



TO-220F Plastic-Encapsulate MOSFETS

CJPF07N65

N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
650V	1.1 Ω @10V	7.4A

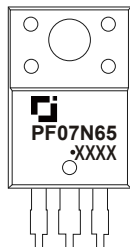
GENERAL DESCRIPTION

This advanced high voltage MOSFET is designed to stand high energy in the avalanche mode and switch efficiently. This new high energy device also offers a drain-to-source diode fast recovery time. Designed for high voltage, high speed switching applications such as power supplies, converters, power motor controls and bridge circuits.

FEATURE

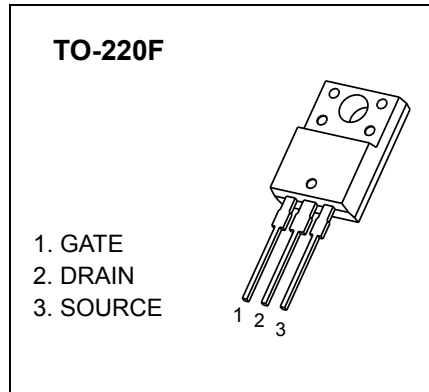
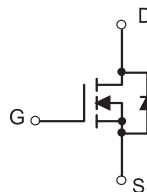
- High Current Rating
- Lower $R_{DS(on)}$
- Lower Capacitance
- Lower Total Gate Charge
- Tighter V_{SD} Specifications
- Avalanche Energy Specified
- Fast Switching Capability

MARKING



PF07N65 = Device code.
Solid dot = Green molding compound device,
if none, the normal device.
XXXX = Code.

EQUIVALENT CIRCUIT



ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current	I_D ①	7.4	A
Pulsed Drain Current	I_{DM} ②	29.6	A
Single Pulsed Avalanche Energy	E_{AS} ③	500	mJ
Maximum Power Dissipation	P_D ①	50	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case	$R_{\theta JC}$ ①	2.5	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	$^\circ\text{C}$

MOSFET ELECTRICAL CHARACTERISTICS

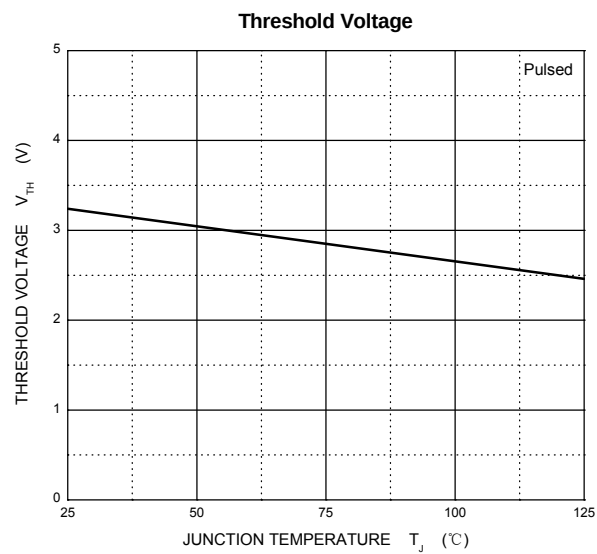
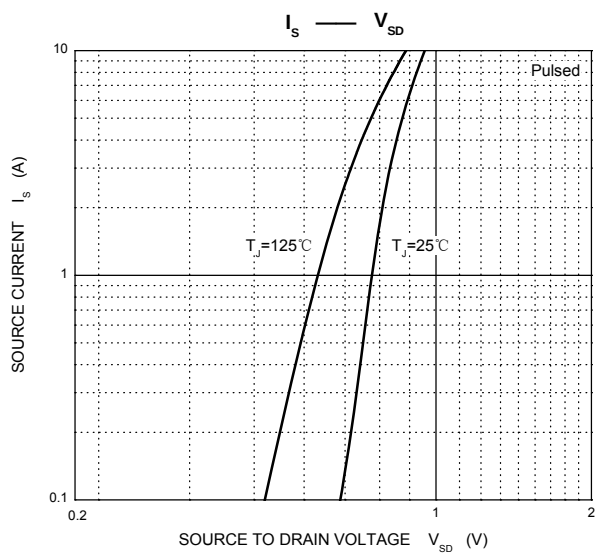
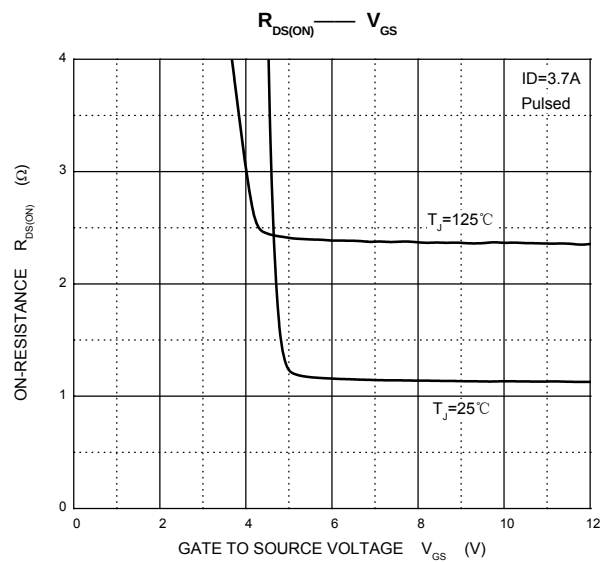
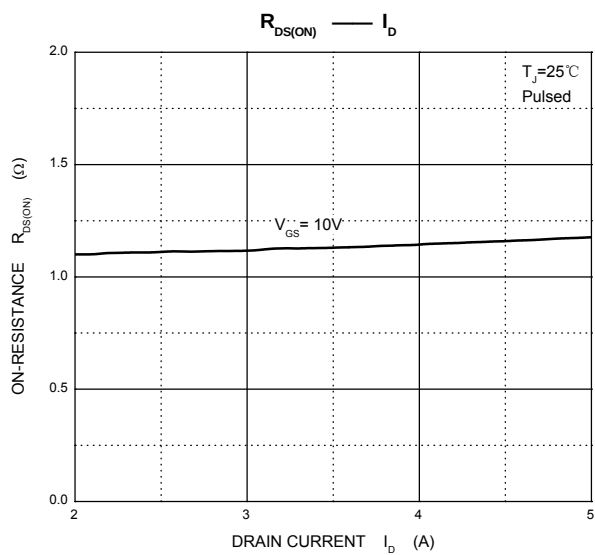
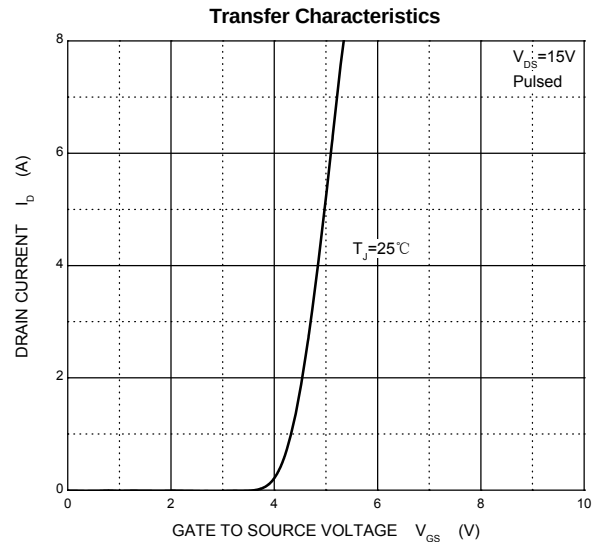
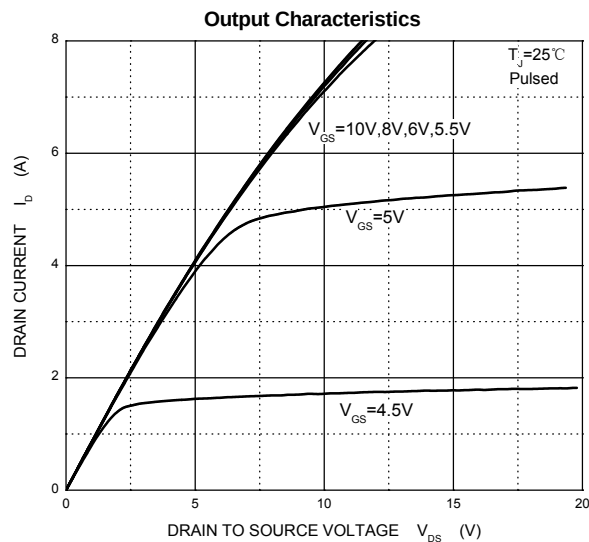
$T_a=25^{\circ}\text{C}$ unless otherwise specified

Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
Off characteristics							
Drain-source breakdown voltage	V _{(BR) DSS}	V _{GS} = 0V, I _D =250μA		650			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =520V,	T _J =25 ℃			10	μA
		V _{GS} =0V	T _J =125 ℃			20	
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±30V				±100	nA
On characteristics ^④							
Gate-threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA		2	3.2	4	V
Static drain-source on-sate resistance	R _{DS(on)}	V _{GS} =10V, I _D =3.7A			1.1	1.3	Ω
Forward transconductance	g _{Fs}	V _{DS} =40V, I _D =3.7A		5			S
Dynamic characteristics ^{④ ⑤}							
Input capacitance	C _{iss}	V _{DS} =25V,V _{GS} =0V, f =1MHz			1130	2260	pF
Output capacitance	C _{oss}				91	182	
Reverse transfer capacitance	C _{rss}				3	6	
Gate resistance	R _g	f =1MHz			4.6		Ω
Switching characteristics ^{④ ⑤}							
Total gate charge	Q _g	V _{GS} =10V, V _{DS} =520V, I _D =7.4A			23	46	nC
Gate-source charge	Q _{gs}				4.7	9.4	
Gate-drain charge	Q _{gd}				8.5	17	
Turn-on delay time	t _{d(on)}	V _{DD} =325V, V _{GS} =10V,R _G =25Ω , ID=7.4A			70		ns
Turn-on rise time	t _r				170		
Turn-off delay time	t _{d(off)}				140		
Turn-off fall time	t _f				130		
Drain-Source Diode Characteristics							
Drain-source diode forward voltage	V _{SD} ^④	V _{GS} =0V, I _S =7.4A				1.4	V
Continuous drain-source diode forward current	I _S ^①					7.4	A
Pulsed drain-source diode forward current	I _{SM} ^②					29.6	A

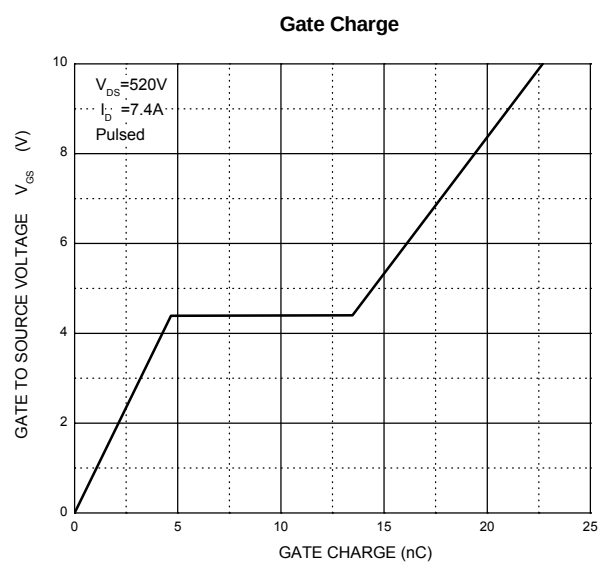
Notes:

1. $T_C=25^{\circ}\text{C}$ Limited only by maximum temperature allowed.
2. $P_W \leq 10\mu s$, Duty cycle $\leq 1\%$.
3. EAS condition: $V_{DD}=50V, V_{GS}=10V, L=10\text{mH}, R_g=25\Omega$ Starting $T_J=25^{\circ}\text{C}$.
4. Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
5. Guaranteed by design, not subject to production.

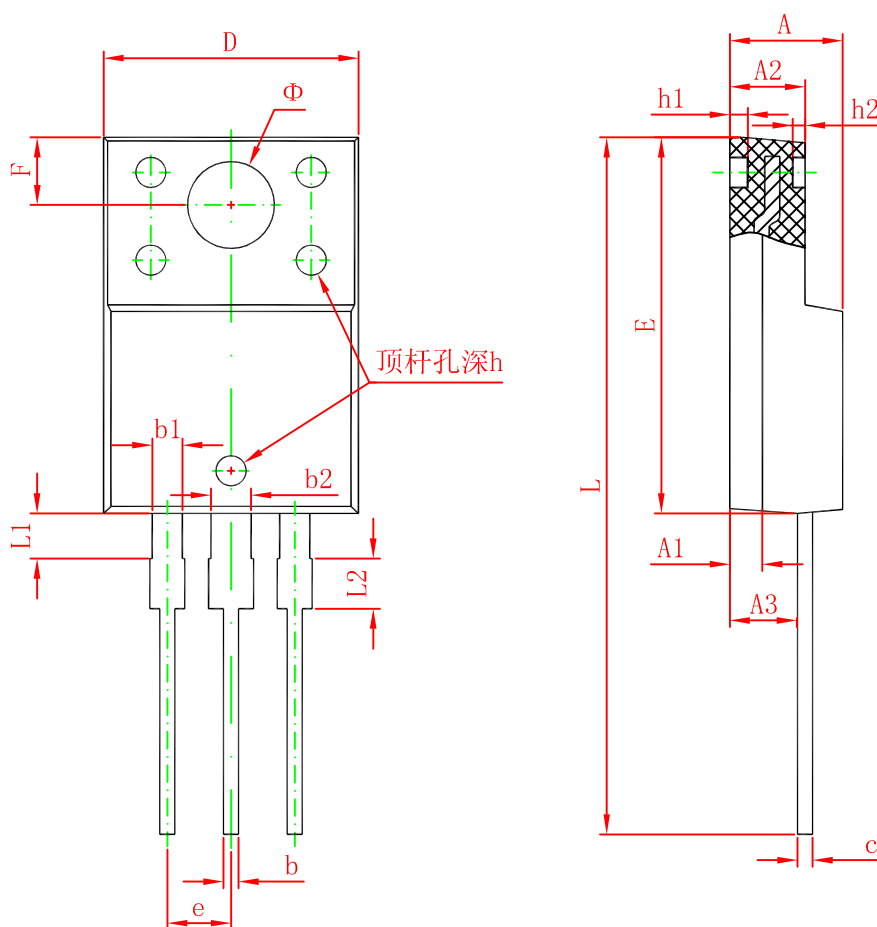
Typical Characteristics



Typical Characteristics



TO-220F Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.300	4.700	0.169	0.185
A1	1.300 REF.		0.051 REF.	
A2	2.800	3.200	0.110	0.126
A3	2.500	2.900	0.098	0.114
b	0.500	0.750	0.020	0.030
b1	1.100	1.350	0.043	0.053
b2	1.500	1.750	0.059	0.069
c	0.500	0.750	0.020	0.030
D	9.960	10.360	0.392	0.408
E	14.800	15.200	0.583	0.598
e	2.540 TYP.		0.100 TYP.	
F	2.700 REF.		0.106 REF.	
Φ	3.500 REF.		0.138 REF.	
h	0.000	0.300	0.000	0.012
h1	0.800 REF.		0.031 REF.	
h2	0.500 REF.		0.020 REF.	
L	28.000	28.400	1.102	1.118
L1	1.700	1.900	0.067	0.075
L2	0.900	1.100	0.075	0.083