

## N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET

SIF20N50C

●特点：热阻低 开关速度快 输入阻抗高 符合RoHS规范

●FEATURES: ■LOW THERMAL RESISTANCE ■FAST SWITCHING ■HIGH INPUT RESISTANCE  
■RoHS COMPLIANT

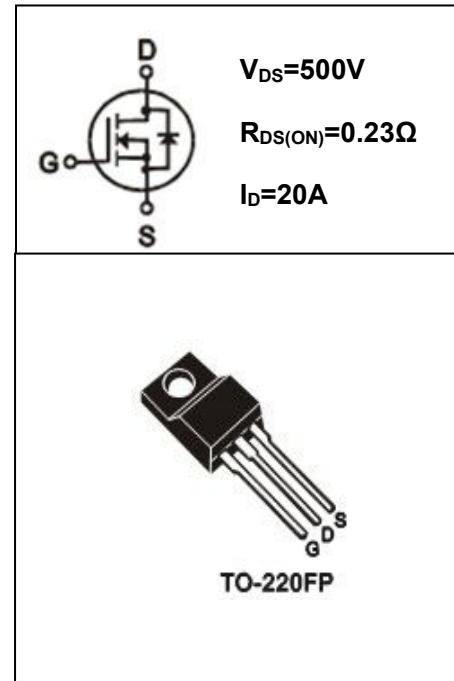
●应用：电子镇流器 电子变压器 开关电源

●APPLICATION: ■ELECTRONIC BALLAST ■ELECTRONIC TRANSFORMER ■SWITCH MODE POWER SUPPLY

●最大额定值 (TC=25°C)

●Absolute Maximum Ratings (Tc=25°C) TO-220FP

参数 PARAMETER	符号 SYMBOL	额定值 VALUE	单位 UNIT
漏-源电压 Drain-source Voltage	V <sub>DS</sub>	500	V
栅-源电压 gate-source Voltage	V <sub>GS</sub>	±30	V
漏极电流 Continuous Drain Current TC=25°C	I <sub>D</sub>	20*	A
漏极电流 Continuous Drain Current TC=100°C	I <sub>D</sub>	13*	A
最大脉冲电流 Drain Current - Pulsed ①	I <sub>DM</sub>	80*	A
耗散功率 Power Dissipation	P <sub>D</sub>	65	W
最高结温 Junction Temperature	T <sub>j</sub>	150	°C
存储温度 Storage Temperature	T <sub>STG</sub>	-55-150	°C
单脉冲雪崩能量 Single Pulse Avalanche Energy②	E <sub>AS</sub>	1000	mJ



\*漏极电流由最高结温限制

\*Drain current limited by maximum junction temperature

●电特性 (Tc=25°C)

●Electronic Characteristics (Tc=25°C)

参数 PARAMETER	符号 SYMBOL	测试条件 TEST CONDITION	最小值 MIN	典型值 TYP	最大值 MAX	单位 UNIT
漏-源击穿电压 Drain-source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	500			V
击穿电压温度系数 Breakdown Voltage Temperature Coefficient	Δ BV <sub>DSS</sub> / Δ T <sub>j</sub>	I <sub>D</sub> =250uA, Referenced to 25°C		0.6		V/°C
栅极开启电压 Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250μA	3.0		5.0	V
漏-源漏电流 Drain-source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =500V, V <sub>GS</sub> =0V, T <sub>j</sub> =25°C			1	μA
		V <sub>DS</sub> =400V, V <sub>GS</sub> =0V, T <sub>j</sub> =125°C			10	μA
跨导 Forward Transconductance	g <sub>f</sub> s	V <sub>DS</sub> =40V, I <sub>D</sub> =10A ③		11		S

●订单信息/ORDERING INFORMATION:

包装形式/PACKING	订货编码/ORDERING CODE	
	普通塑封料/ Normal Package Material	无卤塑封料/Halogen Free
TO-220FP 条管装/TUBE PACKING	SIF20N50C TO-220FP-TU	SIF20N50C TO-220FP-TU-HF

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参数 PARAMETER	符号 SYMBOL	测试条件 TEST CONDITION	最小值 MIN	典型值 TYP	最大值 MAX	单位 UNIT
栅极漏电流 Gate-body Leakage Current ( $V_{DS} = 0$ )	$I_{GSS}$	$V_{GS} = \pm 30V$			$\pm 100$	nA
漏-源导通电阻 Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 10A$ ③		0.23	0.26	$\Omega$
输入电容 Input Capacitance	$C_{iss}$	$V_{GS} = 0V, V_{DS} = 25V$ $F = 1.0MHz$		2650		pF
输出电容 Output Capacitance	$C_{oss}$			290		
反向传输电容 Reverse transfer Capacitance	$C_{rss}$			38		
关断延迟 Turn -Off Delay Time	$T_{d(off)}$	$V_{DD} = 320V, I_D = 20A$ $R_G = 5\Omega$ ③		62		ns
栅极电荷 Total Gate Charge	$Q_g$	$I_D = 10A, V_{DS} = 320V$ $V_{GS} = 10V$ ③		46		nC
栅源电荷 Gate-to-Source Charge	$Q_{gs}$			13		nC
栅漏电荷 Gate-to-Drain Charge	$Q_{gd}$			21		nC
二极管正向电流 Continuous Diode Forward Current	$I_s$				20	A
二极管正向压降 Diode Forward Voltage	$V_{SD}$	$T_j = 25^\circ C, I_s = I_f$ $V_{GS} = 0V$ ③			1.5	V
反向恢复时间 Reverse Recovery Time	$t_{rr}$	$T_j = 25^\circ C, I_f = 20A$ $di/dt = 100A/\mu s$ ③			520	ns
反向恢复电荷 Reverse Recovery Charge	$Q_{rr}$			5.8		uC

### ●热特性

### ●Thermal Characteristics

参数 PARAMETER	符号 SYMBOL	最大值 MAX	单位 UNIT
		TO-220FP	
热阻结-壳 Thermal Resistance Junction-case	$R_{thJC}$	1.92	°C/W
热阻结-环境 Thermal Resistance Junction-ambient	$R_{thJA}$	62.5	°C/W

### 注释(Notes):

① 脉冲宽度：以最高节温为限制

Repetitive rating: Pulse width limited by maximum junction temperature

② Starting  $T_j = 25^\circ C, V_{DD} = 50V, L = 5mH, R_G = 25\Omega, I_{AS} = 20A$

③ 脉冲测试：脉冲宽度≤300μs，占空比≤2%

Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

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### ● 特性曲线

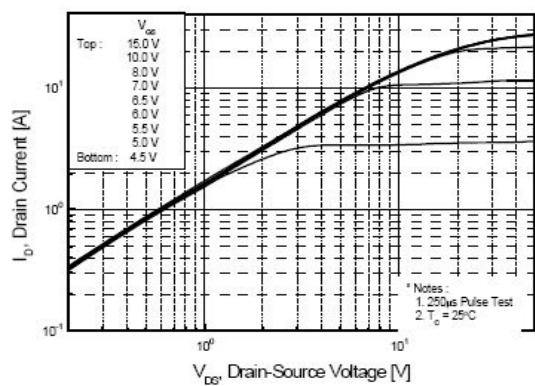


图 1 输出特性曲线,  $T_c=25^\circ\text{C}$

Fig1 Typical Output Characteristics,  $T_c=25^\circ\text{C}$

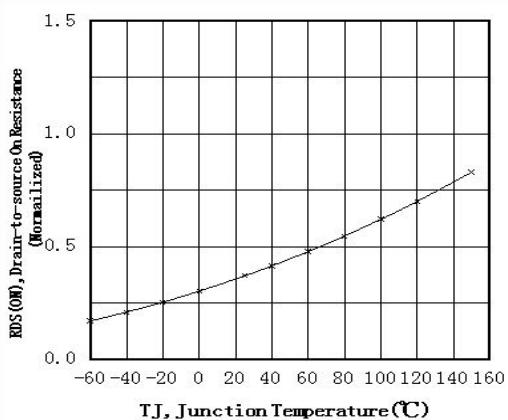


图 2 导通电阻与漏极电流和栅极电压曲线

Fig2 On-Resistance Vs.Drain Current and Gate Voltage

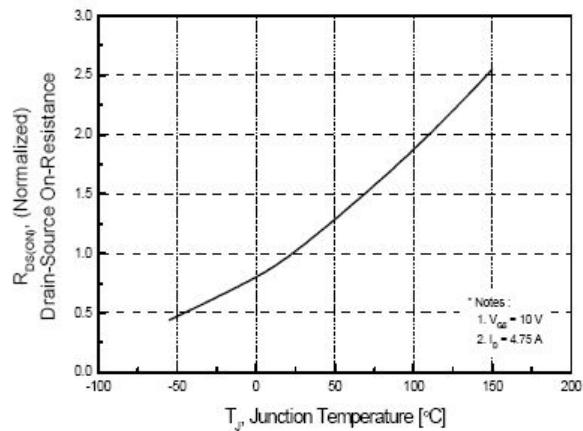


图 3 导通电阻与温度曲线

Fig3 Normalized On-Resistance Vs.Temperature

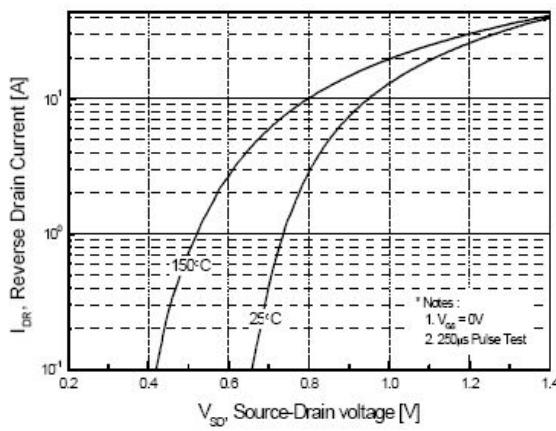


图 4 二极管正向电压曲线

Fig4 Typical Source-Drain Diode Forward Voltage

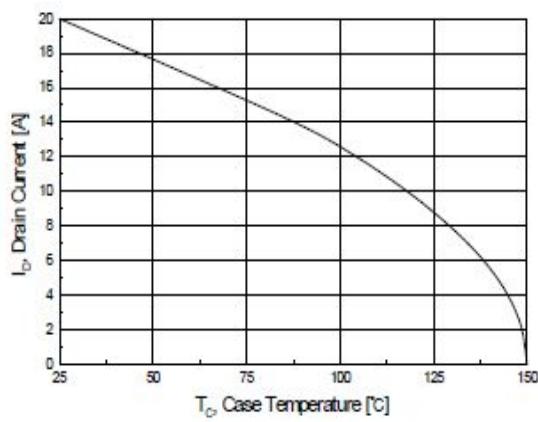


图 5 最大漏极电流与壳温曲线

Fig5 Maximum Drain Current Vs.Case Temperature

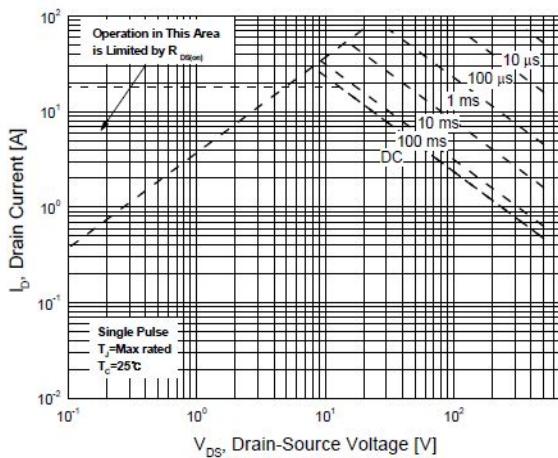


图 6 最大安全工作区曲线

Fig6 Maximum Safe Operating Area

## TO-220FP 封装机械尺寸 TO-220FP MECHANICAL DATA

单位:毫米/UNIT: mm

符号 <b>SYMBOL</b>	最小值 <b>min</b>	典型值 <b>nom</b>	最大值 <b>max</b>	符号 <b>SYMBOL</b>	最小值 <b>min</b>	典型值 <b>nom</b>	最大值 <b>max</b>
A	4.40		4.95	E	9.60		10.30
A <sub>1</sub>	2.30		2.90	e		2.54	
<b>b</b>	<b>0.70</b>		<b>0.90</b>	<b>L</b>	<b>12.40</b>		<b>14.00</b>
b <sub>1</sub>	1.18		1.45	L <sub>2</sub>	2.30		2.60
<b>c</b>	<b>0.40</b>		<b>0.70</b>	L <sub>3</sub>	3.00		4.00
D	14.50		17.00	øp	3.00		3.50
D1	6.10		9.00	Q	2.30		2.80

