

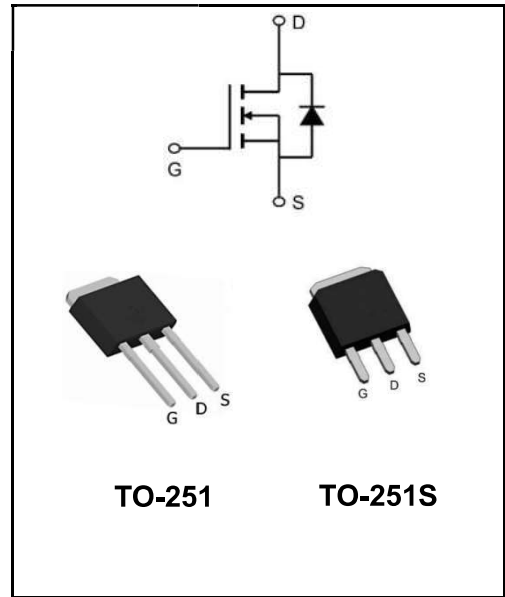
200V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	9A
V_{DSS}	200V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 300mΩ (Type:230mΩ)

Application

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



Product Specification Classification

Part Number	Package	Marking	Pack
YFW9N20AMJ	TO-251	YFW 9N20AMJ XXXXX	4000PCS/Tape
YFW9N20AMJ	TO-251S	YFW 9N20AMJ XXXXX	4000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage($V_{GS}=0V$)	V_{DS}	200	V
Continuous Drain Current	I_D	9	A
Pulsed Drain Current(Note1)	I_{DM}	36	A
Gate - Source Voltage	V_{GS}	±20	V
Single Pulse Avalanche Energy(Note2)	E_{AS}	100	mJ
Avalanche Current(Note1)	I_{AR}	7.5	A
Repetitive Avalanche Energy(Note1)	E_{AR}	8.1	mJ
Power Dissipation ($T_C=25^\circ C$)	P_D	74	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C
Thermal Resistance, Junction-case	$R_{\theta JC}$	1.7	°C/W
Thermal Resistance, Junction ambient	$R_{\theta JA}$	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	200	222	-	V
Zero Gate Voltage Drain Current	$V_{DS}=200V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	5	μA
	$V_{DS}=160V, V_{GS}=0V, T_J=125^\circ C$		-	-	100	
Gate- Source Leakage	$V_{GS}=\pm 20V$	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	$V_{GS}=10V, I_D=4.5A$	R_{DS(ON)}	-	230	300	mΩ
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	684	-	pF
Output Capacitance		C_{oss}	-	103	-	
Reverse Transfer Capacitance		C_{rss}	-	37	-	
Total Gate Charge	$V_{DD}=160V$ $I_D=9A$ $V_{GS}=10V$	Q_g	-	23	-	nC
Gate-Source Charge		Q_{gs}	-	2.5	-	
Gate-Drain Charge		Q_{gd}	-	10	-	
Turn-on delay time	$V_{DD}=100V$ $I_D=9A$ $R_G=25\Omega$	t_{d(on)}	-	12	-	ns
Turn-on Rise Time		T_r	-	22	-	
Turn-Off Delay Time		t_{d(OFF)}	-	50	-	
Turn-on Fall Time		t_f	-	48	-	
Continuous Body Diode Current	$T_C=25^\circ C$	I_S	-	-	9	A
Pulsed Diode Forward Current		I_{SM}	-	-	36	A
Body Diode Voltage	$V_{GS}=0V, I_{SD}=9A, T_J=25^\circ C$	V_{SD}	-	-	1.4	V
Reverse Recovery Time	$V_{GS}=0V, I_S=9A, di_{SD}/dt=100A/\mu s$	t_{rr}	-	190	-	ns
Reverse Recovery Charge		Q_{rr}	-	1.7	-	nC

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 = 7.5A, 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°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

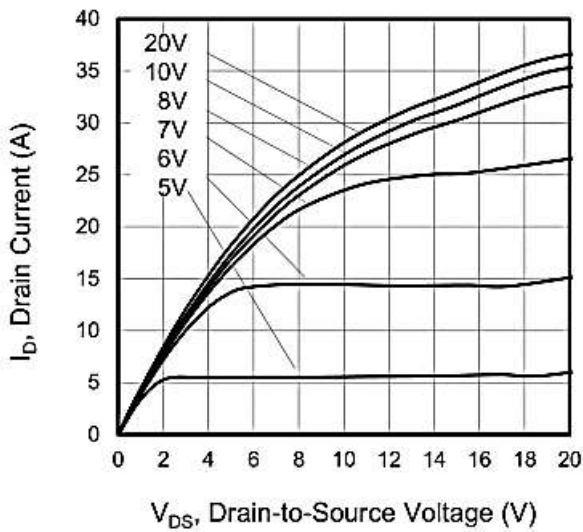


Figure 1. Output Characteristics ($T_J = 25^\circ\text{C}$)

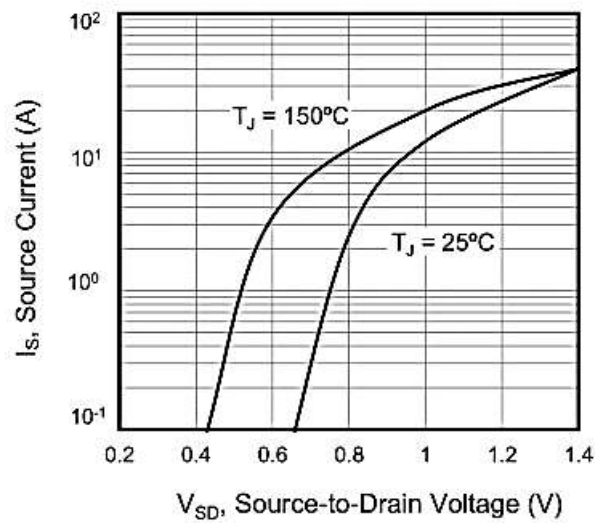


Figure 2. Body Diode Forward Voltage

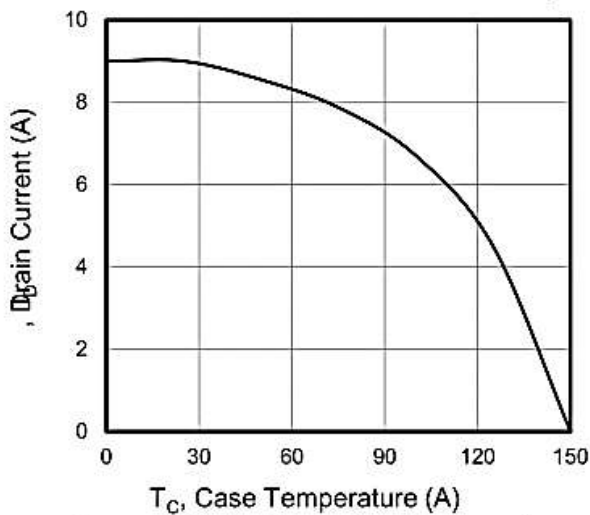


Figure 3. Drain Current vs. Temperature

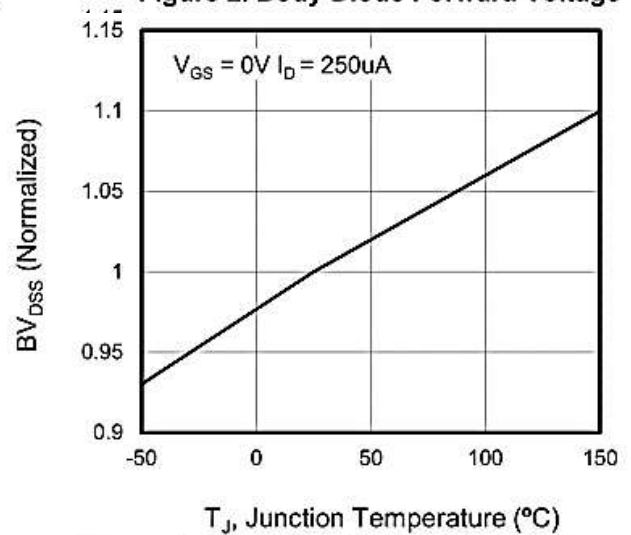


Figure 4. BV_{DSS} Variation vs. Temperature

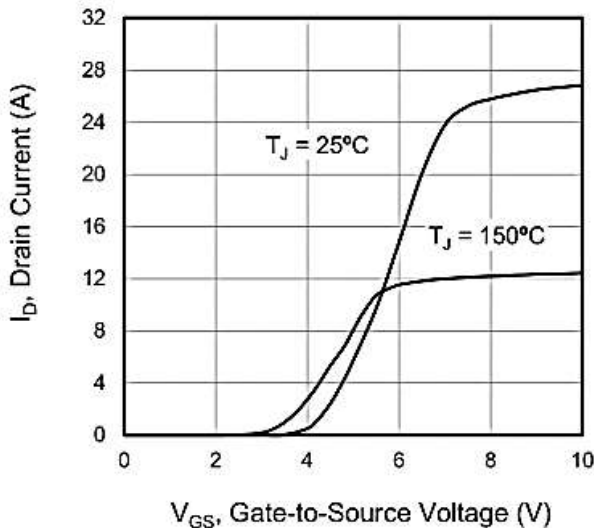


Figure 5. Transfer Characteristics

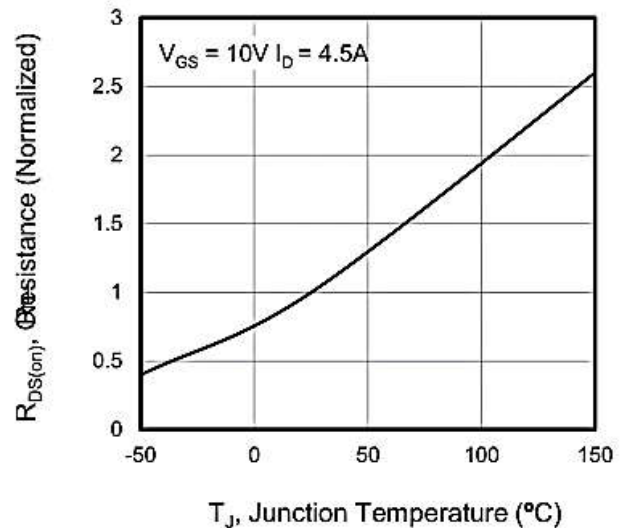


Figure 6. On-Resistance vs. Temperature

Ratings and Characteristic Curves

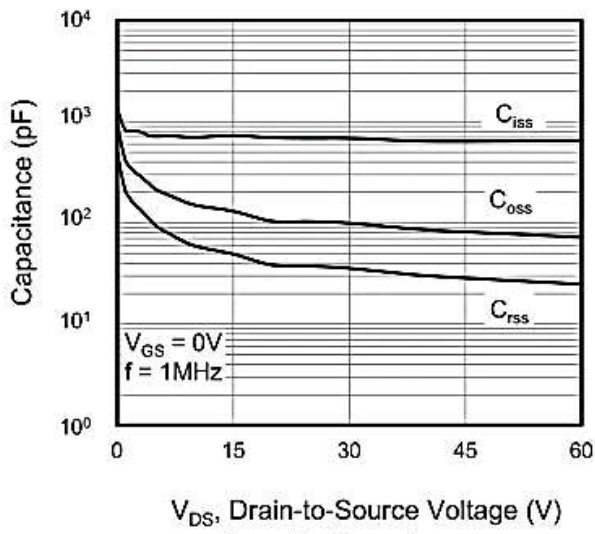


Figure 7. Capacitance

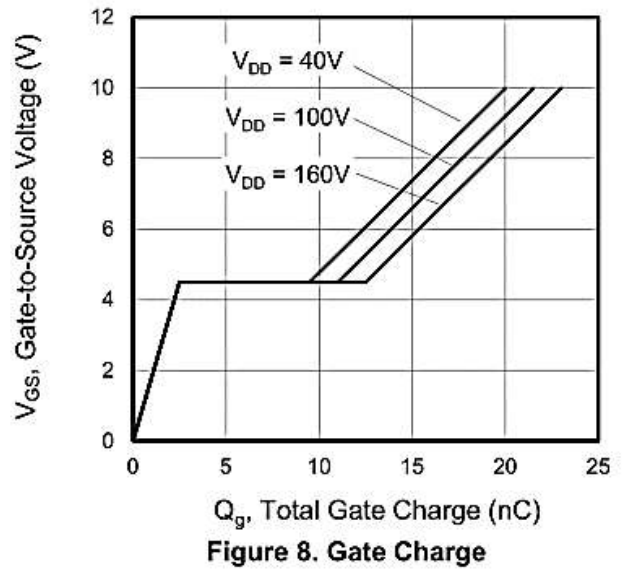


Figure 8. Gate Charge

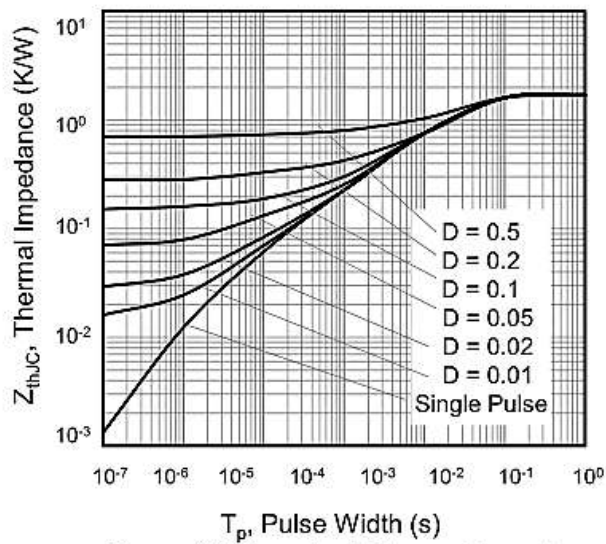


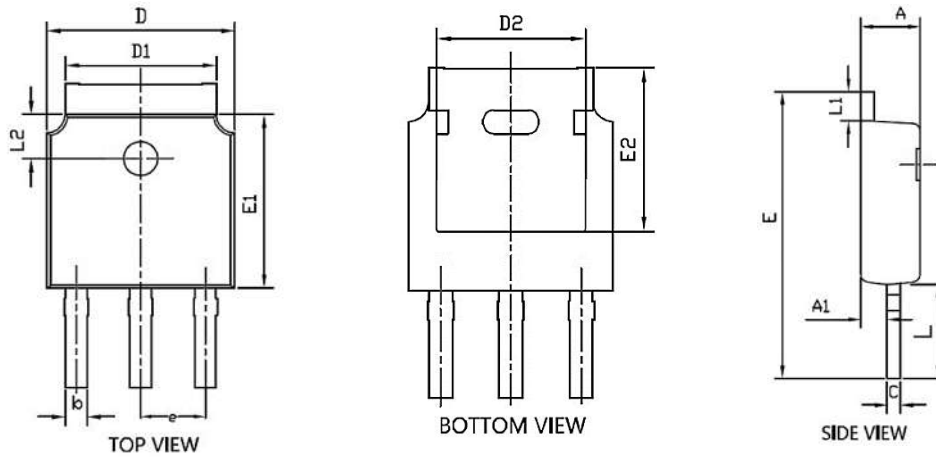
Figure 10. Transient Thermal Impedance

Package Outline Dimensions Millimeters

TO-251

	Dim.	Min.	Max.
	A	2.2	2.4
	A2	0.95	1.15
	A3	0.45	0.65
	b	0.65	0.85
	c	0.45	0.55
	D	6.45	6.75
	D2	5.2	5.4
	E	5.8	6
	E2	0.95	1.25
	e	Typ 2.3	
	e1	Typ 4.6	
	L	4	4.2
	L1	1.2	1.5
	All Dimensions in millimeter		

TO-251S



Symbol	Common		
	mm		
	Mim	Nom	Max
A	2.2	2.3	2.4
A1	0.9	1.0	1.1
b	0.66	0.76	0.86
C	0.46	0.52	0.58
D	6.50	6.6	6.7
D1	5.15	5.3	5.45
D2	4.6	4.8	4.95
E	10.4	---	11.5
E1	6.0	6.1	6.2
E2	5.400REF		
e	2.286BSC		
L	3.5	4.0	4.3
L1	0.9	---	1.27
L2	1.4	---	1.9