

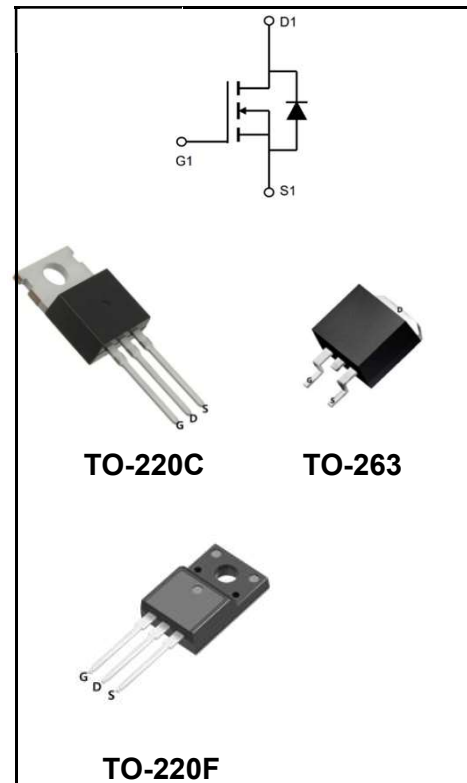
650V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	10A
V_{DSS}	650V
$R_{DS(on)-typ}(@V_{GS}=10V)$	$<1.0\Omega$ (Type: 0.8 Ω)

Features

- ♦Fast Switching
- ♦Low ON Resistance
- ♦Low Gate Charge
- ♦100% Single Pulse avalanche energy Test
- ♦LeadfreeincomplywithEURoHS2011/65/EUdirectives



Mechanical Data

- ♦Case: Molded plastic
- ♦Mounting Position: Any
- ♦Molded Plastic: UL Flammability Classification Rating 94V-0
- ♦Solder bath temperature 275°C maximum, 10s per JESD22-106

Product Specification Classification

Part Number	Package	Marking	Pack
YFW10N65BC	TO-220C	YFW 10N65BC XXXXX	50PCS/Tube
YFW10N65BF	TO-220F(0.5mm)	YFW 10N65BF XXXXX	50PCS/Tube
YFW10N65BF	TO-220F(1.3mm)	YFW 10N65BF XXXXX	50PCS/Tube
YFW10N65BS	TO-263	YFW 10N65BS XXXXX	50PCS/Tube
YFW10N65BS-R	TO-263	YFW 10N65BS XXXXX	800PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value			Units
		220C	220F	263	
Drain-Source Voltage	V _{DS}	650			V
Gate-Source Voltage	V _{GS}	±30			V
Continue Drain Current-Continuous (TC = 25°C)	I _D	10			A
-Continuous (TC = 100°C)		6			
Pulsed Drain Current (Note1)	I _{DM}	40			A
Power Dissipation	P _D	150	50	150	W
-Derate above 25°C		1.23	0.38	1.23	W/°C
Single Pulse Avalanche Energy (Note2)	E _{AS}	690			mJ
Avalanche Current (Note 1)	I _{AR}	10			A
Repetitive Avalanche Energy (Note 1)	E _{AS}	17			mJ
Operating Temperature Range	T _J	150			°C
Storage Temperature Range	T _{STG}	-55 to +150			°C
Thermal Resistance, Junction to Case	R _{θJC}	0.96	3.13	0.96	°C/W
Thermal Resistance, Junction to Ambient	R _{θJA}	62.5	62.5	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} = 0 V, I _D = 250 μA	BV_{DSS}	650	-	-	V
Drain-Source Leakage Current	V _{DS} = 650 V, V _{GS} = 0 V	I_{DSS}	-	-	1	uA
	V _{DS} = 520 V, T _c = 125°C		-	-	10	
Gate Leakage Current	V _{GS} = ± 30 V, V _{DS} = 0 V	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	V _{DS} = V _{GS} , I _D = 250 μA	V_{GS(th)}	2	-	4	V
Drain-Source On-State Resistance	V _{GS} = 10 V, I _D = 5 A	R_{DS(on)}	-	0.8	1.0	Ω
Forward Transconductance	V _{DS} = 40 V, I _D = 5 A	g_{fs}	-	9.5	-	S
Input Capacitance	V _{GS} = 0 V, V _{DS} = 25 V, f = 1MHz	C_{iss}	-	1692	-	pF
Output Capacitance		C_{oss}	-	128	-	
Reverse Transfer Capacitance		C_{rss}	-	7	-	
Turn-on Delay Time	I _D = 10 A, V _{DD} = 325 V, R _G = 25Ω(Note3,4)	td(ON)	-	27	-	nS
Rise Time		tr	-	22	-	
Turn-Off Delay Time		td(OFF)	-	53	-	
Fall Time		tf	-	24	-	
Total Gate Charge	I _D = 10 A, V _{DD} = 520V, V _{GS} = 10 V(Note3,4)	Q_G	-	35	-	nC
Gate to Source Charge		Q_{GS}	-	8	-	
Gate to Drain Charge		Q_{GD}	-	12	-	

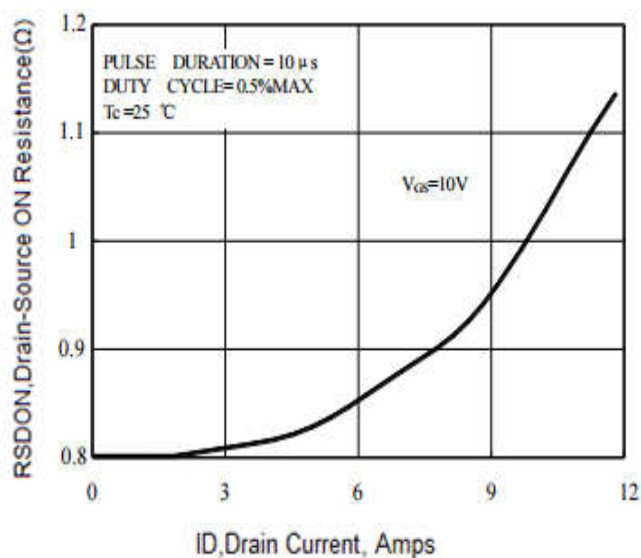
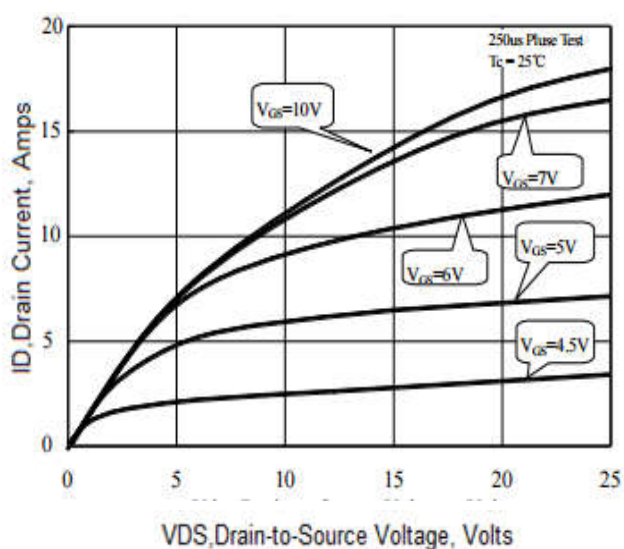
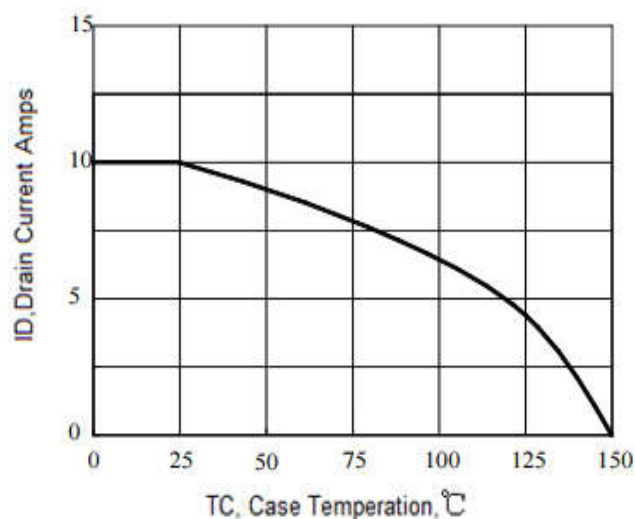
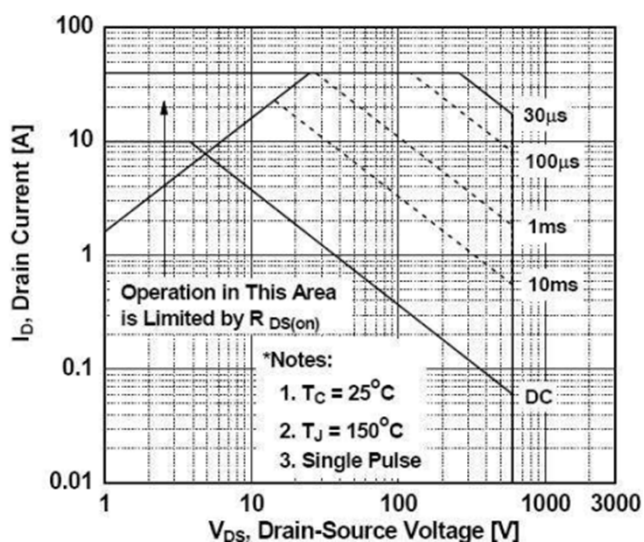
Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Maximum Body-Diode Continuous Current		I_S	-	-	10	A
Maximum Body-Diode Pulsed Current		I_{SM}	-	-	40	A
Drain-Source Diode Forward Voltage	$I_{SD} = 10\text{ A}$	V_{SD}	-	-	1.5	V
Reverse Recovery Time	$I_{SD} = 10\text{ A}, V_{GS} = 0\text{ V},$ $dI_F / dt = 100\text{ A}/\mu\text{s}$ (Note3)	t_{rr}	-	528	-	nS
Reverse Recovery Charge		Q_{rr}	-	3.22	-	uC

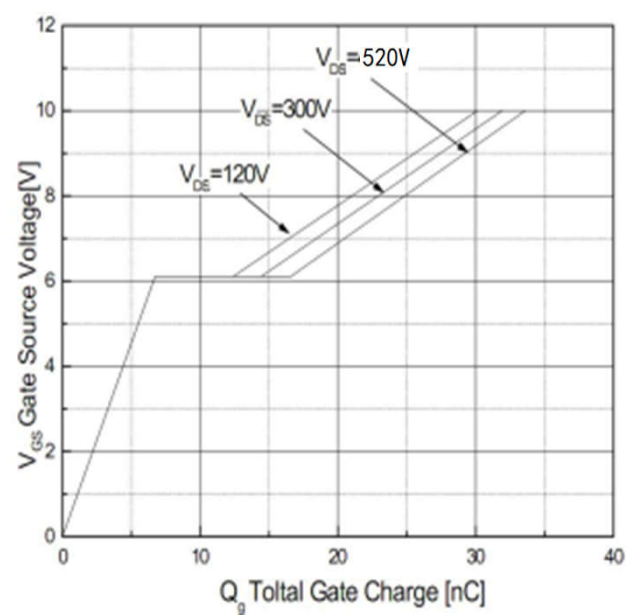
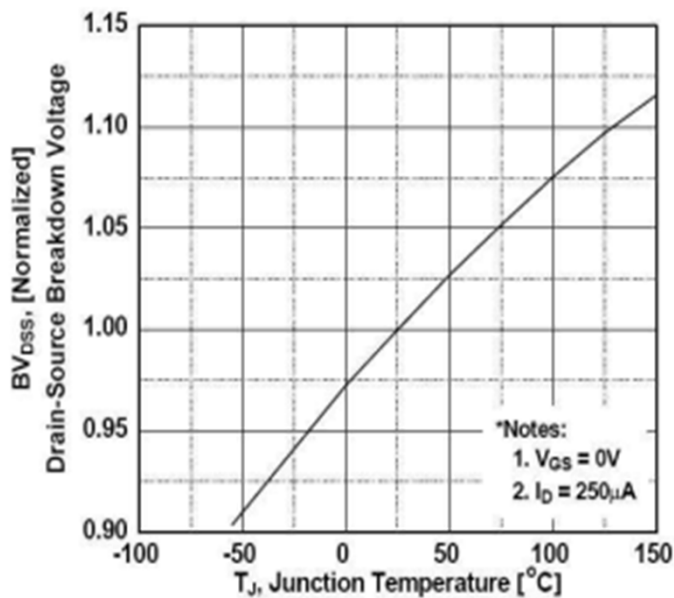
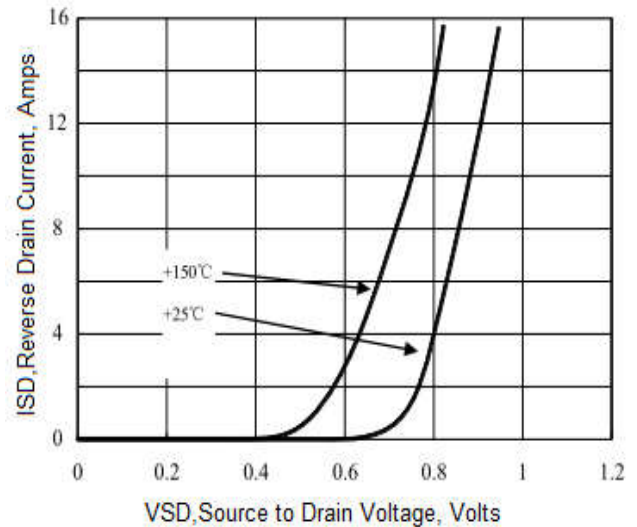
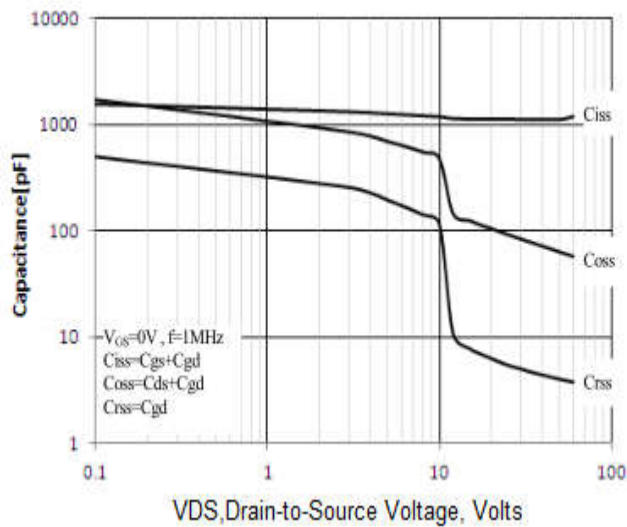
Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. $I_{AS} = 10\text{ A}$, $V_{DD} = 50\text{ V}$, $L = 14\text{mH}$, $R_G = 25\Omega$, starting $T_J = 25^\circ\text{C}$.
3. ulse test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycles $\leq 2\%$.
4. Essentially Independent of Operating Temperature.

Ratings and Characteristic Curves



Ratings and Characteristic Curves



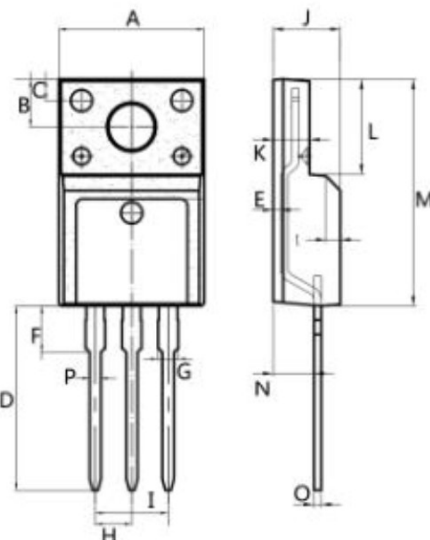
Package Outline Dimensions millimeters

TO-220C

The image shows a technical drawing of a TO-220C package. The front view (left) and side view (right) illustrate the package's dimensions. Key dimensions labeled include: A (width), A2 (width), F (width), C (width), C1 (width), D (width), E (width), S (width), DIA (width), M (width), N (width), P (width), and H (height). The drawing also shows the package's internal structure, including the mounting tab and the lead wires.

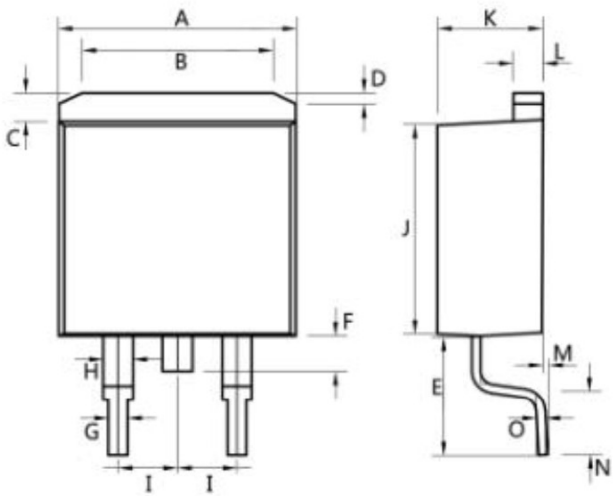
Dim.	Min.	Max.
A	9.8	10.2
A2	4.8	5.2
C	4.35	4.65
C1	1.45	1.05
D	0.65	0.95
E	3.45	3.75
F	2.85	3.15
G	6.4	6.8
H	0.35	0.65
J	28.68	28.98
K	2.8	3.2
M	1.15	1.45
N	Typical 2.54	
P	2.2	2.6
Q	9	9.4
S	0.15	0.35
U	2.65	2.95
DIA	宽 1.50 ± 0.10	
	深 0.50 MAX	
All Dimensions in millimeter		

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			