

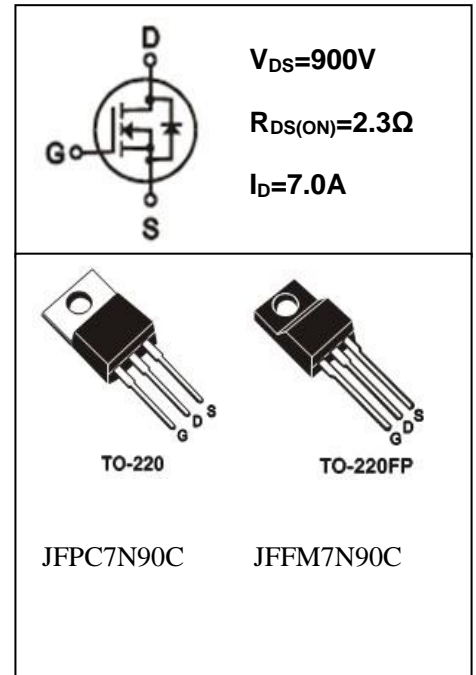
N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET

- 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°C	I _D	7.0	A
漏极电流 Continuous Drain Current TC=100°C	I _D	4.5	A
最大脉冲电流 Drain Current — Pulsed ①	I _{DM}	24	A
耗散功率 Power Dissipation	P _{tot}	TO-220:167	W
		TO-220F:48	
最高结温 Junction Temperature	T _j	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



●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	ΔBV _{DSS} /ΔT _j	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, T _j =25°C			1	μA
		V _{DS} =720V, V _{GS} =0V, T _j =125°C			10	μA
跨导 Forward Transconductance	g _{fs}	V _{DS} =40V, I _D =3.5A 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}	$V_{GS} = \pm 30V$			± 100	nA
漏-源导通电阻 Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 3.5A$ ③		1.7	2.3	Ω
输入电容 Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 25V$ $F = 1.0MHz$		1540		pF
输出电容 Output Capacitance	C_{oss}			102		
反向传输电容 Reverse transfer Capacitance	C_{rss}			9		
关断延迟 Turn -Off Delay Time	$T_d(off)$	$V_{DD} = 350V, I_D = 7.0A$ $R_G = 25\Omega$ ③		80		ns
栅极电荷 Total Gate Charge	Q_g	$I_D = 7.0A, V_{DS} = 720V$ $V_{GS} = 10V$ ③		31		nC
栅源电荷 Gate-to-Source Charge	Q_{gs}			7.7		nC
栅漏电荷 Gate-to-Drain Charge	Q_{gd}			9.4		nC
二极管正向电流 Continuous Diode Forward Current	I_S				6.0	A
二极管正向压降 Diode Forward Voltage	V_{SD}	$T_j = 25^\circ C, I_S = 7.0A$ $V_{GS} = 0V$ ③			1.4	V
反向恢复时间 Reverse Recovery Time	t_{rr}	$T_j = 25^\circ C, I_f = 7.0A$ $di/dt = 100A/\mu s$ ③		320		ns
反向恢复电荷 Reverse Recovery Charge	Q_{rr}			2.4		μC

●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	R_{thJC}	0.75	2.60	$^\circ C/W$
热阻结-环境 Thermal Resistance Junction-ambient	R_{thJA}	62.5	62.5	$^\circ C/W$

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 初始结温= $25^\circ C$, $V_{DD} = 50V$, $L = 19.5mH$, $R_G = 25\Omega$, $I_{AS} = 7.0A$
 Starting $T_j = 25^\circ C$, $V_{DD} = 50V$, $L = 19.5mH$, $R_G = 25\Omega$, $I_{AS} = 7.0A$
- ③ 脉冲测试：脉冲宽度 $\leq 300\mu s$ ，占空比 $\leq 2\%$
 Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$

● 特性曲线

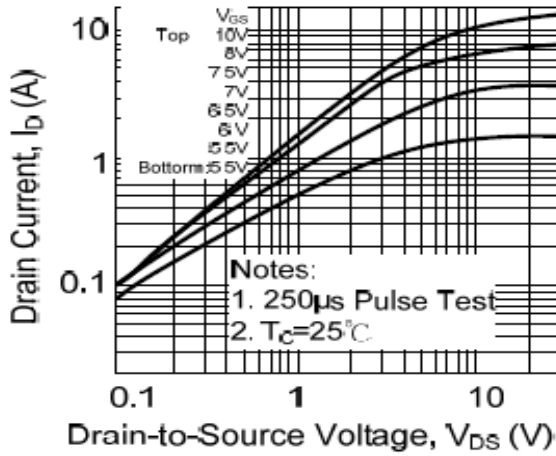


图 1 输出特性曲线, $T_c=25^\circ\text{C}$

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

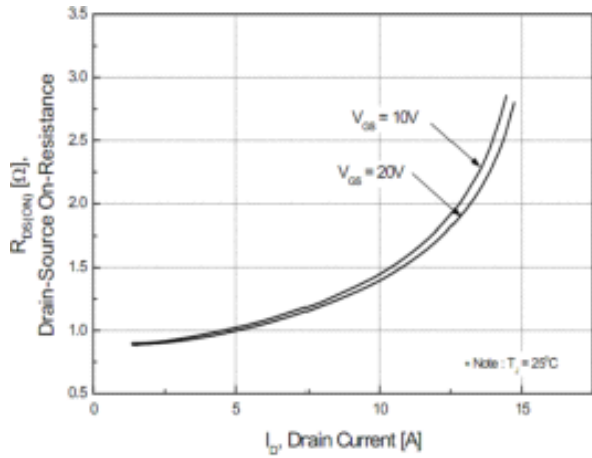


图 2 导通电阻与漏极电流和栅极电压曲线

Fig2 On-Resistance Vs. Drain Current and Gate Voltage

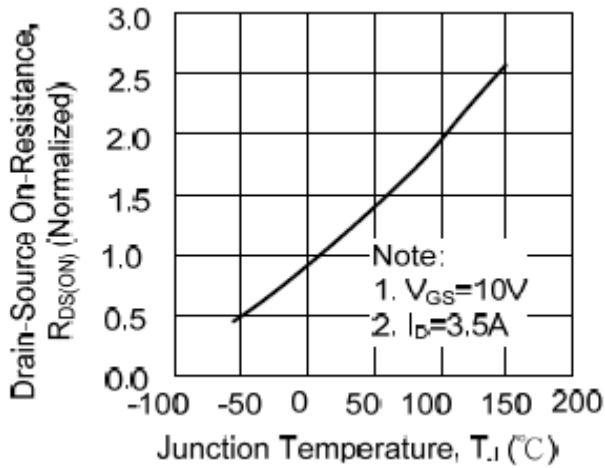


图 3 导通电阻与温度曲线

Fig3 Normalized On-Resistance Vs. Temperature

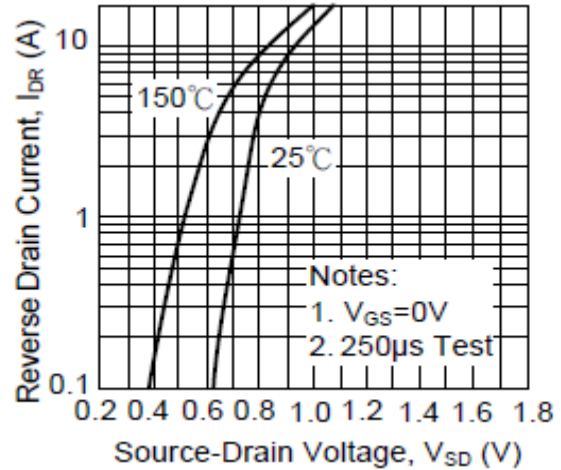


图 4 二极管正向电压曲线

Fig4 Typical Source-Drain Diode Forward Voltage

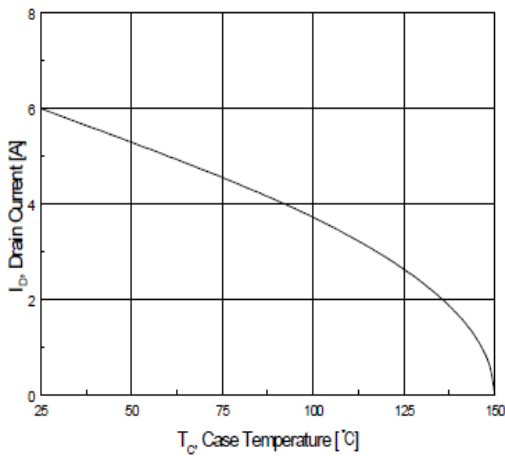


图 5 最大漏极电流与壳温曲线

Fig5 Maximum Drain Current Vs. Case Temperature

● 特性曲线

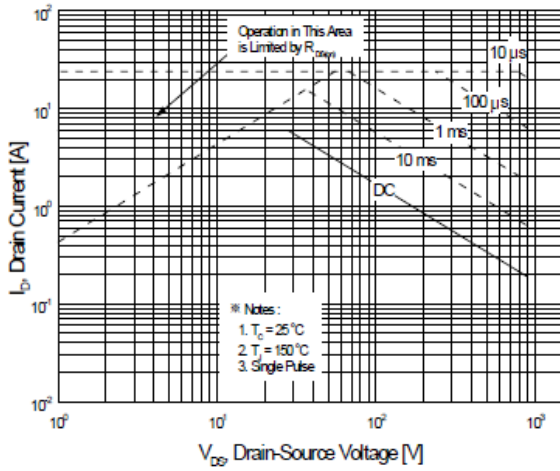


图 6-1 7N90C(TO-220)
最大安全工作区曲线
Fig6-1 Maximum Safe Operating Area

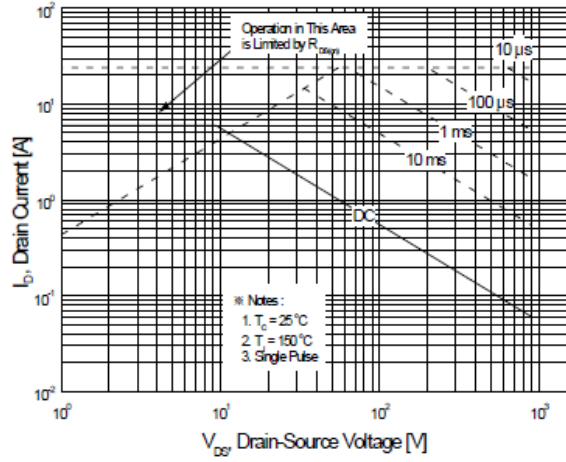


图 6-2 7N90C(TO-220F)
最大安全工作区曲线
Fig6-2 Maximum Safe Operating Area