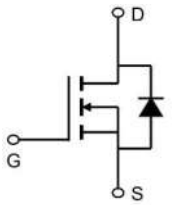
650V N-Channel Super Junction MOSFE

MAIN CHARACTERISTICS

I_D	20 A
V_{DSS}	650V
R_{DSON}-typ(@V_{GS}=10V)	< 190mΩ(Type:170mΩ)



TO-220F

Application

- Solar inverters
- LCD/LED/PDP TV
- Telecom/Server Power supplies
- AC-DC Power Supply

MECHANICAL DATA

- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275℃ maximum,10s per JESD 22-B106

Product Specification Classification

Part Number	Package	Marking	Pack
YFW65R170AF	TO-220F	YFW 65R170AF XXXXX	1000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
		220F	
Drain-Source Voltage	V_{DS}	650	V
Gate - Source Voltage	V_{GS}	±30	V
Continuous Drain Current	I_D	20	A
Pulsed Drain Current(note1)	I_{DM}	60	A
Power Dissipation	P_D	34	W
Single Pulse Avalanche Energy(note1)	E_{AS}	484	mJ
Operating Temperature Range	T_J	-50 to +150	°C
Storage Temperature Range	T_{STG}	-50 to +150	°C
Thermal Resistance, Junction-to-case	$R_{\theta JC}$	3.7	°C/W
Thermal Resistance, Junction ambient	$R_{\theta JA}$	80	°C/W

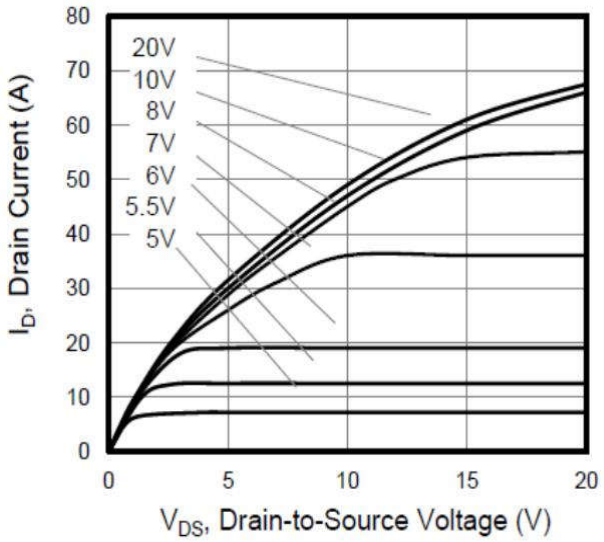
Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

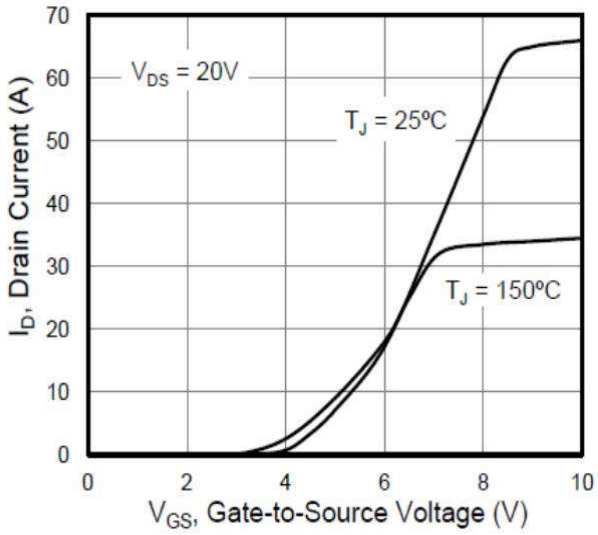
Maximum Ratings at Tc=25°C unless otherwise specified

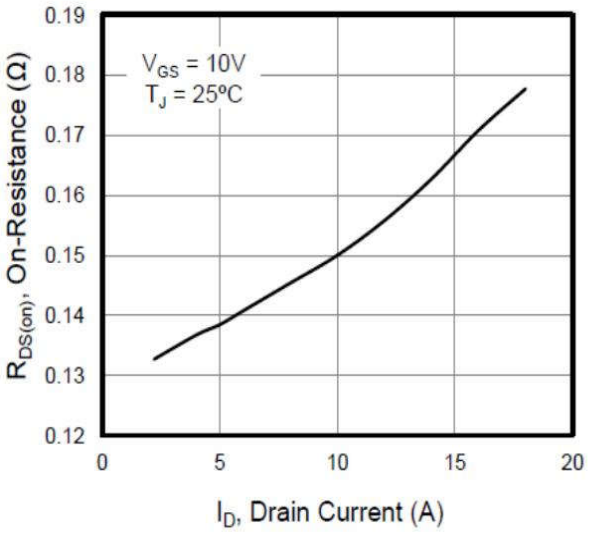
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	BV_{DSS}	650	-	-	V
Drain-Source Leakage Current	V_{DS}=650V , V_{GS}=0V	I_{DSS}	-	-	1	μA
Gate Leakage Current	V_{GS}=±30V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Gate- Source Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	$V_{GS(th)}$	2	-	4	V
Drain-Source On State Resistance	V_{GS}=10V, I_D=2A	$R_{DS(ON)}$	-	170	190	mΩ
Forward Transconductance	V_{DS} = 40 V, I_D = 10A (note4)	g_{fs}	-	15	-	S
Input Capacitance	V_{DS}=100V V_{GS}=0V f=1MHz	C_{iss}	-	1665	-	PF
Output Capacitance		C_{oss}	-	65	-	
Reverse Transfer Capacitance		C_{rss}	-	1	-	
Turn-on delay time(note2)	V_{DD}=400V V_{GS}=10V R_G=25Ω I_D=20A	$t_{d(on)}$	-	15	-	nS
Rise Time(note2)		T_r	-	59	-	
Turn-Off Delay Time(note2)		$t_{d(OFF)}$	-	121	-	
Fall Time(note2)		t_f	-	44	-	
Total Gate Charge(note2)	V_{DS}=520V V_{GS}=10V I_D=20A	Q_g	-	38.5	-	nC
Gate-to Source Charge(note2)		Q_{gs}	-	8	-	
Gate-Drain Charge(note2)		Q_{gd}	-	15	-	
Maximum Continuous Drain -Source Diode Forward Current		I_S	-	-	20	A
Maximum Pulsed Drain-Source Diode Forward Current		I_{SM}	-	-	60	A
Reverse recovery time	Vr=400V, IF= IS dIF/dt=100A/μs	t_{rr}	-	423	-	nS
Reverse recovery charge		Q_{rr}	-	5.3	-	uC
Drain-Source Diode Forward Voltage	T_J = 25°C, I_S = 20A, V_{GS} = 0V	V_{SD}	-	0.9	1.2	V

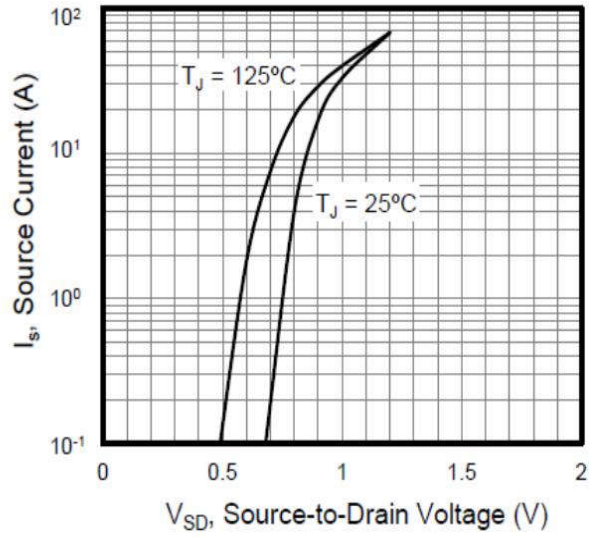
Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

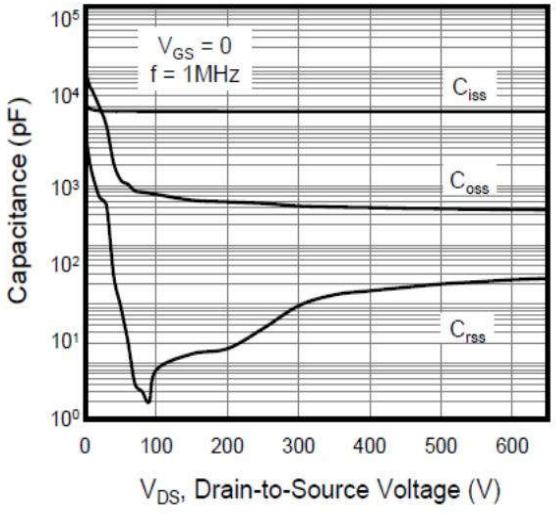
Ratings and Characteristic Curves

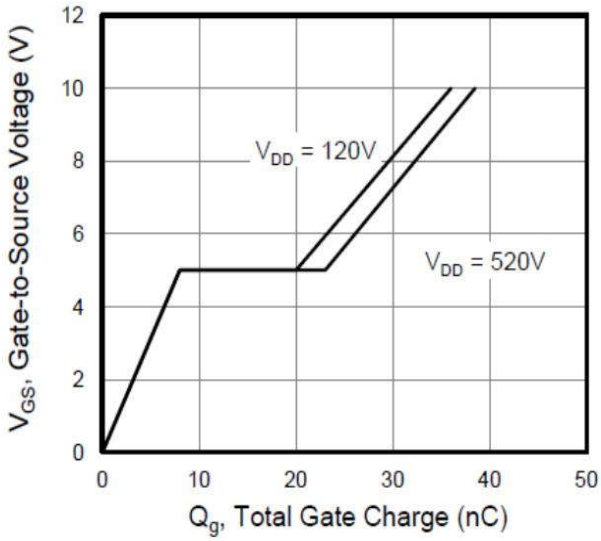




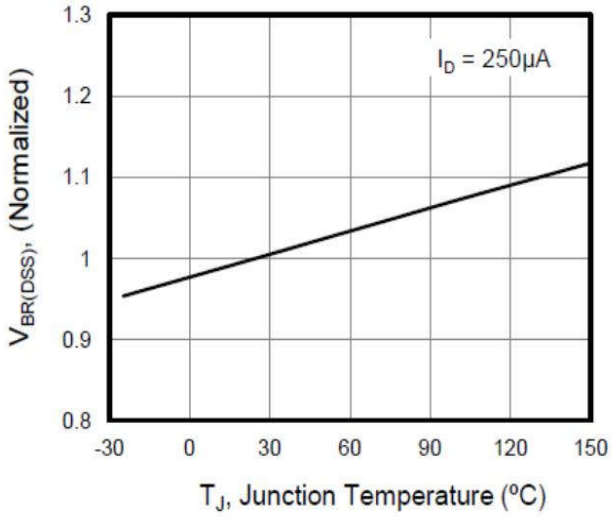


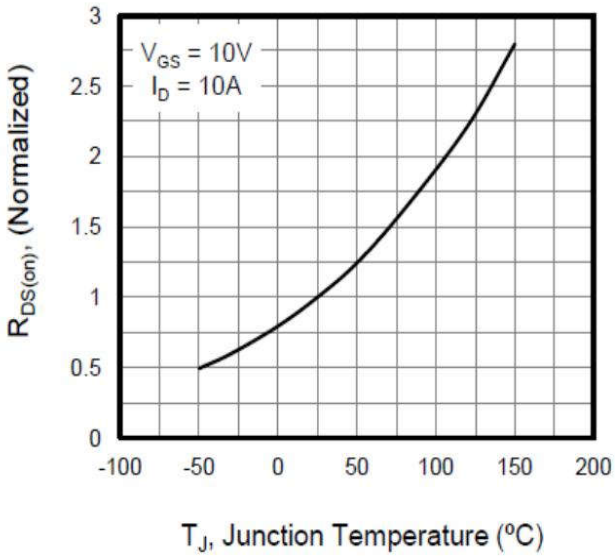


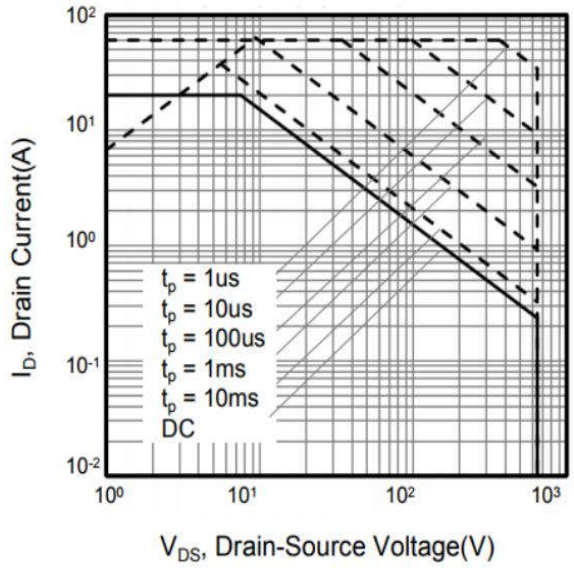


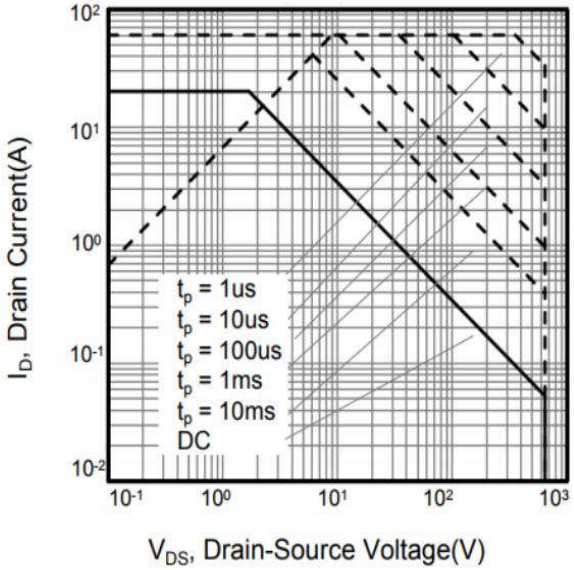


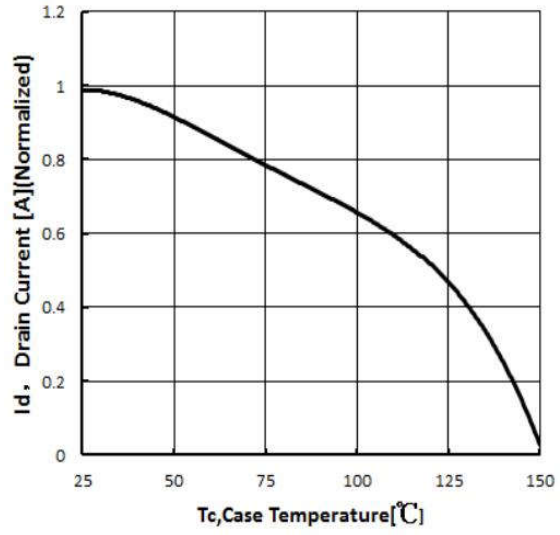
Ratings and Characteristic Curves

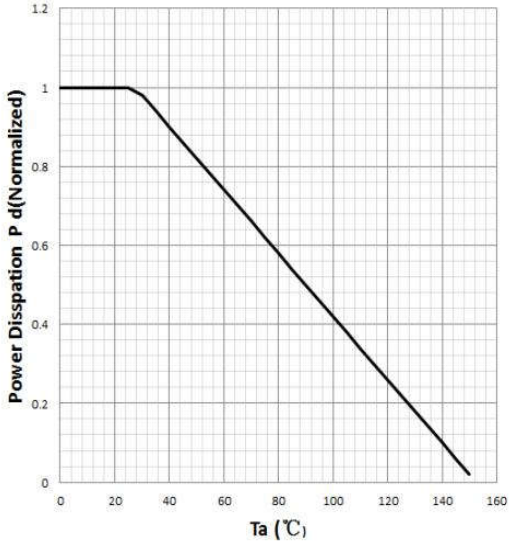






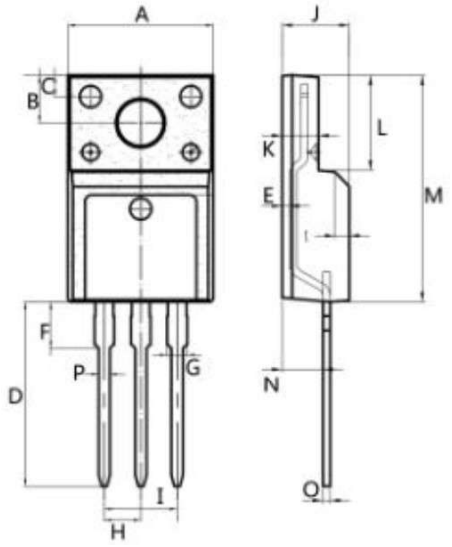






Package Outline Dimensions Millimeters

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		