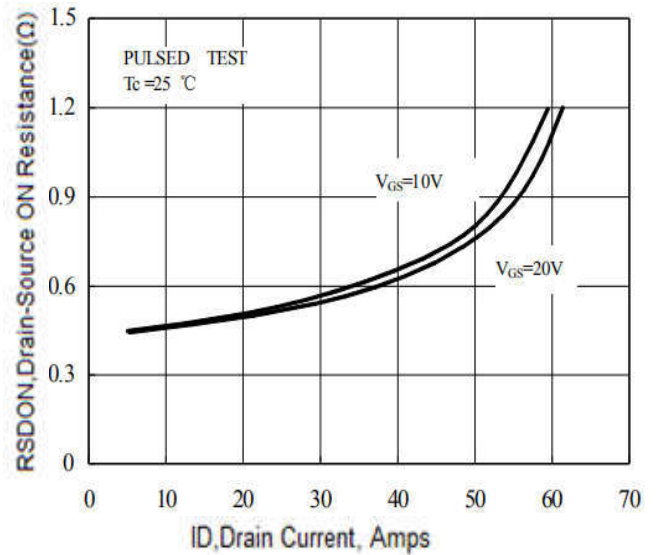
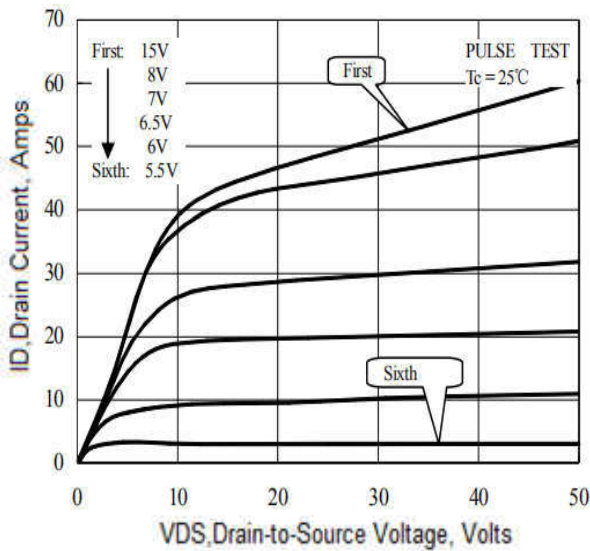
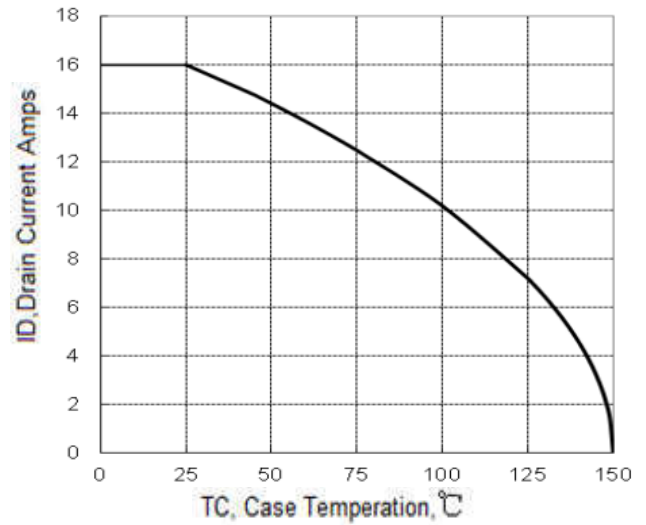
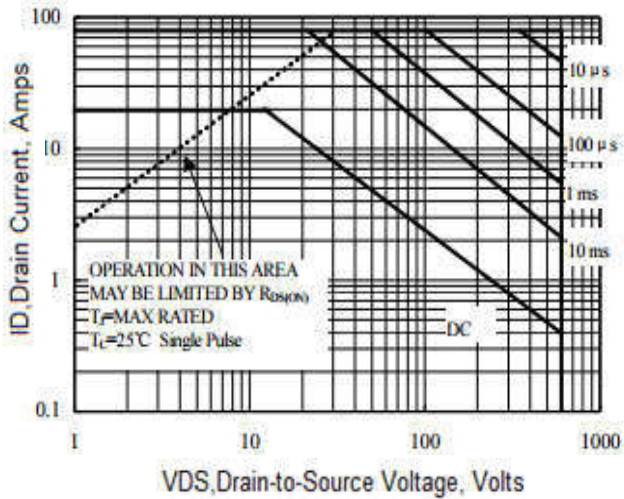
**Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified**

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Maximun Body-Diode Continuous Current		<b>I<sub>S</sub></b>	-	-	16	<b>A</b>
Maximun Body-Diode Pulsed Current		<b>I<sub>SM</sub></b>	-	-	64	<b>A</b>
Drain-Source Diode Forward Voltage	<b>I<sub>SD</sub> = 16A</b>	<b>V<sub>SD</sub></b>	-	-	1.4	<b>V</b>
Reverse Recovery Time	<b>I<sub>SD</sub> = 16A, V<sub>GS</sub> = 0 V, dI<sub>F</sub> / dt = 100 A/μs</b>	<b>trr</b>	-	410	-	<b>nS</b>
Reverse Recovery Charge		<b>Qrr</b>	-	3.5	-	<b>uC</b>

Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. IAS = 16 A, VDD = 50 V, L = 6mH, RG = 25Ω, starting TJ = 25°C.
3. ulse test: Pulse Width ≤ 300 μ s, Duty Cycle ≤ 2%.
4. Essentially Independent of Operating Temperature.

**Ratings and Characteristic Curves**



Package Outline Dimensions Millimeters

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			

TO-247

	Dim.	Min.	Max.
	A	15	16
	B	20	21
	C	41	42
	D	5	6
	E	4	5
	F	2.5	3.5
	G	1.75	2.5
	H	3	3.5
	I	8	10
	J	4.9	5.1
	K	1.9	2.1
	L	3.5	4
	M	4.75	5.25
	N	2	3
	O	0.55	0.75
P	Typ 5.08		
Q	1.2	1.3	
All Dimensions in millimeter			

Package Outline Dimensions Millimeters

TO-247S

Dim.	Min.	Max.
A	15	16
B	19.5	20.5
C	33.5	35.5
D	5	6
E	3.5	4.5
F	2.5	3.5
G	1.75	2.5
H	3	4
I	9	11
J	4.9	5.1
K	1	1.3
L	3.75	4.25
M	4.75	5.25
N	1.8	2.2
O	0.45	0.6
P	Typ 5.08	
Q	1.2	1.3
All Dimensions in millimeter		