N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET SIF9N10

●特点：导通电阻低　开关速度快　输入阻抗高　符合RoHS规范

●**FEATURES:** ■LOW ON-RESISTANCE ■FAST SWITCHING ■HIGH INPUT RESISTANCE ■RoHS COMPLIANT

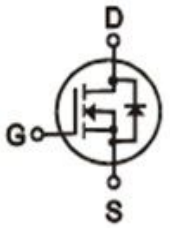
●应用：不间断电源　照明

●**APPLICATION:** ■UPS ■LIGHTING

●最大额定值（Tc=25°C）

●Absolute Maximum Ratings（Tc=25°C）　TO-92

参数 PARAMETER	符号 SYMBOL	额定值 VALUE	单位 UNIT
漏-源电压 Drain-source Voltage	V_{DS}	100	V
-源电压 gate-source Voltage	V_{GS}	±20	V
漏极电流 Continuous Drain Current TC=25℃	I_D	9	A
漏极电流 Continuous Drain Current TC=100℃	I_D	4.5	A
最大脉冲电流 Drain Current －Pulsed ①	I_{DM}	36	A
耗散功率 Power Dissipation	P_{tot}	2.5	W
最高结温 Junction Temperature	Tj	150	°C
z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}	100	mJ



V_{DS}=100V

$R_{DS(ON)}$=0.16Ω

I_d=9.0A

TO-92

●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	100			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		0.5		V/°C
栅极开启电压 Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS}, I_D=250μA	1.5		2.5	V
漏-源漏电流 Drain-source Leakage Current	I_{DSS}	V_{DS} =100V, V_{GS} =0V, Tj=25°C			1	μA
		V_{DS} =100V, V_{GS} =0V, Tj=125°C			10	μA
跨导 Forward Transconductance	gfs	V_{DS} =10V, I_D=4.5A ③	5.0			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-92 盒式编带/AMMOPACK	SIF9N10 TO-92-AP	SIF9N10 TO-92-AP-HF

N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET SIF9N10

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} =±10V			±100	nA
漏-源导通电阻 Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS} =4.5V, I_D=2.5A ③		0.21	0.3	Ω
漏-源导通电阻 Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS} =10V, I_D=4.5A ③		0.16	0.2	Ω
输入电容 Input Capacitance	Ciss	V_{GS} = 0V, V_{DS} = 25V F = 1.0MHZ		378		pF
关断延迟 Turn -Off Delay Time	Td(off)	V_{DD}=100V, I_D =9A R_G= 3.5Ω, R_D=25Ω ③		34		ns
栅极电荷 Total Gate Charge	Qg	I_D =9.0A, V_{DS} = 50V V_{GS} = 10V ③		9.50		nC
栅源电荷 Gate-to-Source Charge	Qgs			1.90		nC
栅漏电荷 Gate-to-Drain Charge	Qgd			3.10		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=9A V_{GS} =0V ③			1.45	V
反向恢复时间 Reverse Recovery Time	trr	Tj=25°C, If=9A di/dt=100A/μs ③			20	ns
反向恢复电荷 Reverse Recovery Charge	Qrr			138		nC

●热特性
●Thermal Characteristics

参数 PARAMETER	符号 SYMBOL	最大值 MAX	单位 UNIT
热阻结-壳 Thermal Resistance Junction-case	Rth_{JC}	50	℃/W
热阻结-环境 Thermal Resistance Junction-ambient	Rth_{JA}	140.0	℃/W

注释(Notes):

① 脉冲宽度：以最高结温为限制

Repetitive rating: Pulse width limited by maximum junction temperature

② 初始结温=25°C, V_{DD} =50V, L=2.0mH, R_G =25Ω, I_{AS}=8 A

Starting Tj=25°C, V_{DD} =50V, L=2.0mH, R_G =25Ω, I_{AS}=8 A

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

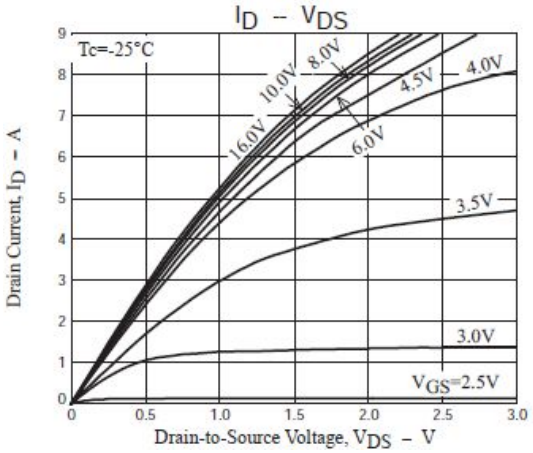


图 1 输出特性曲线, Tc=25℃

Fig1 Typical Output Characteristics, Tc=25℃

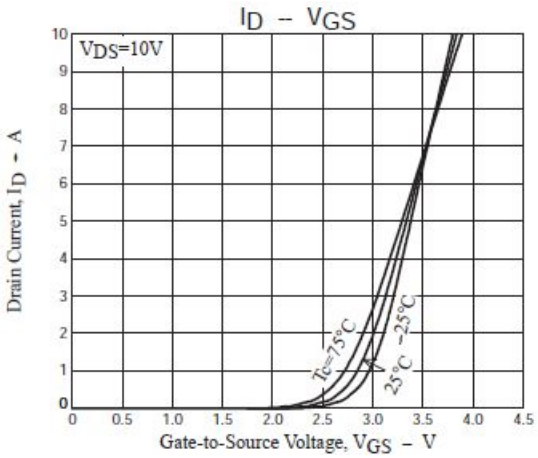


图 2 栅源开启电压与环境温度关系曲线

Fig2 Gate-to-Source Voltage Vs Case Temperature

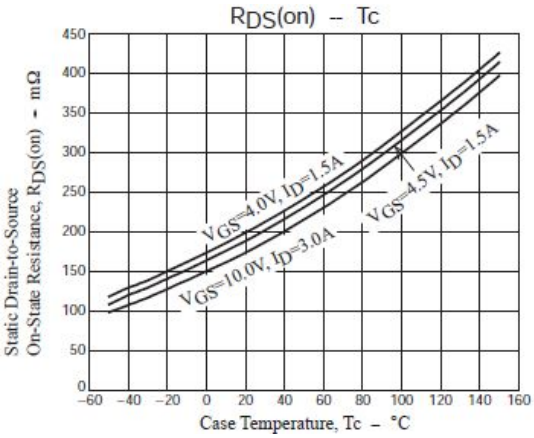


图 3 导通电阻与温度曲线

Fig3 Normalized On-Resistance Vs.Temperature

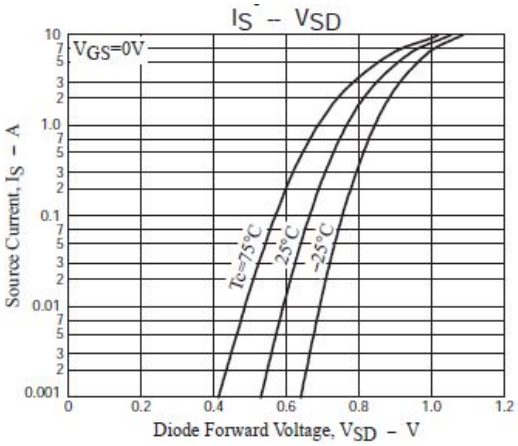


图 4 二极管正向压降与正向电流曲线

Fig4 Typical Source-Drain Diode Forward Voltage

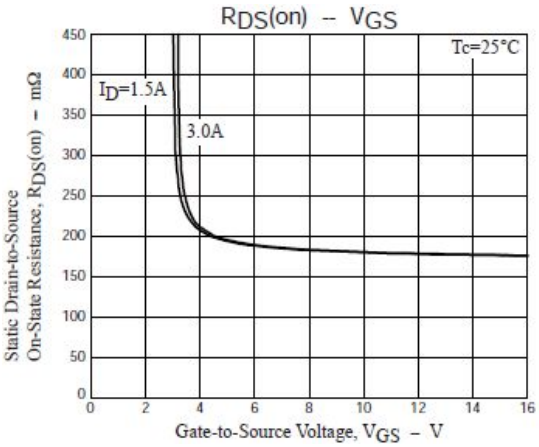


图 5 漏极电流与导通电阻曲线

Fig5 Drain-current Vs On-Resistance

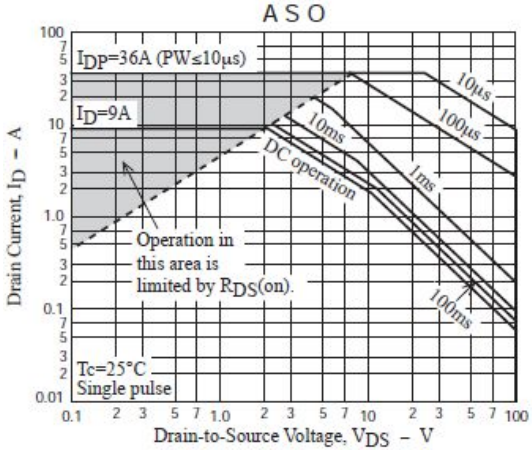
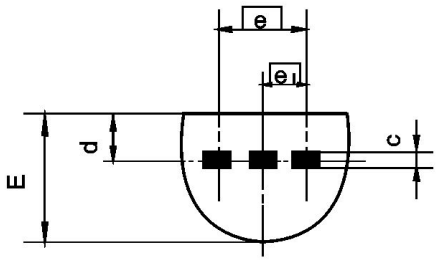
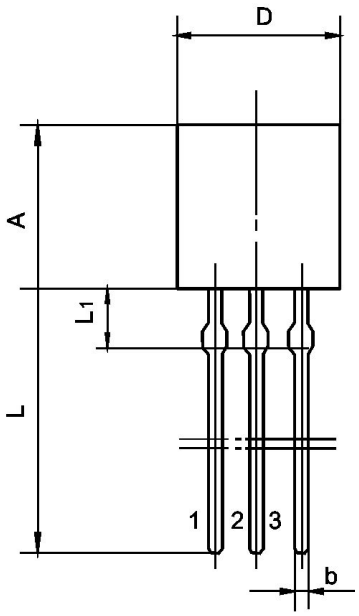


图 6 最大安全工作区

Fig6 Maximum Safe Operating Area

TO-92 封装机械尺寸
TO-92 MECHANICAL DATA

单位:毫米/UNIT：mm

符号/SYMBOL	最小值/min	典型值/nom	最大值/max
A	4.30		5.30
b	0.30		0.55
c	0.30		0.50
φD D	4.30		5.20
d	1.00		1.70
E	3.20		4.20
e		2.54	
e1		1.27	
L	12.70		15.00
L1	1.50		2.00