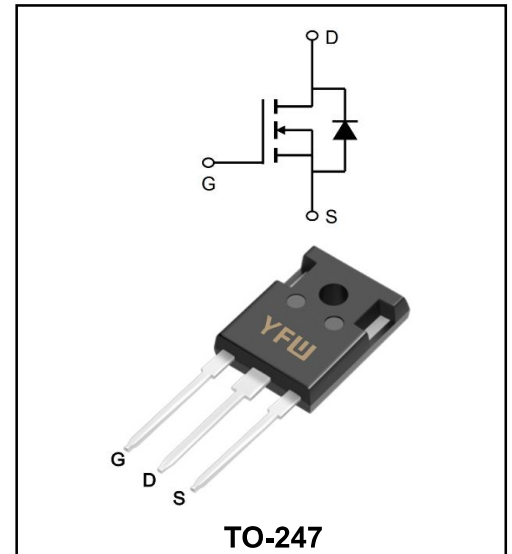


500V N-Channel Enhancement Mode Power MOSFET

MAIN CHARACTERISTICS

I_D	20A
V_{DS}	500V
$R_{DS(on)-typ}(@V_{GS}=10V)$	$<0.28\Omega$ (Typ: 0.24Ω)



FEATURES

- ♦Fast Switching
- ♦Low ON Resistance
- ♦Low Gate Charge
- ♦100% Single Pulse avalanche energy Test

APPLICATIONS

- ♦Power switch circuit of adaptor and charger.

MECHANICAL DATA

- ♦Case: TO-247/AP
- ♦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 $T_c=25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	500	V
Gate - Source Voltage	V_{GS}	± 30	V
Continuous Drain Current	I_D	20	A
Pulsed Drain Current(note1)	I_{DM}	80	A
Power Dissipation	P_D	220	W
Single Pulse Avalanche Energy(note1)	E_{AS}	660	mJ
Operating Temperature Range	T_J	150	$^\circ\text{C}$
Operating Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$
Thermal Resistance, Junction-to-case	$R_{\theta JC}$	0.54	$^\circ\text{C/W}$
Thermal Resistance, Junction ambient	$R_{\theta JA}$	40	$^\circ\text{C/W}$

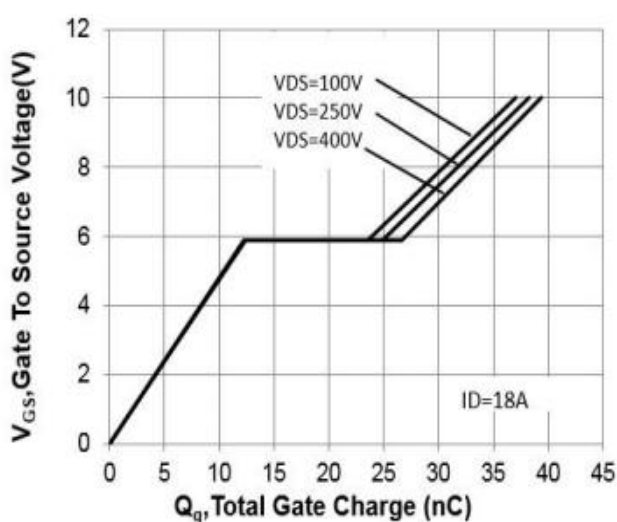
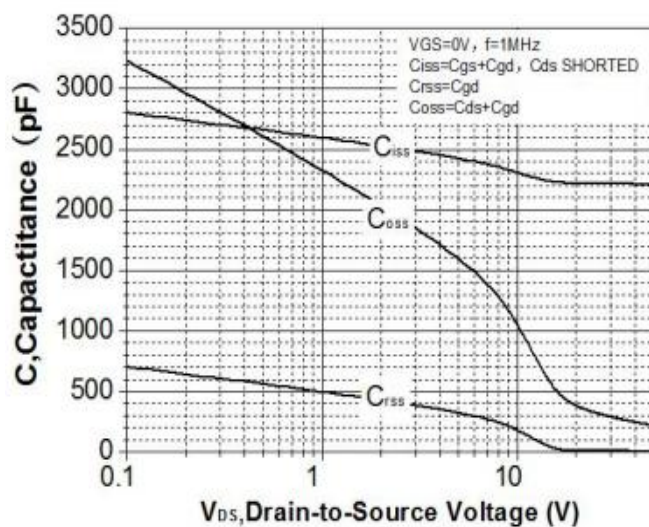
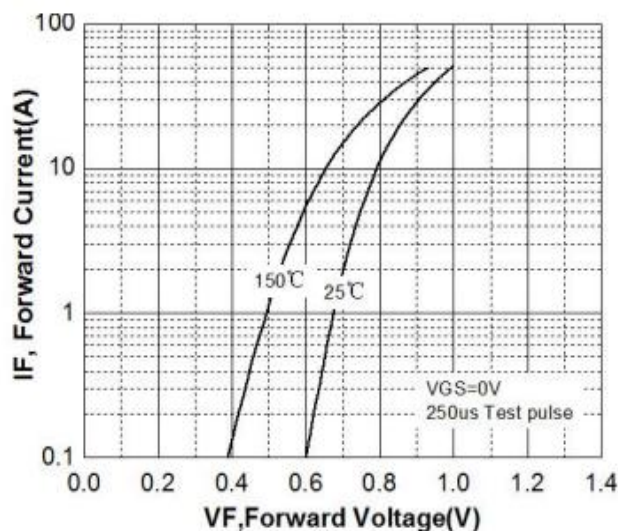
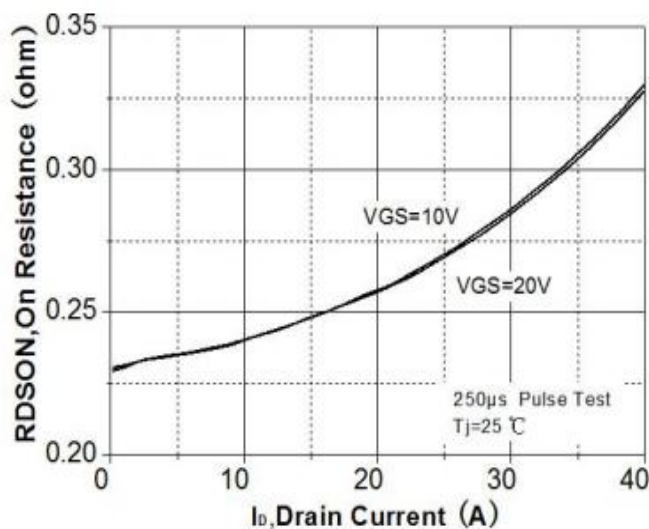
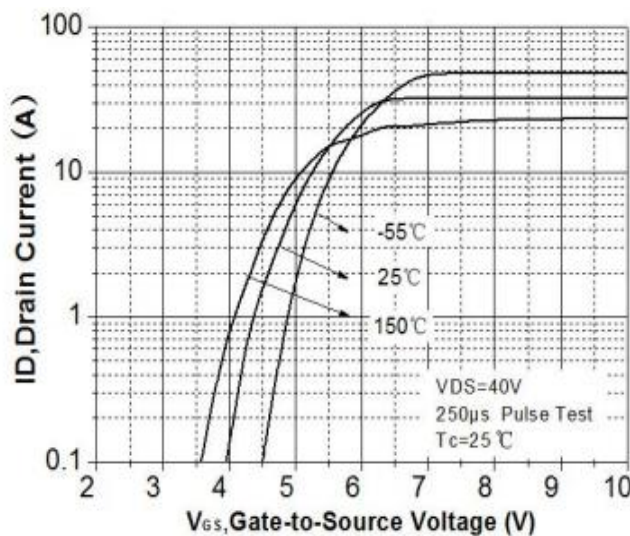
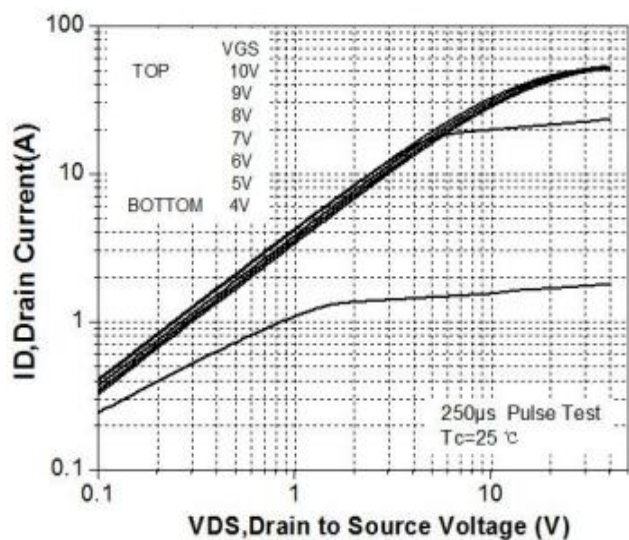
Note1: Pulse test: 300 μs pulse width, 2 % duty cycle

Maximum Ratings at Tc=25°C unless otherwise specified

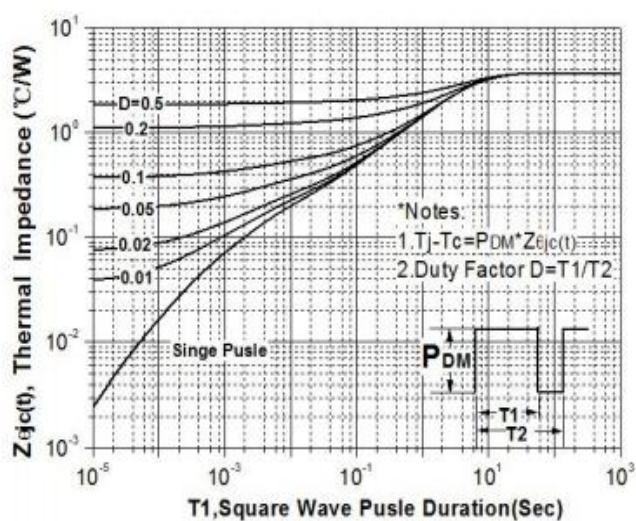
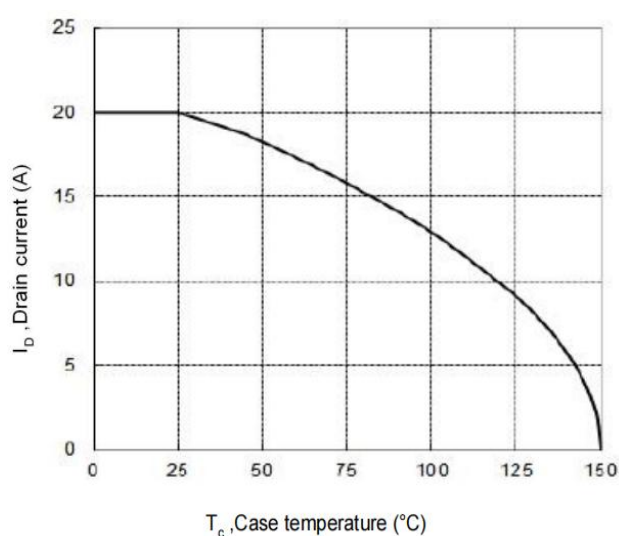
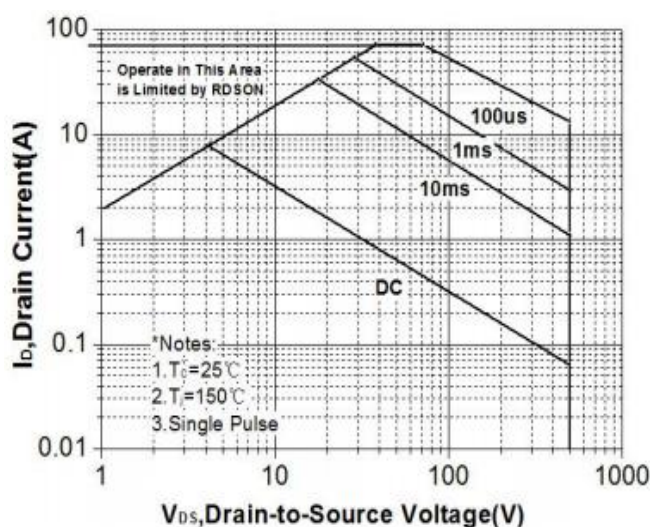
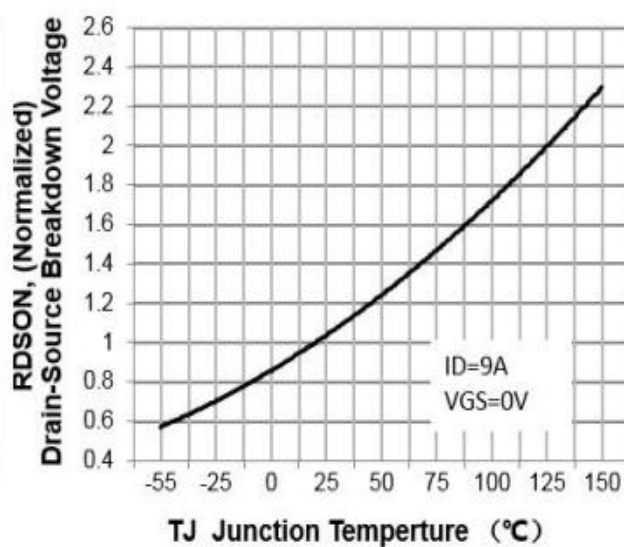
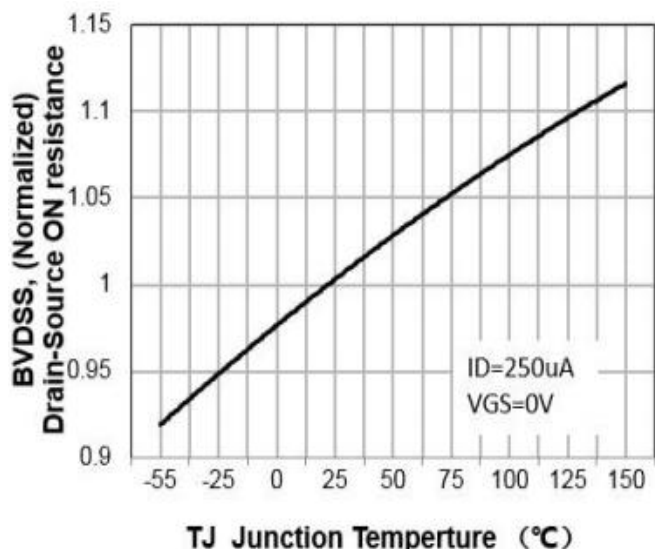
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	500	-	-	V
Drain-Source Leakage Current	$V_{DS}=500V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS}=\pm 30V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	$V_{GS}=10V, I_D=10A$	$R_{DS(on)}$	-	0.24	0.28	Ω
Forward Transconductance	$V_{DS}=40V, I_D=10A$	g_{fs}	-	19	-	S
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	3415	-	pF
Output Capacitance		C_{oss}	-	323	-	
Reverse Transfer Capacitance		C_{rss}	-	6.5	-	
Turn-on delay time(note2)	$I_D=20A$ $V_{DD}=250V$ $R_G=25\Omega$	$t_{d(on)}$	-	34	-	nS
Rise Time(note2)		T_r	-	45	-	
Turn-Off Delay Time(note2)		$t_{d(OFF)}$	-	90	-	
Fall Time(note2)		t_f	-	41.3	-	
Total Gate Charge(note2)	$I_D=20A$ $V_{DD}=255V$ $V_{GS}=10V$	Q_g	-	38	-	nC
Gate-Source Charge(note2)		Q_{gs}	-	12.5	-	
Gate-Drain Charge(note2)		Q_{gd}	-	13	-	
Maximun Body-Diode Continuous Current		I_S	-	-	20	A
Maximun Body-Diode Continuous Current(note2)		I_{SM}	-	-	80	A
Drain-Source Diode Forward Voltage	$I_{SD}=20A$	V_{SD}	-	-	1.4	V
Reverse Recovery Time(note2)	$V_{GS}=0V, I_{SD}=20A$ $di_f/dt=100A/\mu s$	t_{rr}	-	335	-	nS
Reverse Recovery Charge(note2)		Q_{rr}	-	4.3	-	μC

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

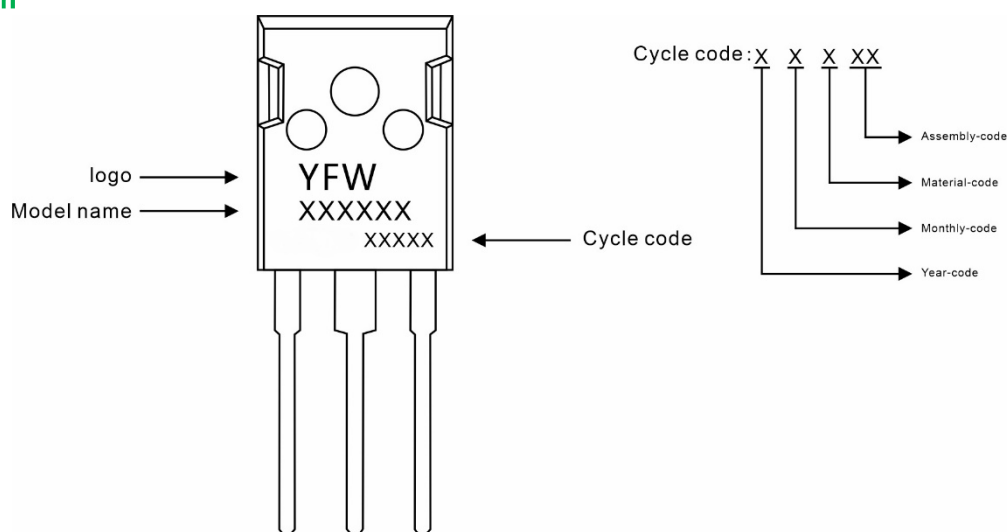
Ratings and Characteristic Curves



Ratings and Characteristic Curves



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW20N50AP	TO-247	0.209oz(5.93g)	30pcs/tube	600PCS/Box 2400PCS/Carton

Package Dimensions

TO-247

Symbol	Dimensions in mm		Dimensions in Inch	
	Min.	Max.	Min.	Max.
A	4.90	5.10	0.193	0.201
A1	1.90	2.10	0.075	0.083
A2	2.29	2.54	0.090	0.100
b	1.00	1.40	0.039	0.055
b1	2.00	2.20	0.079	0.087
b2	3.00	3.20	0.118	0.126
c	0.50	0.70	0.020	0.028
D	15.75	16.05	0.620	0.632
E	20.20	20.80	0.795	0.819
e	5.45 (BSC)		0.215 (BSC)	
e1	10.90 (BSC)		0.429 (BSC)	
F	6.05	6.25	0.238	0.246
F1	5.80	6.00	0.228	0.236
L	20.10	20.40	0.791	0.803
L1	4.05	4.35	0.159	0.171
Φ	3.50	3.70	0.138	0.146

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