

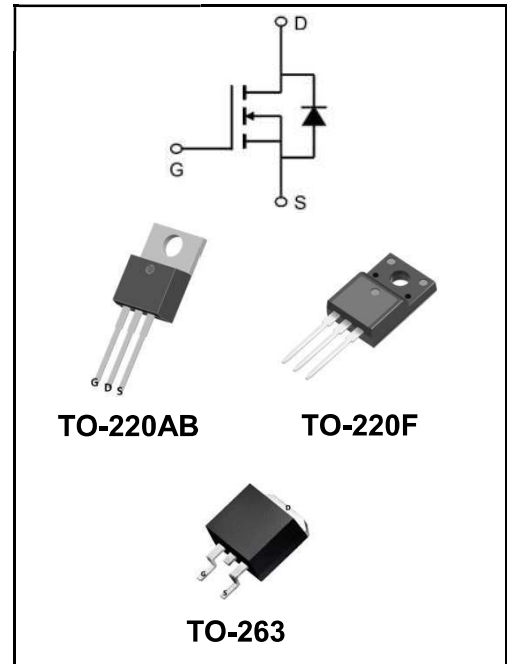
100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	160A
V_{DSS}	100V
R_{DS(on)-typ(@V_{GS}=10V)}	< 4.2mΩ (Type:3.7 mΩ)

Application

- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply



Product Specification Classification

Part Number	Package	Marking	Pack
YFW160N10AT	TO-220AB	YFW 160N10AT XXXXX	1000PCS/box
YFW160N10AF	TO-220F	YFW 160N10AF XXXXX	1000PCS/box
YFW160N10AS	TO-263	YFW 160N10AS XXXXX	800PCS/Reel

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
Continuous Drain Current, V _{GS} @ 10V @T _c =25°C	I_D	160	A
Continuous Drain Current, V _{GS} @ 10V @T _c =100°C	I_D	105	A
Pulsed Drain Current	I_{DM}	600	A
Single Pulse Avalanche Energy	E_{AS}	540	mJ
Avalanche Current	I_{AS}	60	A
Power Dissipation @T _c =25°C	P_D	225	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}	0.55	°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	$V_{GS}=0V, I_D=250\mu A$	V(BR)DSS	100	110	-	V
Gate-Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	V_{GS(th)}	2.5	3.0	4.2	V
Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	1	μA
	$V_{DS}=100V, V_{GS}=0V, T_J=125^\circ C$		-	-	5	
Gate-source leakage current	$V_{GS}=20V, V_{DS}=0V$	I_{GSS}	-	-	100	nA
Drain-source on-state resistance	$V_{GS}=10V, I_D=80A, T_J=25^\circ C$	R_{DS(ON)}	-	3.7	4.2	mΩ
Forward Transconductance	$V_{DS}=5V, I_D=80A$	g_{fs}	-	130	-	S
Input Capacitance	$V_{DS}=50V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	3950	-	pF
Output Capacitance		C_{oss}	-	1200	-	
Reverse Transfer Capacitance		C_{rss}	-	45	-	
Total Gate Charge	$T_J=25^\circ C$ $V_{GS}=10V$ $V_{DS}=50V$ $I_D=80A$	Q_g	-	78	-	nC
Gate-Source Charge		Q_{gs}	-	32	-	
Gate-Drain Charge		Q_{gd}	-	17	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DS}=50V$ $I_D=80A$ $R_G=5\Omega$	t_{d(on)}	-	27	-	ns
Rise Time		T_r	-	52	-	
Turn-Off Delay Time		t_{d(OFF)}	-	58	-	
Fall Time		t_f	-	23	-	
Gate resistance	$V_{GS}=0V, V_{DS}=0V, f=1MHz$	R_g	-	0.77	-	Ω
Body Diode Forward Voltage	$I_{SD}=50A, V_{GS}=0V$	V_{SD}	-	0.85	1.2	V
Body Diode Reverse Recovery Time	$I_F=20A, di/dt=500A/\mu s$	t_{rr}	-	82	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}	-	180	-	nC

Note :

- 1、 The data tested by surface mounted on a 1 inch 2 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 $V_{DD}=82V, V_{GS}=10V, L=0.1mH, I_{AS}=53.8A$
- 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

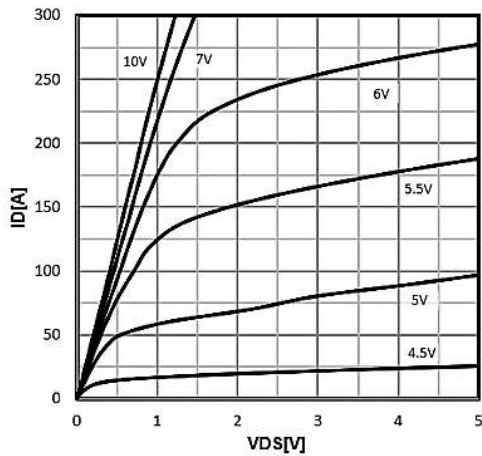


Figure 1. Type. Output Characteristics (Tj=25 °C)

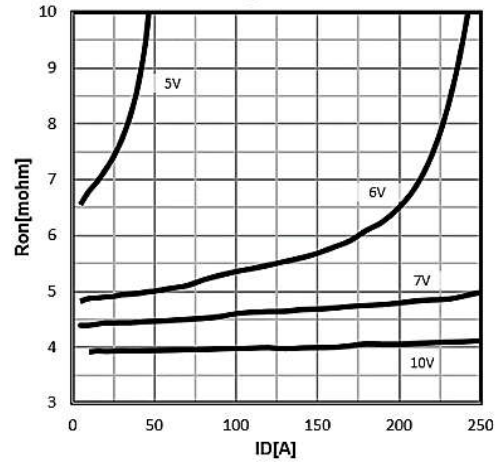


Figure 2. Type. drain-source on resistance

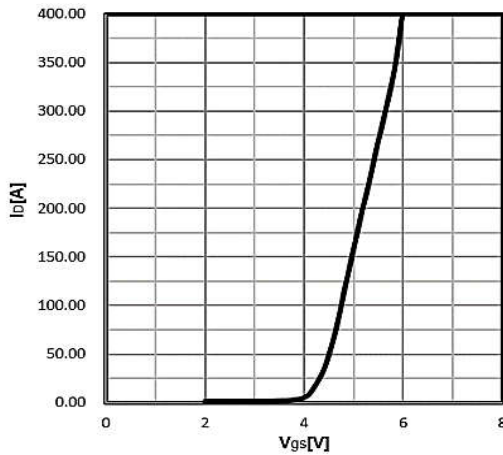


Figure 3. Type. transfer characteristics

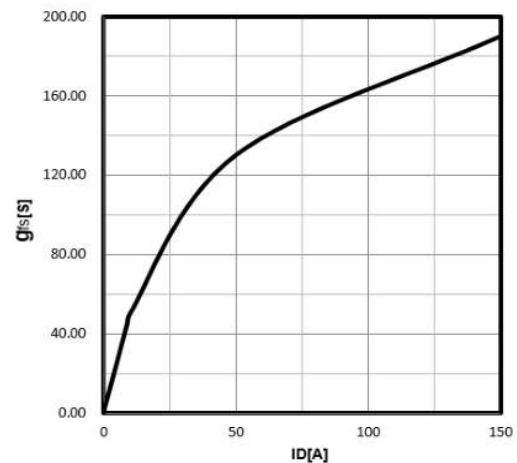


Figure 4. Type. forward transconductance

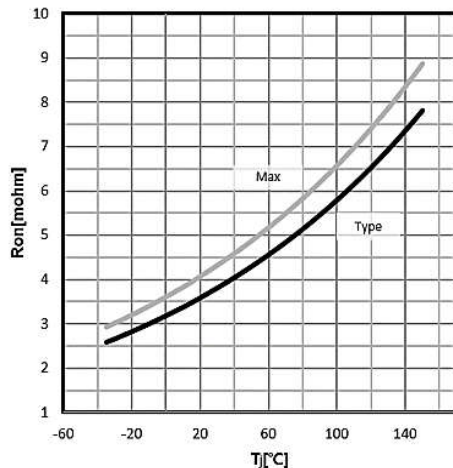


Figure 5. Drain-source on-state resistance
 $R_{DS(on)} = f(T_j)$; $I_D = 80A$; $V_{GS} = 10V$

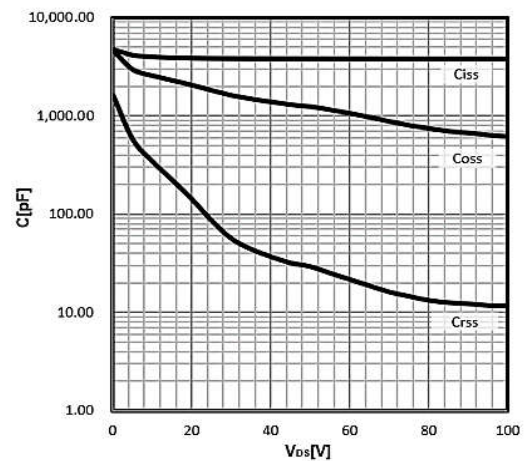


Figure 6. Body-Diode Characteristics
 $C = f(V_{DS})$; $V_{GS} = 0V$; $f = 1MHz$

Ratings and Characteristic Curves

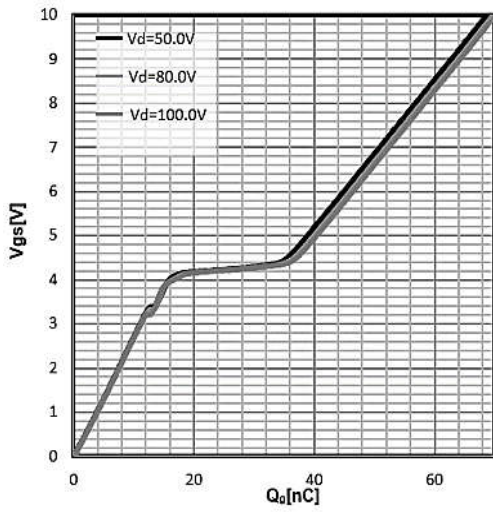


Figure 7. Typ. gate charge
 $V_{GS} = f(Q_{gate})$; $I_D = 20A$

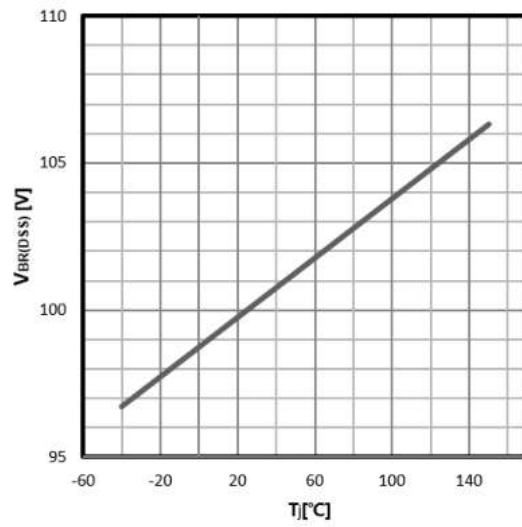


Figure 8. Drain Current Derating
 $V_{BR(DSS)} = f(T_j)$; $I_D = 250\mu A$

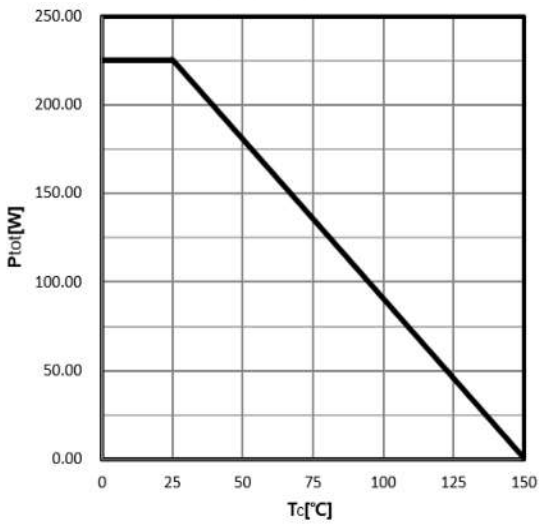


Figure 7. Power Dissipation

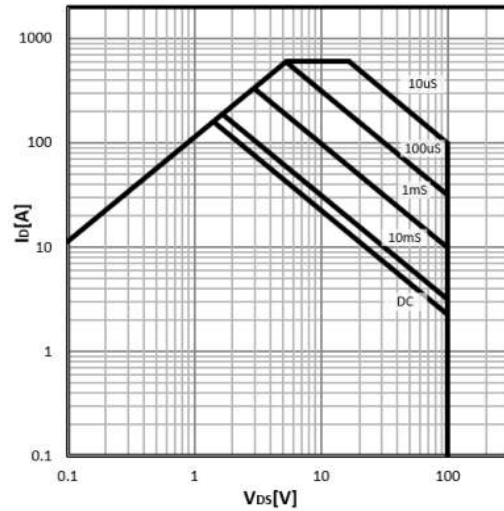


Figure 8. Safe operating area

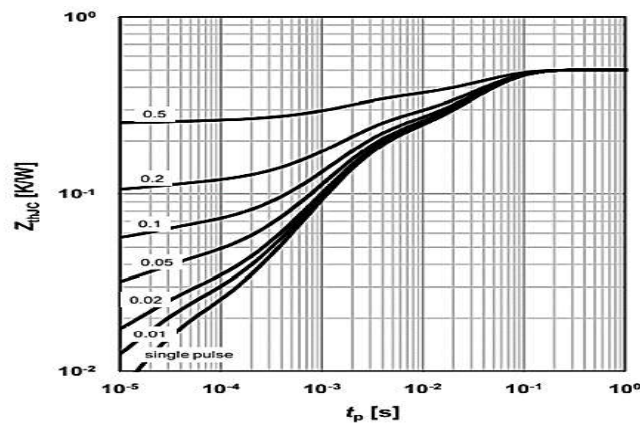


Figure 10. Max. transient thermal impedance

$Z_{thJC} = f(t_p)$

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			