

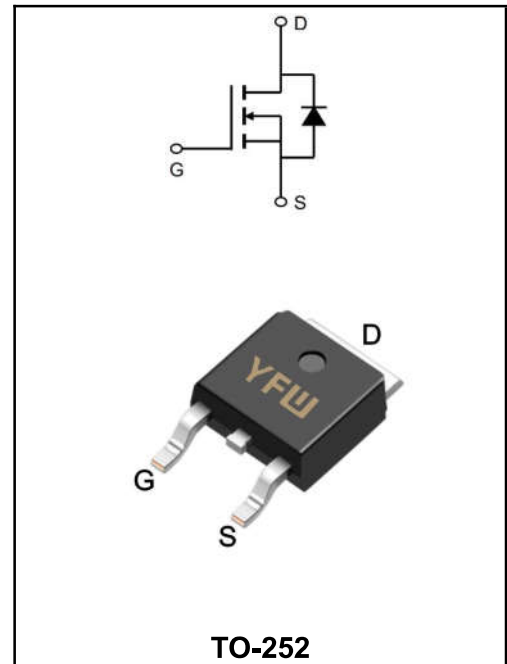
400V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	6A
V_{DSS}	400V
$R_{DS(on)-typ}(@V_{GS}=10V)$	$< 1.0\Omega$ (Type: 0.8 Ω)

Application

- ◆Uninterruptible Power Supply(UPS)
- ◆Power Factor Correction (PFC)



Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage ($V_{GS} = 0V$)	V_{DS}	400	V
Continuous Drain Current	I_D	6	A
Pulsed Drain Current(note1)	I_{DM}	28	A
Gate - Source Voltage	V_{GS}	± 30	V
Single Pulse Avalanche Energy(note2)	E_{AS}	176	mJ
Avalanche Current(note1)	I_{AR}	7	A
Repetitive Avalanche Energy(note1)	E_{AR}	18	mJ
Power Dissipation($T_A=25^\circ C$)	P_D	32.9	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ C$
Thermal Resistance, Junction-to-case	$R_{\theta JC}$	3.8	$^\circ C/W$
Thermal Resistance, Junction ambient	$R_{\theta JA}$	13.3	$^\circ C/W$

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	V(BR)DSS	400	440	-	V
Zero Gate Voltage Drain Current	$V_{DS}=650V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	1	μA
Gate-Source Leakage	$V_{GS}=\pm 30V$	I_{GSS}	-	-	± 100	nA
Gate- Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	V_{GS(th)}	2.0	3.5	4.0	V
Drain-Source On-Resistance (note3)	$V_{GS}=10V, I_D=3.5A$	R_{DS(ON)}	-	0.8	1.0	Ω
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	700	-	pF
Output Capacitance		C_{oss}	-	94	-	
Reverse Transfer Capacitance		C_{rss}	-	12	-	
Total Gate Charge	$V_{DD}=520V$ $I_D=7A$ $V_{GS}=10V$	Q_g	-	19	-	nC
Gate-Source Charge		Q_{gs}	-	3.7	-	
Gate-Drain Charge		Q_{gd}	-	11	-	
Turn-on delay time	$V_{DD}=325V$ $I_D=7A$ $R_G=25\Omega$	t_{d(on)}	-	13	-	nS
Turn-on Rise Time		T_r	-	20	-	
Turn-Off Delay Time		t_{d(OFF)}	-	76	-	
Turn-Off Fall Time		t_f	-	40	-	
Continuous Body Diode Current	$T_C=25^\circ C$	I_S	-	-	7.0	A
Pulsed Diode Forward Current		I_{SM}	-	-	28	
Body Diode Voltage	$T_J = 25^\circ C, I_{SD} = 7A, V_{GS} = 0V$	V_{SD}	-	-	1.4	V
Reverse Recovery Time	$V_{GS} = 0V, I_S = 7A$ $diF/dt = 100A/\mu s$	t_{rr}	-	260	-	nS
Reverse Recovery Charge		Q_{rr}	-	3.8	-	uC

Note :

- 1、The data tested by surface mounted on a 1 inch2 FR-4 board with 20Z copper.
- 2、The EAS data shows Max. rating . IAS = 4.5A, VDD = 50V, RG = 25 Ω , Starting TJ = 25 $^\circ C$
- 3、The test condition is Pulse Test: Pulse width $\leq 300\mu s$, Duty Cycle $\leq 1\%$
- 4、The power dissipation is limited by 150 $^\circ C$ junction temperature
- 5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

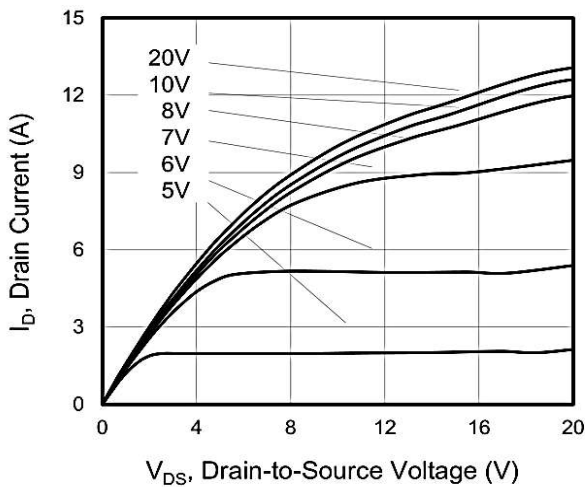


Figure 1. Output Characteristics ($T_J = 25^\circ\text{C}$)

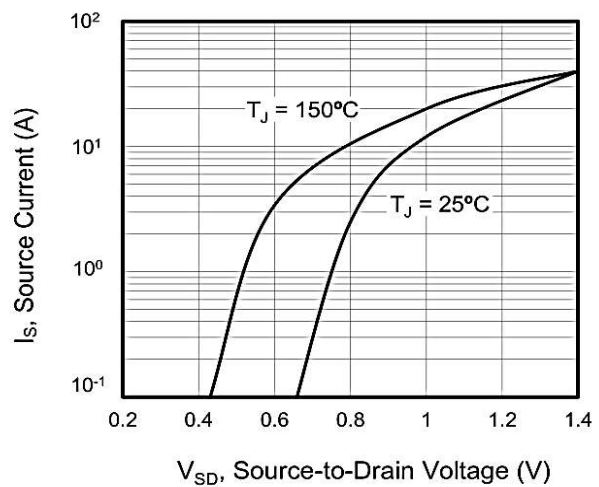


Figure 2. Body Diode Forward Voltage

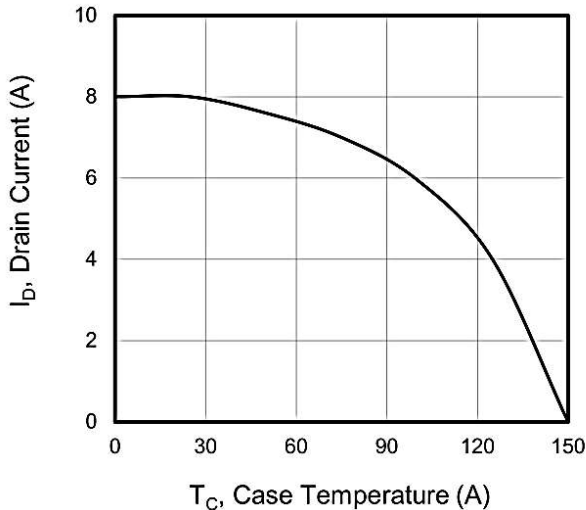


Figure 3. Drain Current vs. Temperature

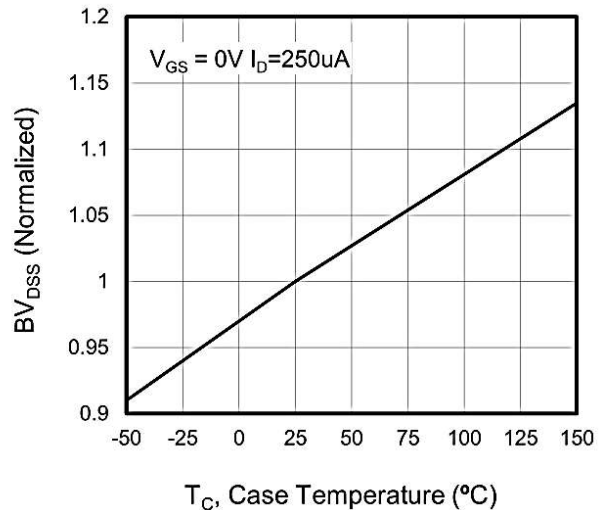


Figure 4. BV_{DSS} Variation vs. Temperature

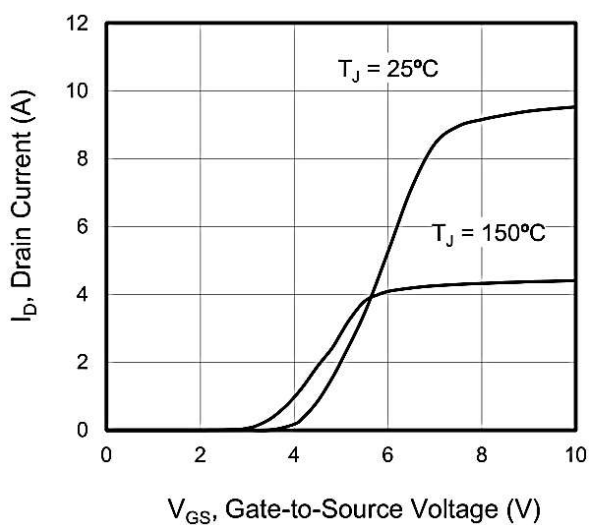


Figure 5. Transfer Characteristics

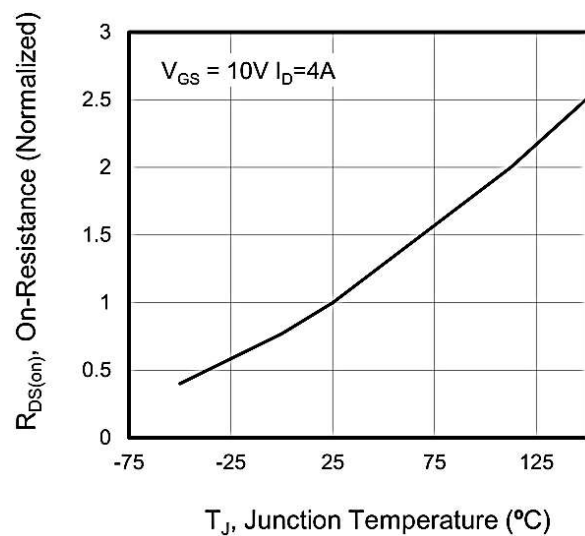


Figure 6. On-Resistance vs. Temperature

Ratings and Characteristic Curves

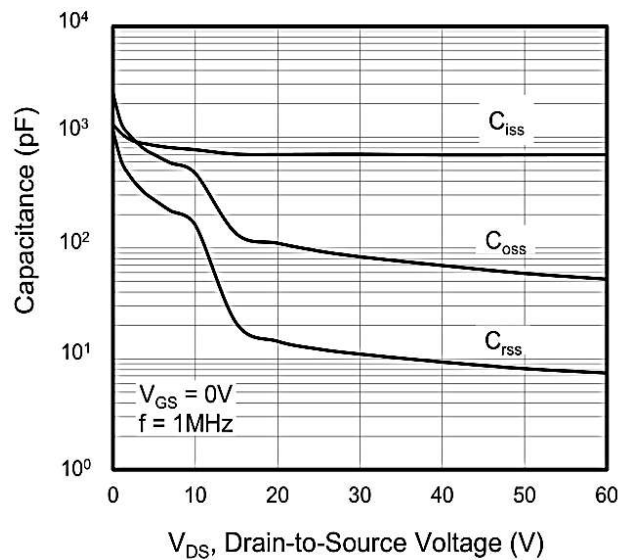


Figure 7. Capacitance

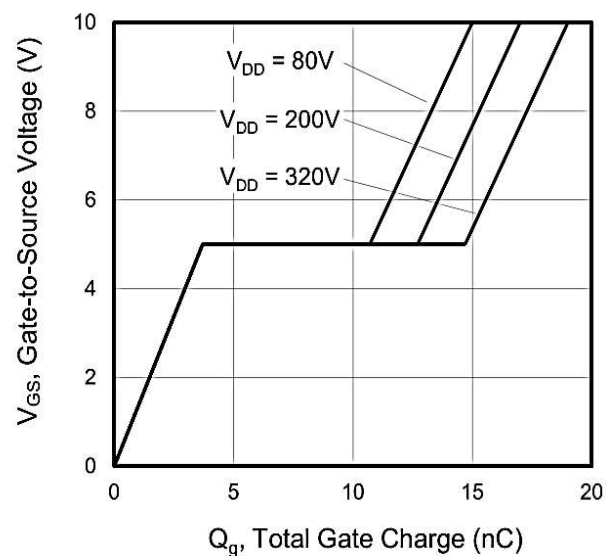


Figure 8. Gate Charge

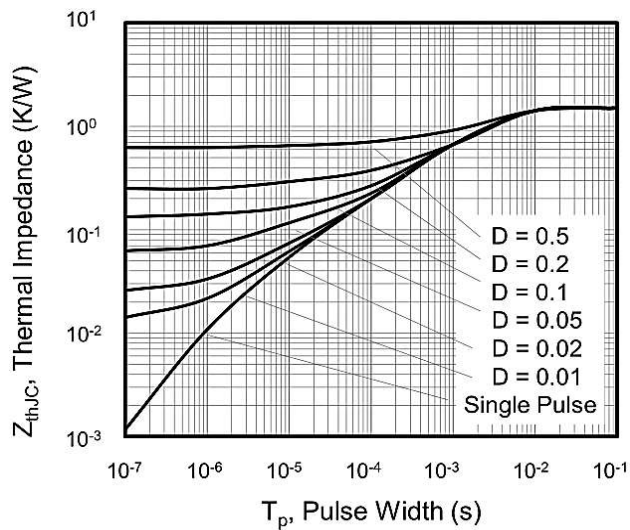
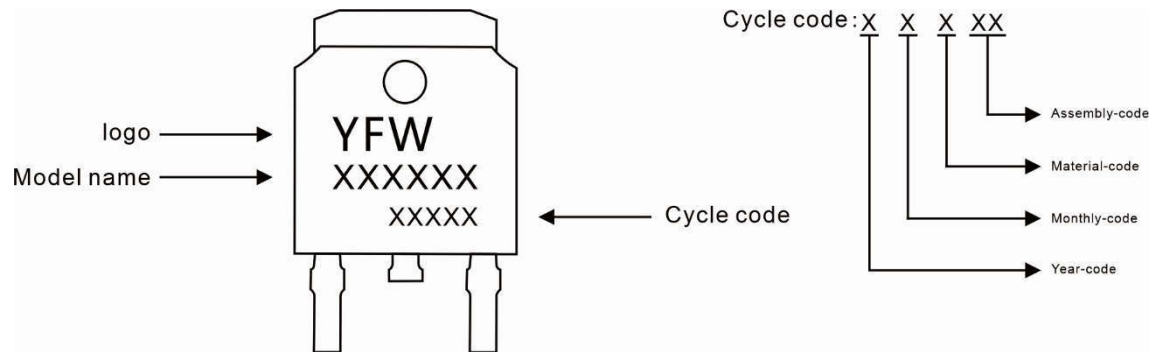


Figure 9. Transient Thermal Impedance

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW6N40AD	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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