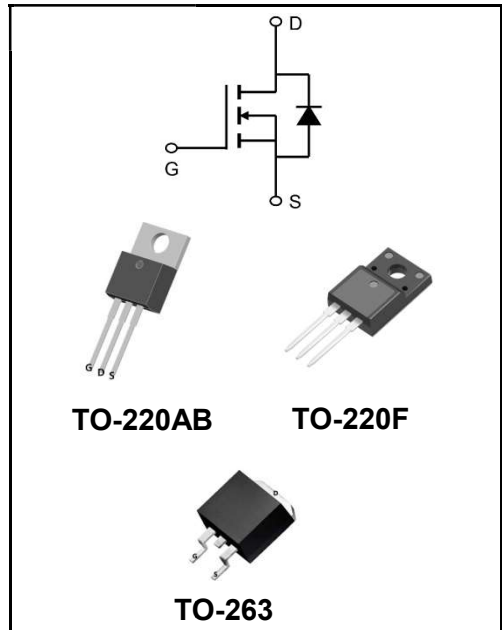


650V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	12A
V_{DSS}	650V
R_{DS(on)-typ(@V_{GS}=10V)}	< 0.72Ω (Type:0.6Ω)



Application

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

Product Specification Classification

Part Number	Package	Marking	Pack
YFW12N65AT	TO-220AB	YFW 12N65AT XXXXX	1000PCS/Tape
YFW12N65AF	TO-220F	YFW 12N65AF XXXXX	1000PCS/Tape
YFW12N65AS-R	TO-263	YFW 12N65AS XXXXX	800PCS/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	12	A
Pulsed Drain Current(note1)	I_{DM}	44	A
Gate - Source Voltage	V_{GS}	±30	V
Single Pulse Avalanche Energy(note2)	E_{AS}	304	mJ
Avalanche Current(note1)	I_{AR}	7.7	A
Repetitive Avalanche Energy(note1)	E_{AR}	65	mJ
Power Dissipation(T _c =25°C)	P_D	32.1	W
Operating Junction and Storage Temperature Range	T_J , T_{STG}	-55 to +150	°C
Thermal Resistance, Junction-to-case	R_{θJC}	1.92	°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	650	685	-	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	3.5	4	V
Drain-Source On-Resistance (Note3)	$V_{GS}=10V, I_D=5.5A$	R_{DS(ON)}	-	0.6	0.72	Ω
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	1528	-	pF
Output Capacitance		C_{oss}	-	147	-	
Reverse Transfer Capacitance		C_{rss}	-	16	-	
Total Gate Charge	$V_{DD}=520V$ $I_D=11A$ $V_{GS}=10V$	Q_g	-	46	-	nC
Gate-Source Charge		Q_{gs}	-	7	-	
Gate-Drain Charge		Q_{gd}	-	23	-	
Turn-on delay time	$V_{DD}=325V$ $I_D=11A$ $R_G=25\Omega$	t_{d(on)}	-	43	-	ns
Turn-on Rise Time		T_r	-	29	-	
Turn-Off Delay Time		t_{d(OFF)}	-	196	-	
Turn-on Fall Time		t_f	-	51	-	
Continuous Body Diode Current	$T_C=25^\circ C$	I_S	-	-	11	A
Pulsed Diode Forward Current		I_{SM}	-	-	44	A
Body Diode Voltage	$T_J=25^\circ C, I_{SD}=5.5A, V_{GS}=0V$	V_{SD}	-	-	1.4	V
Reverse Recovery Time	$V_{GS}=0V, I_S=11A$ $diF/dt=100A/\mu s$	t_{rr}	-	482	-	nS
Reverse Recovery Charge		Q_{rr}	-	2.85	-	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 = 11A, 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

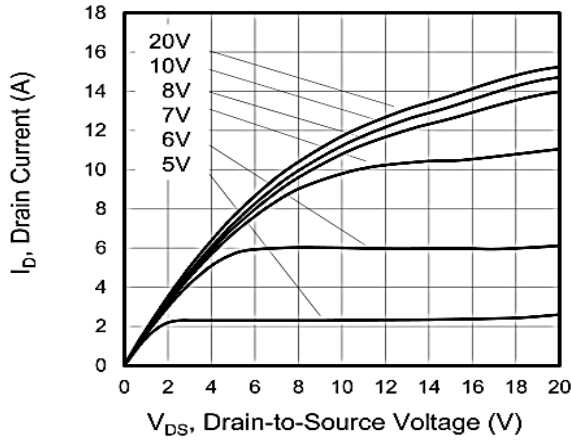


Figure 1. Output Characteristics (T_J = 25°C)

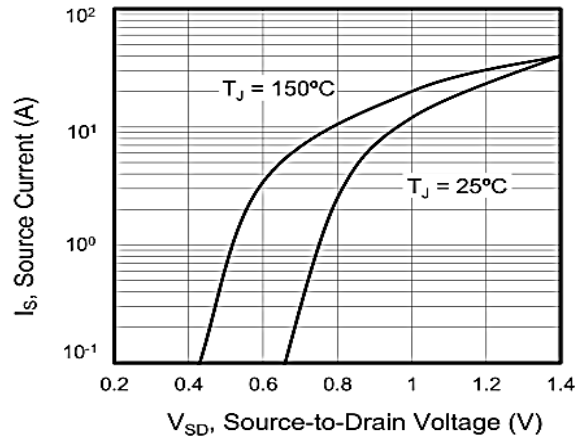


Figure 2. Body Diode Forward Voltage

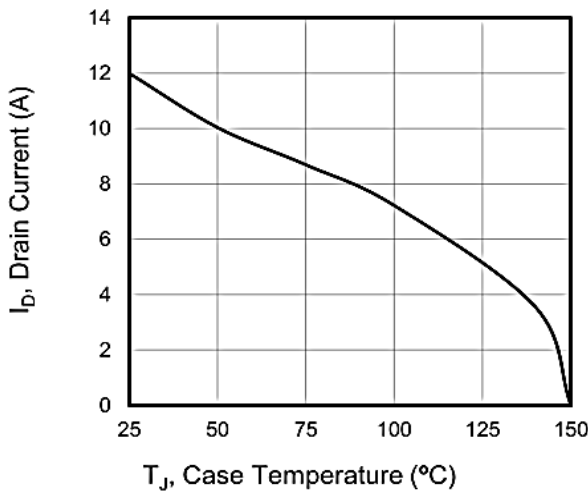


Figure 3. Drain Current vs. Temperature

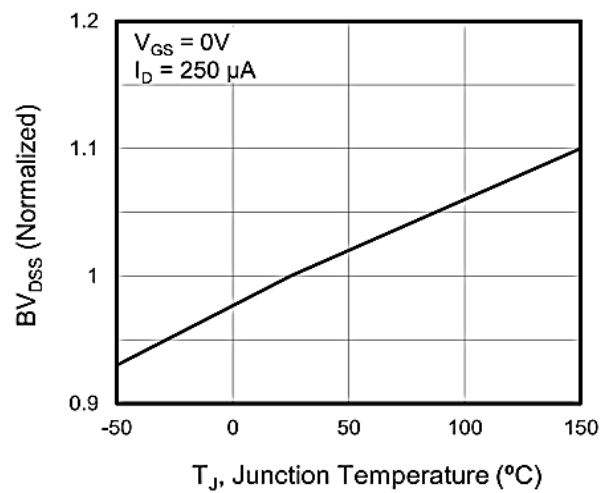


Figure 4. BV DSS Variation vs. Temperature

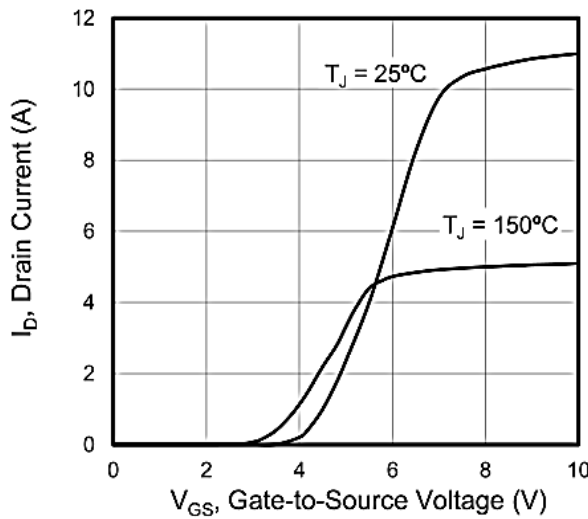


Figure 5. Transfer Characteristics

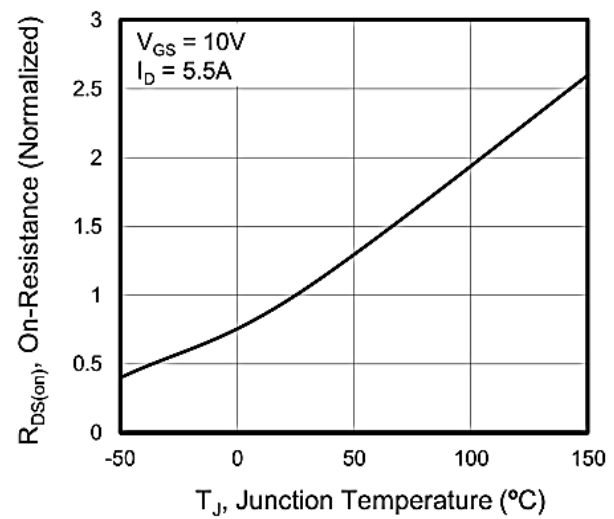


Figure 6. On-Resistance vs. Temperature

Ratings and Characteristic Curves

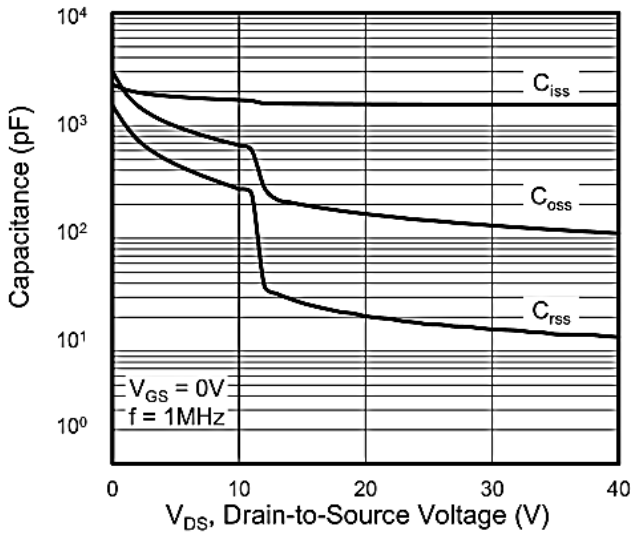
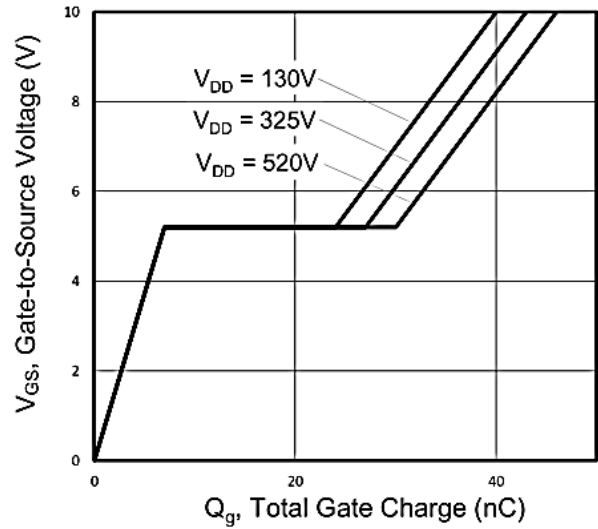


Figure 7. Capacitance Figure



8. Gate Charge

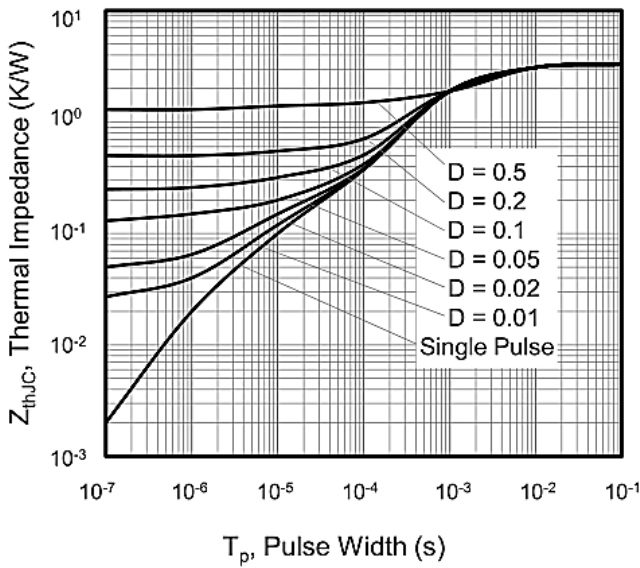


Figure 9. Transient Thermal Impedance

Package Outline Dimensions Millimeters

TO-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		

TO-220F

Dim.	Min.	Max.
A	9.95	10.25
B	2.95	3.25
C	1.25	1.45
D	12.95	13.25
E	0.50	0.65
F	3.1	3.3
G	1.30	1.45
H	Typ 2.54	
I	Typ 5.08	
J	4.60	4.75
K	2.50	2.65
L	6.35	6.55
M	15.4	16.0
N	2.75	3.05
O	0.48	0.52
P	0.76	0.84
All Dimensions in millimeter		

Package Outline Dimensions Millimeters

TO-263

Dim.	Min.	Max.
A	10.1	10.2
B	7.4	7.6
C	1.3	1.5
D	0.55	0.75
E	5.0	6.0
F	1.4	1.6
G	0.78	0.86
H	1.2	1.3
I	Typ2.54	
J	8.4	8.6
K	4.45	4.55
L	1.25	1.35
M	0.02	0.1
N	2.4	2.8
O	0.36	0.40
All Dimensions in millimeter		

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[DMN2990UFB-7B](#) [SSM3K35CT,L3F](#) [IPLK60R1K0PFD7ATMA1](#) [2N7002W-G](#) [MCAC30N06Y-TP](#) [IPWS65R035CFD7AXKSA1](#)
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