

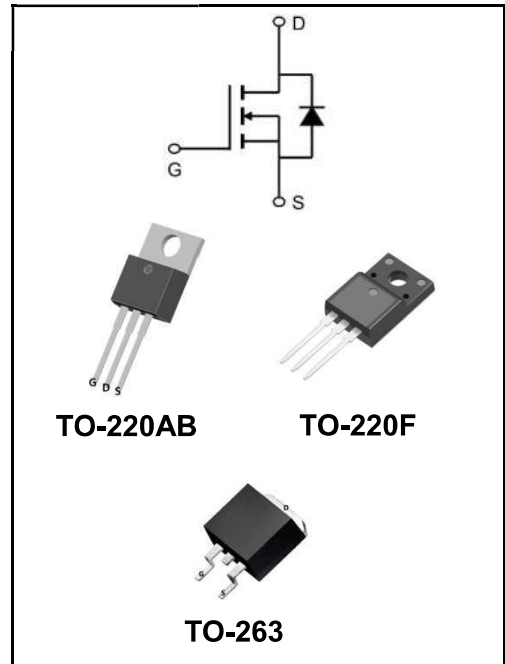
100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	55A
V_{DSS}	100V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 21mΩ (Type:15 mΩ)

Application

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



Product Specification Classification

Part Number	Package	Marking	Pack
YFW55N10AT	TO-220AB	YFW 55N10AT XXXXX	1000PCS/Box
YFW55N10AF	TO-220F	YFW 55N10AF XXXXX	1000PCS/Box
YFW55N10AS	TO-263	YFW 55N10AS XXXXX	800PCS/Reel

Maximum Ratings at Tc=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 ¹⁾ , T _c =25 °C	I_D	55	A
Pulsed drain current ²⁾ , T _c =25 °C	$I_{D, pulse}$	110	A
Power dissipation ³⁾ , T _c =25 °C	P_D	50	W
Single Pulse Avalanche Energy ⁵⁾	E_{AS}	57	mJ
Operation and storage temperature	T _{STG} , T _J	-55 to +150	°C

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	-	-	V
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.4	-	2.5	V
Drain-source on-state resistance	$V_{GS}=10V, I_D=10A$	$R_{DS(on)}$	-	15	21	mΩ
	$V_{GS}=4.5V, I_D=7A$		-	20	26	
Gate-Source Leakage Current	$V_{GS}=20V$	I_{GSS}	-	-	100	nA
	$V_{GS}=-20V$		-	-	-100	
Drain-Source Leakage Current	$V_{DS}=100V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Input Capacitance	$V_{GS}=0V$ $V_{DS}=50V$ $f=100KHz$	C_{iss}	-	1003.9	-	pF
Output Capacitance		C_{oss}	-	185.4	-	
Reverse Transfer Capacitance		C_{rss}	-	9.8	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DS}=50V$ $R_G=10\Omega$ $I_D=5A$	$t_{d(on)}$	-	16.6	-	ns
Rise Time		T_r	-	3.8	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	75.5	-	
Fall Time		t_f	-	46	-	
Total Gate Charge	$I_D=5A$ $V_{DS}=50V$ $V_{GS}=10V$	Q_g	-	16.2	-	nC
Gate-Source Charge		Q_{gs}	-	2.8	-	
Gate-Drain Charge		Q_{gd}	-	4.1	-	
Gate plateau voltage		$V_{plateau}$	-	3	-	
Diode forward current	$V_{GS}<V_{th}$	I_S	-	-	16	A
Pulsed Source Current		I_{SP}	-	-	48	
Diode Forward Voltage	$I_S=^{1234}A, V_{GS}=0V$	V_{SD}	-	-	1.3	V
Reverse Recovery Time	$I_S=5A, di/dt=100A/\mu s$	t_{rr}	-	49	-	ns
Reverse Recovery Charge		Q_{rr}	-	61.8	-	nC
Peak reverse recovery current		I_{rrm}	-	2.4	-	A

1) Calculated continuous current based on maximum allowable junction temperature.

2) Repetitive rating; pulse width limited by max. junction temperature.

3) Pd is based on max. junction temperature, using junction-case thermal resistance.

4) The value of RθJA is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with Ta=25 °C.

5) V_{DD}=50 V, R_G=50 Ω, L=0.3 mH, starting T_j=25 °C.

Ratings and Characteristic Curves

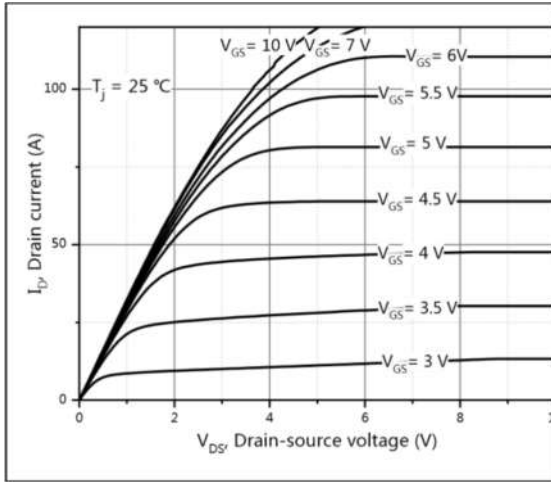


Figure 1, Typ. output characteristics

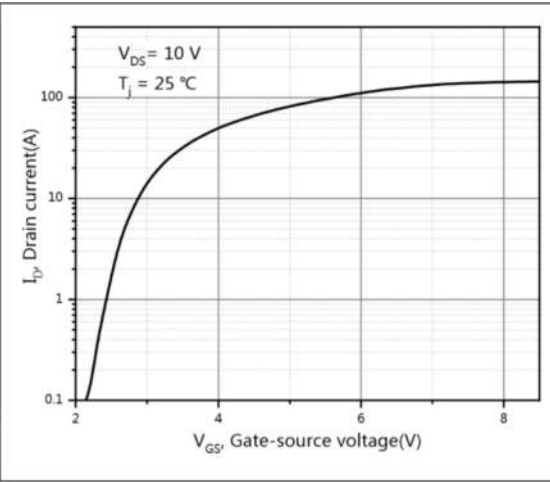


Figure 2, Typ. transfer characteristics

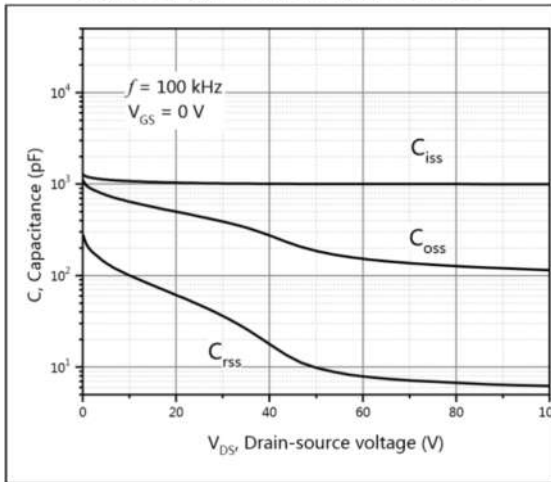


Figure 3, Typ. capacitances

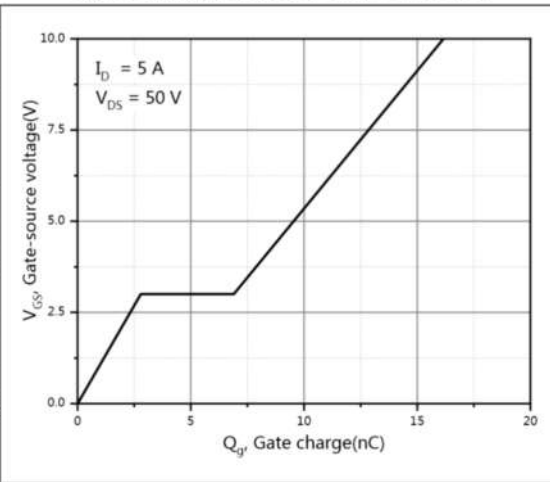


Figure 4, Typ. gate charge

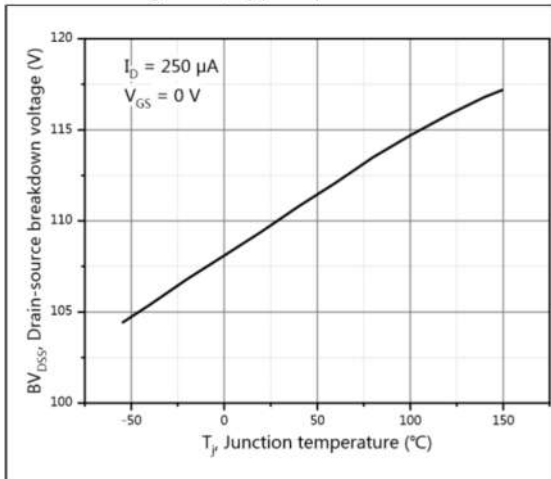


Figure 5, Drain-source breakdown voltage

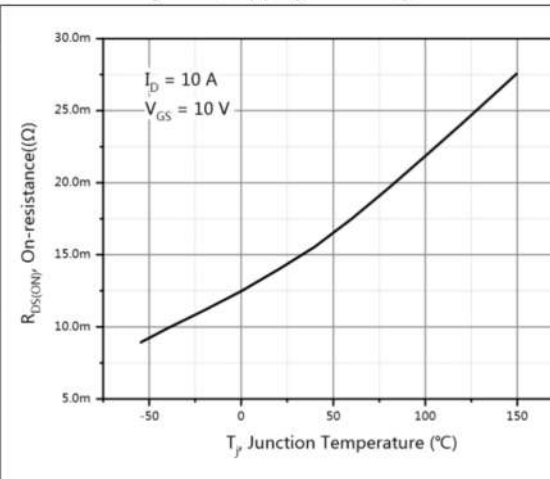


Figure 6, Drain-source on-state resistance

Ratings and Characteristic Curves

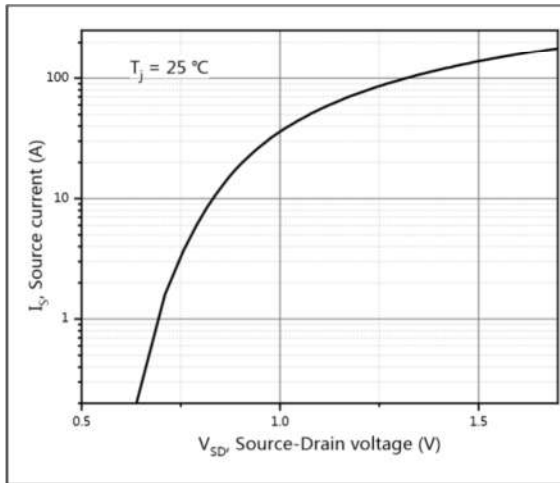


Figure 7, Forward characteristic of body diode

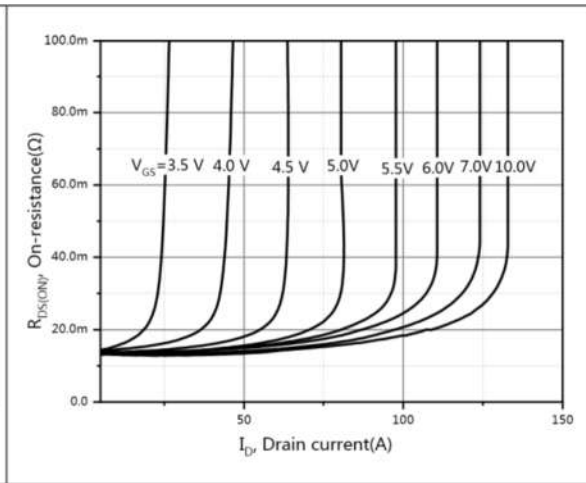


Figure 8, Drain-source on-state resistance

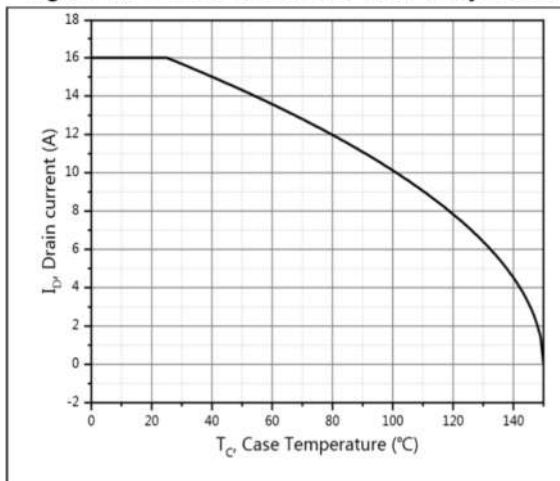


Figure 9, Drain current

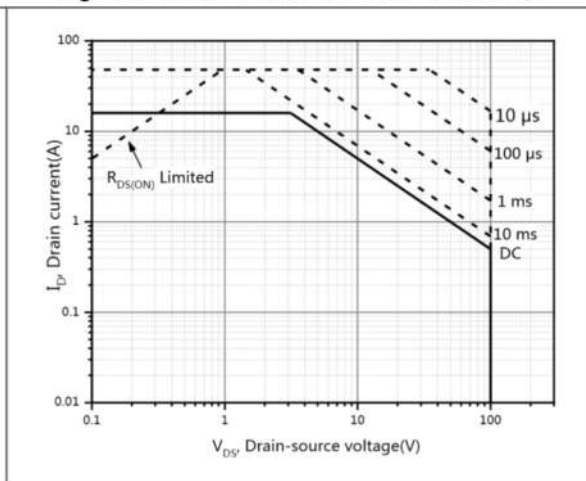


Figure 10, Safe operation area $T_C=25\text{ °C}$

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			