

100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

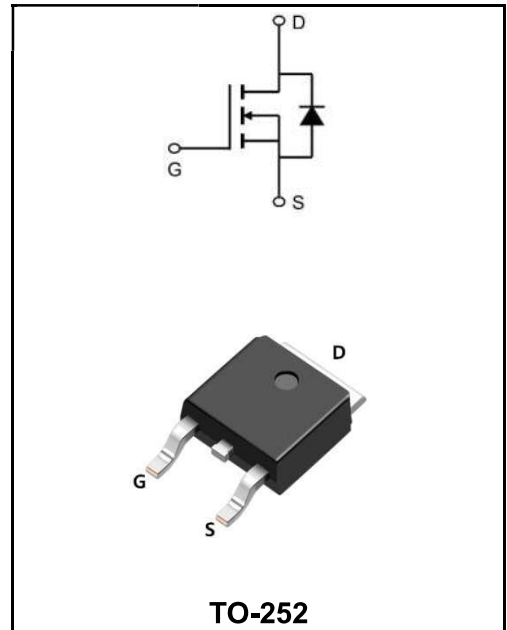
I_D	38A
V_{DSS}	100V
R_{DS(on)-typ(@V_{GS}=10V)}	< 25mΩ(Type:18 mΩ)

Features

◆YFW-SGT technology

Application

- ◆DC/DC Converter
- ◆LED Backlighting
- ◆Power Management Switches



Product Specification Classification

Part Number	Package	Marking	Pack
YFW38N10AD	TO-252	YFW 38N10AD XXXXX	2500PCS/Tape

Maximum Ratings at T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	100	V
Gate - Source Voltage	V_{GS}	±20	V
Drain Current, V _{GS} @ 10V @T _c =25°C	I_D	38	A
Drain Current, V _{GS} @ 10V @T _c =100°C	I_D	18	A
Pulsed Drain Current	I_{DM}	100	A
Single Pulse Avalanche Energy	E_{AS}	160	mJ
Avalanche Current	I_{AS}	53.4	A
Total Power Dissipation ⁴ @T _c =25°C	P_D	27	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance, Junction-ambient	R_{θJA}	4.65	°C/W
Thermal Resistance, Junction-case	R_{θJC}	62	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BVDSS	100	108	-	V
Drain-Source Leakage Current	$V_{DS}=80V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate to 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)}	1.2	1.8	2.6	V
Static Drain-Source on-Resistance	$V_{GS}=10V, I_D=15A$	R_{DS(on)}	-	18	25	mΩ
	$V_{GS}=4.5V, I_D=10A$		-	28	38	
Forward Transconductance	$V_{DS}=10V, I_D=20A$	g_{FS}	-	22	-	S
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1.0MHz$	R_g	-	1.62	-	Ω
Input Capacitance	$V_{DS}=50V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	822	-	pF
Output Capacitance		C_{oss}	-	310	-	
Reverse Transfer Capacitance		C_{rss}	-	23.5	-	
Total Gate Charge	$V_{DS}=50V$ $V_{GS}=10V$ $I_D=20A$	Q_g	-	22.7	-	nC
Gate-Source Charge		Q_{gs}	-	6.2	-	
Gate-Drain("Miller") Charge		Q_{gd}	-	5.3	-	
Turn-on delay time	$V_{DS}=50V$ $I_D=20A$ $R_G=3\Omega$ $V_{GS}=10V$	t_{d(on)}	-	15	-	ns
Turn-on Rise Time		T_r	-	3.2	-	
Turn-Off Delay Time		t_{d(OFF)}	-	30	-	
Turn-Off Fall Time		t_f	-	7.6	-	
Continuous Source Current		I_S	-	-	25	A
Diode Forward Voltage	$V_{GS}=0V, I_S=20A$	V_{SD}	-	0.88	1.0	V
Reverse Recovery Time	$I_{SD}=20A, di_{SD}/dt=100A/\mu s$	t_{rr}	-	45	-	ns
Reverse Recovery Charge		Q_{rr}	-	59	-	nC

Notes:

- 1、 The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、 The EAS data shows Max. rating . The test condition is $V_{DD}=50V, V_{GS}=10V, L=0.5mH, I_{AS}=8A$
- 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.

Ratings and Characteristic Curves

Typical Characteristics

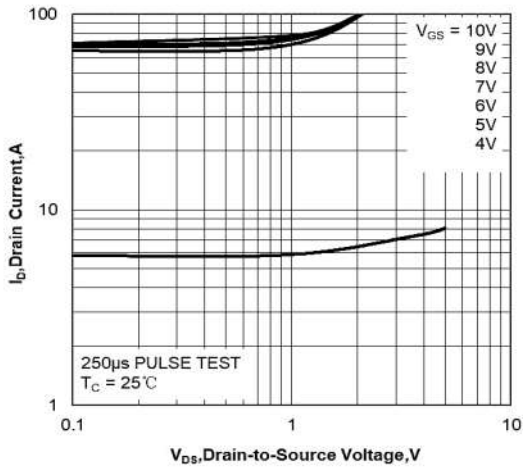


Figure 1. Output Characteristics

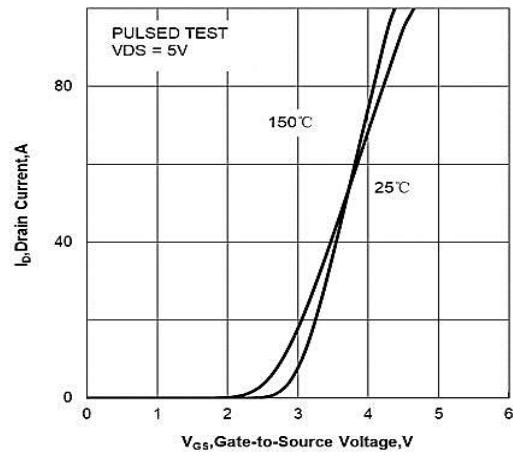


Figure 2. Transfer Characteristics

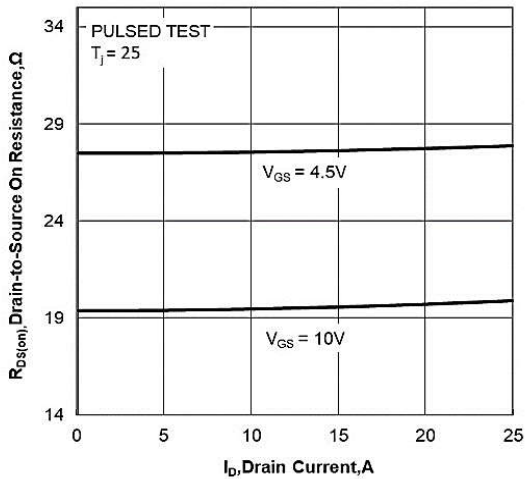


Figure 3. Drain-to-Source On Resistance vs Drain Current

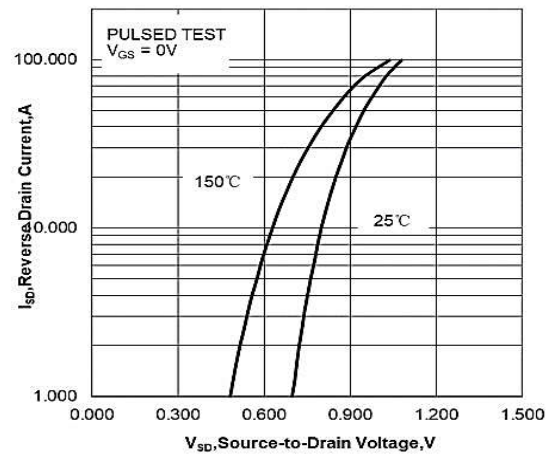


Figure 4. Body Diode Forward Voltage vs Source Current and Temperature

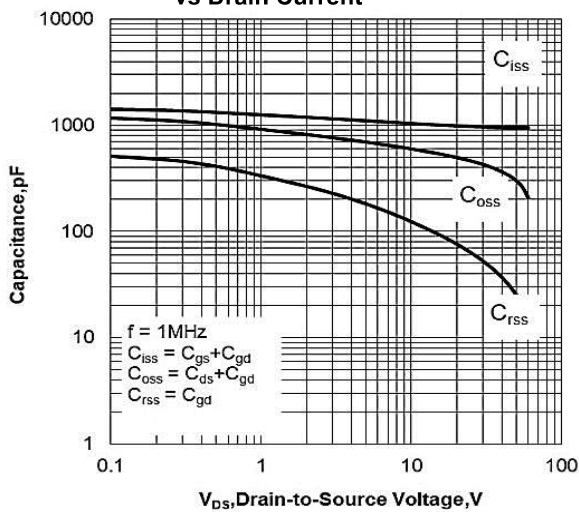


Figure 5. Capacitance Characteristics

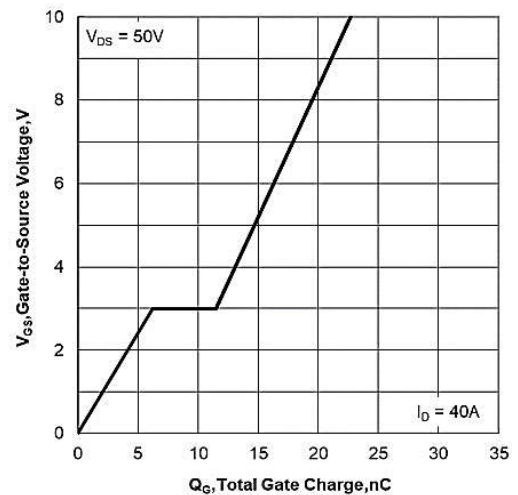


Figure 6. Gate Charge Characteristics

Ratings and Characteristic Curves

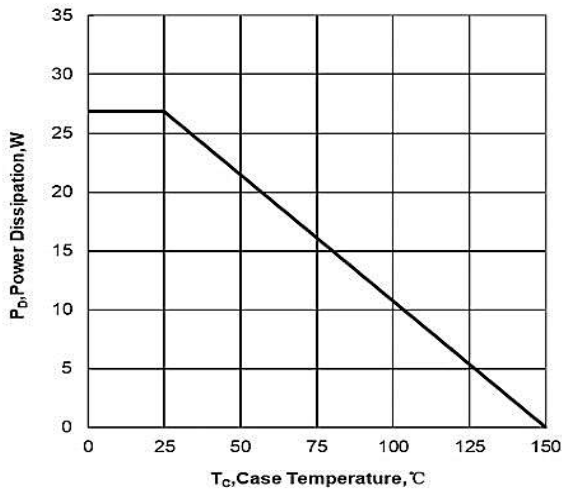


Figure 9. Maximum Continuous Drain Current vs Case Temperature

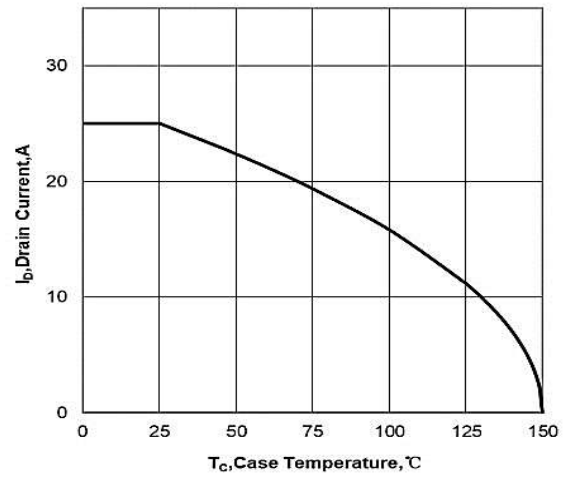


Figure 10. Maximum Power Dissipation vs Case Temperature

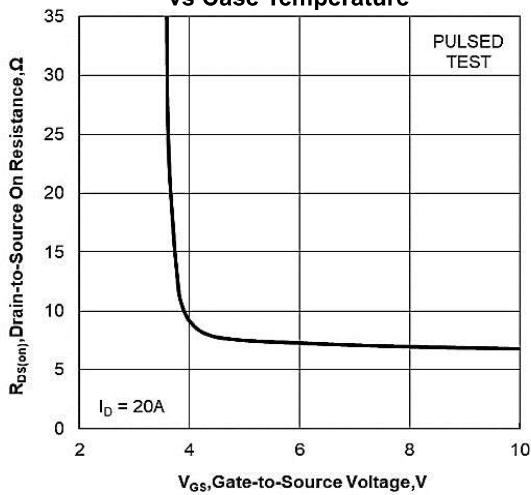


Figure 11. Drain-to-Source On Resistance vs Gate Voltage and Drain Current

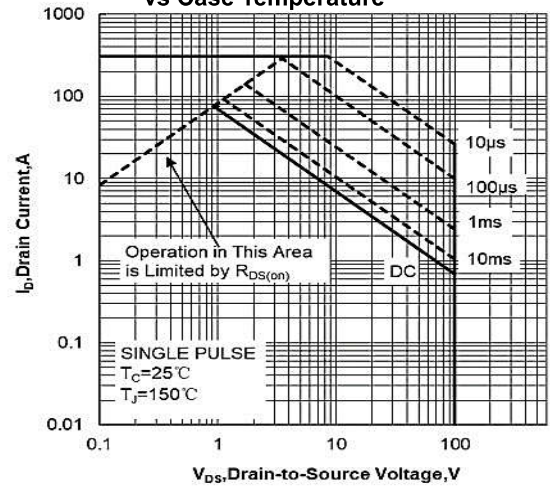


Figure 12. Maximum Safe Operating Area

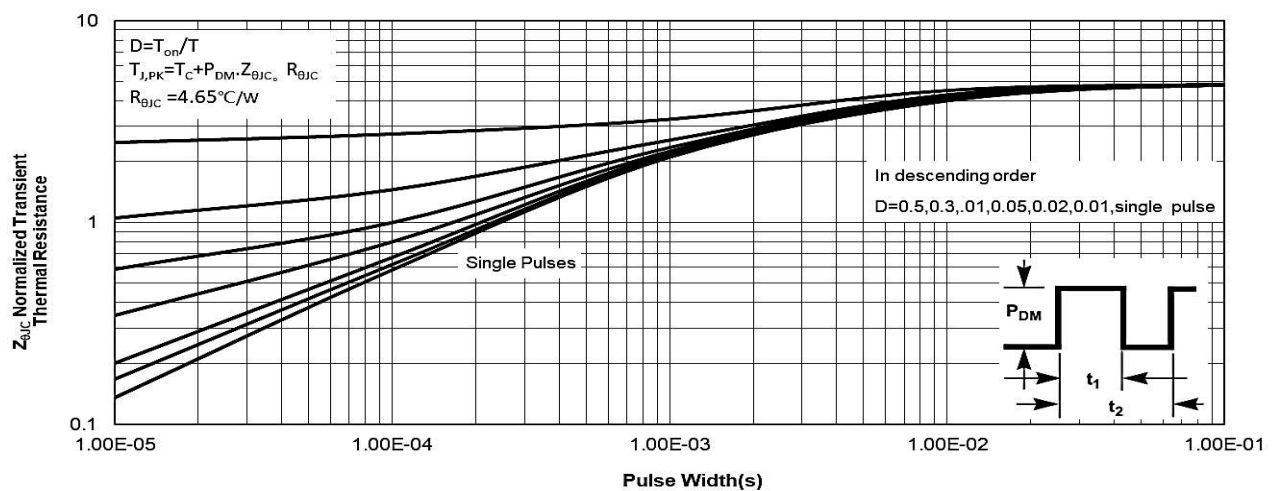


Figure 13. Maximum Effective Transient Thermal Impedance, Junction-to-Case

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			

