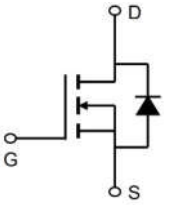
200V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	18A
V_{DSS}	200V
R_{DSON}-typ(@V_{GS}=10V)	< 150mΩ(Type:120mΩ)



TO-220AB

Application

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

Product Specification Classification

Part Number	Package	Marking	Pack
YFW640AT	TO-220AB	YFW 640AT XXXXX	1000PCS/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	18	A
Pulsed Drain Current (Note1)	I_{DM}	72	A
Gate - Source Voltage	V_{GS}	±20	V
Single Pulse Avalanche Energy (Note2)	E_{AS}	340	mJ
Avalanche Current (Note1)	I_{AR}	15	A
Repetitive Avalanche Energy (Note1)	E_{AR}	8.3	mJ
Power Dissipation (T_C=25℃)	P_D	104	W
Operating Junction and Storage Temperature Range	T_J ,T_{STG}	-55 to +150	°C
Thermal Resistance, Junction-case	$R_{\theta JC}$	1.2	°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=250uA	**V(BR)DSS**	200	220	-	**V**
Zero Gate Voltage Drain Current	V_{DS}=200V , V_{GS}=0V , T_J= 25℃	**I_{DSS}**	-	-	5	**μA**
	V_{DS}=160V, V_{GS}=0V , T_J= 125℃		-	-	100	
Gate- Source Leakage	V_{GS}=±20V	**I_{GSS}**	-	-	±100	**nA**
Gate Source Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	**$V_{GS(th)}$**	2.0	3.0	4.0	**V**
Drain-Source On-Resistance (Note3)	V_{GS}=10V, I_D=9A	**$R_{DS(ON)}$**	-	120	150	**mΩ**
Input Capacitance	V_{DS}=25V V_{GS}=0V f=1MHz	**C_{iss}**	-	1318	-	**pF**
Output Capacitance		**C_{oss}**	-	180	-	
Reverse Transfer Capacitance		**C_{rss}**	-	75	-	
Total Gate Charge	V_{DD}=160V I_D=18A V_{GS}=10V	**Q_g**	-	41	-	**nC**
Gate-Source Charge		**Q_{gs}**	-	5.5	-	
Gate-Drain Charge		**Q_{gd}**	-	19.5	-	
Turn-on delay time	V_{DD}=100V I_D=18A R_G=25Ω	**$t_{d(on)}$**	-	24	-	**ns**
Turn-on Rise Time		**T_r**	-	45	-	
Turn-Off Delay Time		**$t_{d(OFF)}$**	-	101	-	
Turn-on Fall Time		**t_f**	-	95	-	
Continuous Body Diode Current	T_C= 25℃	**I_S**	-	-	18	**A**
Pulsed Diode Forward Current		**I_{SM}**	-	-	72	**A**
Body Diode Voltage	V_{GS}=0V , I_{SD}=18A , T_J= 25℃	**V_{SD}**	-	-	1.4	**V**
Reverse Recovery Time	V_{GS}=0V, I_S=18A, dI_{SD}/dt=100A/μs	**t_{rr}**	-	230	-	**ns**
Reverse Recovery Charge		**Q_{rr}**	-	1.8	-	**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 = 15A, VDD = 50V, RG = 25 Ω, Starting TJ = 25 ºC
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

Typical Characteristics

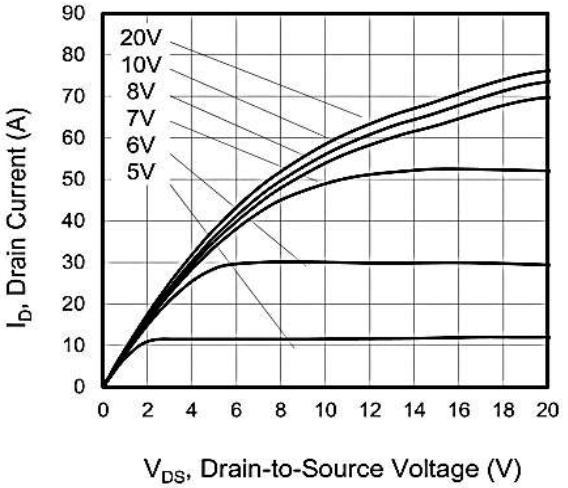


Figure 1. Output Characteristics (T_J = 25°C)

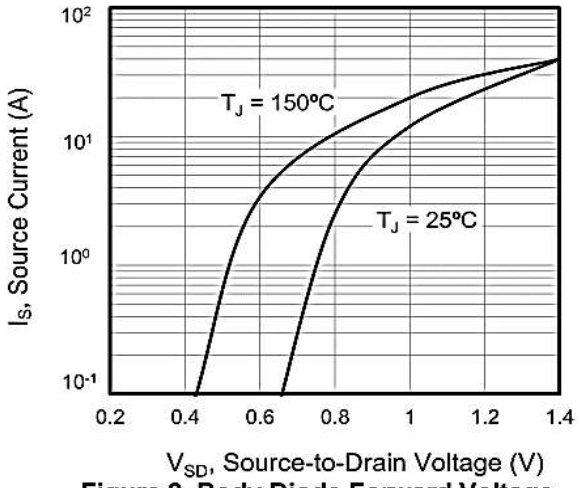


Figure 2. Body Diode Forward Voltage

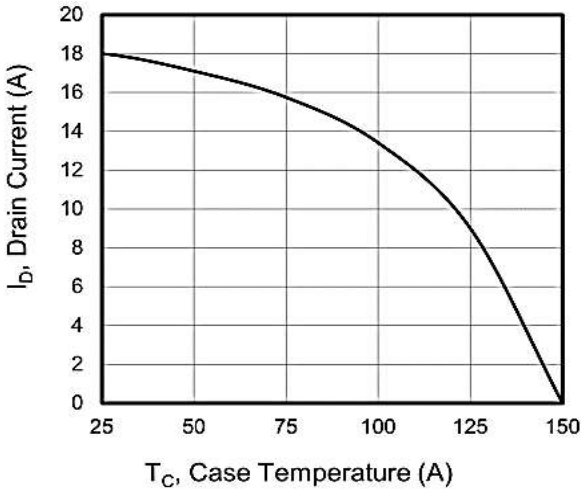


Figure 3. Drain Current vs. Temperature

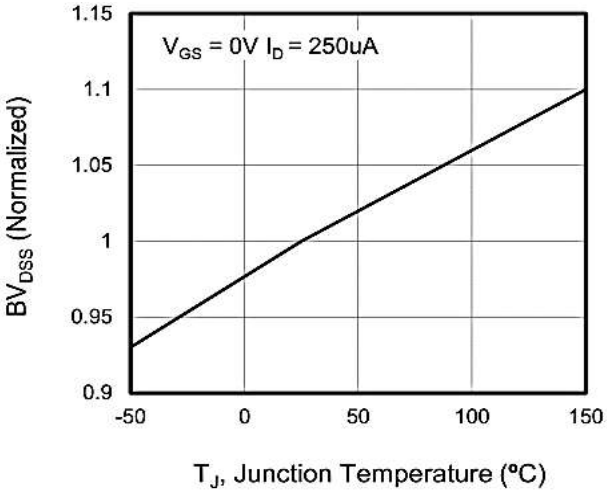


Figure 4. BV_{DSS} Variation vs. Temperature

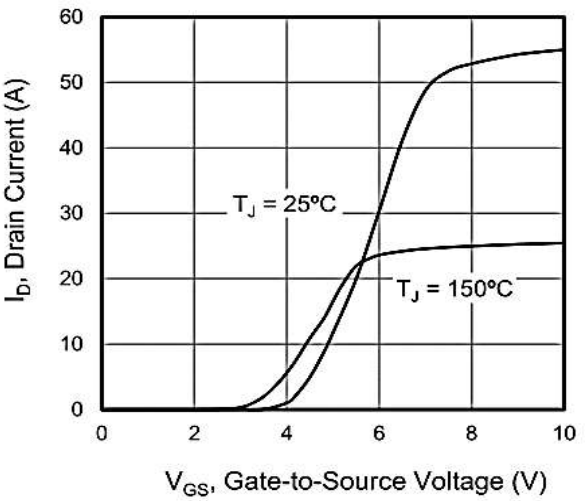


Figure 5. Transfer Characteristics

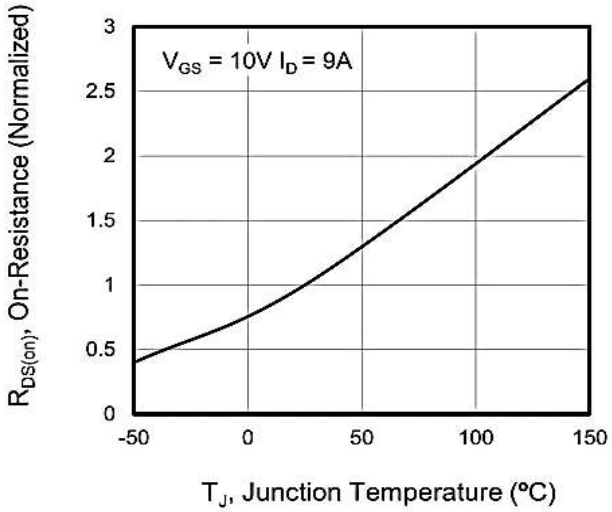


Figure 6. On-Resistance vs. Temperature

Ratings and Characteristic Curves

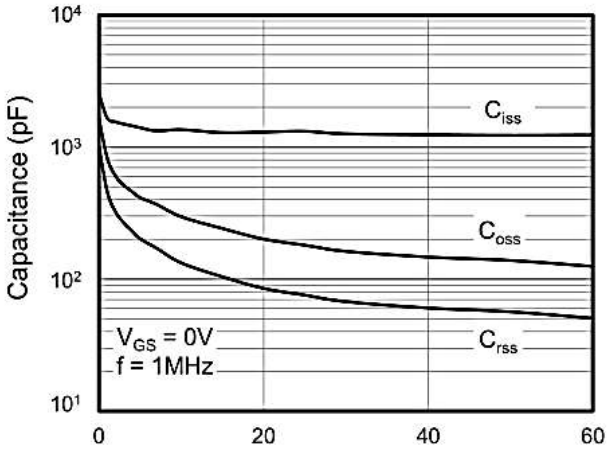


Figure 7. Capacitance

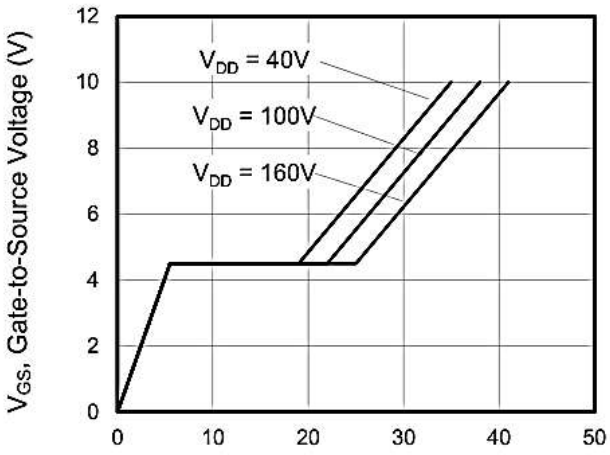


Figure 8. Gate Charge

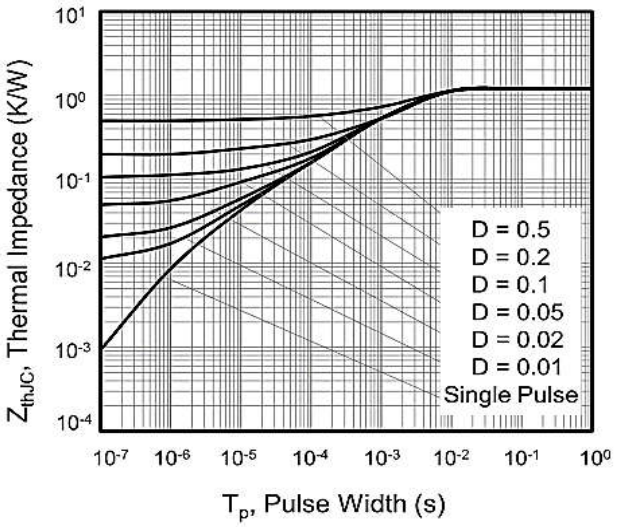
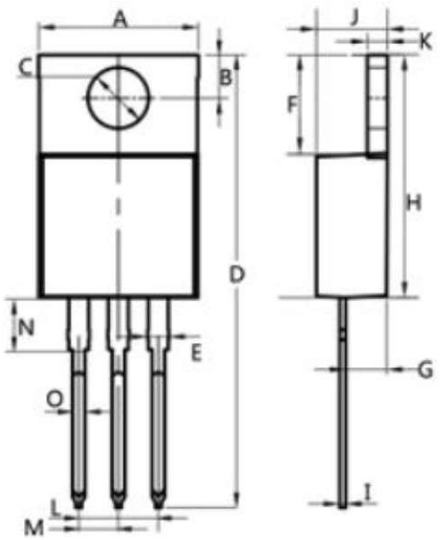


Figure 10. Transient Thermal Impedance

Package Outline Dimensions Millimeters

TO-220AB



Dim.	Min.	Max.
A	10.15	10.35
B	2.65	2.95
C	3.70	3.90
D	28.5	29.5
E	1.30	1.45
F	6.35	6.55
G	2.9	3.3
H	15.0	16.0
I	0.38	0.42
J	4.45	4.55
K	1.25	1.35
L	Typ 5.08	
M	Typ 2.54	
N	3.1	3.3
O	0.76	0.84
All Dimensions in millimeter		