

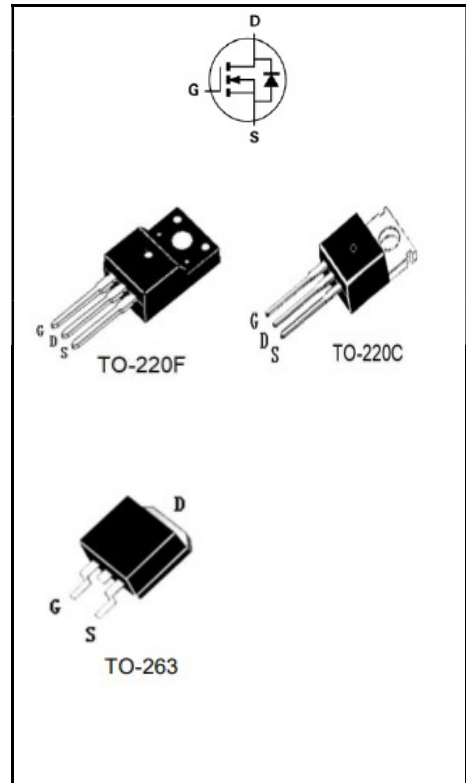
N-CHANNEL ENHANCEMENT MODE POWER MOSFET

MAIN CHARACTERISTICS

I_D	10A
V_{DSS}	650V
$R_{DS(ON)-typ}(@V_{GS}=10V)$	0.8Ω

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
- ◆Case: TO-220C, TO-220F, TO-263

PRODUCT SPECIFICATION CLASSIFICATION

Part Number	Package	Marking	Pack
YFW10N65A9	TO-220C	10N65AC	50PCS/Tube
YFW10N65A2	TO-220F(0.5mm)	10N65AF	50PCS/Tube
YFW10N65A8	TO-220F(1.3mm)	10N65AF	50PCS/Tube
YFW10N65A3	TO-263	10N65AS	50PCS/Tube
YFW10N65A3-R	TO-263	10N65AS	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	145	50	145	W
-Derate above 25°C		1.23	0.38	1.23	
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	$R_{\theta JC}$	1.1	2.5	1.1	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	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	$V_{GS} = 0 V, I_D = 250 \mu A$	BV_{DSS}	650	-	-	V
Drain-Source Leakage Current	$V_{DS} = 650 V, V_{GS} = 0 V$	I_{DSS}	-	-	1	uA
	$V_{DS} = 520 V, T_c = 125^\circ C$		-	-	10	
Gate Leakage Current	$V_{GS} = \pm 30 V, V_{DS} = 0 V$	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu A$	$V_{GS(th)}$	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(Note3)	$V_{DS} = 40 V, I_D = 5 A$	g_{fs}	-	9.5	-	S
Input Capacitance	$V_{GS} = 0 V, V_{DS} = 25 V, f = 1MHz$	C_{iss}	-	1900	-	pF
Output Capacitance		C_{oss}	-	134	-	
Reverse Transfer Capacitance		C_{rss}	-	6	-	
Turn-on Delay Time	$I_D = 10 A, V_{DD} = 325 V, R_G = 25\Omega(\text{Note3,4})$	$td(ON)$	-	25	-	nS
Rise Time		tr	-	21	-	
Turn-Off Delay Time		$td(OFF)$	-	50	-	
Fall Time		tf	-	23	-	
Total Gate Charge	$I_D = 10 A, V_{DD} = 520V, V_{GS} = 10 V(\text{Note3,4})$	Q_G	-	21.5	-	nC
Gate to Source Charge		Q_{GS}	-	8	-	
Gate to Drain Charge		Q_{GD}	-	12	-	

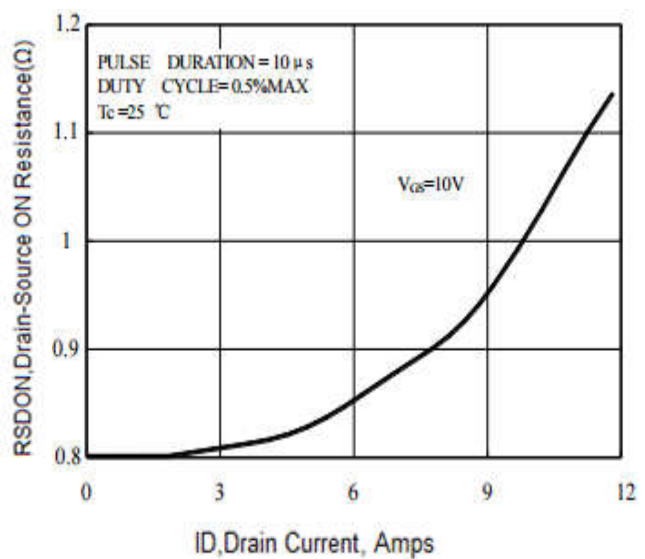
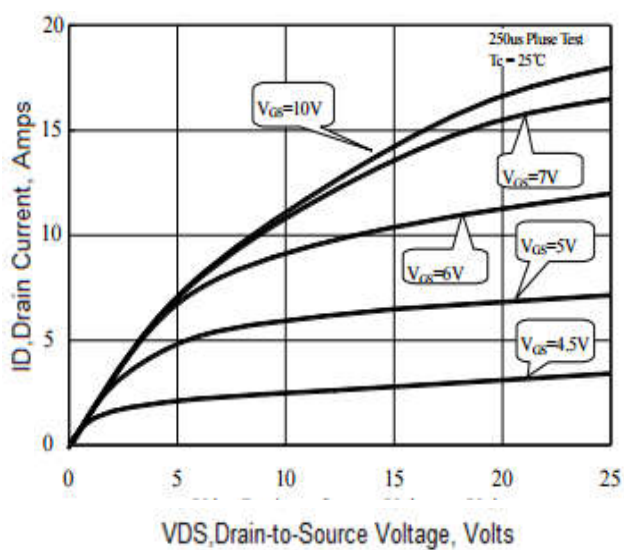
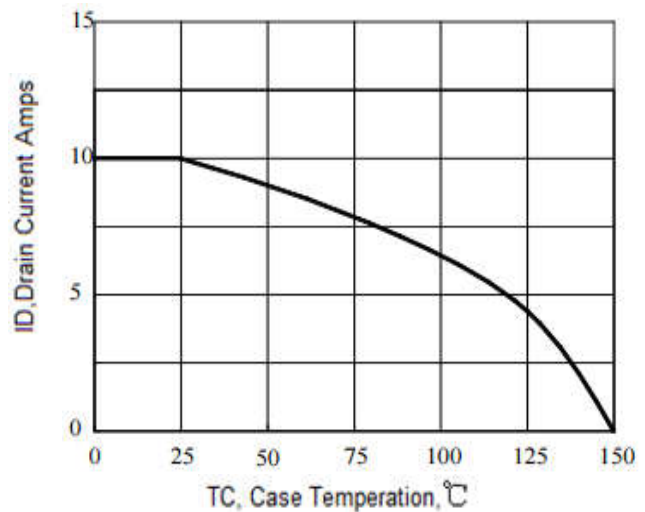
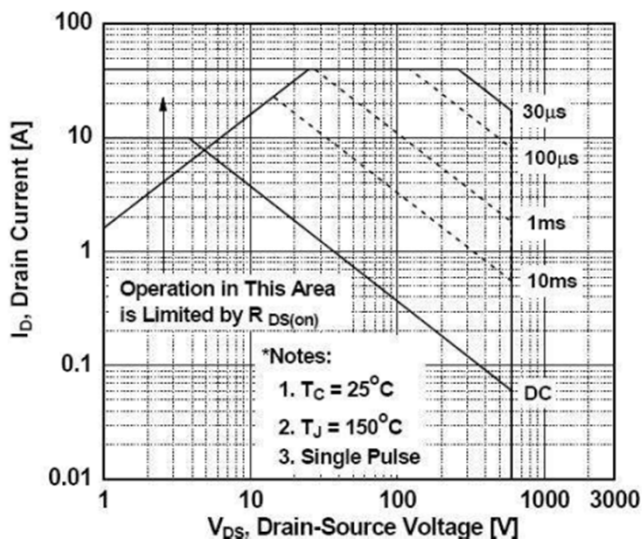
Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Maximun Body-Diode Continuous Current		I_S	-	-	10	A
Maximun Body-Diode Pulsed Current		I_{SM}	-	-	40	A
Drain-Source Diode Forward Voltage	I _{SD} = 10 A	V_{SD}	-	-	1.4	V
Reverse Recovery Time	I _{SD} = 10 A, V _{GS} = 0 V, dI _F / dt = 100 A/μs (Note3)	trr	-	498	-	nS
Reverse Recovery Charge		Qrr	-	3.1	-	uC

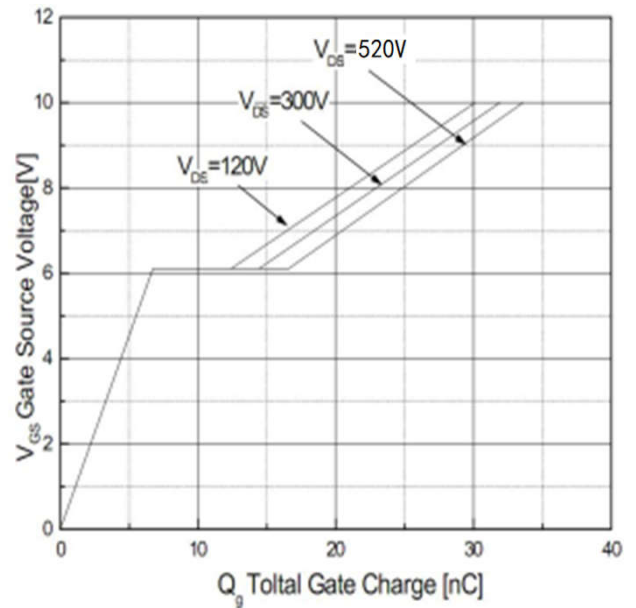
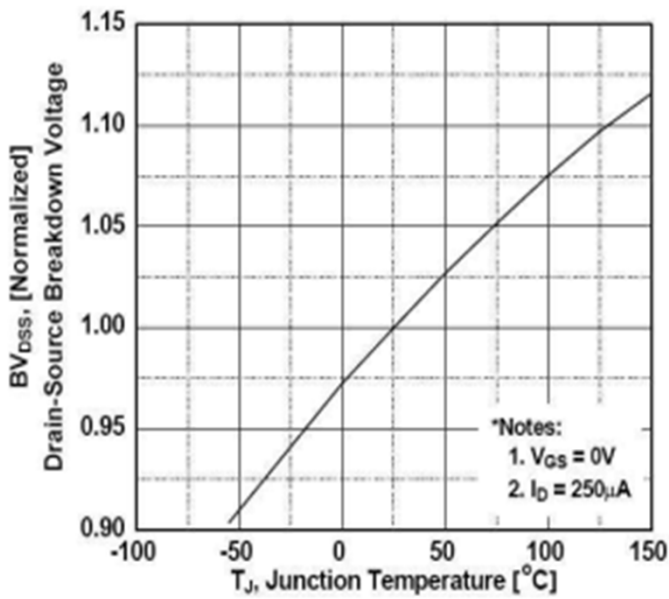
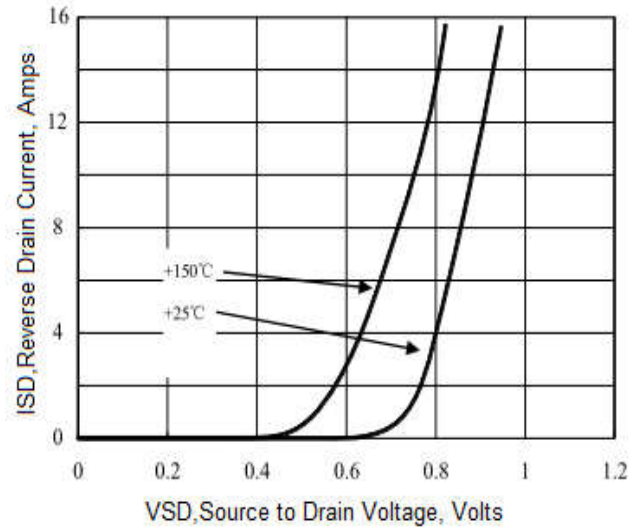
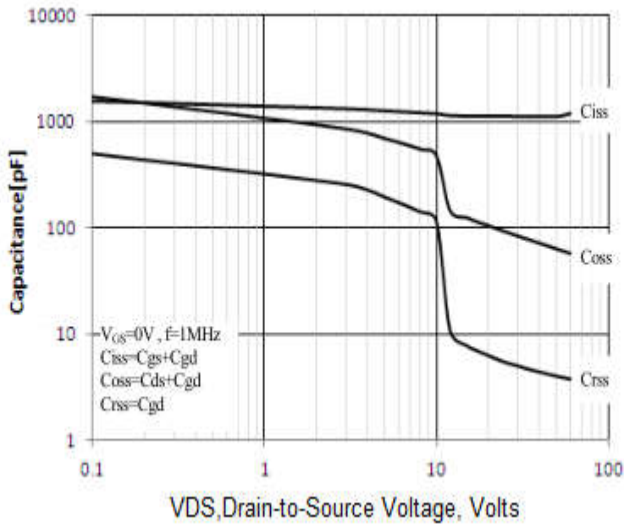
Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. IAS = 10 A, VDD = 50 V, L = 14mH, RG = 25Ω, starting TJ = 25°C.
3. ulse test: Pulse Width ≤300 μ s, Duty Cycles≤2%.
4. Essentially Independent of Operating Temperature.

RATINGS AND CHARACTERISTIC CURVES



RATINGS AND CHARACTERISTIC CURVES



Package Outline Dimensions millimeters

TO-220C

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		