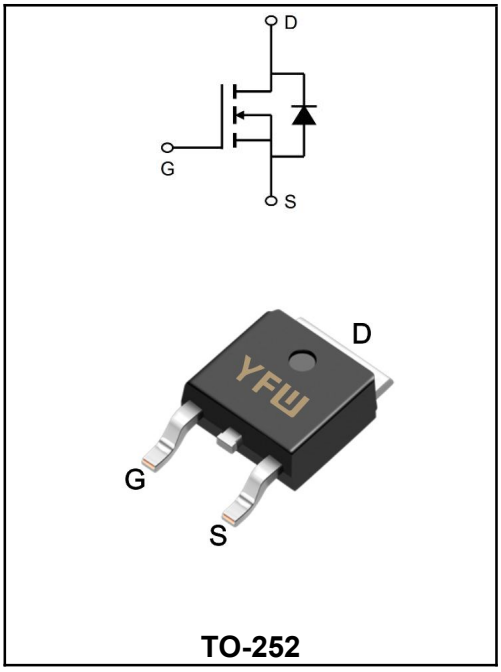
500V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	7A
V_{DSS}	500V
R_{DSON}-typ(@V_{GS}=10V)	< 1.5Ω(Type:1.2Ω)



TO-252

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}	500	V
Continuous Drain Current	I_D	7	A
Pulsed Drain Current(note1)	I_{DM}	28	A
Gate - Source Voltage	V_{GS}	±30	V
Single Pulse Avalanche Energy(note2)	E_{AS}	247	mJ
Avalanche Current(note1)	I_{AR}	7	A
Repetitive Avalanche Energy(note1)	E_{AR}	18	mJ
Power Dissipation(T_C=25℃)	P_D	32.9	W
Operating Junction and Storage Temperature Range	T_J ,T_{STG}	-55 to +150	°C
Thermal Resistance, Junction-to-case	$R_{\theta JC}$	3.8	°C/W
Thermal Resistance, Junction ambient	$R_{\theta JA}$	13.3	°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=250uA	**V(BR)DSS**	500	550	-	**V**
Zero Gate Voltage Drain Current	V_{DS}=650V , V_{GS}=0V, T_J=25℃	**I_{DSS}**	-	-	1	**μA**
Gate-Source Leakage	V_{GS}=±30V	**I_{GSS}**	-	-	±100	**nA**
Gate- Source Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	**$V_{GS(th)}$**	2.0	-	4.0	**V**
Drain-Source On-Resistance (note3)	V_{GS}=10V, I_D=3.5A	**$R_{DS(ON)}$**	-	1.2	1.5	**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=25Ω	**$t_{d(on)}$**	-	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℃	**I_S**	-	-	7.0	**A**
Pulsed Diode Forward Current		**I_{SM}**	-	-	28	
Body Diode Voltage	T_J = 25°C, I_{SD} = 7A, V_{GS} = 0V	**V_{SD}**	-	-	1.4	**V**
Reverse Recovery Time	V_{GS} = 0V,I_S = 7A diF/dt =100A /μs	**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 2OZ copper.
2、The EAS data shows Max. rating . IAS = 4.5A, VDD = 50V, RG = 25 Ω, Starting TJ = 25 °C
3、The test condition is Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%
4、The power dissipation is limited by 150℃ 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

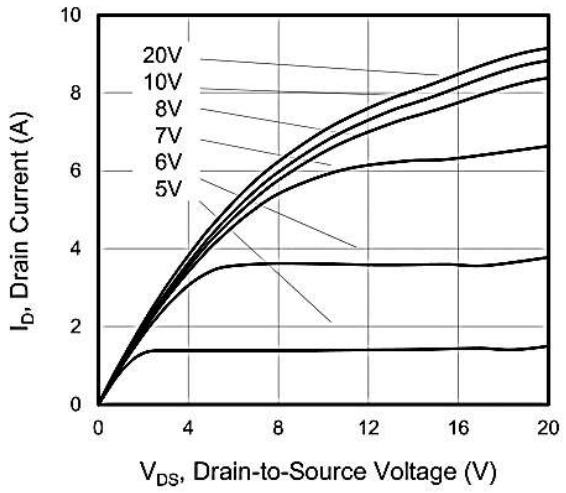


Figure 1. Output Characteristics (T J = 25ºC)

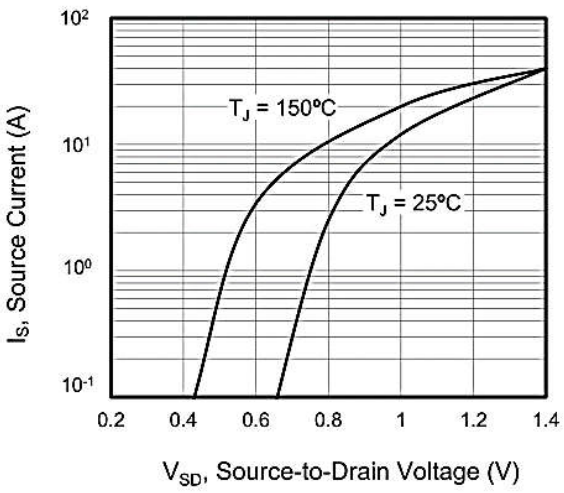


Figure 2. Body Diode Forward Voltage

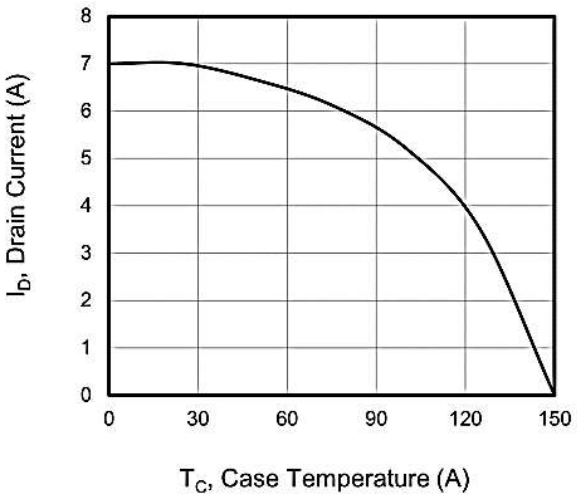


Figure 3. Drain Current vs. Temperature

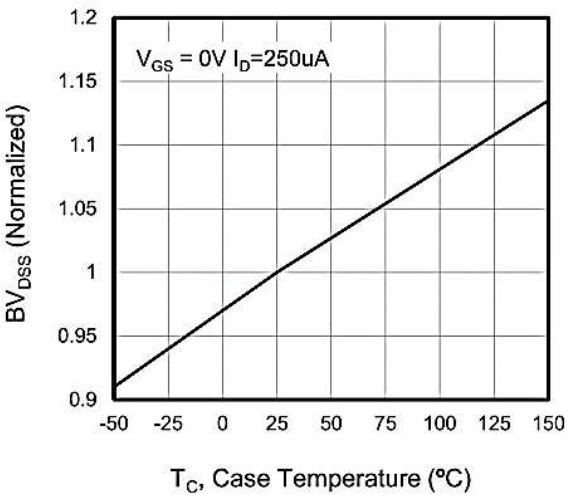


Figure 4. BV DSS Variation vs. Temperature

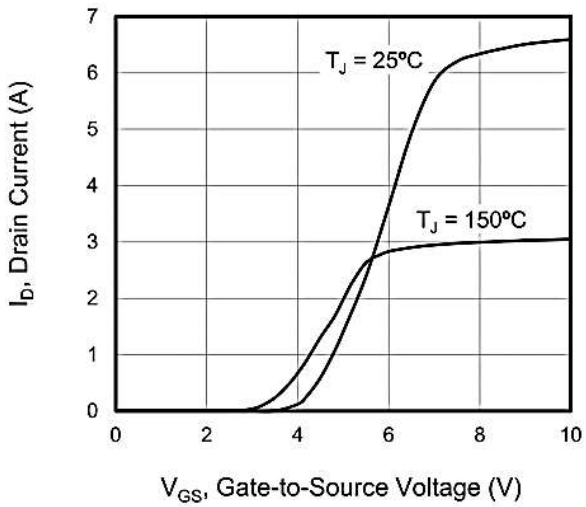


Figure 5. Transfer Characteristics

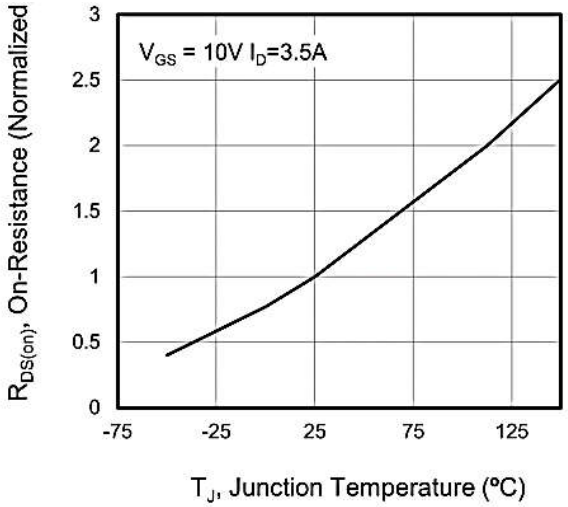


Figure 6. On-Resistance vs. Temperature

Ratings and Characteristic Curves

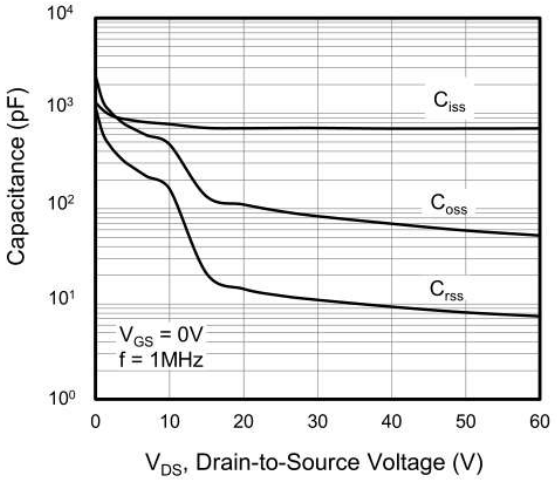


Figure 7. Capacitance

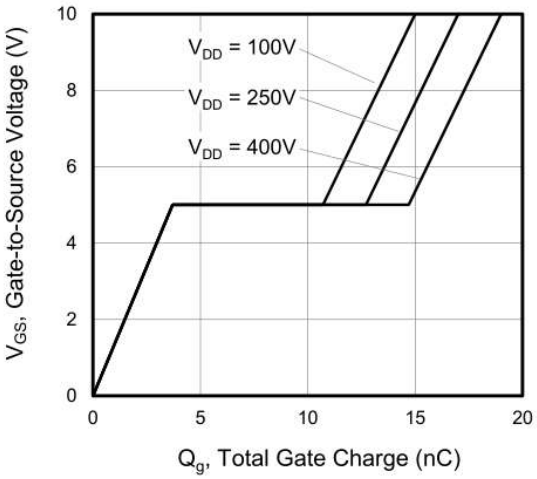


Figure 8. Gate Charge

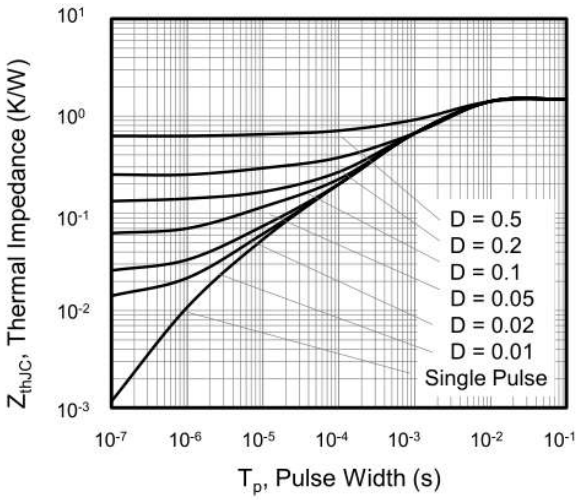
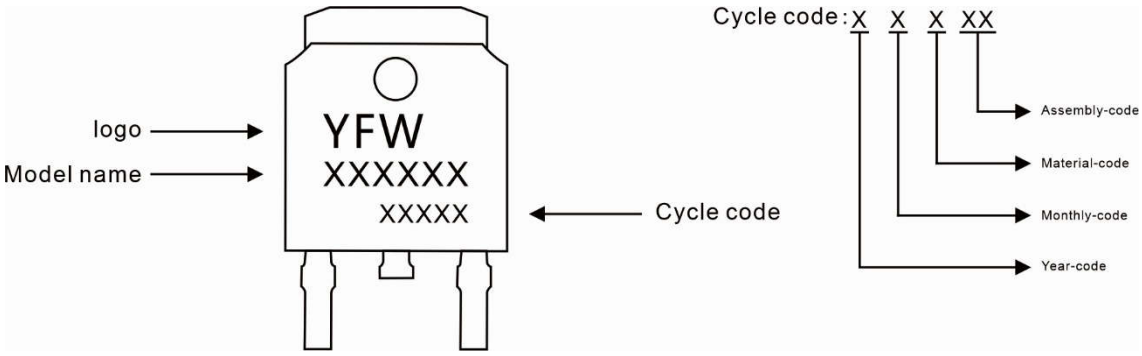


Figure 9. Transient Thermal Impedance

Marking Diagram

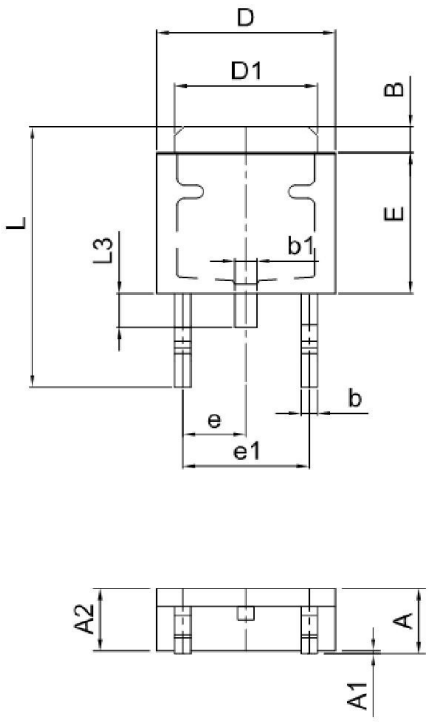


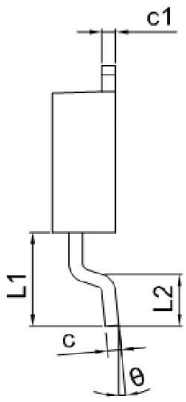
Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW7N50AD	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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