

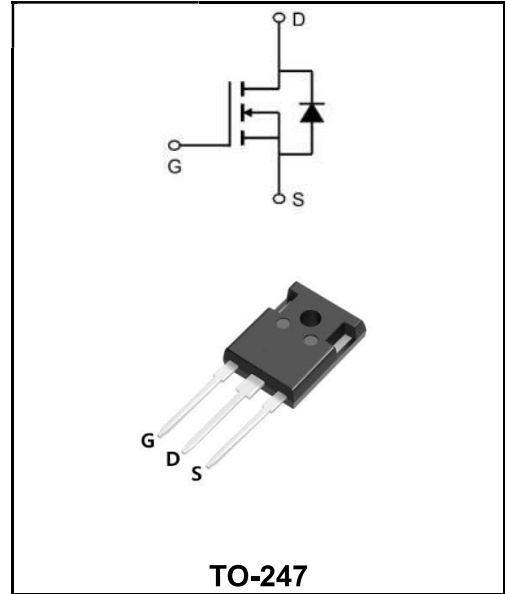
650V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	47A
V_{DSS}	650V
R_{DS(on)-typ(@V_{GS}=10V)}	< 72mΩ (Type:60mΩ)

Application

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



Product Specification Classification

Part Number	Package	Marking	Pack
YFWJ47N65AP	TO-247	YFW 47N65AP XXXXX	600PCS/Tube

Maximum Ratings at T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage (V _{GS} = 0V)	V_{DS}	650	V
Continuous Drain Current	I_D	47	A
Pulsed Drain Current(note1)	I_{DM}	138	A
Gate - Source Voltage	V_{GS}	±30	V
Single Pulse Avalanche Energy(note2)	E_{AS}	1210	mJ
MOSFET dv/dt ruggedness (@V _{DS} =0~400V)	dv/dt	25	V/ns
Peak diode Recovery dv/dt (4)	dv/dt	15	V/ns
Power Dissipation(T _c =25°C)	P_D	3.34	W
Operating Junction and Storage Temperature Range	T_J , T_{STG}	-55 to +150	°C
Thermal Resistance, Junction-to-case	R_{θJC}	0.33	°C/W
Thermal Resistance, Junction ambient	R_{θJA}	40	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	650	-	-	V
Breakdown voltage temperature coefficient	Reference to 25°C, $I_D=250\mu A$	$\Delta BV_{DSS}/\Delta T_J$	-	0.7	-	V/°C
Drain -Source Leakage Current	$V_{DS}=650V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
	$V_{DS}=520V, T_C=125^\circ C$		-	-	50	
Gate to source leakage current, forward	$V_{GS}=30V, V_{DS}=0V$	I_{GSS}	-	-	100	nA
Gate to source leakage current, reverse	$V_{GS}=-30V, V_{DS}=0V$		-	-	-100	
Gate- Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	3	4	5	V
Drain to source on state resistance	$V_{GS}=10V, I_D=24A$	$R_{DS(ON)}$	-	60	72	mΩ
Gate resistance		R_G	-	1	-	Ω
Input Capacitance	$V_{DS}=100V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	4655	-	pF
Output Capacitance		C_{oss}	-	185	-	
Reverse Transfer Capacitance		C_{rss}	-	5.1	-	
Turn-on delay time	$V_{DS}=380V$ $I_D=15A$ $R_G=4.7\Omega$ $V_{GS}=10V$	$t_{d(on)}$	-	34	-	nS
Rising time		T_r	-	31	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	80	-	
Fall Time		t_f	-	26	-	
Total Gate Charge	$V_{DS}=520V$ $I_D=24A$ $V_{GS}=10V$	Q_g	-	104	130	nC
Gate-Source Charge		Q_{gs}	-	30	-	
Gate-Drain Charge		Q_{gd}	-	34	-	
Continuous source current	Integral reverse p-n Junction diode in the MOSFET	I_S	-	-	47	A
Pulsed source current		I_{SM}	-	-	138	
Diode forward voltage drop	$I_S = 24A, V_{GS} = 0V$	V_{SD}	-	0.9	1.2	V
Reverse Recovery Time	$V_{GS} = 0V, I_S = 24A, V_{DD}=2$ $diF/dt = 100A/\mu s$	t_{rr}	-	633	-	nS
Reverse Recovery Charge		Q_{rr}	-	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 . L=20mH, IAS =11A, VDD =100, RG=25Ω
- 3、 The test condition is Pulse Test: ISD ≤ ID, di/dt = 100A/us, VDD ≤ BVDSS, Starting at TJ =25oC
- 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

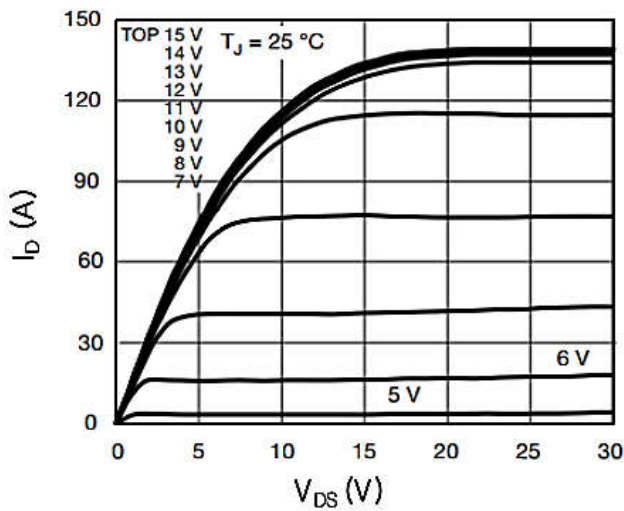


Fig1. Output characteristics

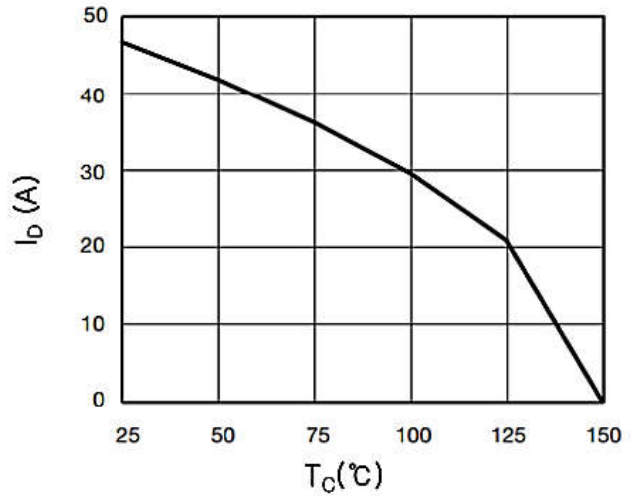


Fig2. - Maximum Drain Current vs. Case Temperature

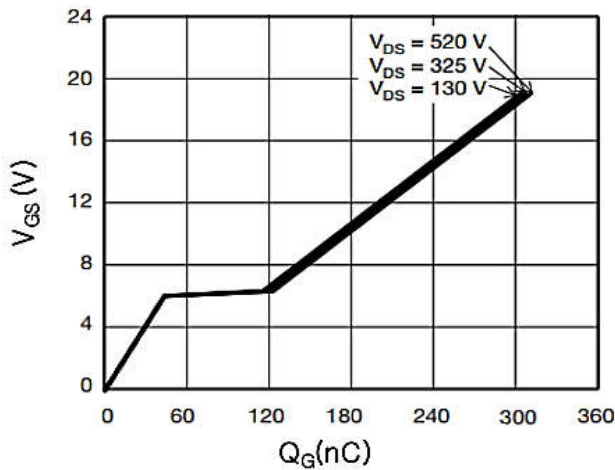


Fig3. Gate charge characteristics

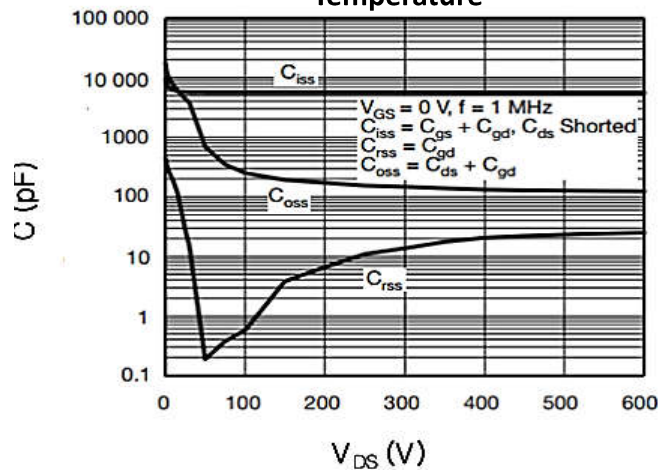


Fig 4. Capacitance Characteristics

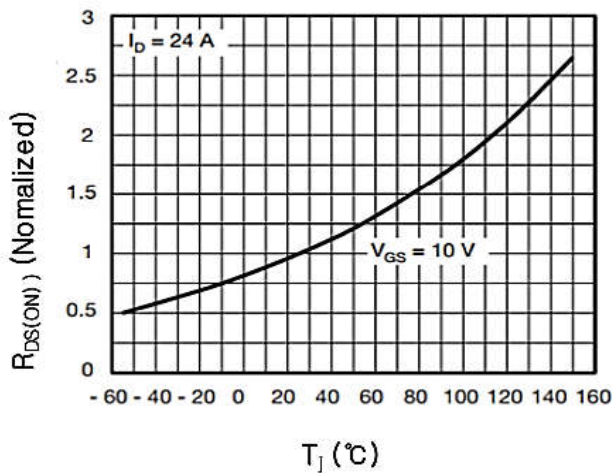


Fig 5. $R_{DS(ON)}$ vs junction temperature

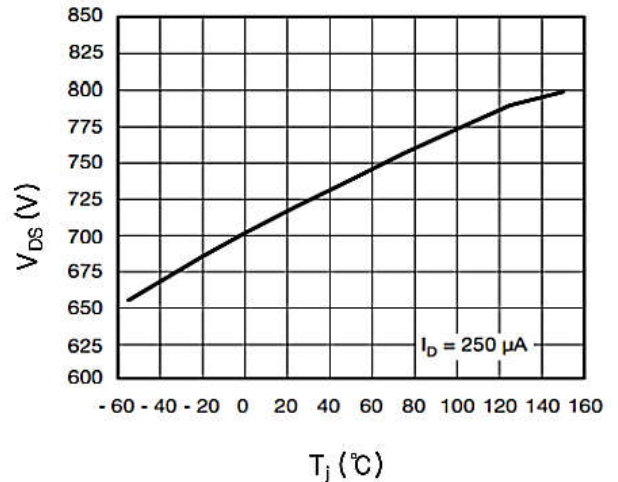


Fig 6. - Temperature vs. Drain-to-Source Voltage

Ratings and Characteristic Curves

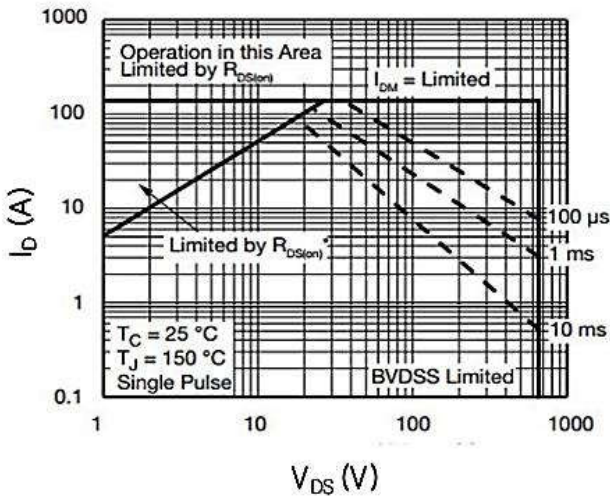


Fig 7 . Safe operating area

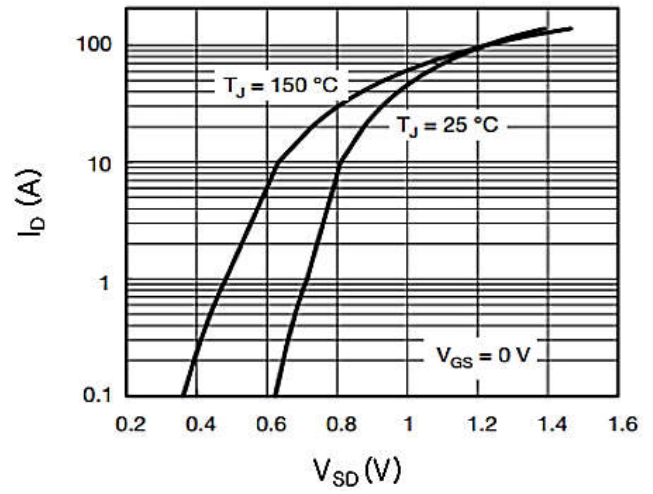


Fig 8. Forward characteristics of reverse diode

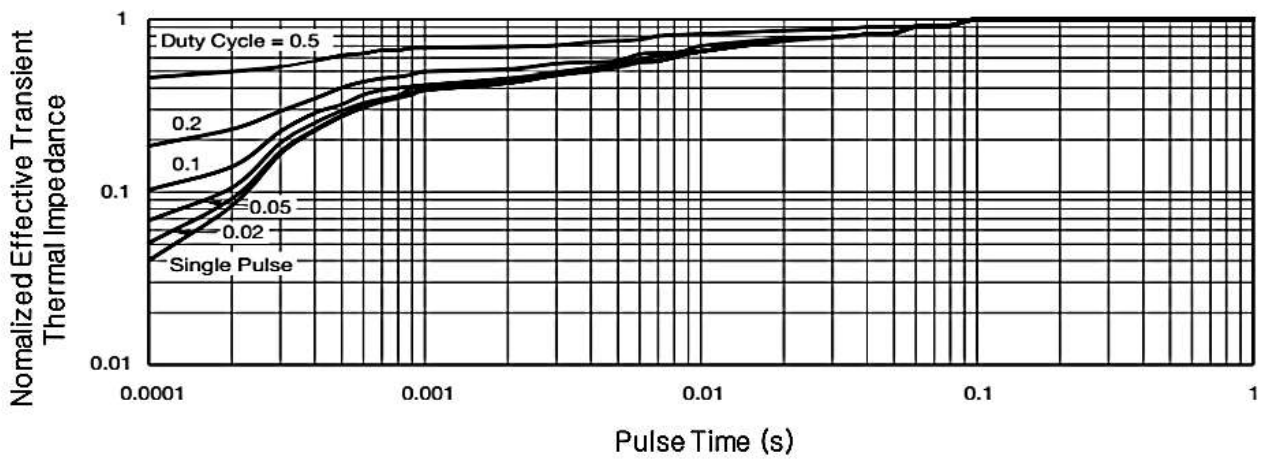
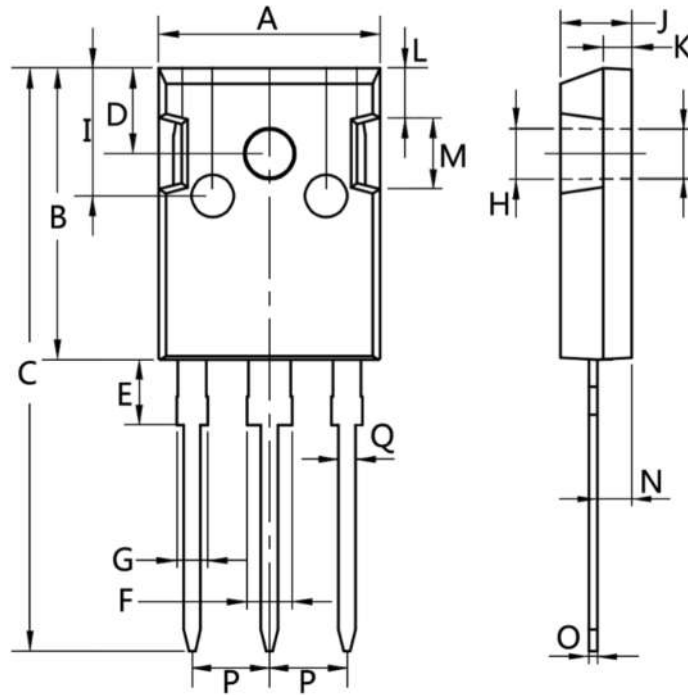


Fig 9 . Transient thermal impedance

TO-247



Dim.	Min.	Max.
A	15.0	16.0
B	20.0	21.0
C	41.0	42.0
D	5.0	6.0
E	4.0	5.0
F	2.5	3.5
G	1.75	2.5
H	3.0	3.5
I	8.0	10.0
J	4.9	5.1
K	1.9	2.1
L	3.5	4.0
M	4.75	5.25
N	2.0	3.0
O	0.55	0.75
P	Typ 5.08	
Q	1.2	1.3