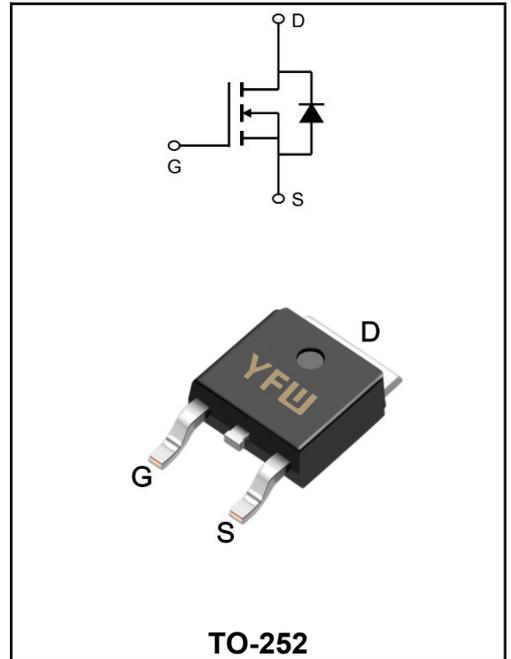


20V N- Channel Advanced Power MOSFET

MAIN CHARACTERISTICS

I_D	60A
V_{DSS}	20V
R_{DS(on)-typ(@V_{GS}=4.5V)}	<6.5mΩ(Typ:5mΩ)



FEATURES

Adopt advanced trench technology to provide excellent R_{DS(ON)}, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

APPLICATIONS

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

MECHANICAL DATA

- ♣ Case: TO-252/AD
- ♣ 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	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	20	V
Gate-Source Voltage	V _{GS}	±12	V
Continue Drain Current	I _D	60	A
Pulsed Drain Current (Note1)	I _{DM}	210	A
Power Dissipation	P _D	60	W
Single Pulse Avalanche Energy (Note1)	E _{AS}	231	mJ
Operating Temperature Range	T _J	150	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	R _{θJC}	2.1	°C/W
Thermal Resistance, Junction to Ambient	R _{θJA}	62	°C/W

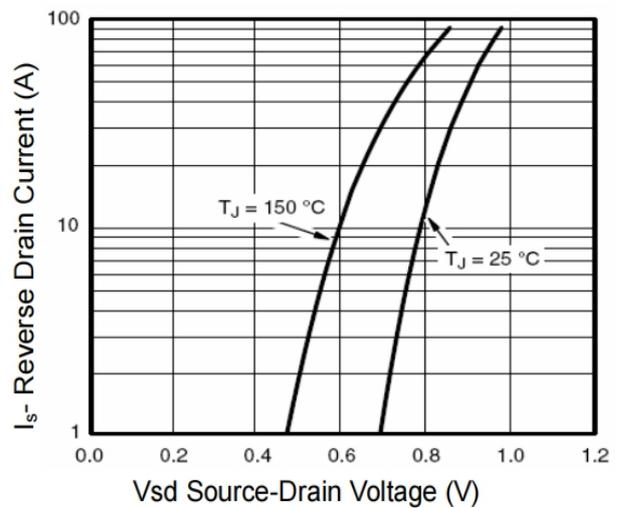
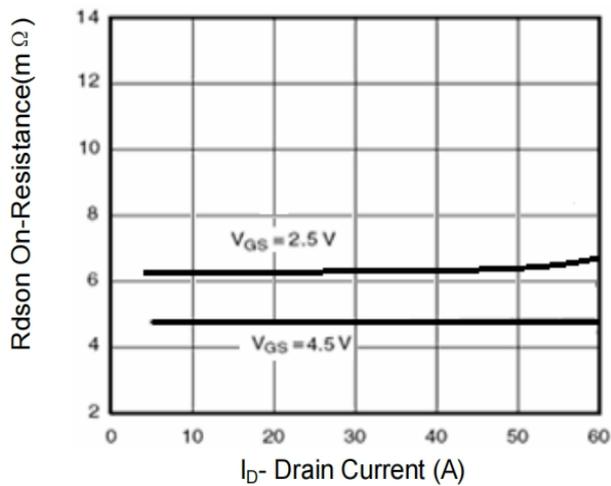
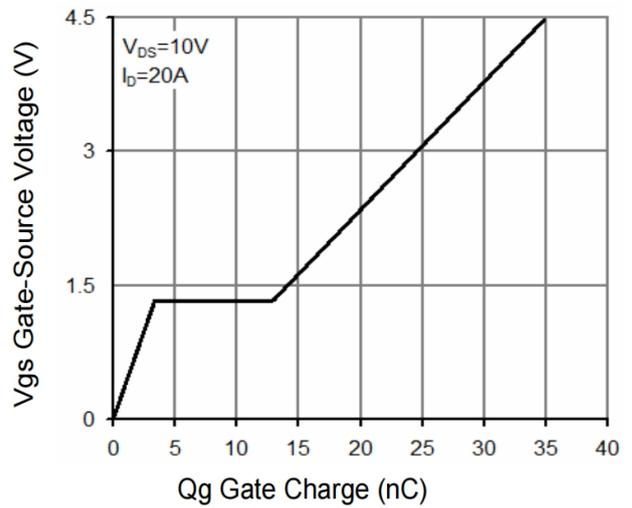
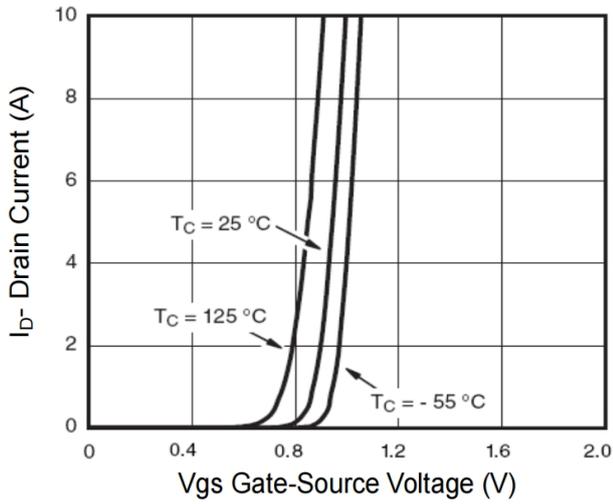
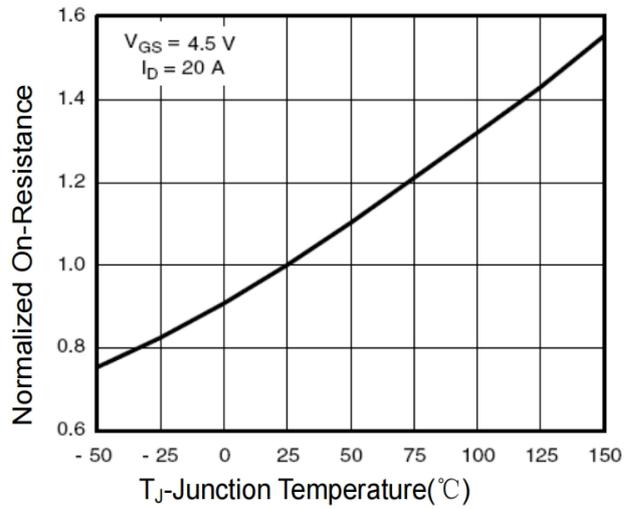
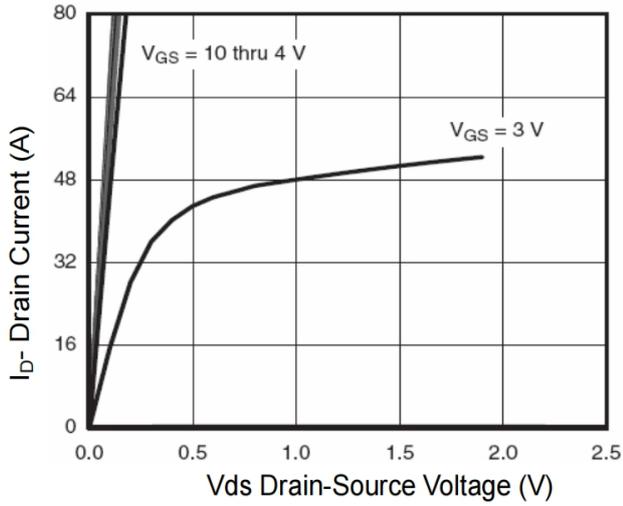
Note1:Pulse test: 300 μs pulse width, 2 % duty cycl

Maximum Ratings at Tc=25°C unless otherwise specified

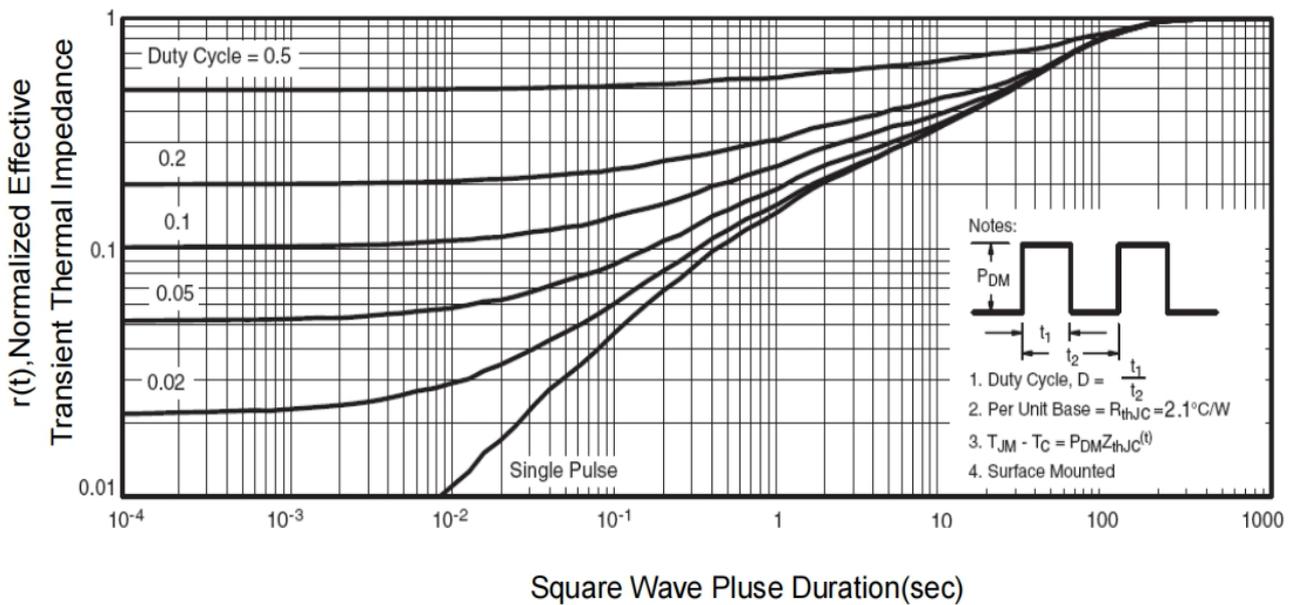
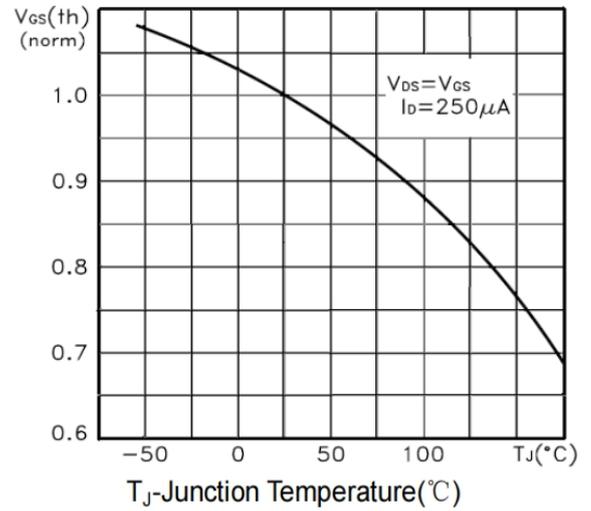
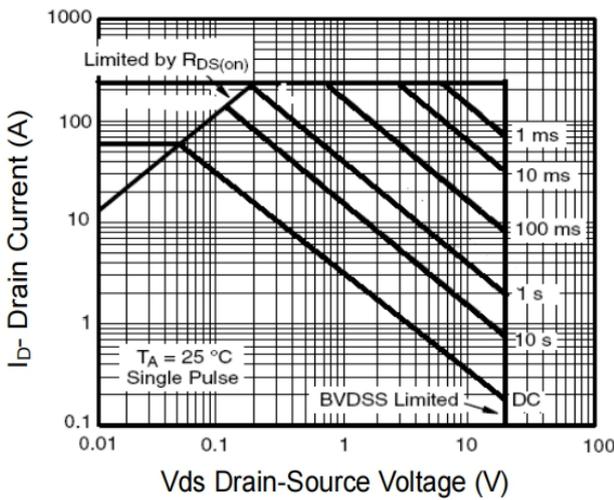
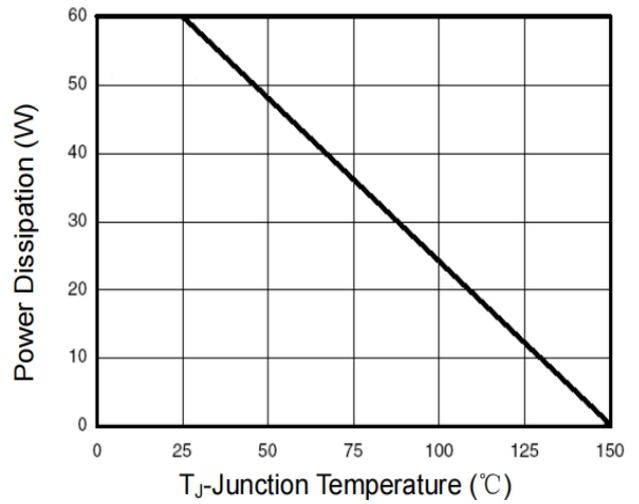
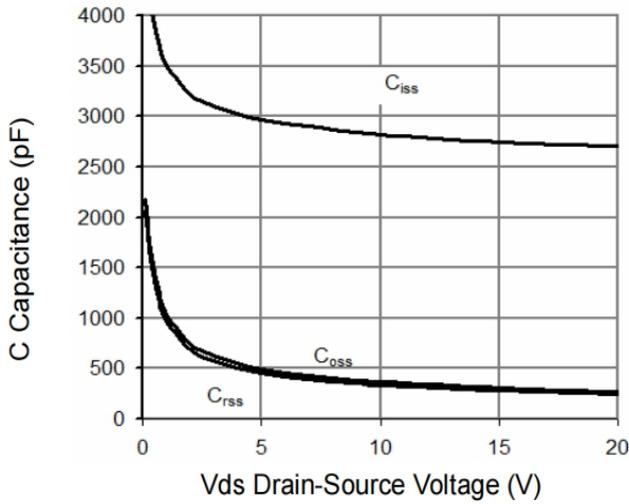
Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	BV_{DSS}	20	-	-	V
Drain-Source Leakage Current	$V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS} = \pm 12\text{ V}, V_{DS} = 0\text{ V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	$V_{GS(th)}$	0.4	-	1	V
Drain-Source On-State Resistance	$V_{GS} = 4.5\text{ V}, I_D = 25\text{A}$	$R_{DS(ON)}$	-	5	6.5	mΩ
	$V_{GS} = 2.5\text{ V}, I_D = 15\text{A}$		-	7	10	mΩ
Forward Transconductance	$V_{DS}=10\text{V}, I_D=20\text{A}$	g_{fs}	15	-	-	S
Input Capacitance	$V_{GS} = 0\text{ V}$ $V_{DS} = 10\text{ V}$ $f = 1.0\text{MHz}$	C_{iss}	-	2800	-	pF
Output Capacitance		C_{oss}	-	368	-	
Reverse Transfer Capacitance		C_{rss}	-	341	-	
Turn-on Delay Time(Note2)	$V_{DS}=10\text{V}$ $I_D=2\text{A}$ $V_{GS}=4.5\text{V}$ $R_G=3\Omega$	$t_{d(on)}$	-	6.4	-	ns
Rise Time(Note2)		T_r	-	17.2	-	
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	29.6	-	
Fall Time(Note2)		t_f	-	16.8	-	
Total Gate Charge(Note2)	$V_{DS}=10\text{V}$ $I_D=20\text{A}$ $V_{GS}=4.5\text{V}$	Q_g	-	35	-	nC
Gate to Source Charge(Note2)		Q_{gs}	-	3	-	
Gate to Drain Charge(Note2)		Q_{gd}	-	10	-	
Maximun Body-Diode Continuous Current		I_S	-	-	60	A
Drain-Source Diode Forward Voltage	$V_{GS}=0\text{V}, I_S=20\text{A}, T_J=25^\circ\text{C}$	V_{SD}	-	-	1.2	V
Reverse Recovery Time(Note2)	$I_S = I_F, I_{SD}=20\text{A}, V_{GS} = 0\text{ V},$ $dI / dt = 100\text{ A}/\mu\text{s}$	t_{rr}	-	25	-	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	24	-	nC

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

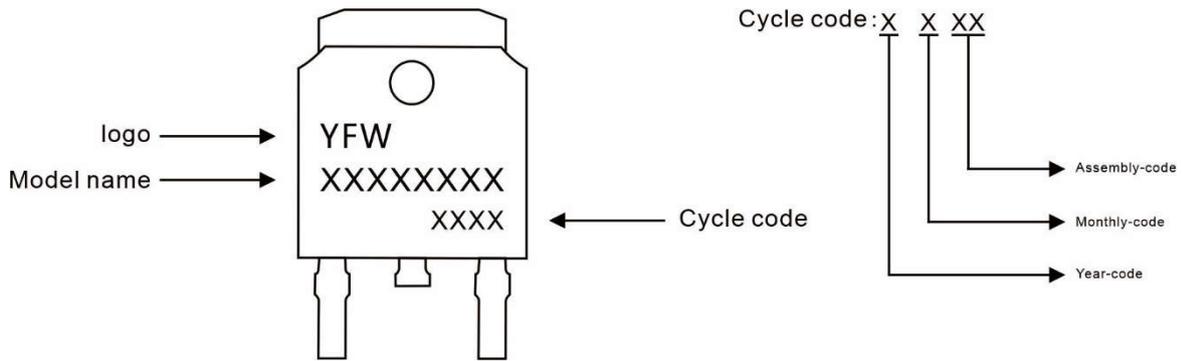
RATINGS AND CHARACTERISTIC CURVES



Ratings and Characteristic Curves



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW60N02AD	TO-252	0.011oz(0.32g)	2500pcs/reel	5000pcs/box 25000pcs/Carton

Package Dimensions

TO-252

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.098
A1	0.00	0.12	0.000	0.005
A2	2.20	2.40	0.087	0.094
B	1.20	1.60	0.047	0.063
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.35	6.65	0.250	0.262
D1	5.20	5.40	0.205	0.213
E	5.40	5.70	0.213	0.224
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	10.00	11.00	0.393	0.433
L1	2.70	3.10	0.106	0.122
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059

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