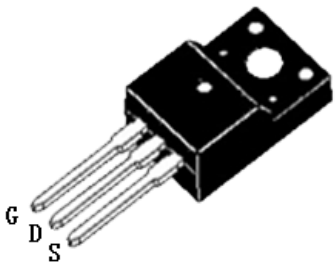
12N65F

N-Channel Enhancement Mode Power MOSFET



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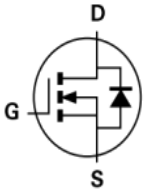


FEATURES

- Fast Switching
- Low ON Resistance
- Low Gate Charge
- 100% Single Pulse avalanche energy Test

APPLICATIONS

- Power switch circuit of adaptor and charger.

MECHANICAL DATA

- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275℃ maximum,10s per JESD 22-B106

MAIN CHARACTERISTICS

I_D	12A
V_{DSS}	650V
R_{DSON}-typ （@V_{GS}=10V）	0.60Ω

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	±30	V
Continue Drain Current	I_D	12	A
Pulsed Drain Current (Note1)	I_{DM}	48	A
Power Dissipation	P_D	42	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	670	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.98	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	°C/W

Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

Electrical Characteristics at Tc=25°C unless otherwise specified

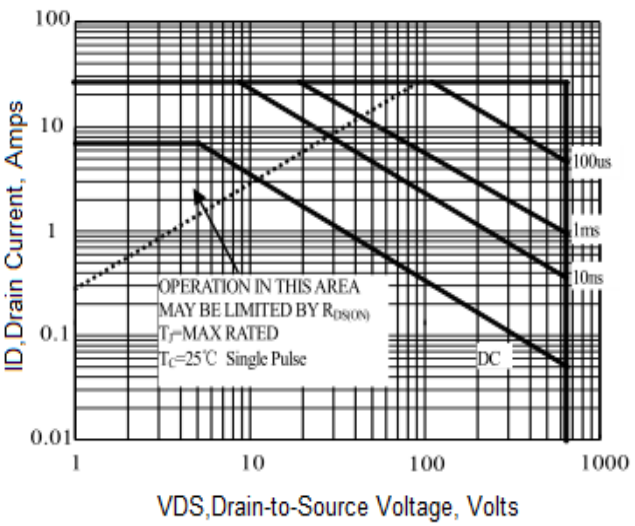
Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS} = 0 V,I_D = 250 μA	BV_{DSS}	650	-	-	V
Drain-Source Leakage Current	V_{DS} = 650 V, V_{GS} = 0 V	I_{DSS}	-	-	1	μA
Gate Leakage Current	V_{GS} = ± 30 V, V_{DS} = 0 V	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	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 = 6 A	$R_{DS(on)}$	-	0.60	0.80	Ω
Forward Transconductance	V_{DS} = 15 V, I_D = 6 A	gfs	-	12	-	S
Input Capacitance	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{iss}	-	2020	-	pF
Output Capacitance		C_{oss}	-	170	-	pF
Reverse Transfer Capacitance		C_{rss}	-	7	-	pF
Turn-on Delay Time(Note2)	I_D = 12 A, V_{DD} = 325V, R_G= 10 Ω	$t_{d(ON)}$	-	29	-	ns
Rise Time(Note2)		t_r	-	27	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	65	-	ns
Fall Time(Note2)		t_f	-	46	-	ns
Total Gate Charge(Note2)	I_D = 12 A, V_{DD} = 520 V, V_{GS} = 10 V	Q_G	-	41	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	10	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	14	-	nC

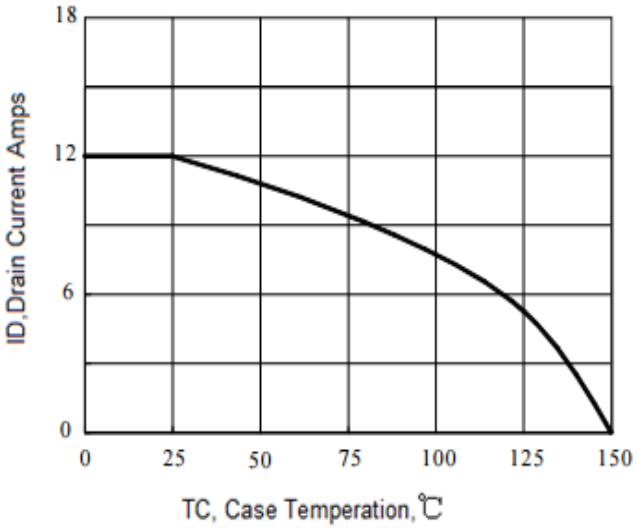
Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified

Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		I_S	-	-	12	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	48	A
Drain-Source Diode Forward Voltage	I_{SD} = 12 A	V_{SD}	-	-	1.5	V
Reverse Recovery Time(Note2)	I_{SD} = 12 A, V_{GS} = 0 V, dI_F / dt = 100 A/μs	trr	-	670	-	ns
Reverse Recovery Charge(Note2)		Qrr	-	4.4	-	μC

Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

RATINGS AND CHARACTERISTIC CURVES





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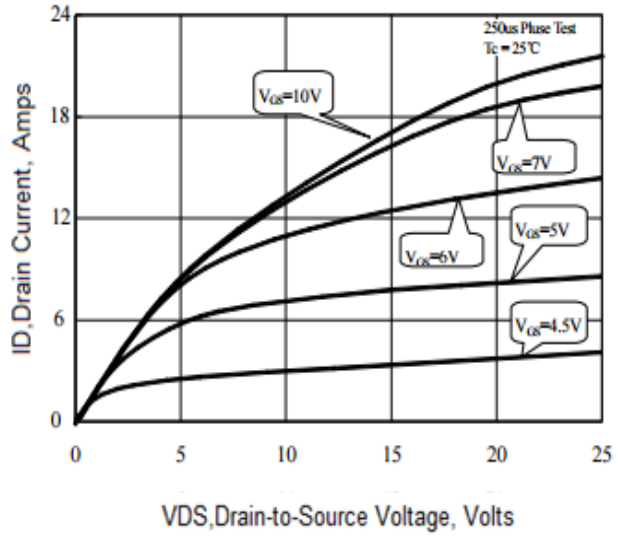
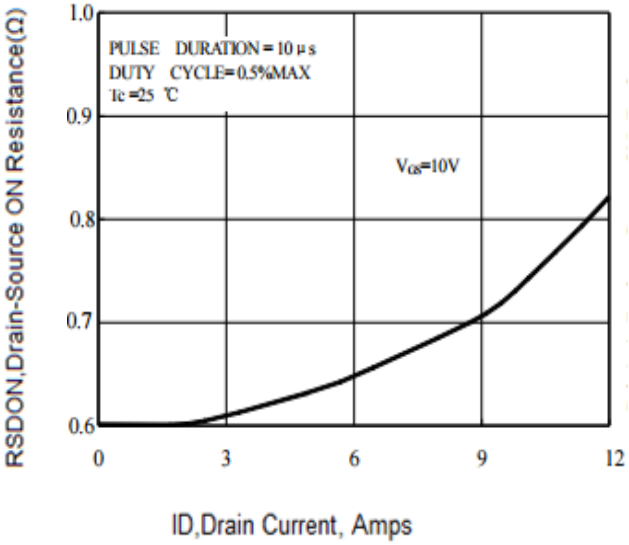
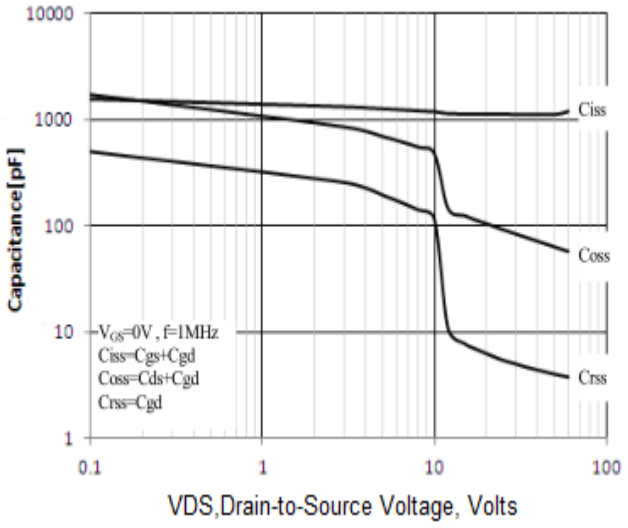
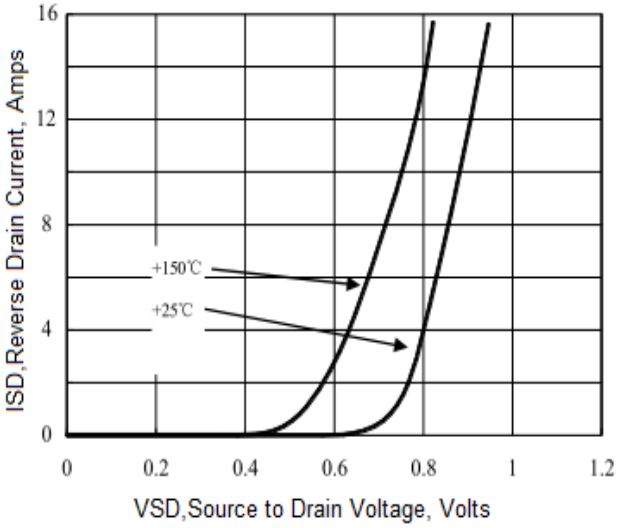
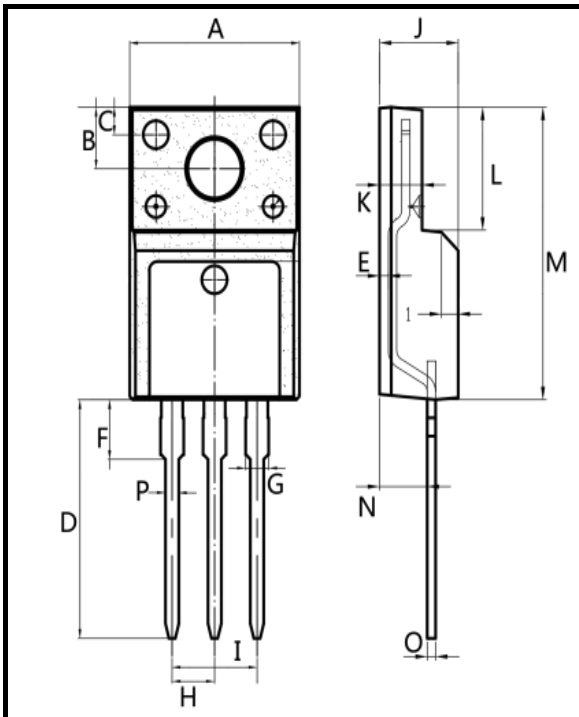








Package Outline Dimensions millimeters **TO220F**



Dim.	Min.	Max.
A	9.9	10.3
B	2.9	3.5
C	1.15	1.45
D	12.75	13.25
E	0.55	0.75
F	3.1	3.5
G	1.25	1.45
H	Typ 2.54	
I	Typ 5.08	
J	4.55	4.75
K	2.4	2.7
L	6.35	6.75
M	15	16
N	2.75	3.15
O	0.45	0.6
P	0.7	0.9
All Dimensions in millimeter		