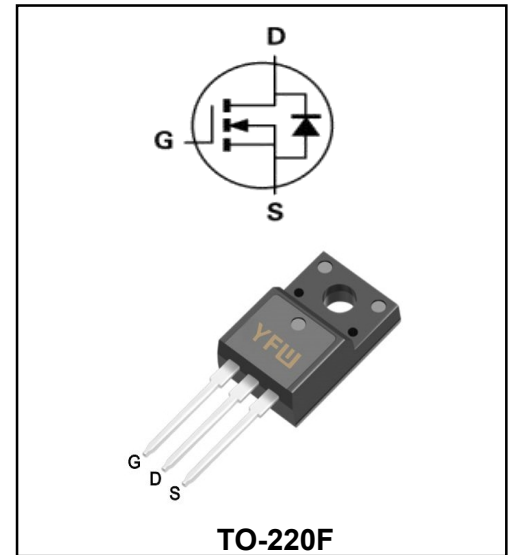


650V N-Channel Super Junction MOSFE

MAIN CHARACTERISTICS

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



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°C maximum,10s per JESD 22-B106

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_{θJC}	3.7	°C/W
Thermal Resistance, Junction ambient	R_{θJA}	80	°C/W

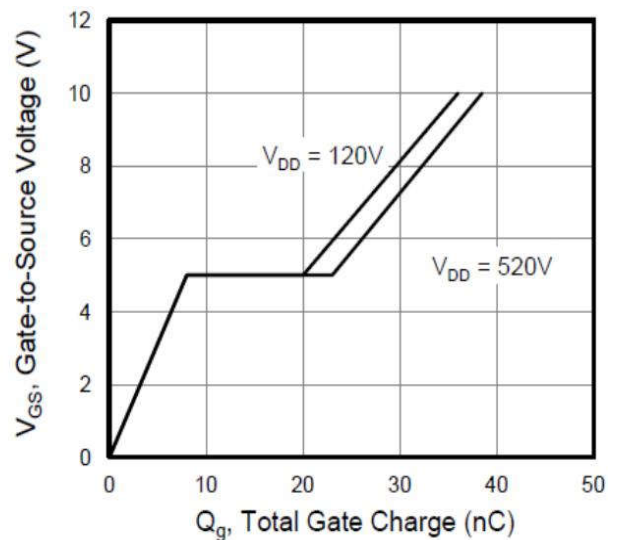
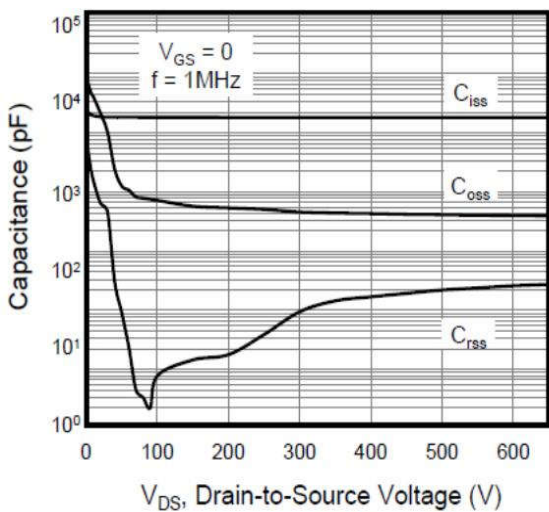
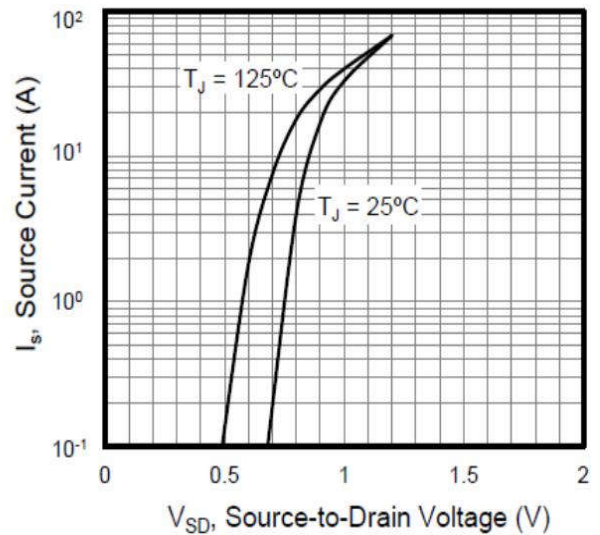
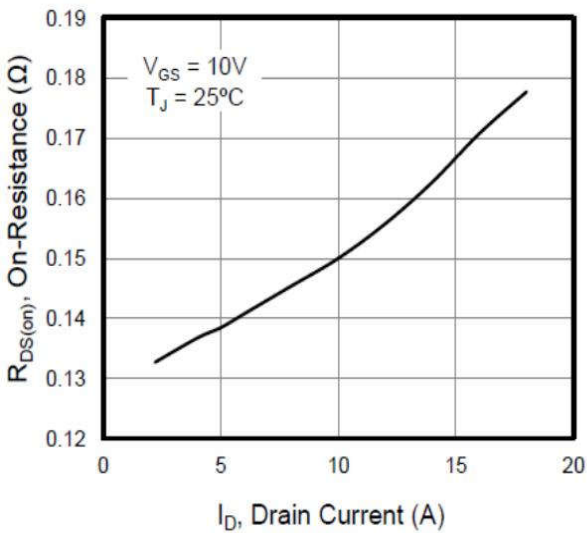
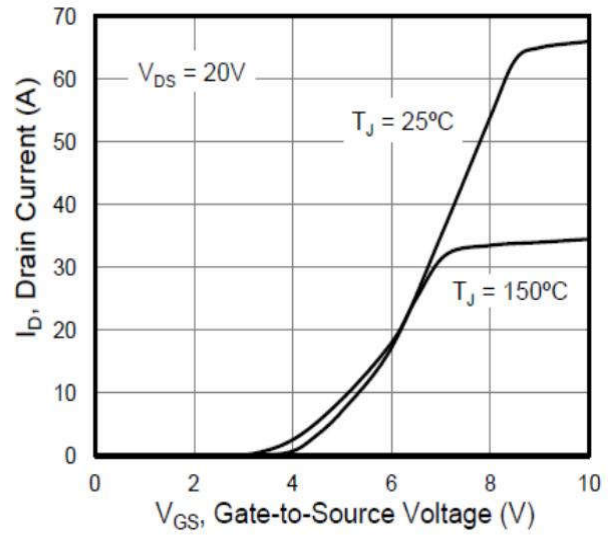
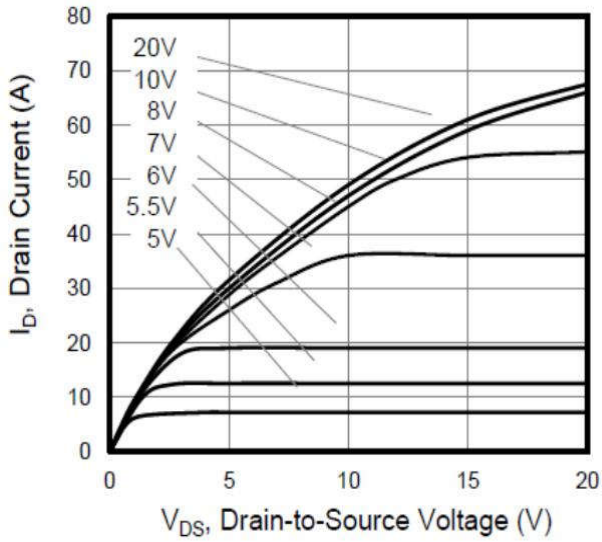
Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

Maximum Ratings at Tc=25°C unless otherwise specified

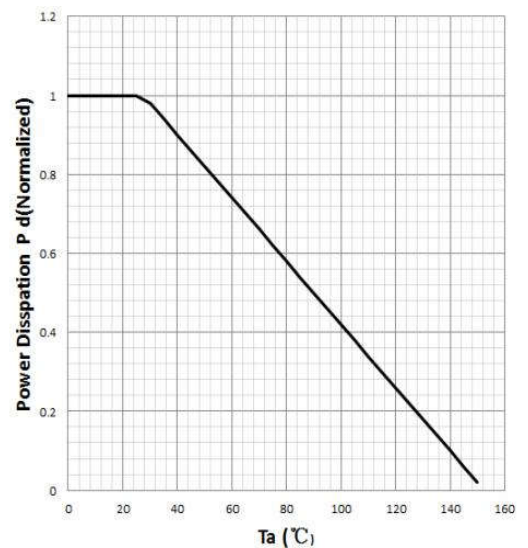
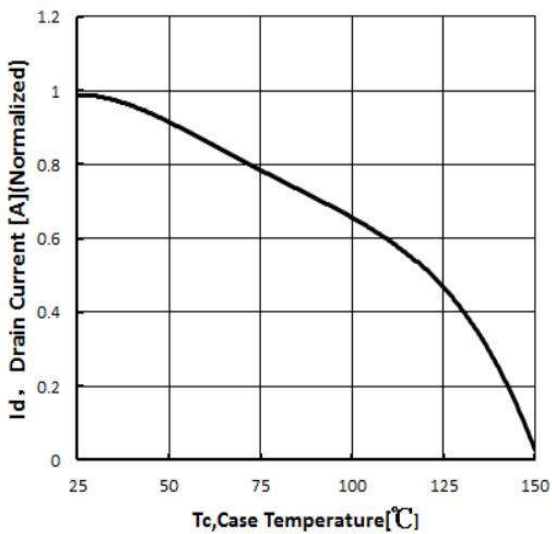
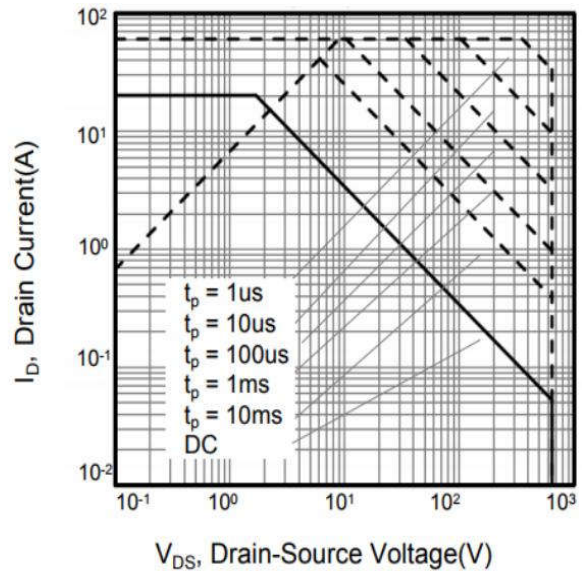
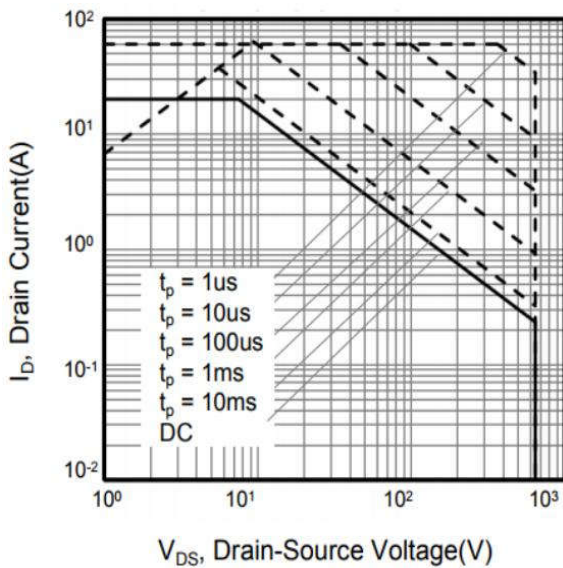
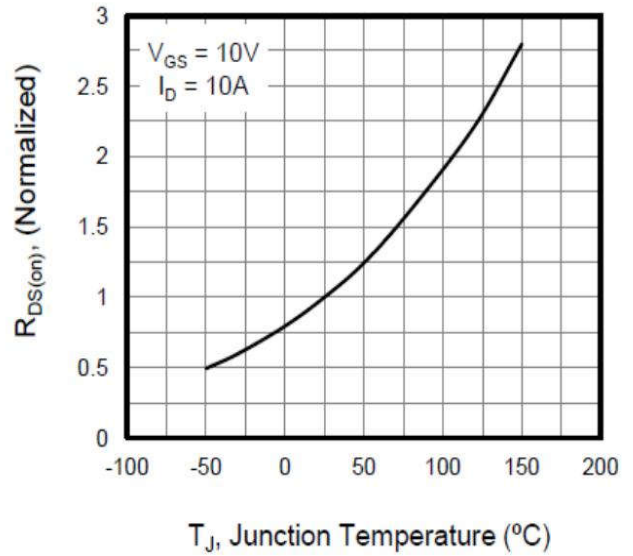
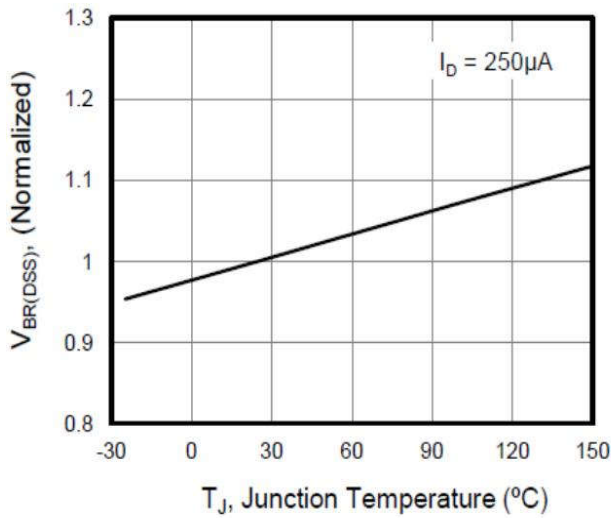
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	650	-	-	V
Drain-Source Leakage Current	$V_{DS}=650V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS}=\pm 30V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Gate- Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	2	-	4	V
Drain-Source On State Resistance	$V_{GS}=10V, I_D=2A$	$R_{DS(ON)}$	-	170	190	m Ω
Forward Transconductance	$V_{DS}=40V, I_D=10A$ (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)	$V_{DD}=400V$ $V_{GS}=10V$ $R_G=25\Omega$ $I_D=20A$	$t_{d(on)}$	-	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	$V_r=400V, I_F=I_S$ $dI_F/dt=100A/\mu s$	t_{rr}	-	423	-	nS
Reverse recovery charge		Q_{rr}	-	5.3	-	μC
Drain-Source Diode Forward Voltage	$T_J=25^\circ C, I_S=20A, V_{GS}=0V$	V_{SD}	-	0.9	1.2	V

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

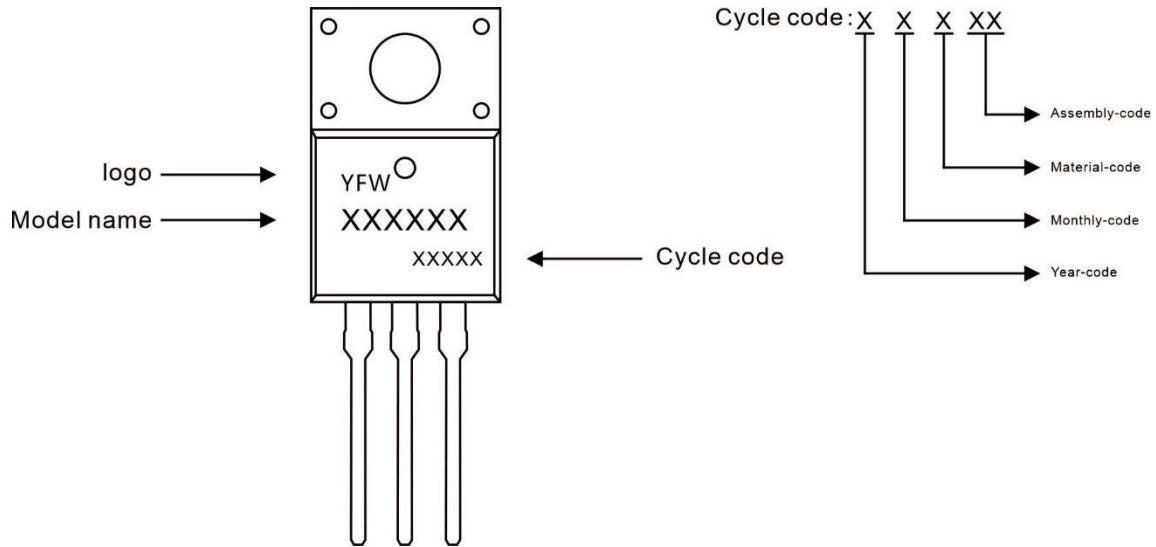
Ratings and Characteristic Curves



Ratings and Characteristic Curves



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW65R170AF	TO-220F	0.06oz(1.74g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

Package Dimensions

TO-220F

Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.50	4.90	0.177	0.193
A1	2.34	2.74	0.092	0.108
A2	2.66	2.86	0.105	0.113
b	0.75	0.85	0.030	0.033
b1	1.24	1.44	0.049	0.057
c	0.40	0.60	0.016	0.024
D	10.00	10.32	0.394	0.406
E	15.75	16.05	0.620	0.632
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
F	3.10	3.5	0.122	0.138
L	13.50	13.90	0.531	0.547
L1	2.90	3.30	0.114	0.130
Φ	3.10	3.30	0.122	0.130

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