

60V N- Channel Advanced Power MOSFET

MAIN CHARACTERISTICS

I_D	60A
V_{DSS}	60V
R_{DS(on)}-typ(@V_{GS}=10V)	<17mΩ (Type:12mΩ)

Features

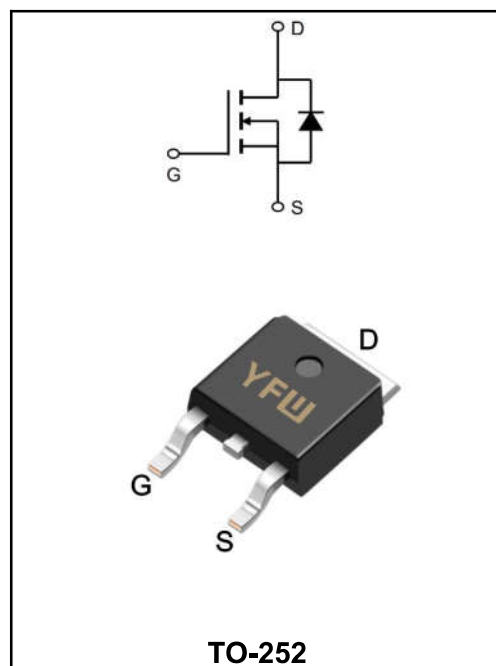
- ♦Fast Switching
- ♦Low ON Resistance
- ♦Low Gate Charge
- ♦100% Single Pulse avalanche energy Test

Applications

- ♦Load Switch
- ♦PWM Application
- ♦Power management

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°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}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continue Drain Current	I_D	60	A
Pulsed Drain Current (Note1)	I_{DM}	200	A
Power Dissipation	P_D	75	W
Single Pulse Avalanche Energy (Note5)	E_{AS}	80	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case(Note 2)	$R_{\theta JC}$	2	°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	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	BV_{DSS}	60	-	-	V
Drain-Source Leakage Current	$V_{DS} = 60\text{ V}, V_{GS} = 0\text{ V}$	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	-	2.5	V
Drain-Source On-State Resistance (Note 3)	$V_{GS} = 10\text{ V}, I_D = 30\text{ A}$	$R_{DS(on)}$	-	12	17	m Ω
	$V_{GS} = 4.5\text{ V}, I_D = 20\text{ A}$	$R_{DS(on)}$	-	16	25	m Ω
Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$	C_{iss}	-	2030	-	pF
Output Capacitance		C_{oss}	-	130	-	pF
Reverse Transfer Capacitance		C_{rss}	-	115	-	pF
Turn-on Delay Time	$V_{DD}=30\text{ V}, V_{GS}=10\text{ V}, R_G=1.8\text{ }\Omega, I_D=30\text{ A}$	$t_{d(ON)}$	-	11	-	ns
Rise Time		t_r	-	79	-	ns
Turn-Off Delay Time		$t_{d(OFF)}$	-	33	-	ns
Fall Time		t_f	-	105	-	ns
Total Gate Charge	$V_{DS}=30\text{ V}, V_{GS}=10\text{ V}, I_D=30\text{ A}$	Q_G	-	45	-	nC
Gate to Source Charge		Q_{GS}	-	8	-	nC
Gate to Drain Charge		Q_{GD}	-	11	-	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 (Note 2)		I_S	-	-	60	A
Maximun Body-Diode Pulsed Current		I_{SM}	-	-	200	A
Drain-Source Diode Forward Voltage (Note 3)	$I_{SD} = 30\text{ A}$	V_{SD}	-	-	1.2	V
Reverse Recovery Time	$I_S = I_F, I_{SD}=30\text{ A}, V_{GS} = 0\text{ V}, dI/dt = 100\text{ A}/\mu\text{s}$ (Note3)	t_{rr}	-	14	-	ns
Reverse Recovery Charge		Q_{rr}	-	10	-	μC

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

Ratings and Characteristic Curves

Figure1: Output Characteristics

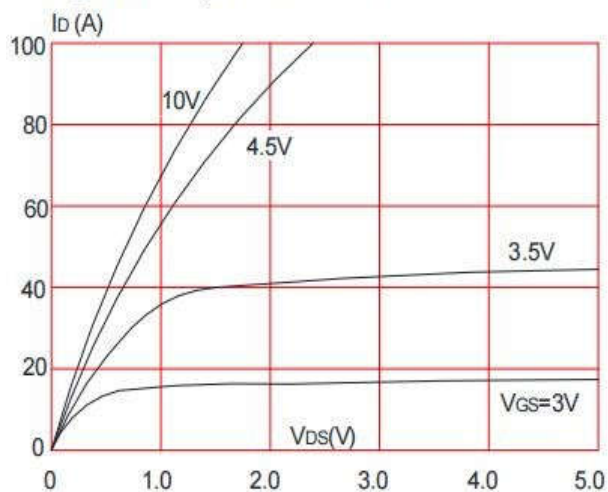


Figure 2: Typical Transfer Characteristics

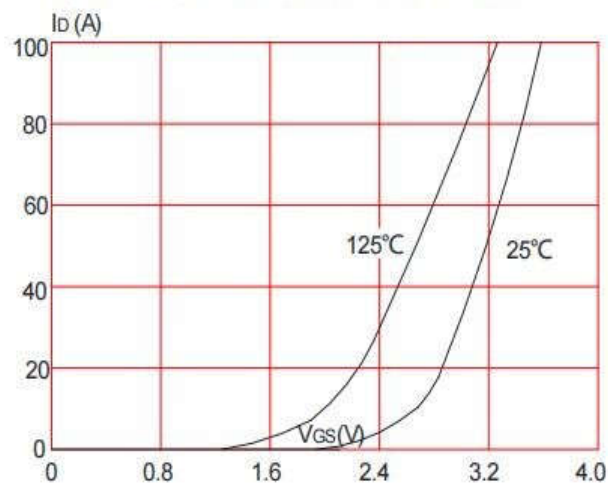


Figure 3: On-resistance vs. Drain Current

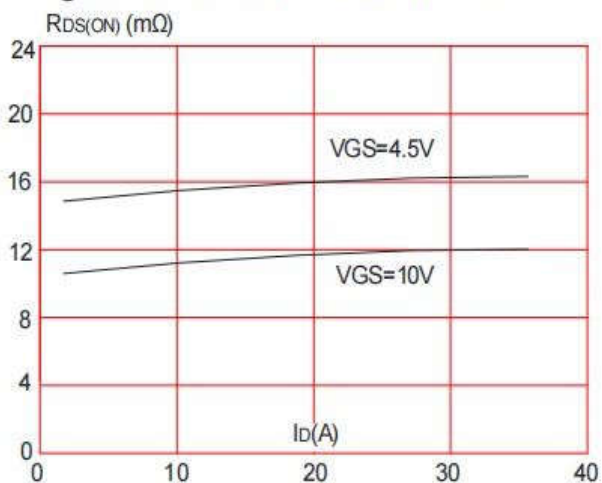


Figure 4: Body Diode Characteristics

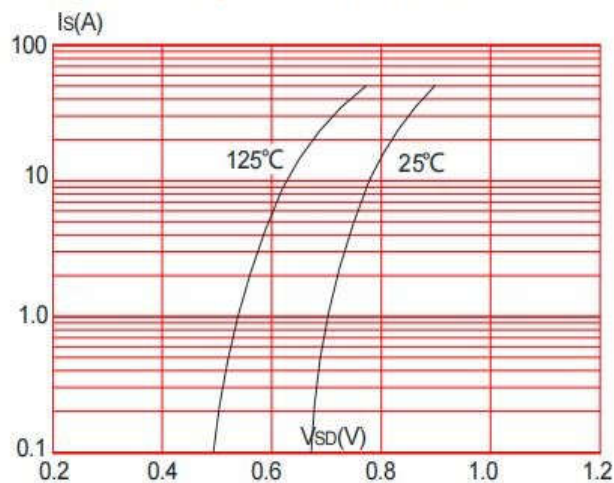


Figure 5: Gate Charge Characteristics

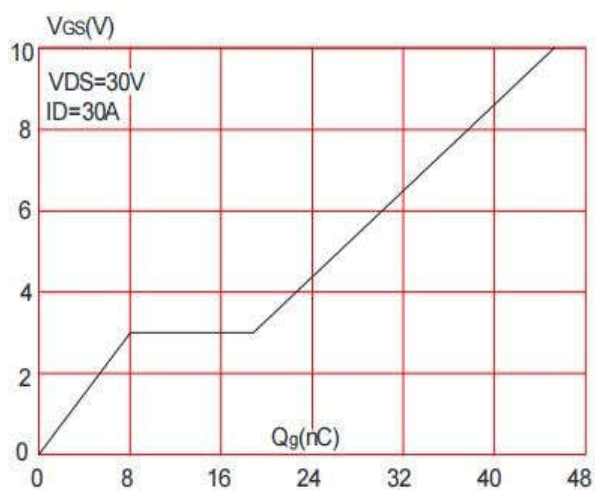
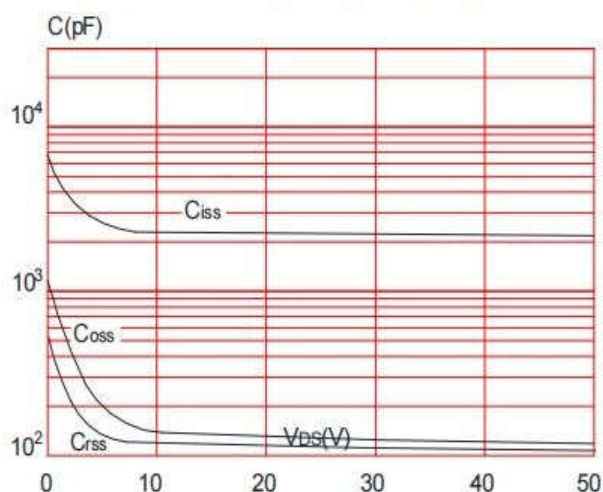


Figure 6: Capacitance Characteristics



Ratings and Characteristic Curves

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

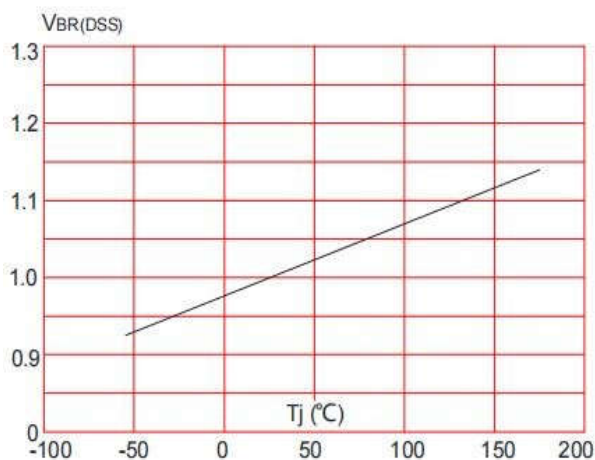


Figure 8: Normalized on Resistance vs. Junction Temperature

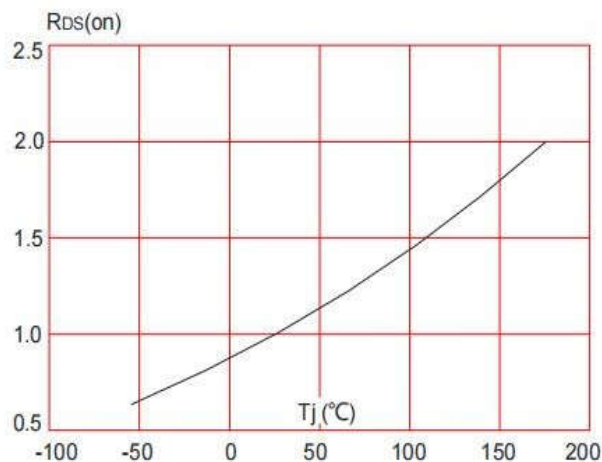


Figure 9: Maximum Safe Operating Area

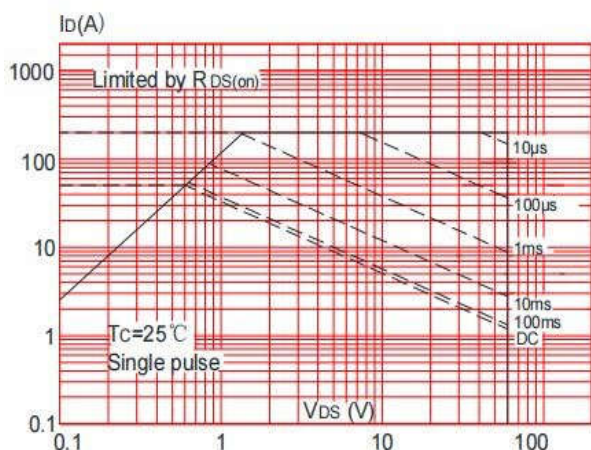


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

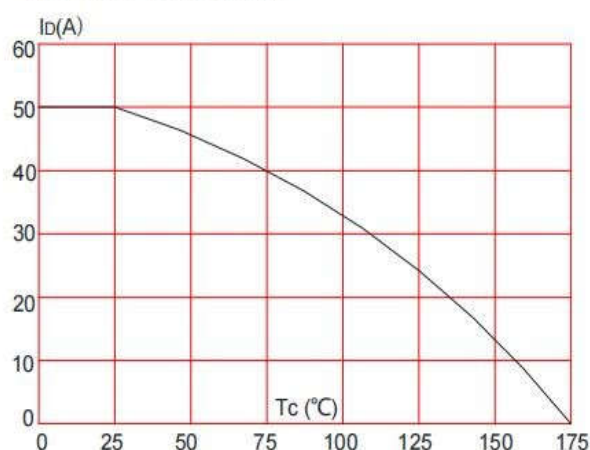
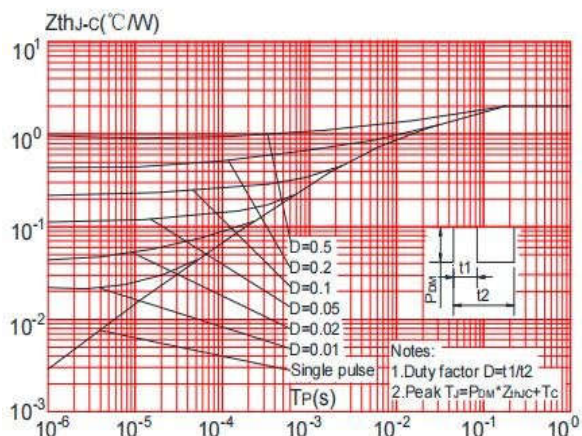
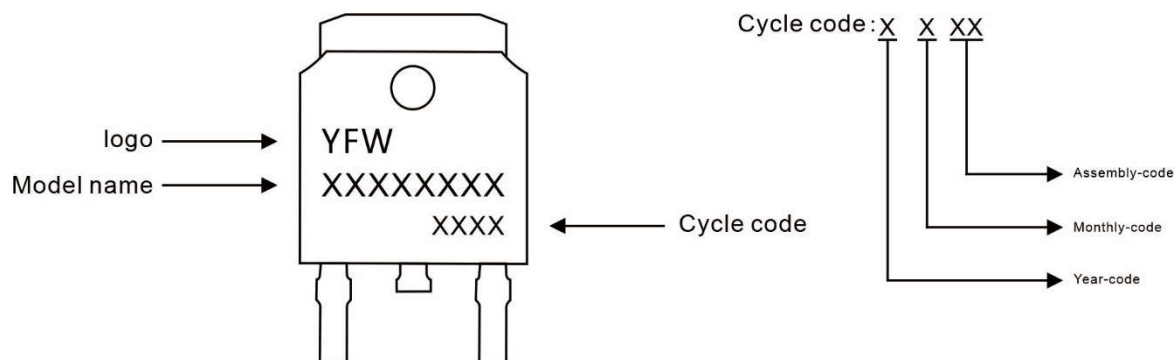


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW60N06AD	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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