

60V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	80A
V_{DS}	60V
R_{DS(on)-typ}(@V_{GS}=10V)	< 6.9mΩ (Typ: 5.3mΩ)

FEATURES

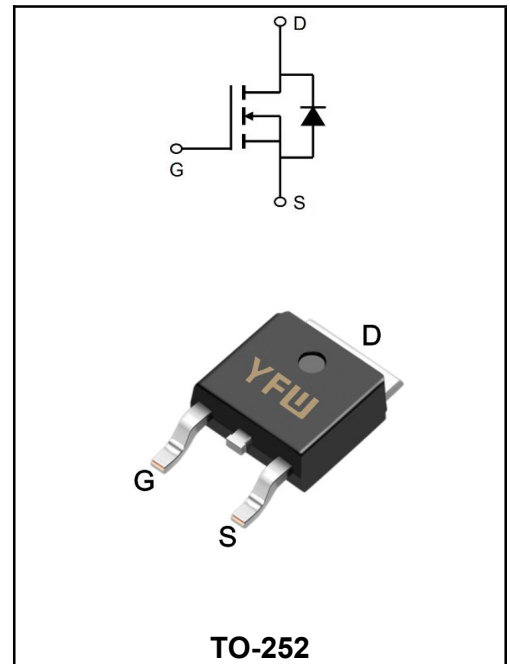
- ♦Advanced Trench Technology
- ♦Excellent RDS(ON) and Low Gate Charge

APPLICATIONS

- ♦Load switch
- ♦PWM Application
- ♦Power Management

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	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	60	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	80	A
Pulsed Drain Current(Note1)	I_{DM}	320	A
Total Power Dissipation	P_D	108	W
Single Pulse Avalanche Energy	E_{AS}	165	mJ
Operating Junction Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +175	°C
Thermal Resistance, Junction to Case	R_{θJC}	1.4	°C/W
Thermal Resistance, Junction ambient	R_{θJA}	62	°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
Zero Gate Voltage Drain 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	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	2	-	4	V
Drain-Source on-Resistance	$V_{GS}=10V, I_D=30A$	$R_{DS(on)}$	-	5.3	6.9	m Ω
Forward Transconductance	$V_{DS}=5V, I_D=10A$	g_{fs}	10	-	-	S
Input Capacitance	$V_{DS}=30V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	3712	-	μF
Output Capacitance		C_{oss}	-	296	-	
Reverse Transfer Capacitance		C_{rss}	-	251	-	
Total Gate Charge	$I_D=30A,$ $V_{DS}=30V,$ $V_{GS}=10V$	Q_g	-	90	-	nC
Gate-Source Charge		Q_{gs}	-	9	-	
Gate-Drain Charge		Q_{gd}	-	18	-	
Turn-on delay time	$V_{DD}=30V$ $V_{GS}=10V$ $R_G=1.8\Omega$ $I_D=30A$	$t_{d(on)}$	-	9	-	ns
Rise Time		T_r	-	7	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	40	-	
Fall Time		t_f	-	15	-	
Maximun Body-Diode Continuous Current		I_S	-	-	80	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	320	A
Drain-Source Diode Forward Voltage	$V_{GS}=0V, I_S=30A, T_J=25^\circ C$	V_{SD}	-	-	1.2	V
Reverse Recovery Time(Note2)	$I_{SD}=30A, V_{GS}=0V,$ $dIF/dt=100A/\mu s$	t_{rr}	-	33	-	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	46	-	nC

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

Ratings and Characteristic Curves

Figure1: Output Characteristics

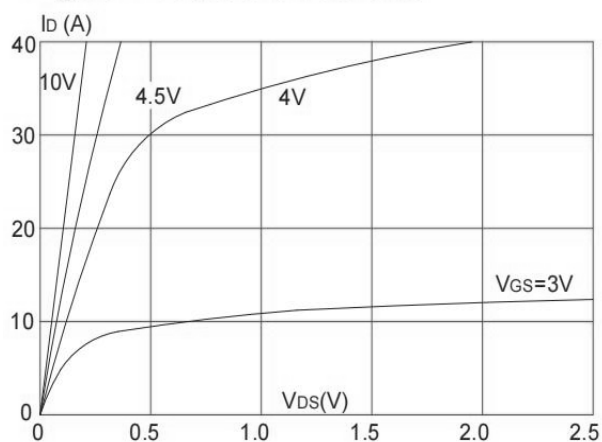


Figure 2: Typical Transfer Characteristics

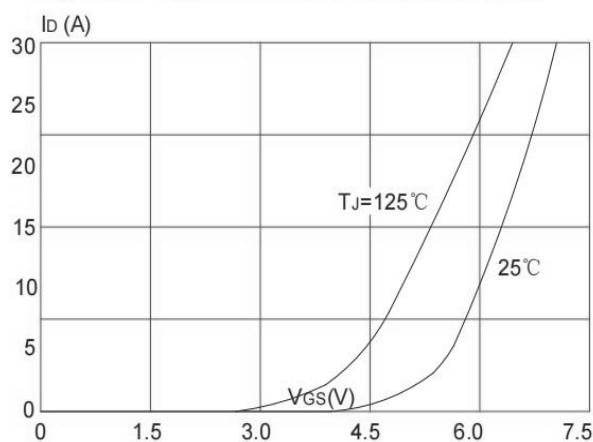


Figure 3: On-resistance vs. Drain Current

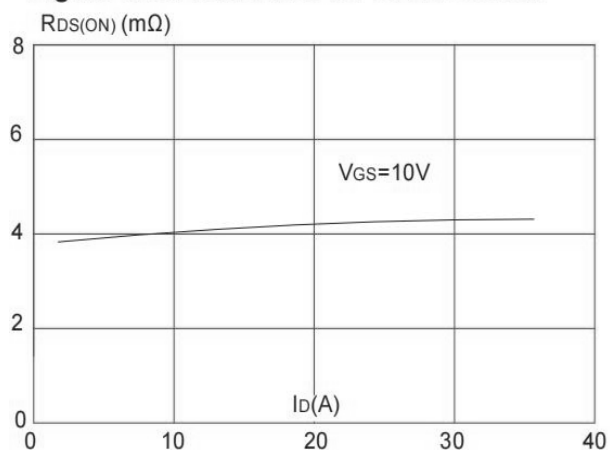


Figure 4: Body Diode Characteristics

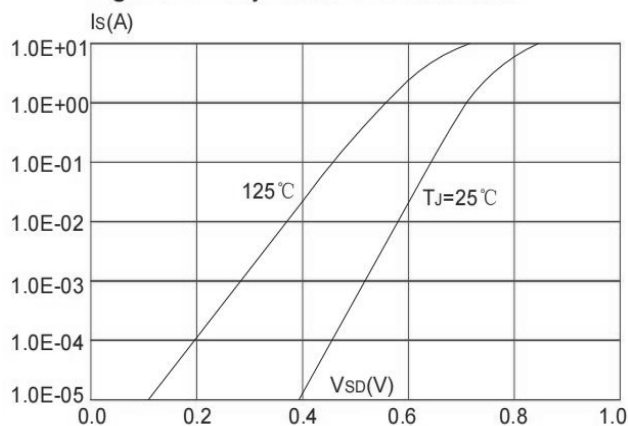


Figure 5: Gate Charge Characteristics

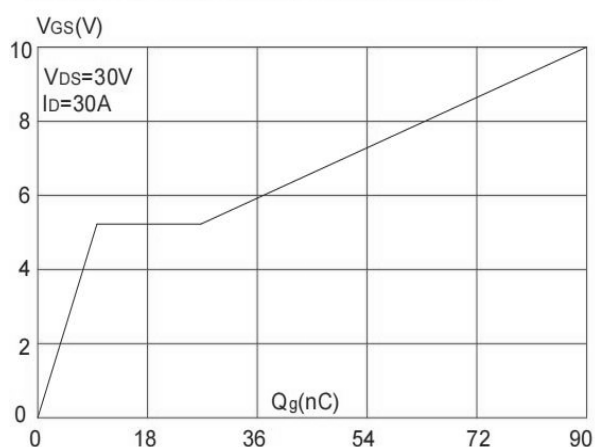
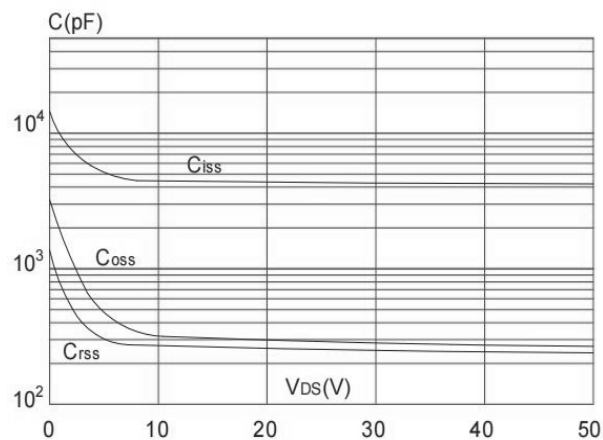


Figure 6: Capacitance Characteristics



Ratings and Characteristic Curves

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

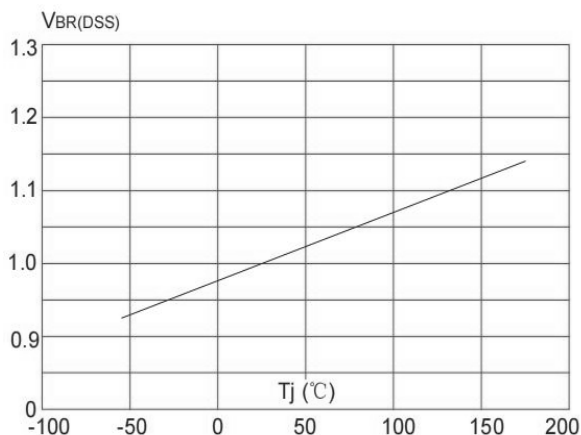


Figure 8: Normalized on Resistance vs. Junction Temperature

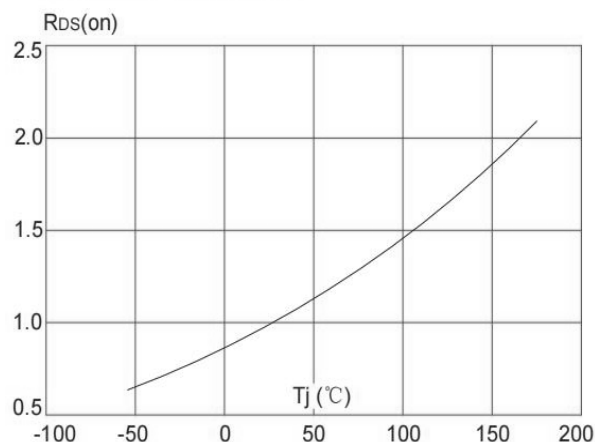


Figure 9: Maximum Safe Operating Area

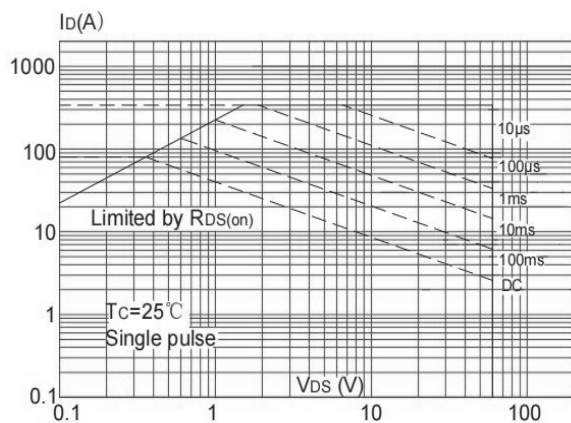


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

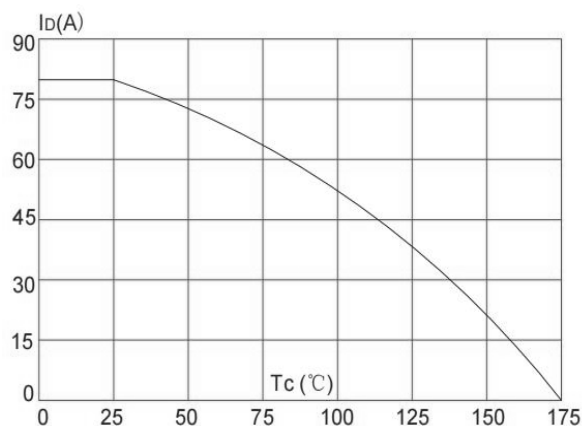
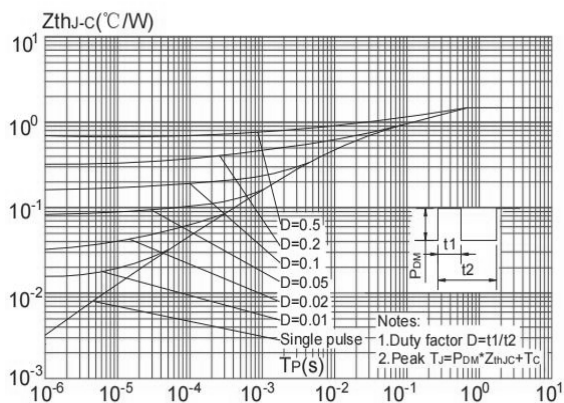
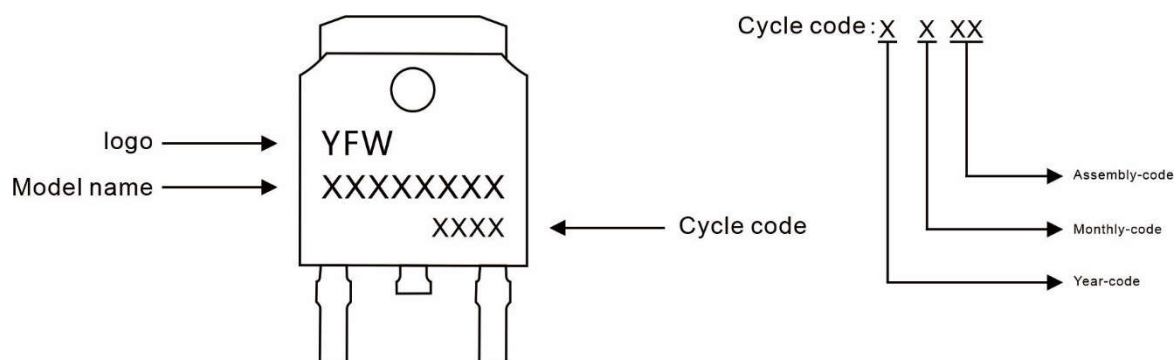


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW80N06AD	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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