

40V N-Channel Enhancement Mode MOSFET

MAIN CHARACTERISTICS

I_D	80A
V_{DSS}	40V
R_{DS(on)}-typ(@V_{GS}=10V)	<7mΩ (Type: 5.5mΩ)

FEATURES

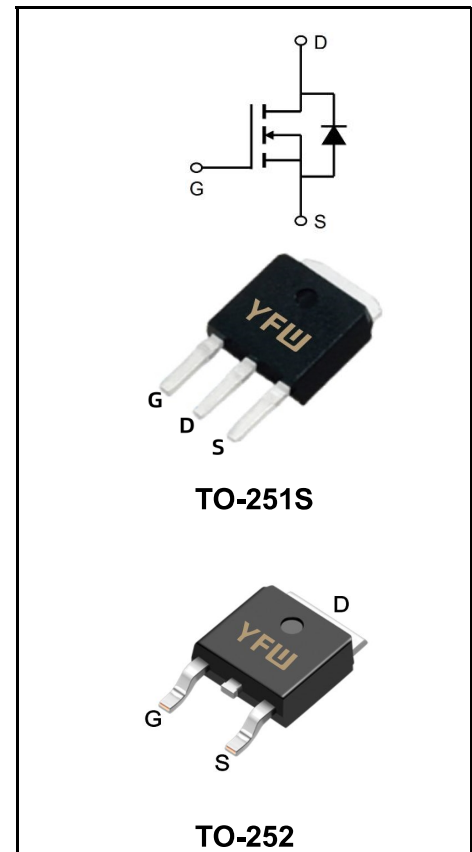
Adopt advanced trench technology to provide excellent RDS(ON), low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

APPLICATIONS

- Battery protection
- Load switch
- Uninterruptible power supply

MECHANICAL DATA

- Case: 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



Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continue Drain Current	I_D	80	A
Pulsed Drain Current (Note1)	I_{DM}	350	A
Power Dissipation	P_D	80	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	750	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.88	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62	°C/W

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

Electrical Characteristics at Tc=25°C unless otherwise specified

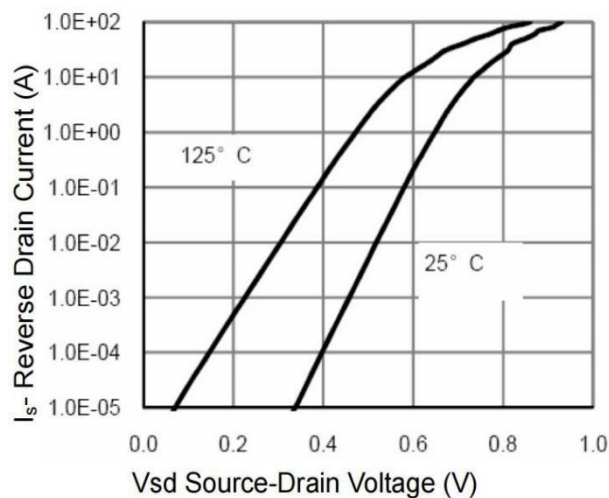
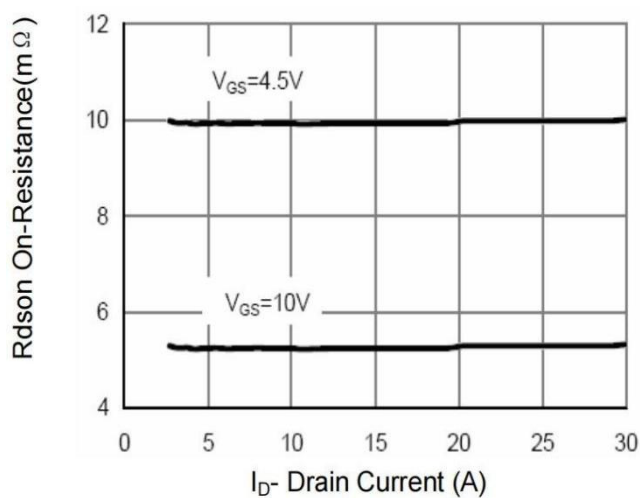
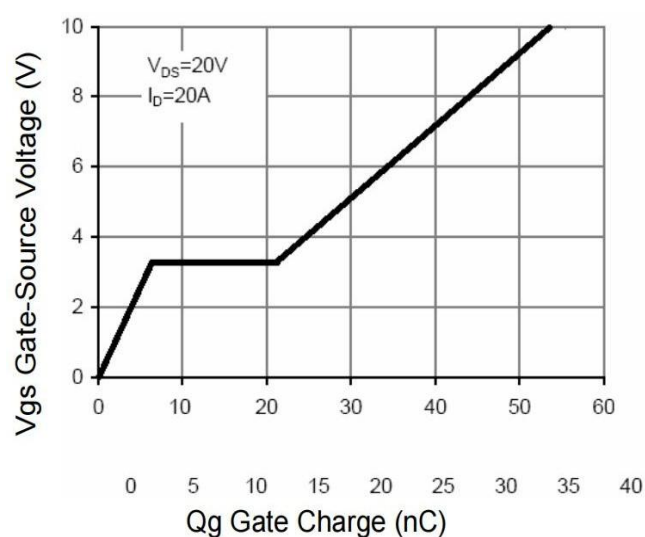
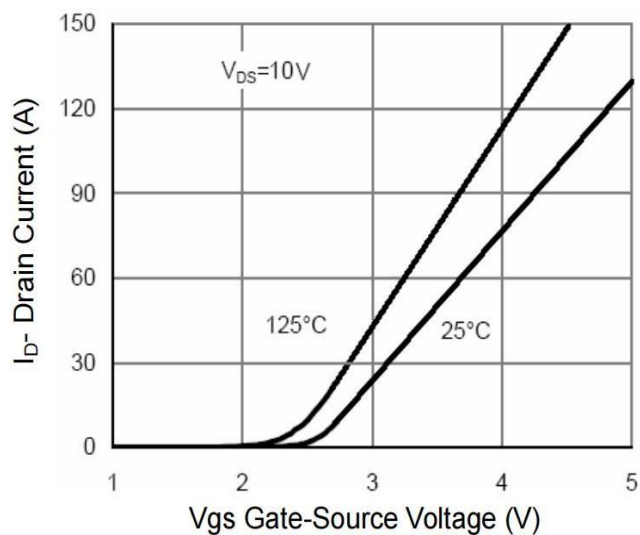
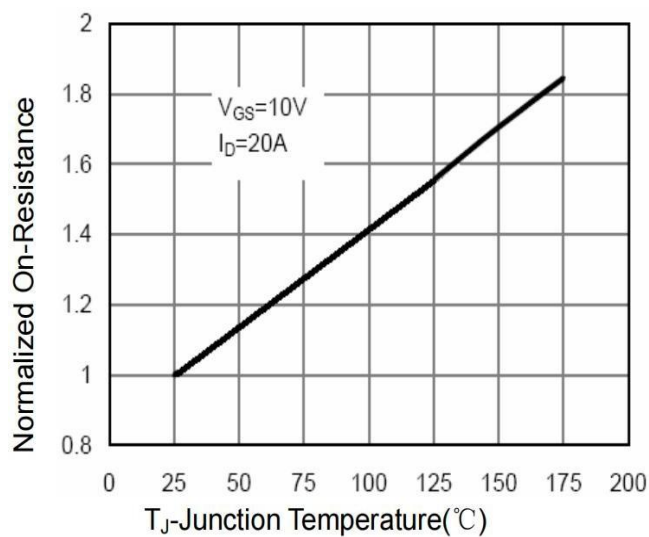
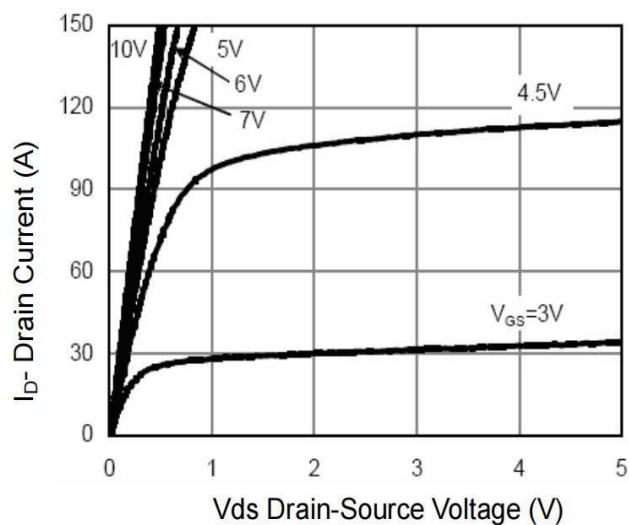
Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0 \text{ V}, I_D = 250 \mu\text{A}$	BV_{DSS}	40	-	-	V
Drain-Source Leakage Current	$V_{DS} = 40 \text{ V}, V_{GS} = 0 \text{ V}$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0 \text{ V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	$V_{GS(th)}$	1.1	-	2.4	V
Drain-Source On-State Resistance	$V_{GS} = 10 \text{ V}, I_D = 30 \text{ A}$	$R_{DS(on)}$	-	5.5	7	m Ω
	$V_{GS} = 4.5 \text{ V}, I_D = 20 \text{ A}$	$R_{DS(on)}$	-	8	12	m Ω
Forward Transconductance	$V_{DS} = 10 \text{ V}, I_D = 20 \text{ A}$	g_{fs}	15	-	-	S
Input Capacitance	$V_{DS}=20\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$	C_{iss}	-	2662	3200	pF
Output Capacitance		C_{oss}	-	322	-	pF
Reverse Transfer Capacitance		C_{rss}	-	246	-	pF
Turn-on Delay Time(Note2)	$V_{DD}=20\text{V}, V_{GS}=10\text{V}, R_G=3 \Omega, R_L=1 \Omega$	$t_{d(ON)}$	-	12	-	ns
Rise Time(Note2)		t_r	-	11	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	39	-	ns
Fall Time(Note2)		t_f	-	12	-	ns
Total Gate Charge(Note2)	$V_{DS}=20\text{V}, V_{GS}=10\text{V}, I_D=20\text{A}$	Q_G	-	54.3	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	6.9	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	14.5	-	nC

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

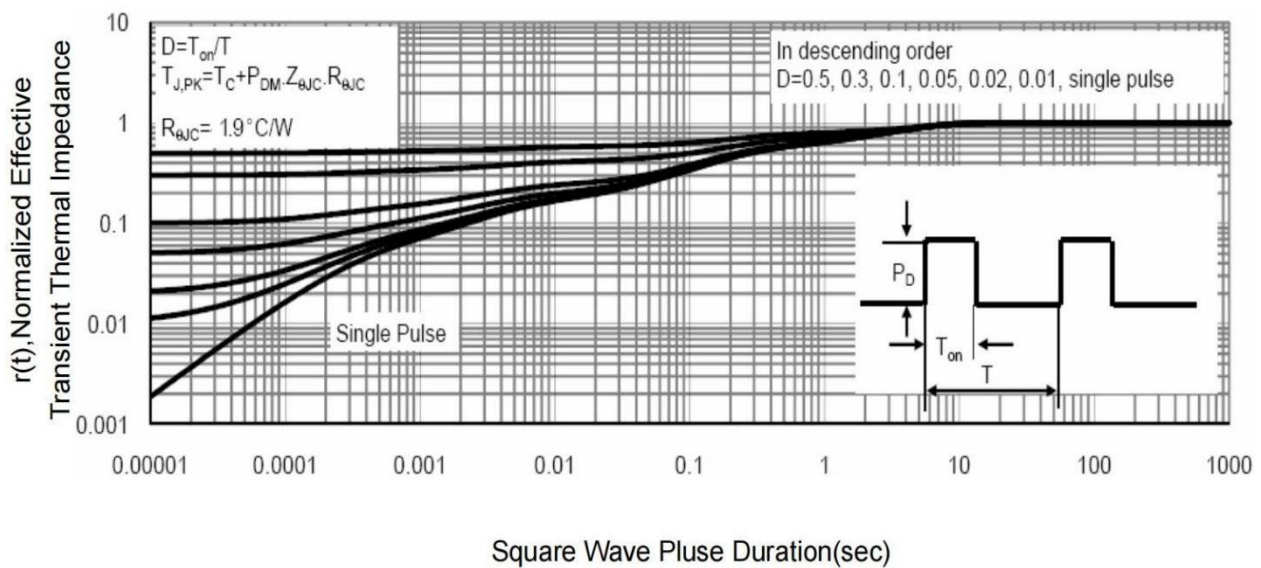
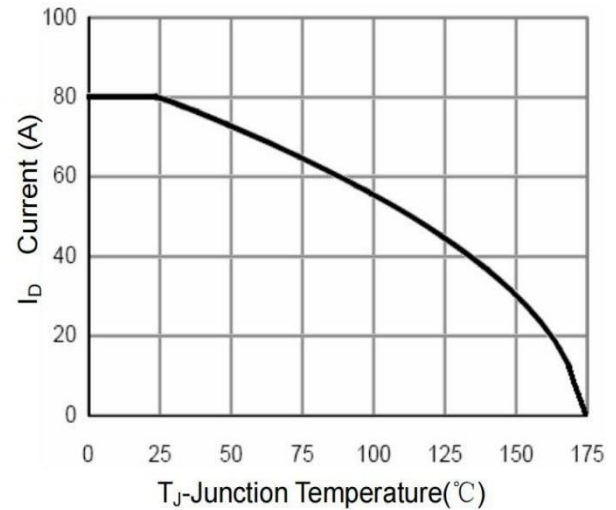
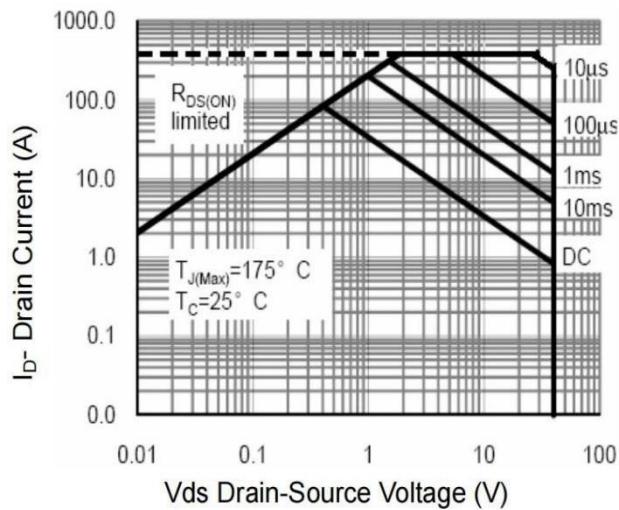
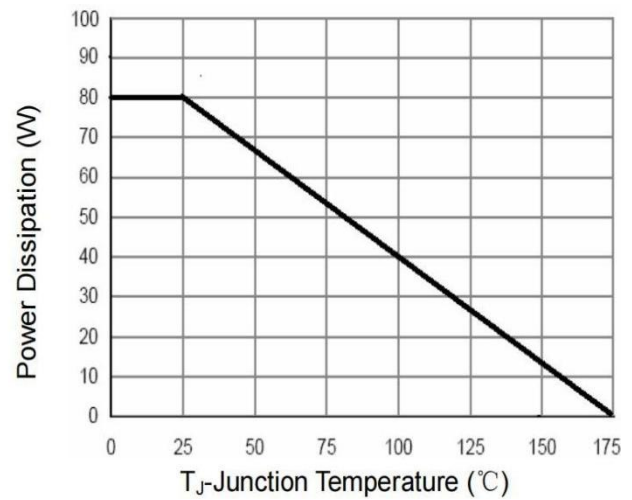
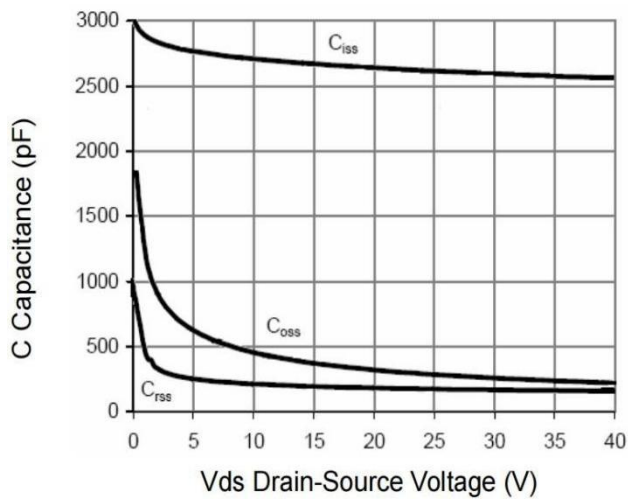
Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		I_S	-	-	80	A
Drain-Source Diode Forward Voltage	$V_{GS}=0\text{V}, I_S=10\text{A}, T_J=25$	V_{SD}	-	-	1.2	V
Reverse Recovery Time(Note2)	$T_J = 25^\circ\text{C}, I_F = 20\text{A}$ $di/dt = 100 \text{ A}/\mu\text{s}$	trr	-	-	45	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	-	50	nC

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

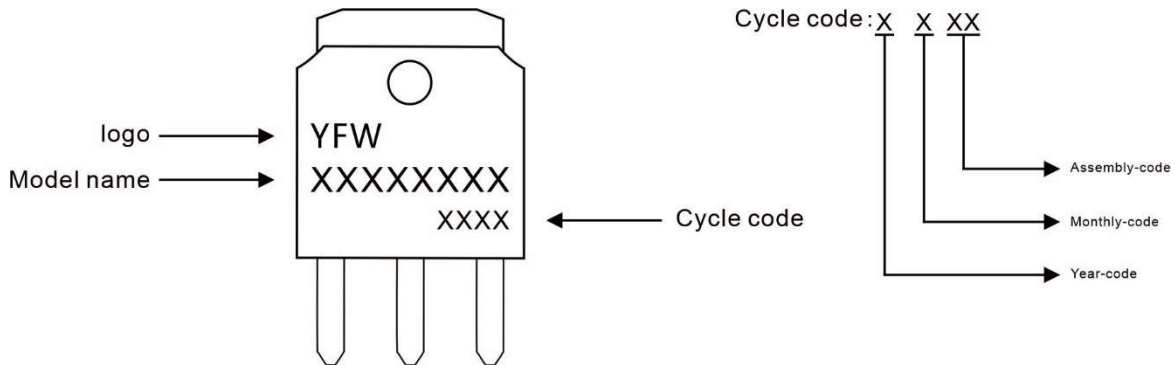
RATINGS AND CHARACTERISTIC CURVES



RATINGS AND CHARACTERISTIC CURVES



Marking Diagram



Ordering information

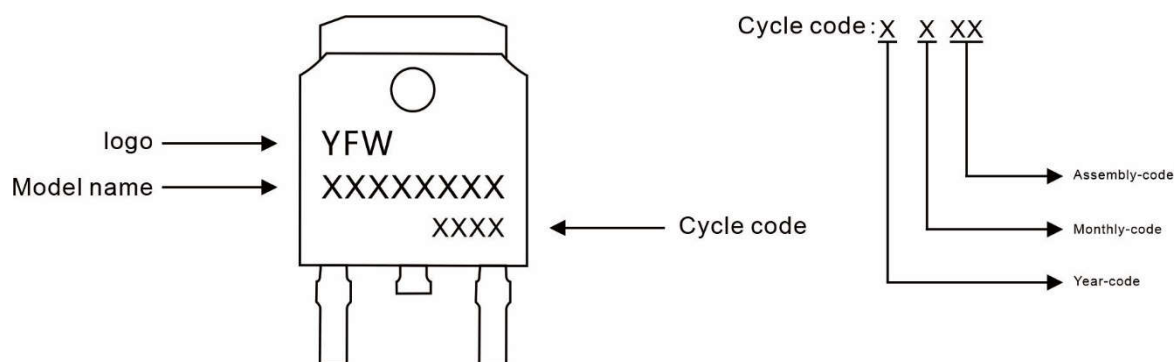
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW80N04AMJ	TO-251S	0.011oz(0.32g)	80pcs/tube	4000pcs/box 24000pcs/Carton

Package Dimensions

TO-251S

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.1	2.5	0.083	0.098
A1	6.3	6.9	0.248	0.271
A2	0.9	1.1	0.035	0.043
A3	TYP0.5		TYP0.019	
b	0.6	0.8	0.024	0.031
c	0.4	0.5	0.015	0.020
D	5.3	5.5	0.209	0.217
D2	3.65	4.05	0.144	0.159
E	5.8	6.4	0.228	0.252
E2	0.9	1.4	0.035	0.055
e	TYP2.29		TYP0.090	
e1	TYP4.58		TYP0.180	
L	3.7	4.3	0.146	0.169

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW80N04AD	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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