佳恩半导体
JIAENSEMI

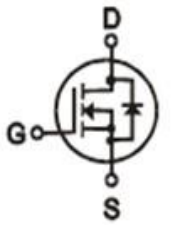
JFPC9N90C JFFM9N90C

N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET

●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-220/220F**

参数 PARAMETER	符号 SYMBOL	额定值 VALUE	单位 UNIT
漏-源电压 Drain-source Voltage	V_{DS}	900	V
栅-源电压 gate-source Voltage	V_{GS}	±30	V
漏极电流 Continuous Drain Current TC=25℃	I_D	9.0	A
漏极电流 Continuous Drain Current TC=100℃	I_D	6.2	A
最大脉冲电流 Drain Current －Pulsed ①	I_{DM}	36	A
耗散功率 Power Dissipation	P_{tot}	TO-220:167 TO-220F:56	W
最高结温 Junction Temperature	Tj	150	°C
存储温度 Storage Temperature	T_{STG}	-55-150	°C
单脉冲雪崩能量 Single Pulse Avalanche Energy ②	E_{AS}	515	mJ



V_{DS}=900V
$R_{DS(ON)}$=1.2Ω
I_D=9.0A

TO-220

TO-220FP

JFPC9N90C　JFFM9N90C

●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_{DSS}	V_{GS}=0V, I_D=250μA	900			V
击穿电压温度系数 Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta Tj$	I_D=250uA, Referenced to 25°C		0.65		V/°C
栅极开启电压 Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS}, I_D=250μA	3.0		5.0	V
漏-源漏电流 Drain-source Leakage Current	I_{DSS}	V_{DS} =900V, V_{GS} =0V, Tj=25°C			1	μA
		V_{DS} =720V, V_{GS} =0V, Tj=125°C			10	μA
跨导 Forward Transconductance	gfs	V_{DS} =40V, I_D=3.0A ③		5.0		S

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} =±30V			±100	nA
漏-源导通电阻 Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS} =10V, I_D=4.5A ③		1.2	1.5	Ω
输入电容 Input Capacitance	Ciss	V_{GS} = 0V, V_{DS} = 25V F = 1.0MHZ		1680		pF
输出电容 Output Capacitance	Coss			137		
反向传输电容 Reverse transfer Capacitance	Crss			20		
关断延迟 Turn -Off Delay Time	Td(off)	V_{DD}=350V, I_D =9.0A R_G=25Ω ③		80		ns
栅极电荷 Total Gate Charge	Qg	I_D =9.0A, V_{DS} = 720V V_{GS} = 10V ③		34		nC
栅源电荷 Gate-to-Source Charge	Qgs			9.9		nC
栅漏电荷 Gate-to-Drain Charge	Qgd			1.2		nC
二极管正向电流 Continuous Diode Forward Current	I_S				9.0	A
二极管正向压降 Diode Forward Voltage	V_{SD}	Tj=25°C, Is=9.0A V_{GS} =0V ③			1.4	V
反向恢复时间 Reverse Recovery Time	trr	Tj=25°C,If=9.0A di/dt=100A/μs ③		320		ns
反向恢复电荷 Reverse Recovery Charge	Qrr			2.4		uC

●热特性

●Thermal Characteristics

参数 PARAMETER	符号 SYMBOL	最大值 MAX		单位 UNIT
		TO-220	TO-220F	
热阻结-壳 Thermal Resistance Junction-case	Rth_{JC}	0.75	2.23	℃/W
热阻结-环境 Thermal Resistance Junction-ambient	Rth_{JA}	62.5	62.5	℃/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 初始结温=25ºC, V_{DD} =50V, L=19.5mH, R_G =25Ω, I_{AS}=9.0A

Starting Tj=25ºC, V_{DD} =50V, L=19.5mH, R_G =25Ω, I_{AS}=9.0A

③ 脉冲测试：脉冲宽度≤ 300μs ， 占空比≤ 2 %

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

● 特性曲线

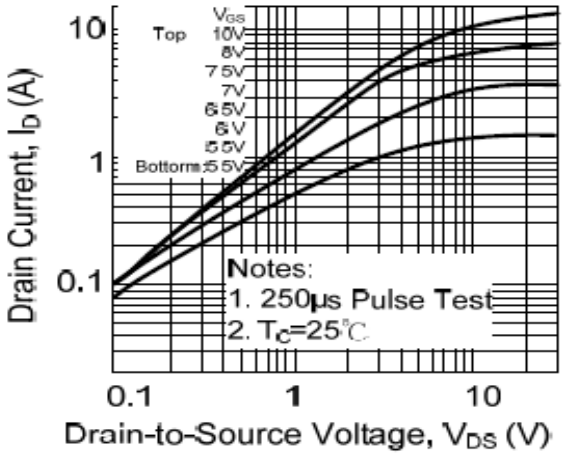


图 1 输出特性曲线, Tc=25℃

Fig1 Typical Output Characteristics, Tc=25℃

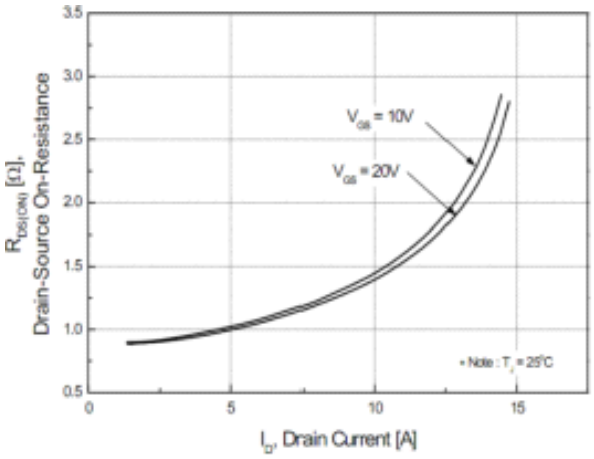


图 2 导通电阻与漏极电流和栅极电压曲线

Fig2 On-Resistance Vs.Drain Current and Gate Voltage

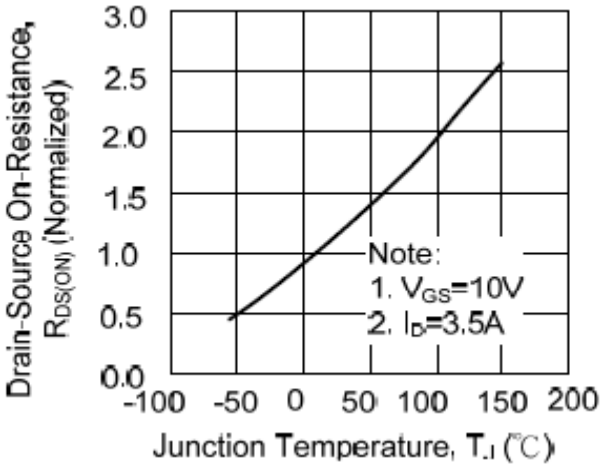


图 3 导通电阻与温度曲线

Fig3 Normalized On-Resistance Vs.Temperature

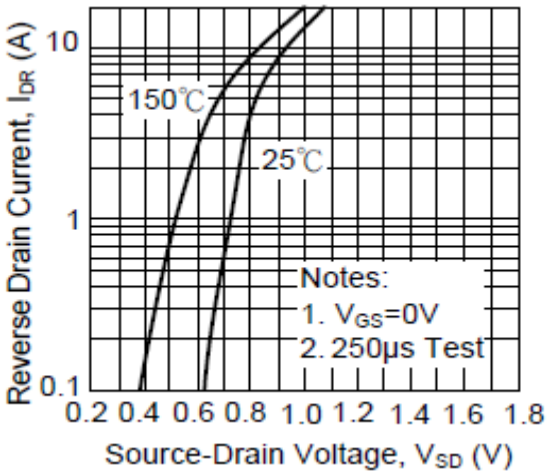


图 4 二极管正向电压曲线

Fig4 Typical Source-Drain Diode Forward Voltage

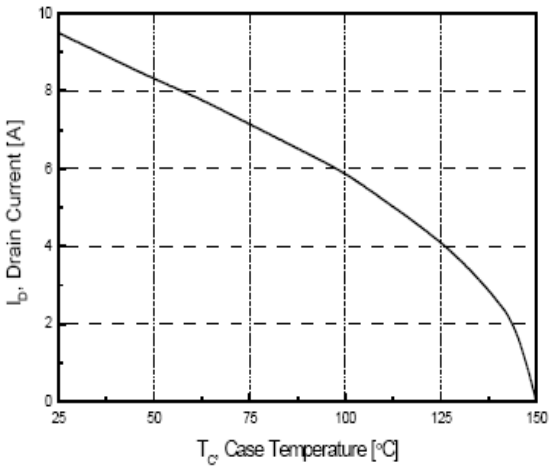


图 5 最大漏极电流与壳温曲线

Fig5 Maximum Drain Current Vs.Case Temperature

● 特性曲线

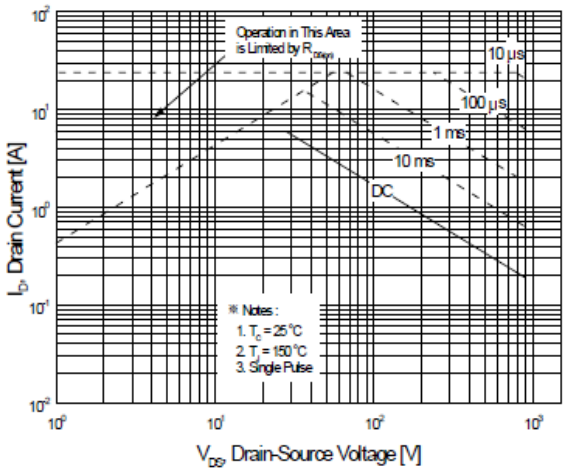


图 6-1　9N90(TO-220)
最大安全工作区曲线
Fig6-1 Maximum Safe Operating Area

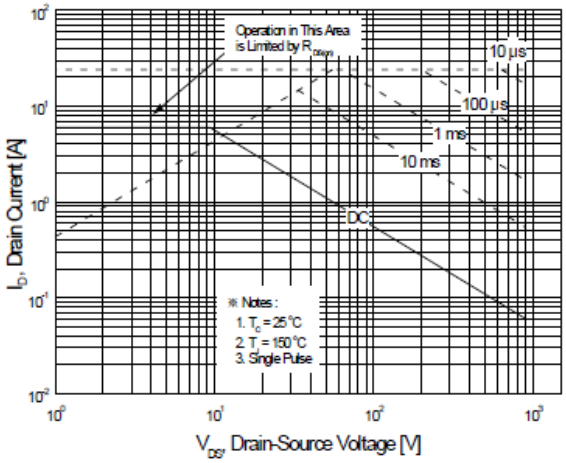


图 6-2　9N90(TO-220F)
最大安全工作区曲线
Fig6-2 Maximum Safe Operating Area