

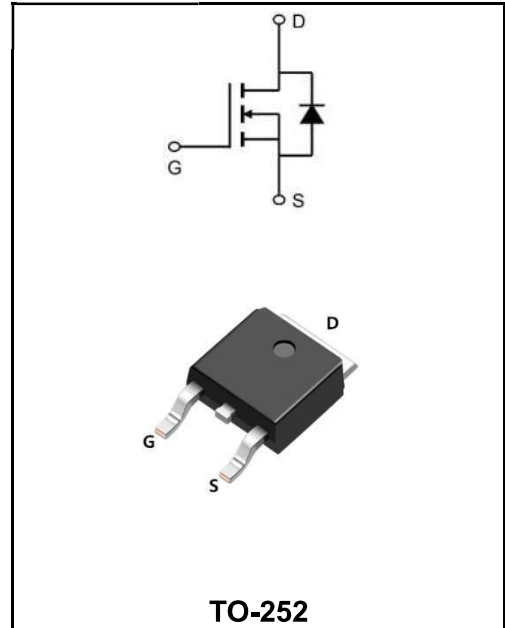
500V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	5A
V_{DSS}	500V
R_{DS(on)-typ(@V_{GS}=10V)}	< 3.0Ω(Type:2.4Ω)

Application

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



Product Specification Classification

Part Number	Package	Marking	Pack
YFW5N50BD	TO-252	YFW 5N50BD XXXXX	2500PCS/Tape

Maximum Ratings at T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage (V _{GS} = 0V)	V_{DS}	500	V
Continuous Drain Current	I_D	5	A
Pulsed Drain Current(note1)	I_{DM}	15	A
Gate - Source Voltage	V_{GS}	±30	V
Single Pulse Avalanche Energy(note2)	E_{AS}	57	mJ
Avalanche Current(note1)	I_{AR}	2.4	A
Repetitive Avalanche Energy(note1)	E_{AR}	6.4	mJ
Power Dissipation(T _c =25°C)	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_{θJC}	6.25	°C/W
Thermal Resistance, Junction ambient	R_{θJA}	62.5	°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	500	550	-	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	3.0	4.0	V
Drain-Source On-Resistance (note3)	$V_{GS}=10V, I_D=3.5A$	R_{DS(ON)}	-	2.4	3.0	Ω
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	310	-	pF
Output Capacitance		C_{oss}	-	39	-	
Reverse Transfer Capacitance		C_{rss}	-	6	-	
Total Gate Charge	$V_{DD}=400V$ $I_D=3A$ $V_{GS}=10V$	Q_g	-	8	-	nC
Gate-Source Charge		Q_{gs}	-	1.2	-	
Gate-Drain Charge		Q_{gd}	-	5	-	
Turn-on delay time	$V_{DD}=250V$ $I_D=3A$ $R_G=25\Omega$	t_{d(on)}	-	7.8	-	nS
Turn-on Rise Time		T_r	-	33	-	
Turn-Off Delay Time		t_{d(OFF)}	-	23	-	
Turn-Off Fall Time		t_f	-	59	-	
Continuous Body Diode Current	$T_C=25^\circ C$	I_S	-	-	3.0	A
Pulsed Diode Forward Current		I_{SM}	-	-	12	
Body Diode Voltage	$T_J = 25^\circ C, I_{SD} = 3A, V_{GS} = 0V$	V_{SD}	-	-	1.4	V
Reverse Recovery Time	$V_{GS} = 0V, I_S = 3A$ $diF/dt = 100A/\mu s$	t_{rr}	-	80	-	nS
Reverse Recovery Charge		Q_{rr}	-	1.8	-	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 = 2.4A, 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°C junction temperature
- 5、 The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

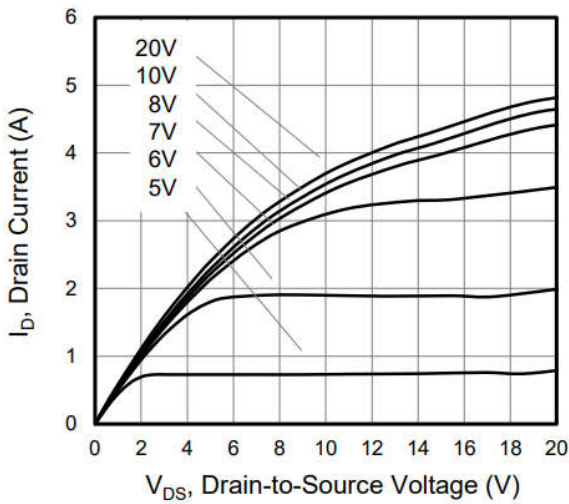


Figure 1. Output Characteristics ($T_J = 25^\circ\text{C}$)

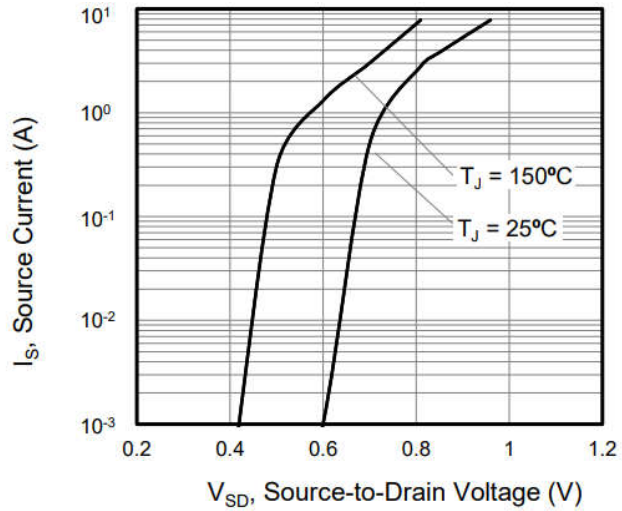


Figure 2. Body Diode Forward Voltage

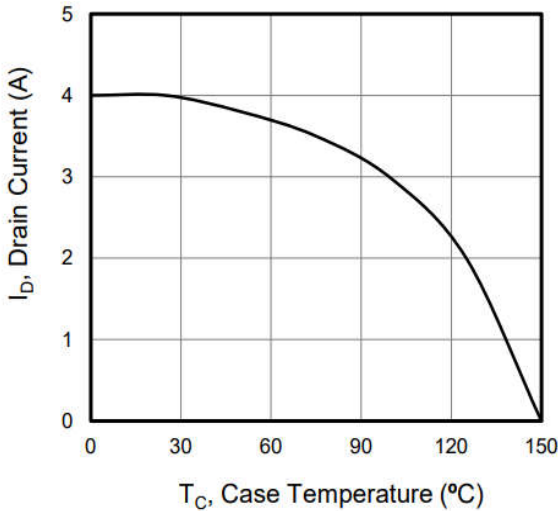


Figure 3. Drain Current vs. Temperature

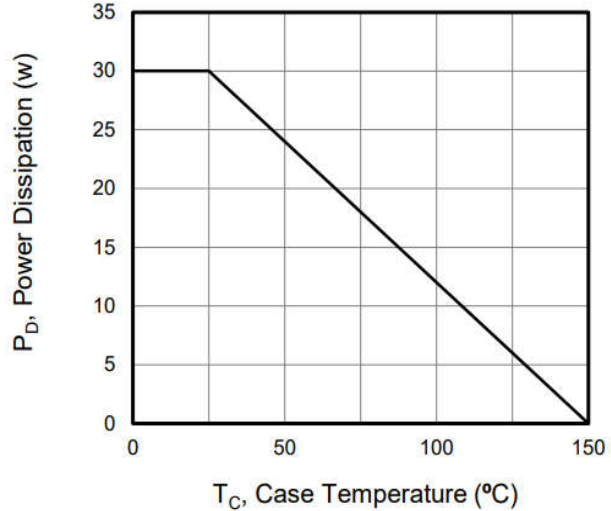


Figure 4. BV DSS Variation vs. Temperature

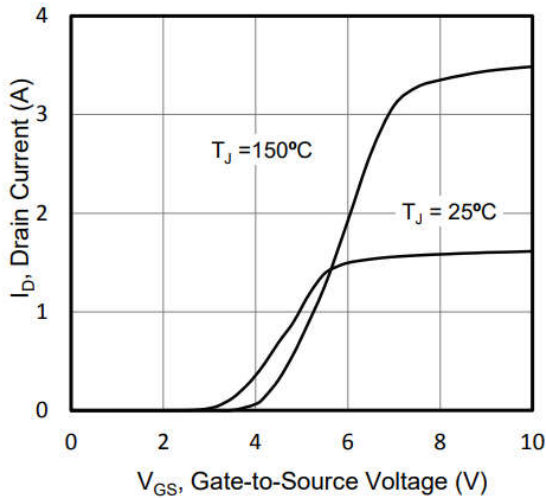


Figure 5. Transfer Characteristics

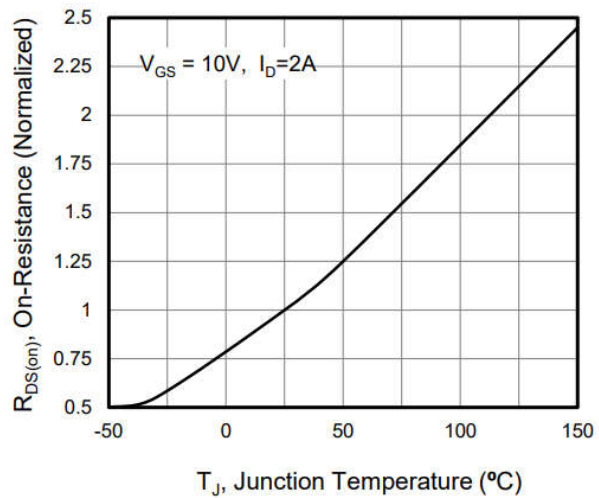


Figure 6. On-Resistance vs. Temperature

Ratings and Characteristic Curves

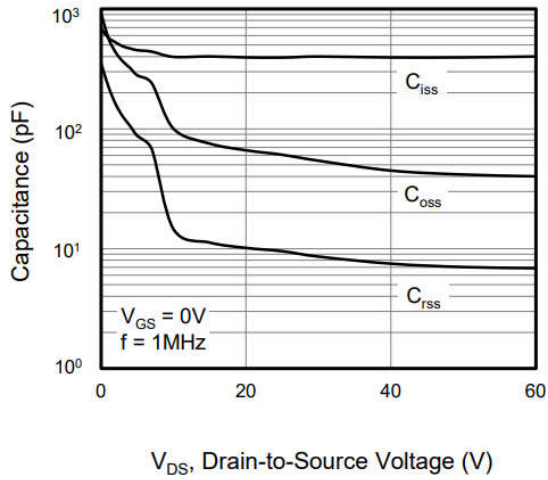


Figure 7. Capacitance

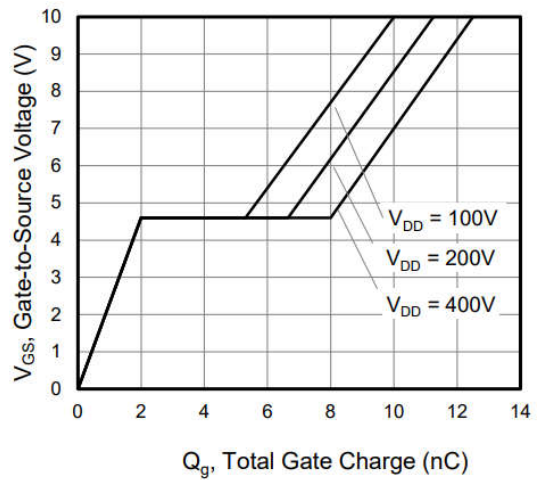


Figure 8. Gate Charge

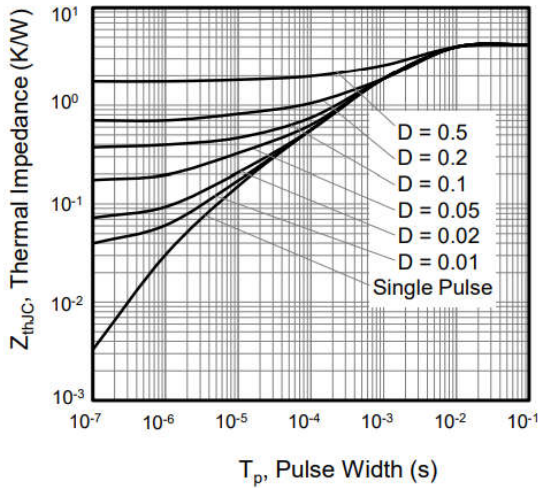


Figure 9. Transient Thermal Impedance

Package Outline Dimensions Millimeters

TO-252

Dim.	Min.	Typ.	Max.
A	2.10	-	2.50
A2	0	-	0.10
B	0.66	-	0.86
B2	5.18	-	5.48
C	0.40	-	0.60
C2	0.44	-	0.58
D	5.90	-	6.30
D1	5.30REF		
E	6.40	-	6.80
E1	4.63	-	-
G	4.47	-	4.67
H	9.50	-	10.70
L	1.09	-	1.21
L2	1.35	-	1.65
V1	-	7°	-
V2	0°	-	6°
All Dimensions in millimeter			

