

100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	80A
V_{DSS}	100V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 12m Ω (Type: 8.0 m Ω)

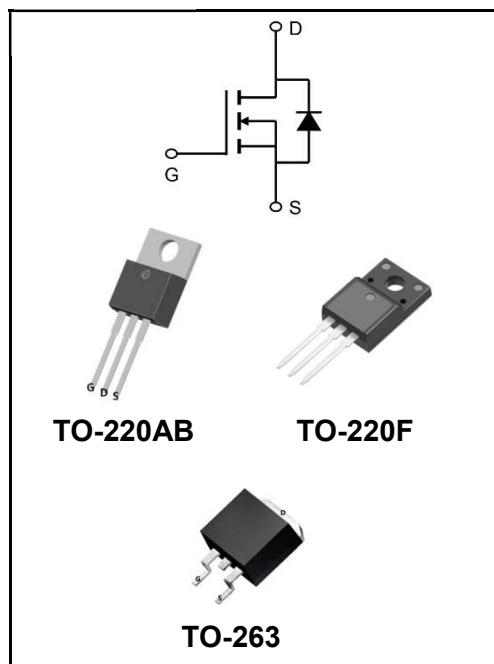
Features

◆ YFW-SGT technology



Application

- ◆ Isolated DC
- ◆ Motor control
- ◆ Synchronous-rectification



Product Specification Classification

Part Number	Package	Marking	Pack
YFW80N10AT	TO-220AB	YFW 80N10AT XXXXX	1000PCS/Tape
YFW80N10AF	TO-220F	YFW 80N10AF XXXXX	1000PCS/Tape
YFW80N10AS-R	TO-263	YFW 80N10AS XXXXX	800PCS/Tube

Maximum Ratings at $T_c=25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	100	V
Gate - Source Voltage	V_{GS}	± 20	V
Continuous drain current, $T_c=25^\circ\text{C}$	I_D	80	A
Pulsed drain current, $T_c=25^\circ\text{C}$	I_{DM}	210	A
Power dissipation, $T_c=25^\circ\text{C}$	P_D	107	W
Single Pulse Avalanche Energy4)	E_{AS}	183.8	mJ
Operation and storage temperature	T_{STG}, T_J	-55 to +150	$^\circ\text{C}$
Thermal Resistance Junction-Case	$R_{\theta JC}$	1.17	$^\circ\text{C/W}$
Thermal Resistance, Junction--Ambient 4)	$R_{\theta JA}$	62	$^\circ\text{C/W}$

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}	100	111	-	V
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	2.0	3.0	4.0	V
Drain-source on-state resistance	$V_{GS}=10V, I_D=20A$	$R_{DS(ON)}$	-	8	12.0	mΩ
	$V_{GS}=4.5V, I_D=12A$		-	12	14.0	
Gate-Source Leakage Current	$V_{GS}=\pm 20V$	I_{GSS}	-	-	± 100	nA
Drain-Source Leakage Current	$V_{DS}=100V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate resistance	f= 1 MHz, Open drain	R_G	-	5.5	-	Ω
Input Capacitance	$V_{GS}=0V$ $V_{DS}=50V$ f=100KHz	C_{iss}	-	1998.1	-	pF
Output Capacitance		C_{oss}	-	321.7	-	
Reverse Transfer Capacitance		C_{rss}	-	7.1	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DS}=50V$ $R_G=2\Omega$ $I_D=25A$	$t_{d(on)}$	-	22.1	-	ns
Rise Time		T_r	-	5.2	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	44	-	
Fall Time		t_f	-	8.4	-	
Total Gate Charge	$I_D=25A$ $V_{DS}=50V$ $V_{GS}=10V$	Q_g	-	28.9	-	nC
Gate-Source Charge		Q_{gs}	-	6	-	
Gate-Drain Charge		Q_{gd}	-	6.8	-	
Gate plateau voltage		$V_{plateau}$	-	3.7	-	
Diode forward current	$V_{GS}<V_{th}$	I_S	-	-	60	A
Pulsed Source Current		I_{SP}	-	-	180	
Diode Forward Voltage	$I_S=20A, V_{GS}=0V$	V_{SD}	-	-	1.3	V
Reverse Recovery Time	$I_S=25A, di/dt=100A/\mu s$	t_{rr}	-	102.9	-	ns
Reverse Recovery Charge		Q_{rr}	-	379	-	nC
Peak reverse recovery current		I_{rrm}	-	6.4	-	A

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 VDD=30V,VGS=10V, L=0.3mH, starting Tj=25°C
- 4、The power dissipation is limited by 150°C junction temperature
- 5、The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation

Typical Characteristics

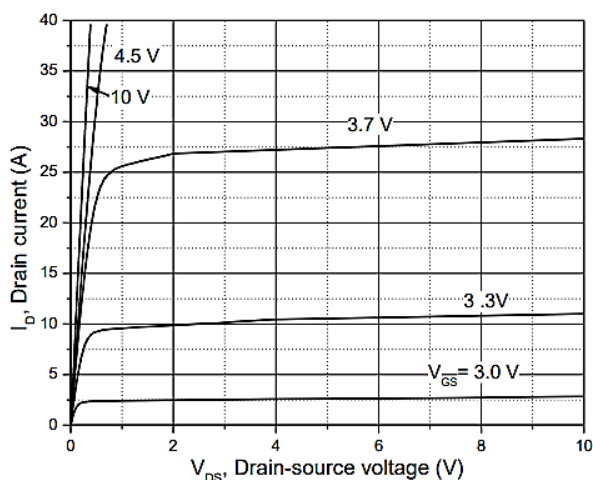


Figure 1. Typ. output characteristics

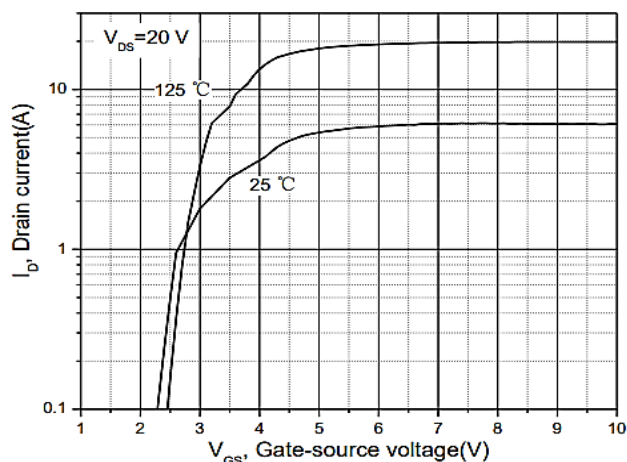


Figure 2. Typ. transfer characteristics

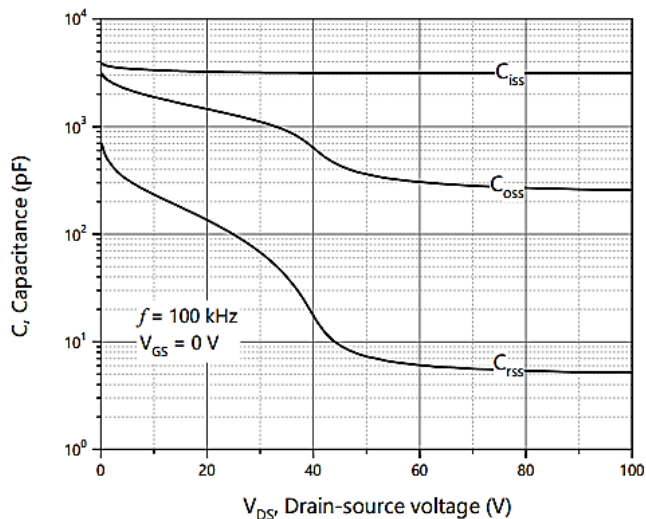


Figure 3. Typ. capacitances

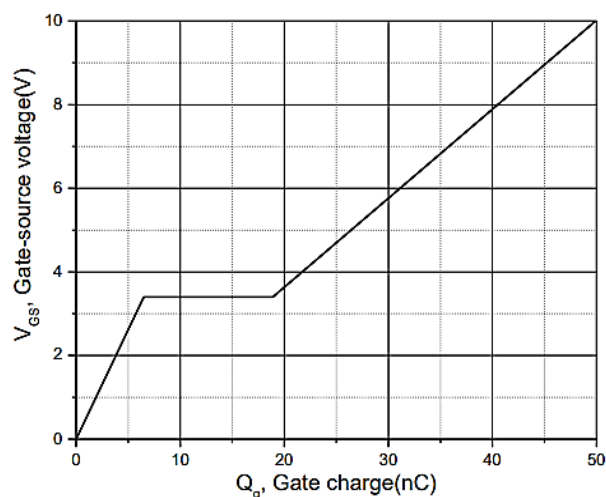


Figure 4. Typ. gate charge

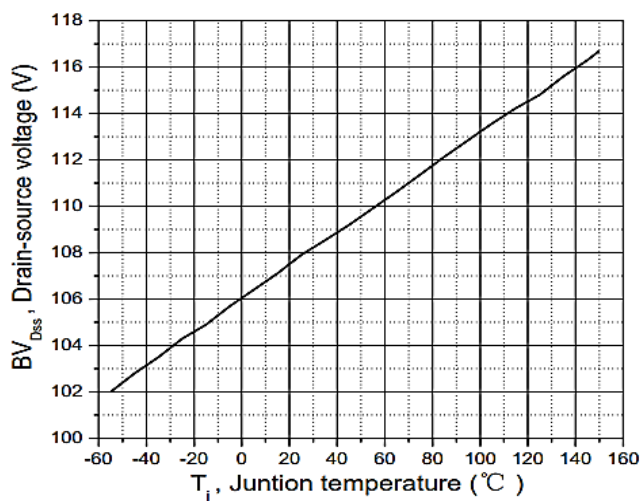


Figure 5. Drain-source breakdown voltage

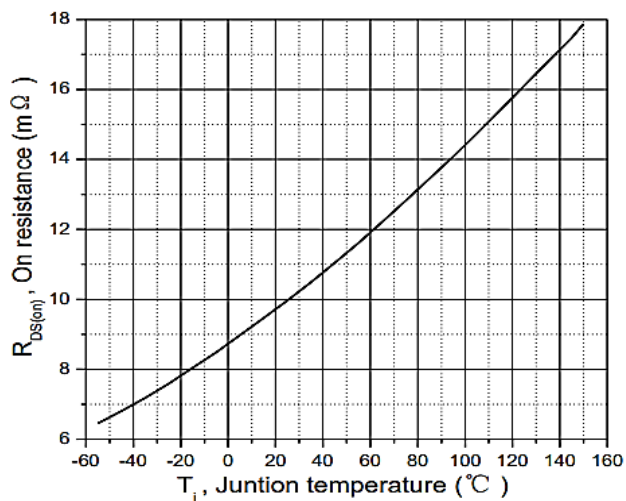


Figure 6. Drain-source on-state resistance

Ratings and Characteristic Curves

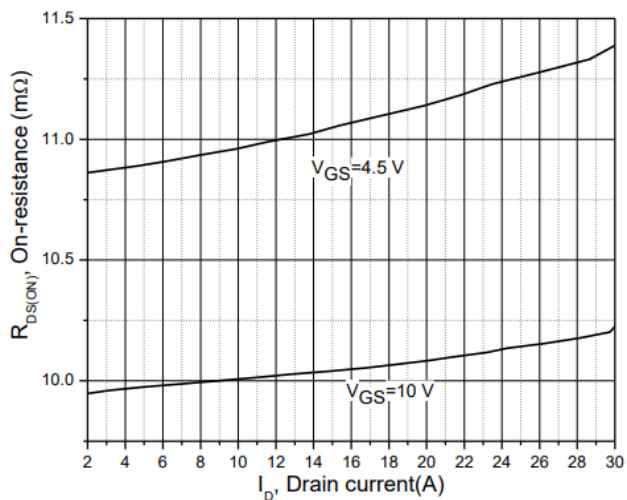


Figure 7. Drain-source on-state resistance

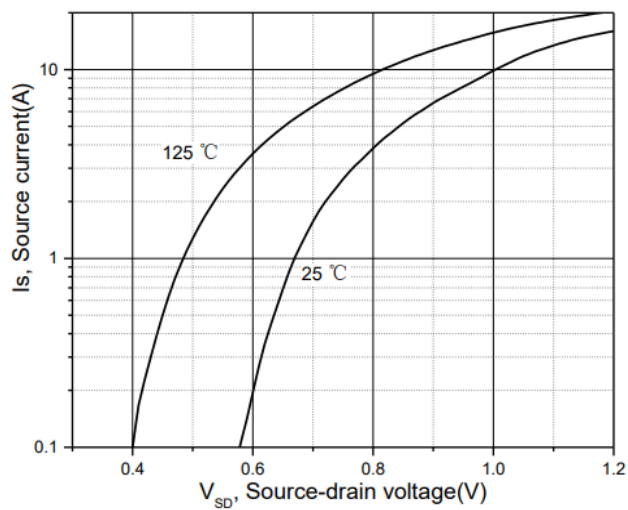


Figure 8. Forward characteristic of body diode

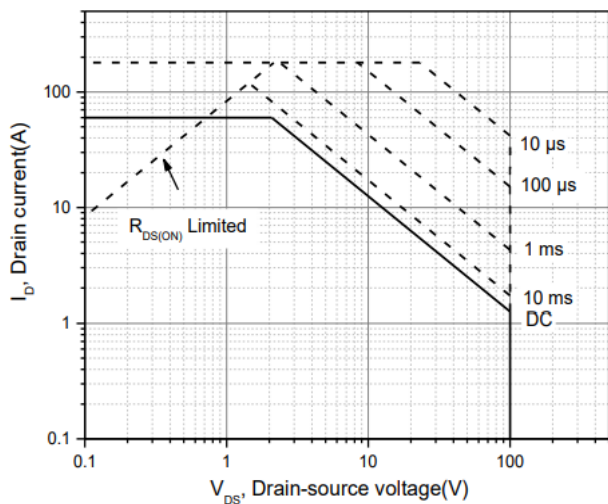
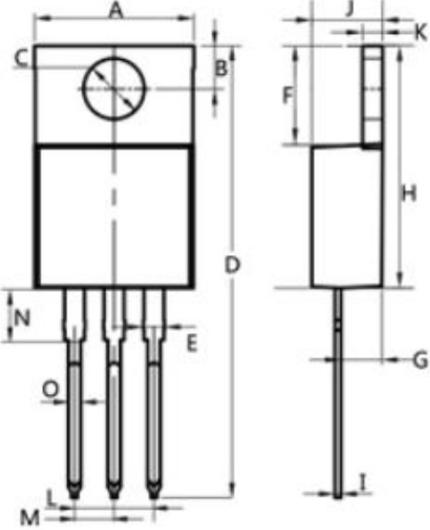


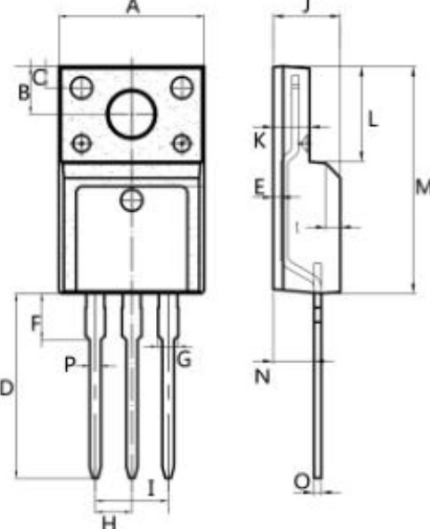
Figure 9. Safe operation area $T_C=25\text{ }^{\circ}\text{C}$

Package Outline Dimensions Millimeters

TO-220AB

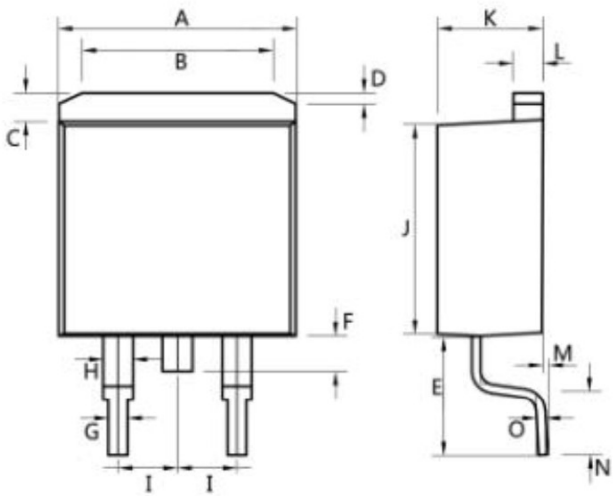
	Dim.	Min.	Max.
	A	10.15	10.35
	B	2.65	2.95
	C	3.70	3.90
	D	28.5	29.5
	E	1.30	1.45
	F	6.35	6.55
	G	2.9	3.3
	H	15.0	16.0
	I	0.38	0.42
	J	4.45	4.55
	K	1.25	1.35
	L	Typ 5.08	
	M	Typ 2.54	
	N	3.1	3.3
	O	0.76	0.84
All Dimensions in millimeter			

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			