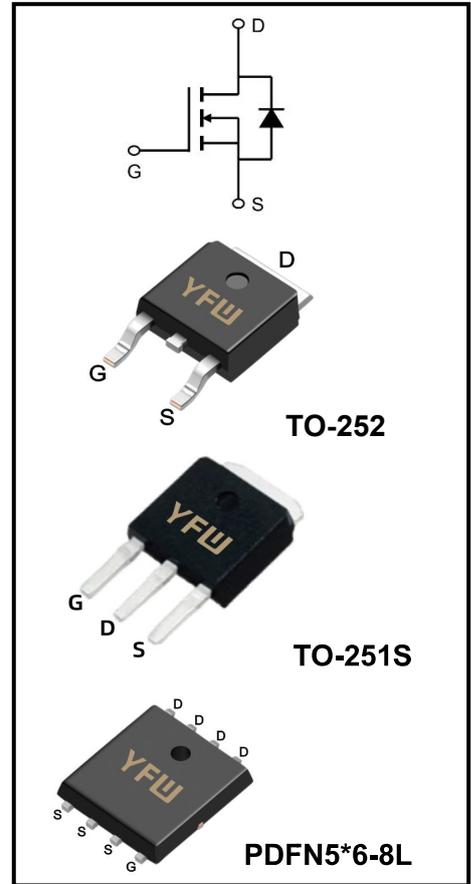


60V N-Channel Trench Power MOSFET

MAIN CHARACTERISTICS

I_D	30A
V_{DSS}	60V
R_{DS(on)-typ(@V_{GS}=10V)}	<29mΩ(Typ:23mΩ)



FEATURES

- Advanced Trench Technology
- Excellent RDS(ON) and Low Gate Charge

Application

- Load Switch
- PWM Application
- Power Management

MECHANICAL DATA

- Case:TO-252/AD TO-251S/AMJ PDFN5X6-8L/NF
- 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
Drain-Source Voltage	V_{DS}	60	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	30	A
Pulsed Drain Current(Note1)	I_{DM}	74	A
Total Power Dissipation	P_D	50	W
Single Pulse Avalanche Energy(Note1)	E_{AS}	144	mJ
Operating Junction Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	R_{θJC}	3.0	°C/W
Thermal Resistance, Junction ambient	R_{θJA}	100	°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}	60	-	-	V
Drain-Source Leakage Current	$V_{DS}=60V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1	-	2.5	V
Drain-Source on-Resistance	$V_{GS}=10V, I_D=15A$	$R_{DS(on)}$	-	23	29	m Ω
	$V_{GS}=4.5V, I_D=10A$		-	28	40	m Ω
Forward Transconductance	$V_{DS}=5V, I_D=20A$	g_{fs}	30	-	-	S
Input Capacitance	$V_{DS}=30V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	1905	-	μF
Output Capacitance		C_{oss}	-	132	-	
Reverse Transfer Capacitance		C_{rss}	-	94	-	
Total Gate Charge(Note2)	$I_D=20A$ $V_{DS}=30V$ $V_{GS}=10V$	Q_g	-	31	-	nC
Gate-Source Charge(Note2)		Q_{gs}	-	4.4	-	
Gate-Drain Charge(Note2)		Q_{gd}	-	7.6	-	
Turn-on delay time(Note2)	$V_{GS}=10V$ $V_{DS}=30V$ $R_G=3\Omega$	$t_{d(on)}$	-	5.2	-	ns
Rise Time(Note2)		T_r	-	2.5	-	
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	16	-	
Fall Time(Note2)		t_f	-	2.2	-	
Maximun Body-Diode Continuous Current		I_S	-	-	30	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	74	A
Drain-Source Diode Forward Voltage	$I_{SD}=30A$	V_{SD}	-	-	1.2	V
Reverse Recovery Time(Note2)	$I_{SD}=20A, V_{GS}=0V,$ $dIF/dt=100A/\mu s$	t_{rr}	-	35	-	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	53	-	μC

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

Ratings and Characteristic Curves

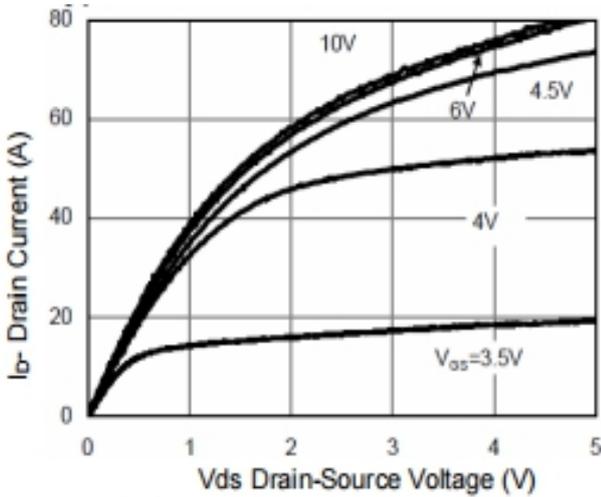


Figure 1 Output Characteristics

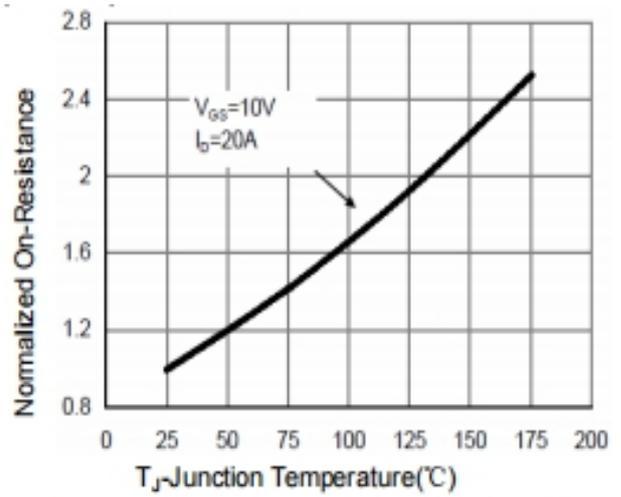


Figure 4 $R_{ds(on)}$ -Junction Temperature

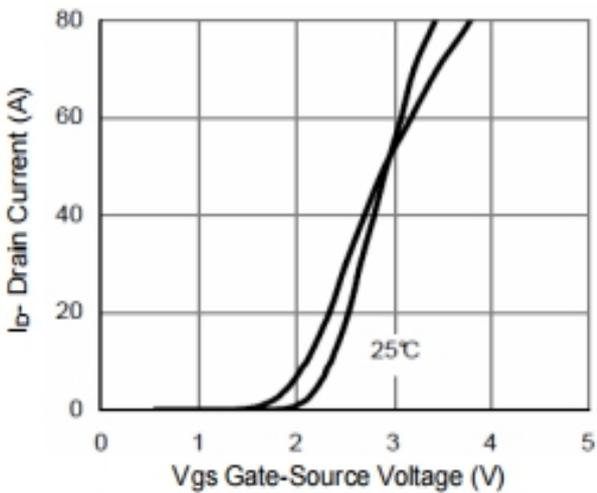


Figure 2 Transfer Characteristics

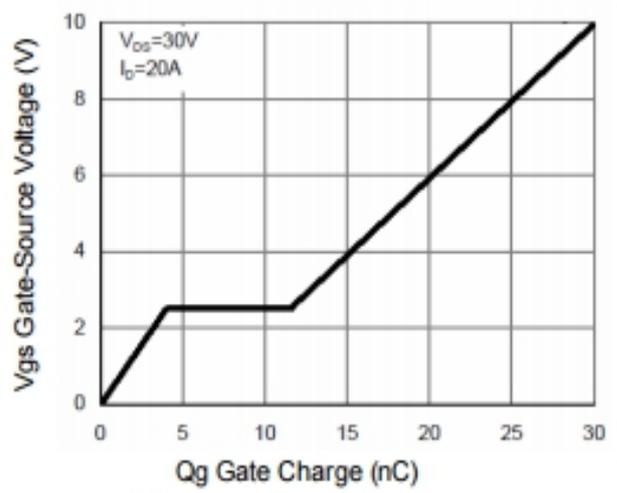


Figure 5 Gate Charge

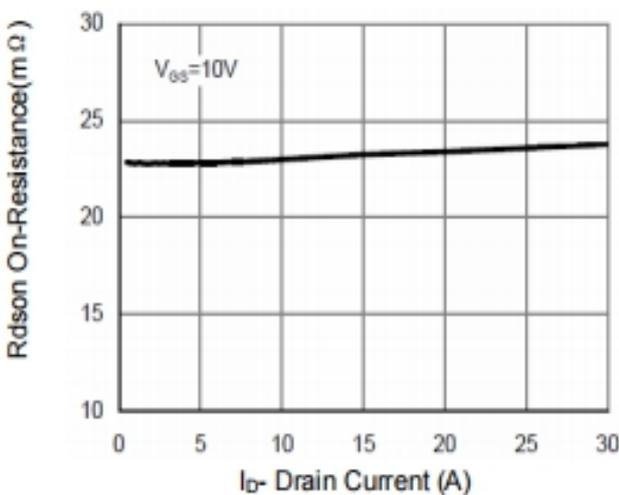


Figure 3 $R_{ds(on)}$ - Drain Current

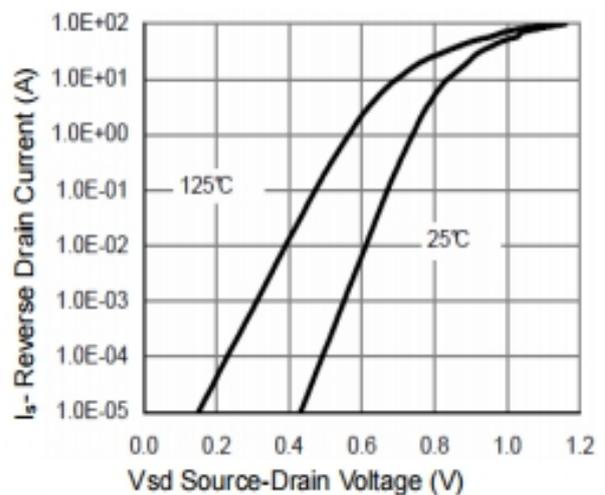


Figure 6 Source-Drain Diode Forward

Ratings and Characteristic Curves

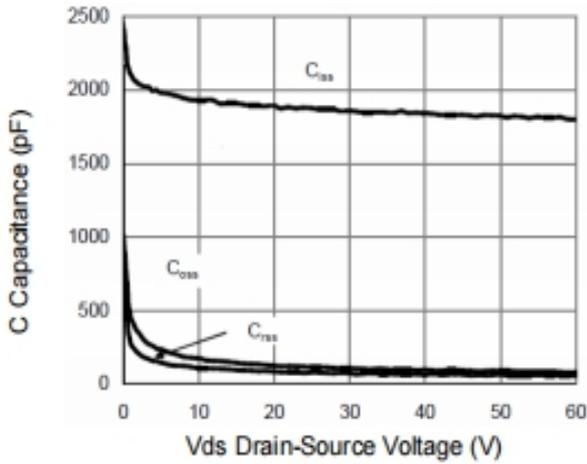


Figure 7 Capacitance vs Vds

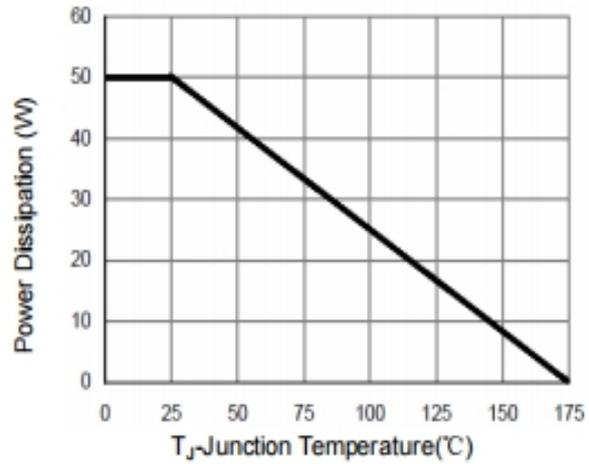


Figure 9 Power De-rating

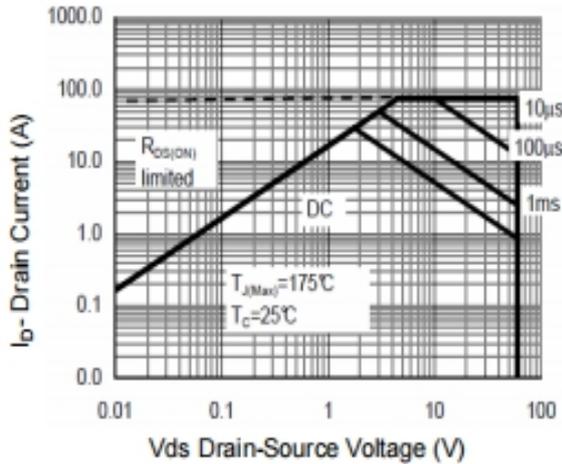


Figure 8 Safe Operation Area

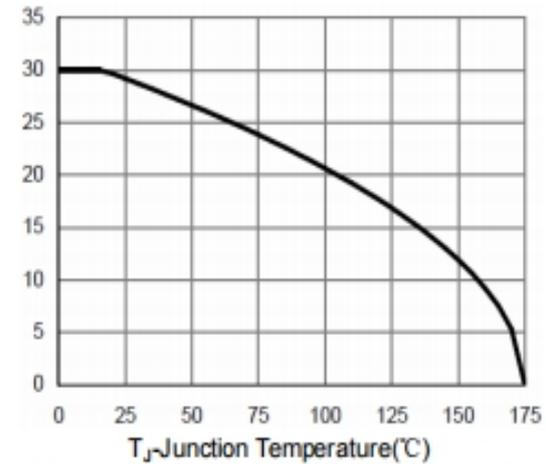


Figure 10 $V_{GS(th)}$ vs Junction Temperature

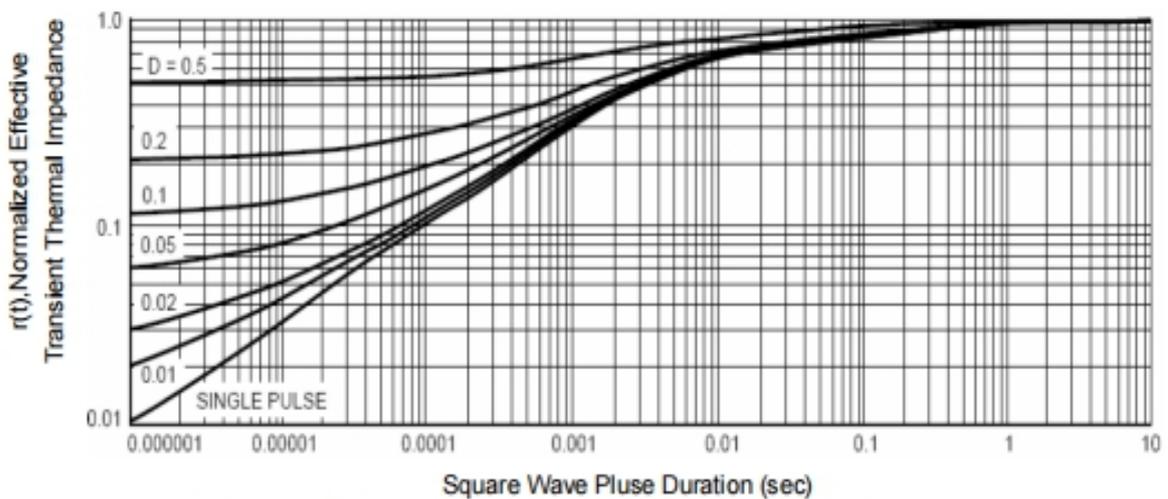
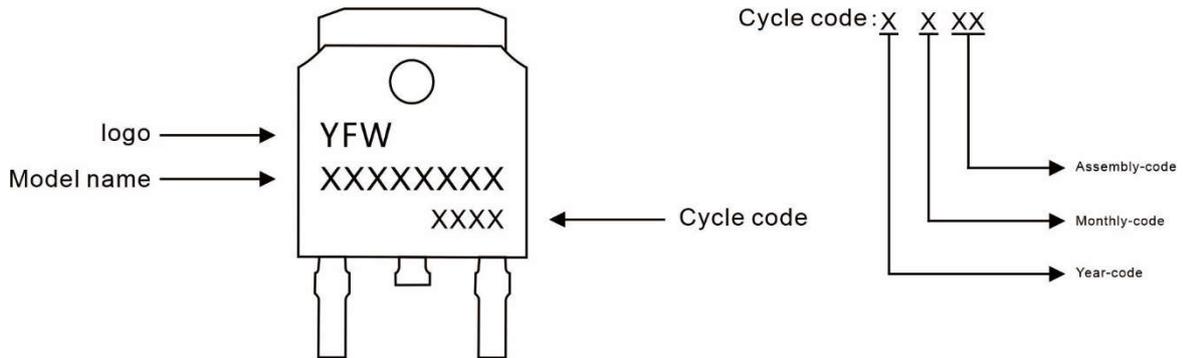


Figure 11 Normalized Maximum Transient Thermal Impedance

Marking Diagram



Ordering information

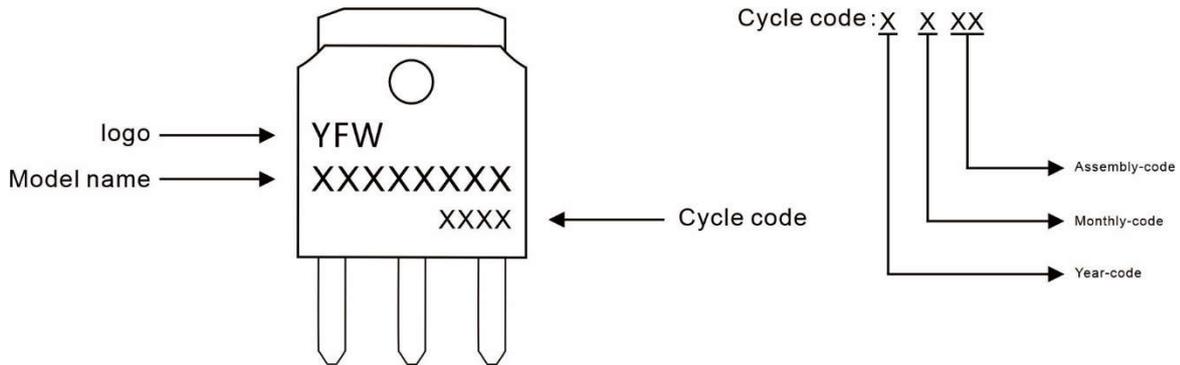
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW30N06AD	TO-252	0.011oz(0.32g)	2500pcs/reel	5000pcs/box 25000pcs/Carton

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

Marking Diagram



Ordering information

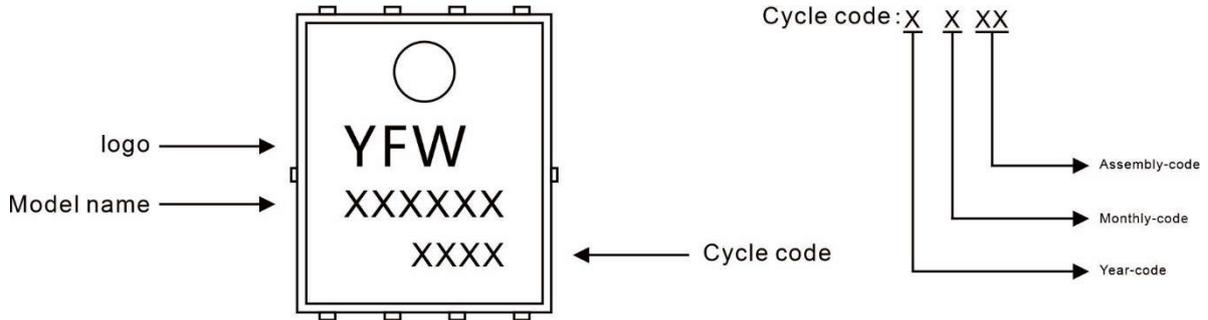
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW30N06AMJ	TO-251S	0.011oz(0.32g)	80pcs/tube	4000pcs/box 24000pcs/Carton

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
YFW30N06NF	PDFN5*6-8L	0.0032oz(0.093g)	5000pcs/reel	10000pcs/box 50000pcs/Carton

Package Dimensions

PDFN5*6-8L

Dim	Millimeter		mil	
	Min.	Max.	Min.	Max.
A	0.9	1.2	35	45
A2	0.204	0.304	8	12
b	0.4ref.		16ref.	
b1	0.2	0.4	8	16
D	5.0	5.3	197	209
D1	4.84	5.24	191	206
E	5.95	6.35	234	250
E1	3.275	3.675	129	145
E2	5.69	6.09	224	232
e	1.27typ.		50typ.	
K	1.29typ.		51typ.	
L	0.585	0.785	23	27
L1	0.7typ.		28typ.	

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