

30V N-Channel Trench Power MOSFET

MAIN CHARACTERISTICS

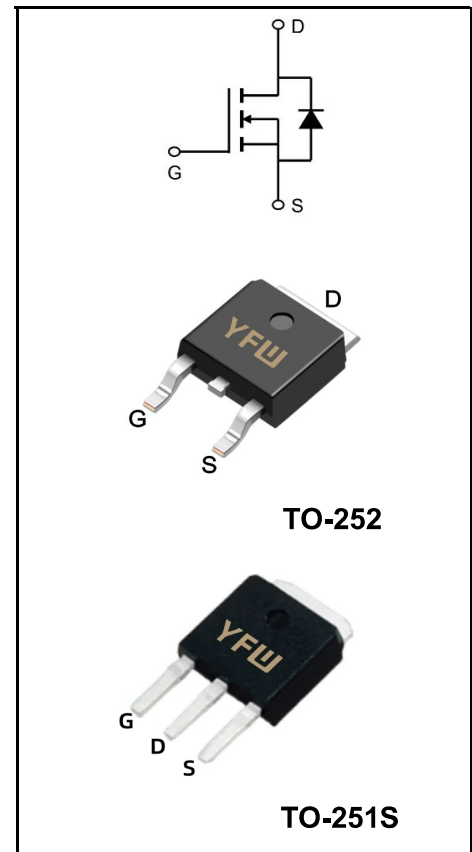
I_D	100A
V_{DS}	30V
$R_{DS(on)-typ}$ (@ $V_{GS}=10V$ $T_C=25^{\circ}C$)	$< 4.7m\Omega$ (Typ: 3m Ω)

FEATURES

- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge

APPLICATIONS

- Battery protection
- Load switch
- Uninterruptible power supply



Maximum Ratings at $T_C=25^{\circ}C$ unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	30	V
Gate - Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	100	A
Pulsed Drain Current(note1)	I_{DM}	360	A
Power Dissipation	P_D	67	W
Single Pulse Avalanche Energy(note1)	E_{AS}	90	mJ
Operating Temperature Range	T_J	150	$^{\circ}C$
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}C$
Thermal Resistance, Junction-to-case	$R_{\theta JC}$	1.85	$^{\circ}C/W$
Thermal Resistance, Junction ambient	$R_{\theta JA}$	62	$^{\circ}C/W$

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

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	BV_{DSS}	30	-	-	V
Drain-Source Leakage Current	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$	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	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	$V_{GS(th)}$	1	-	2	V
Drain-Source On-State Resistance	$V_{GS}=10\text{V}, I_D=30\text{A}$	$R_{DS(ON)}$	-	3	4.7	m Ω
	$V_{GS}=4.5\text{V}, I_D=20\text{A}$		-	4.98	7.5	m Ω
Forward Transconductance	$V_{DS} = 5\text{ V}, I_D = 10\text{ A}$	g_{fs}	20	-	-	S
Input Capacitance	$V_{DS}=25\text{V}$ $V_{GS}=0\text{V}$ $f=1\text{MHz}$	C_{iss}	-	2200	-	pF
Output Capacitance		C_{oss}	-	240	-	pF
Reverse Transfer Capacitance		C_{rss}	-	210	-	pF
Turn-on Delay Time(Note2)	$V_{DD}=15\text{V}$ $V_{GS}=10\text{V}$ $R_G=1.8\Omega$ $I_D=60\text{A}$	$t_{d(on)}$	-	11	-	ns
Rise Time(Note2)		T_r	-	160	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	12	-	ns
Fall Time(Note2)		t_f	-	80	-	ns
Total Gate Charge(Note2)	$V_{DS}=15\text{V}$ $V_{GS}=10\text{V}$ $I_D=30\text{A}$	Q_g	-	39	-	nC
Gate to Source Charge(Note2)		Q_{gs}	-	5	-	nC
Gate to Drain Charge(Note2)		Q_{gd}	-	9	-	nC
Maximun Body-Diode Continuous Current		I_S	-	-	100	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	360	A
Drain-Source Diode Forward Voltage	$V_{GS}=0\text{V}, I_S=24\text{A}, T_J=25^\circ\text{C}$	V_{SD}	-	-	1.2	V
Reverse Recovery Time	$I_S = I_F, I_{SD}=20\text{A}, V_{GS} = 0\text{ V},$ $dI / dt = 100\text{ A}/\mu\text{s}$	t_{rr}	-	12	-	ns
Reverse Recovery Charge		Q_{rr}	-	2.5	-	nC

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

Ratings and Characteristic Curves

Fig.1 Power Dissipation Derating Curve

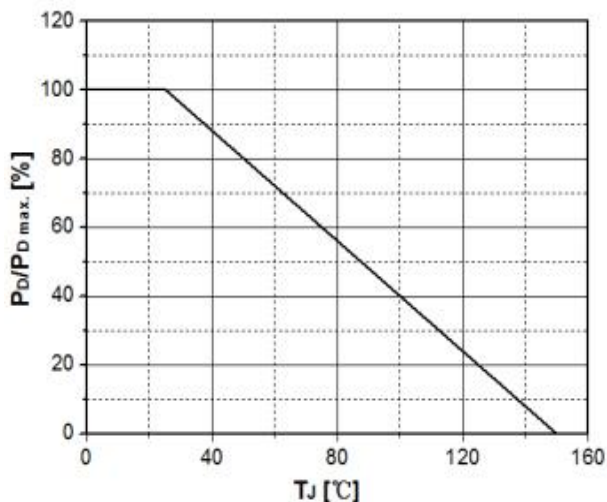


Fig.2 Avalanche Energy Derating Curve vs. Junction Temperature

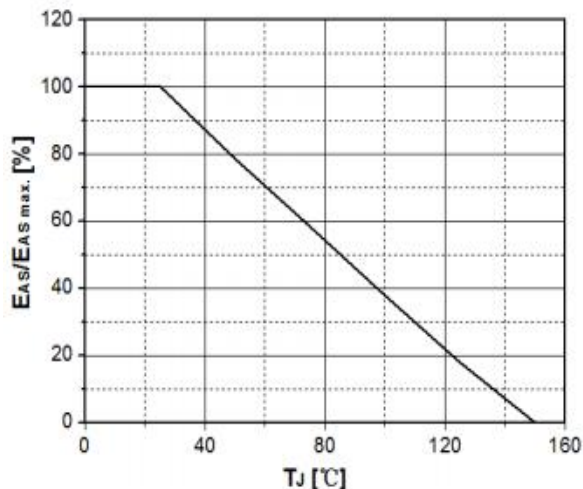


Fig.3 Typical Output Characteristics

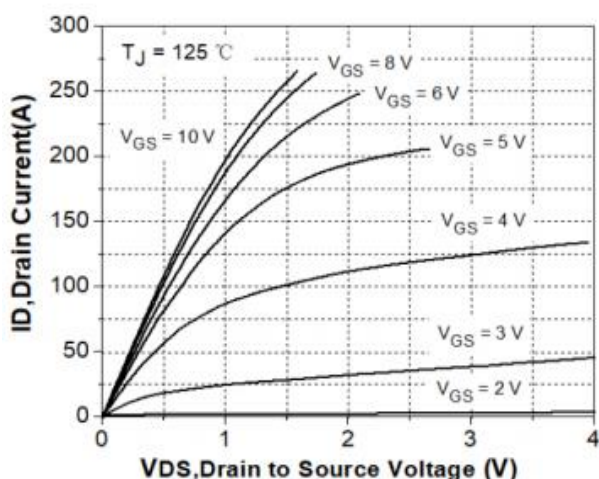


Fig. 4 Transconductance vs. Drain Current

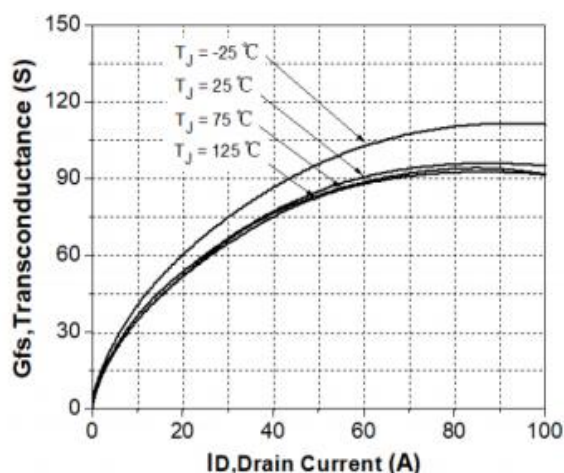


Fig.5 Typical Transfer Characteristics

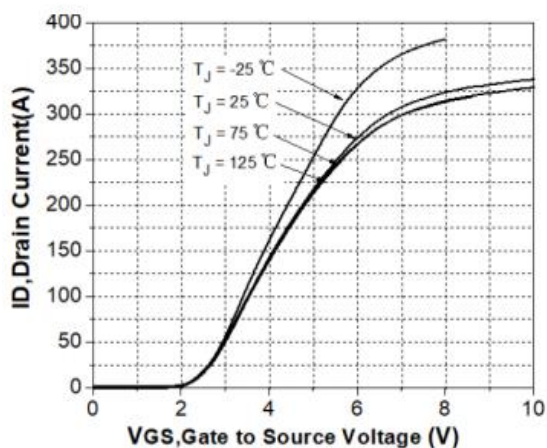
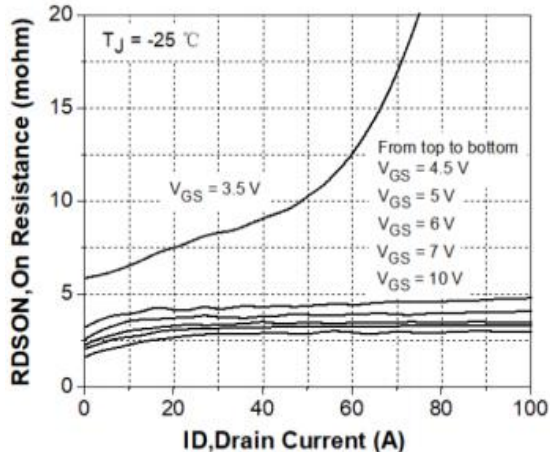


Fig. 6 State Resistance vs. Drain Current @ -25°C



Ratings and Characteristic Curves

Fig.7 State Resistance vs. Drain Current
@25°C

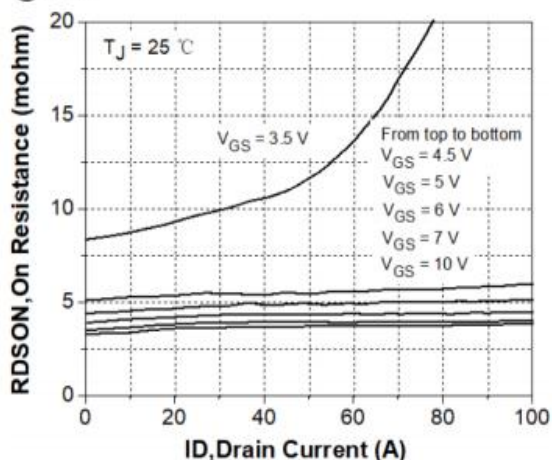


Fig. 8 State Resistance vs. Drain Current
@75°C

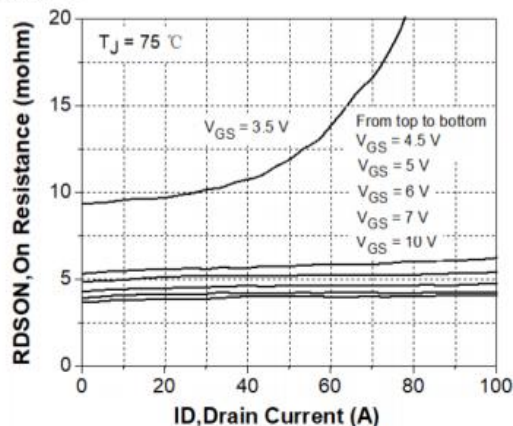


Fig.9 State Resistance vs. Drain Current
@125°C

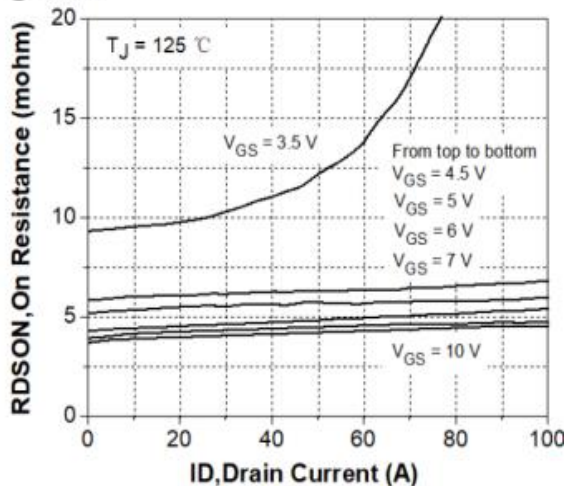


Fig.10 Gate Charge Characteristics

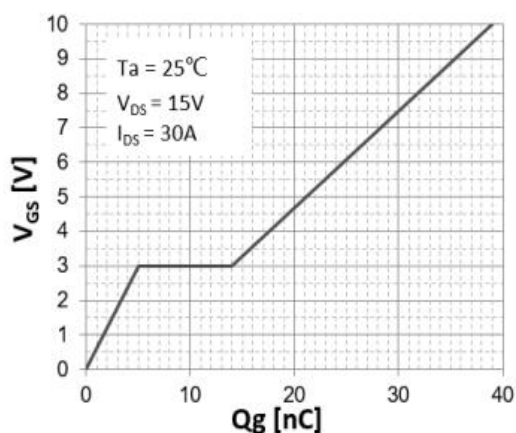


Fig.11 Breakdown Voltage
vs. Junction Temperature

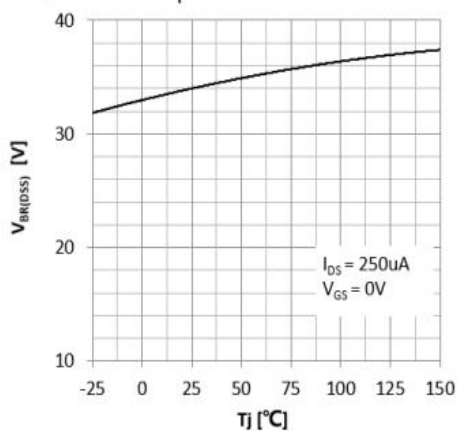
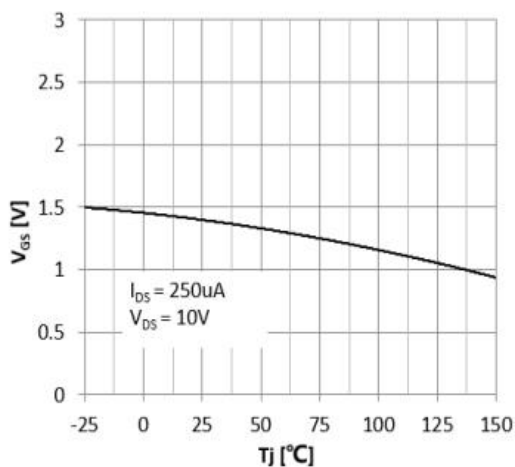
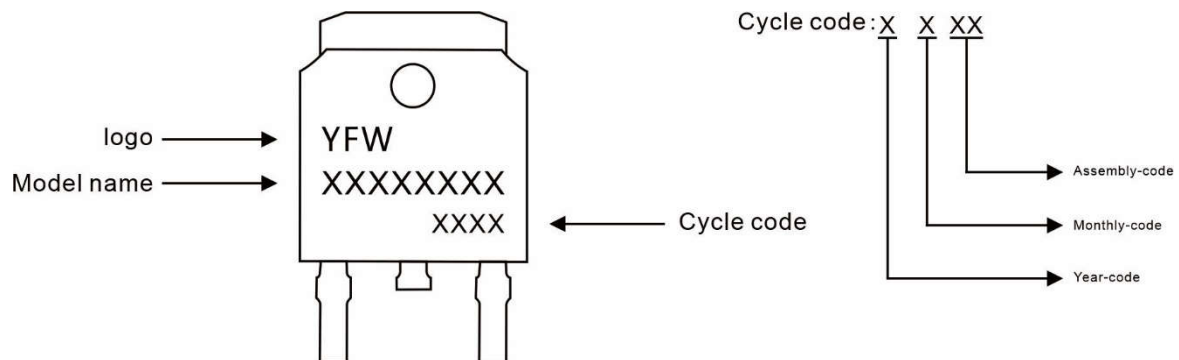


Fig. 12 Gate Threshold Voltage
vs. Junction Temperature



Marking Diagram



Ordering information

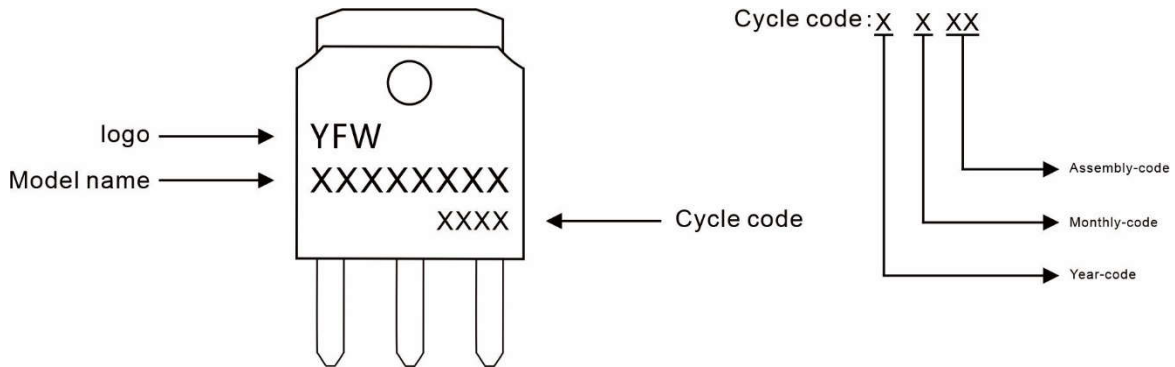
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW100N03AD	TO-252	0.011oz(0.32g)	2500pcs/reel	5000pcs/box 25000pcs/Carton

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	0.95	1.55	0.037	0.061
b	0.50	0.80	0.020	0.031
b1	0.60	0.90	0.024	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	5.80	6.40	0.228	0.252
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	3.50	0.106	0.138
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW100N03AMJ	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

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