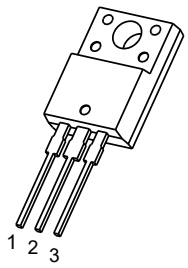
TO-220F Plastic-Encapsulate MOSFETS

PF130SN10 N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$TYP	I_D
100V	5.0mΩ@10V	130A

TO-220F



1. GATE
2. DRAIN
3. SOURCE

DESCRIPTION

The PF130SN10 uses shielded gate trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications

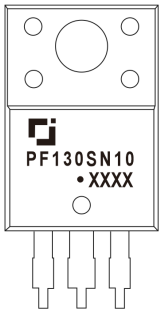
FEATURES

- Low $R_{DS(on)}$
- Low Gate Charge

APPLICATIONS

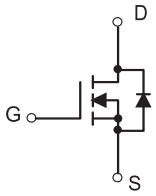
- High efficiency power supply
- Secondary synchronus rectifier

MARKING



PF130SN10 = Device code
Solid dot = Green molding compound device, if none, the normal device
XXXX = Code

EQUIVALENT CIRCUIT



ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current	I_D ①	130	A
Pulsed Drain Current	I_{DM} ②	390	
Maximum Power Dissipation	P_D	2.0	W
Single Pulsed Avalanche Energy	E_{AS} ③	500	mJ
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	62	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	
Lead Temperature for Soldering Purposes(1/8" from case for 10s)	T_L	260	

MOSFET ELECTRICAL CHARACTERISTICS

T_a=25℃ 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 =250uA	100			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =100V, V_{GS} =0V			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
On characteristics ④						
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250uA	2.0	3.0	4.0	V
Static drain-source on-sate resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =12A		5.0	6.0	mΩ
Dynamic characteristics ④⑤						
Input capacitance	C_{iss}	V_{DS} =50V,V_{GS} =0V, f =100KHz		6660		pF
Output capacitance	C_{oss}			821		
Reverse transfer capacitance	C_{rss}			17		
Gate resistance	R_g	f =1MHz		3.2		Ω
Switching characteristics ④⑤						
Total gate charge	Q_g	V_{GS}=10V, V_{DS}=50V, I_D=22A		91		nC
Gate-source charge	Q_{gs}			23		
Gate-drain charge	Q_{gd}			13		
Turn-on delay time	$t_{d(on)}$	V_{DS}=50V,I_D=22A , V_{GS}=10V,R_G=2.2Ω		28.2		ns
Turn-on rise time	t_r			7.5		
Turn-off delay time	$t_{d(off)}$			81.9		
Turn-off fall time	t_f			20.1		
Drain-Source Diode Characteristics						
Drain-source diode forward voltage(note1)	V_{SD} ④	V_{GS} =0V, I_S=20A			1.3	V
Continuous drain-source diode forward current	I_S ①				130	A
Pulsed drain-source diode forward current	I_{SM} ②				390	A

Notes:

1.T_C=25℃ Limited only by maximum temperature allowed.

2.P_W≤10μs, Duty cycle≤1%.

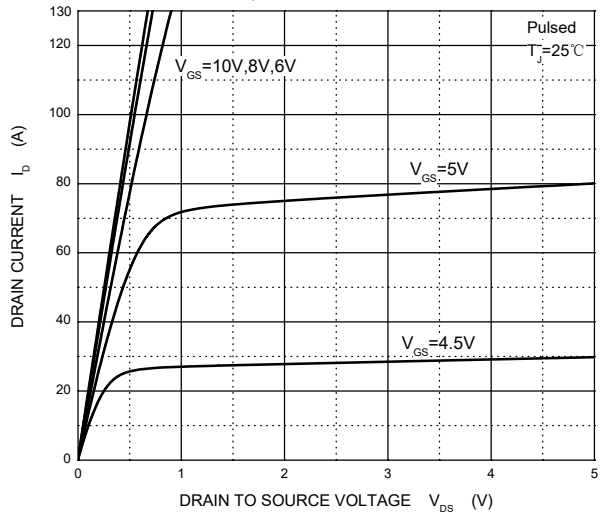
3.EAS condition: V_{DD}=30V,V_{GS}=10V, L=0.5mH, Rg=25Ω Starting T_J = 25°℃.

4.Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.

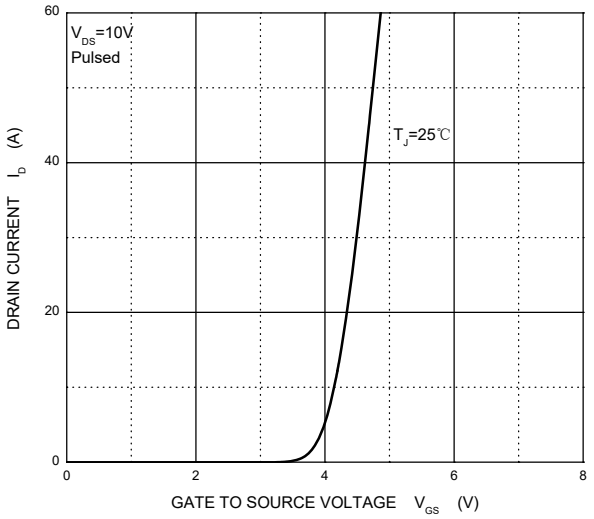
5.Guaranteed by design, not subject to production.

Typical Characteristics

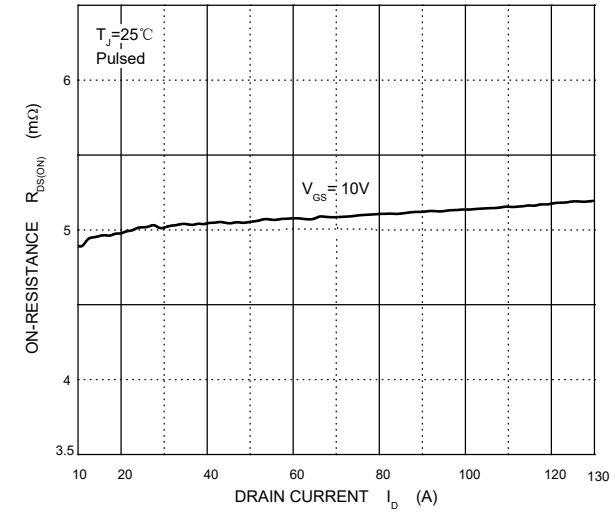
Output Characteristics



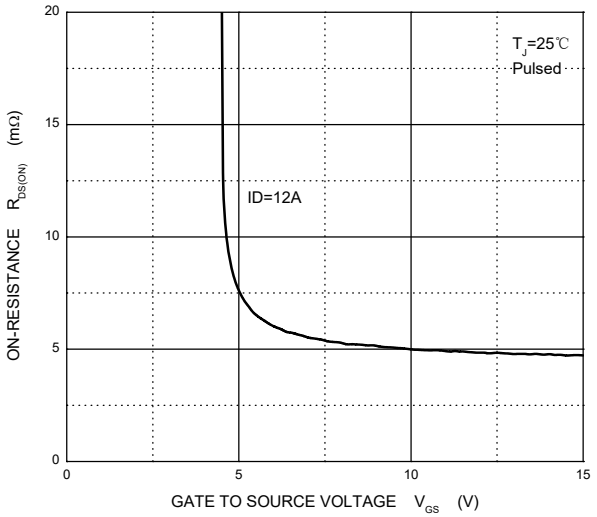
Transfer Characteristics



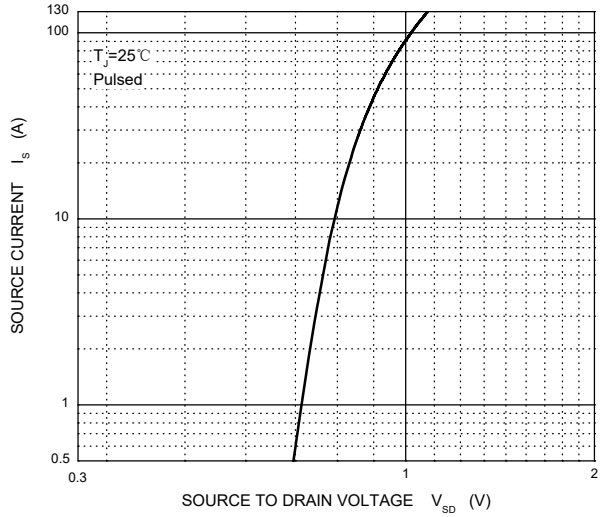
$R_{DS(ON)}$ —— I_D



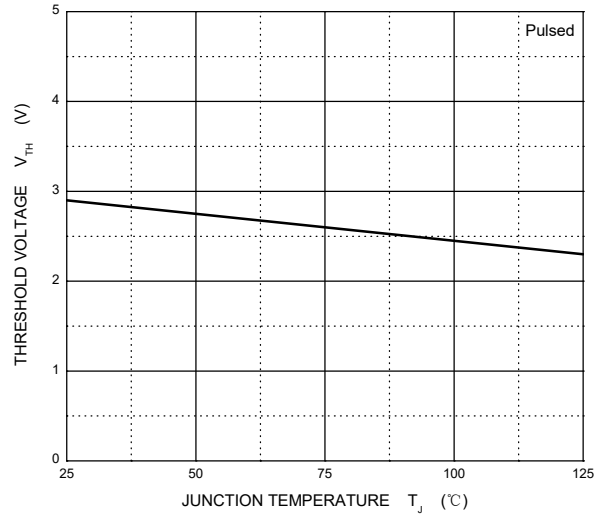
$R_{DS(ON)}$—— V_{GS}



I_S —— V_{SD}

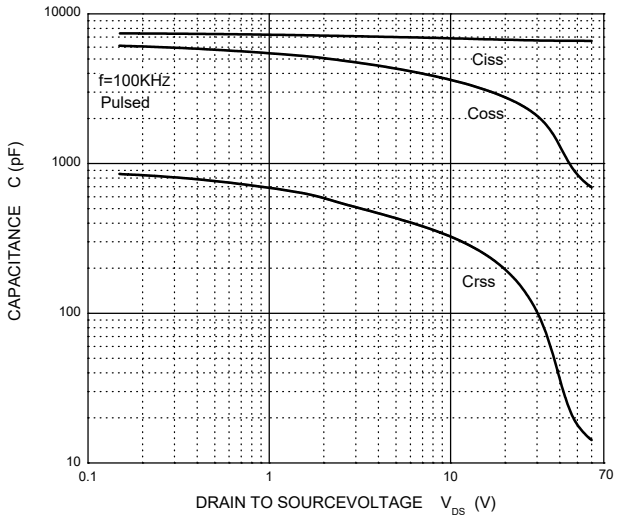


Threshold Voltage

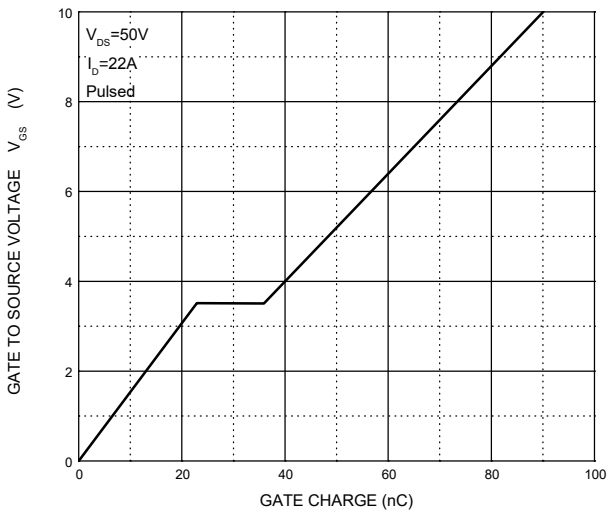


Typical Characteristics

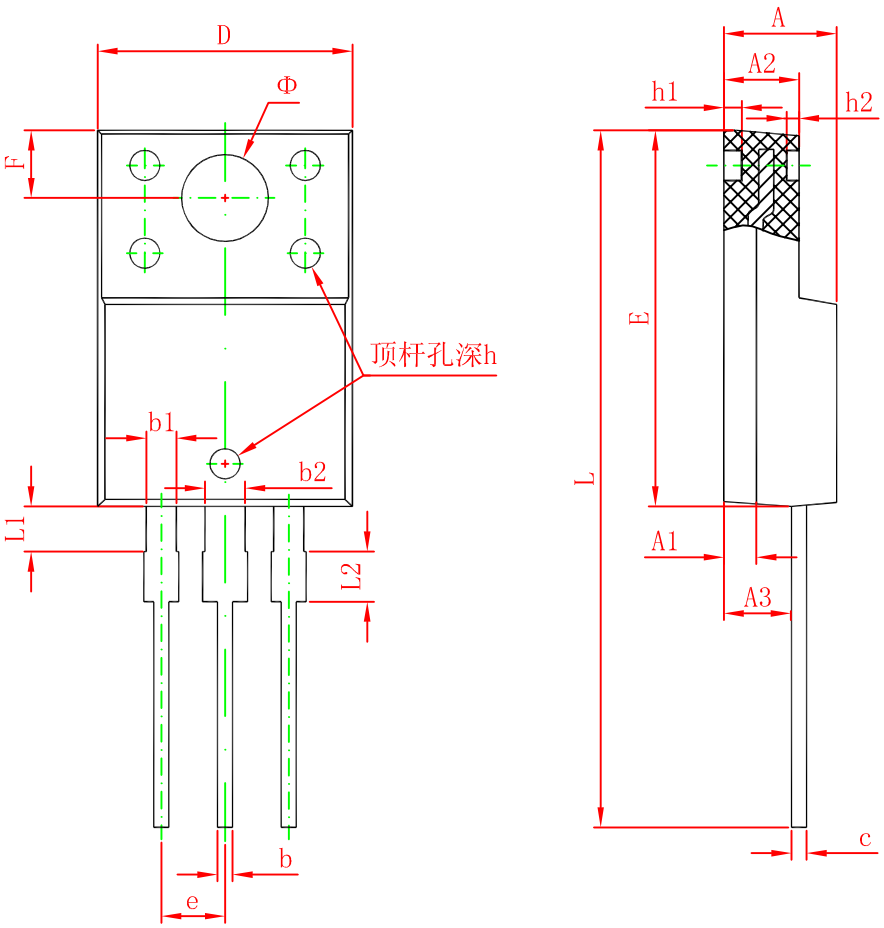
Capacitances



Gate Charge



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	1.900	2.100	0.075	0.083