

N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET

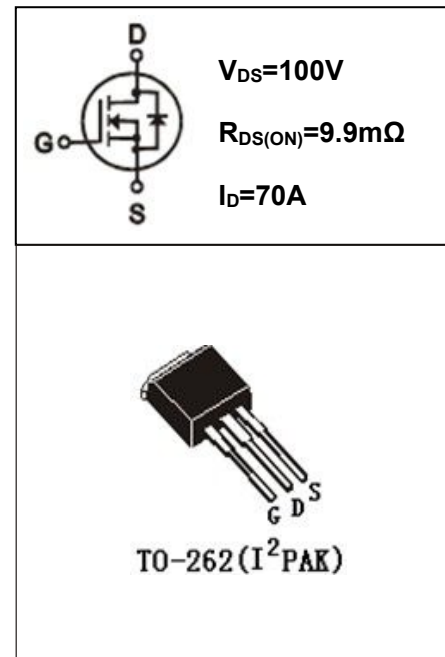
SIF70N100A

- 特点: 热阻低 导通电阻低 栅极电荷低, 开关速度快 输入阻抗高 符合RoHS规范
- FEATURES: ■LOW THERMAL RESISTANCE ■LOW $R_{DS(ON)}$ TO MINIMIZE CONDUCTIVE LOSS ■LOW GATE CHARGE FOR FAST SWITCHING ■HIGH INPUT RESISTANCE ■RoHS COMPLIANT
- 应用: 低压高频逆变电路 同步整流 开关
- APPLICATION: ■LOW VOLTAGE,HIGH FREQUENCY INVERTERS ■SYNCHRONOUS RECTIFIER ■PRIMARY SWITCH

●最大额定值 (TC=25°C)

●Absolute Maximum Ratings (Tc=25°C) TO-262

参数 PARAMETER	符号 SYMBOL	额定值 VALUE	单位 UNIT
漏-源电压 Drain-source Voltage	V_{DS}	100	V
栅-源电压 gate-source Voltage	V_{GS}	±20	V
漏极电流 Continuous Drain Current TC=25°C ①	I_D	70	A
耗散功率 Total Power Dissipation ①	P_{tot}	120	W
最高结温 Junction Temperature	T_J	150	°C
存储温度 Storage Temperature	T_{STG}	-55-175	°C
单脉冲雪崩能量 Single Pulse Avalanche Energy ②	E_{AS}	600	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}	$V_{GS}=0V, I_D=250\mu A$	100			V
栅极开启电压 Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.4		3	V
漏-源漏电流 Drain-source Leakage Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V,$			1	μA
栅极漏电流 Gate-body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			±100	nA
漏-源导通电阻 Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$		9.9	13	mΩ
		$V_{GS}=4.5V, I_D=9.5A$		12	16.5	
跨导 Forwad Transconductance	g_{FS}	$V_{DS}=50V, I_D=20A$	100			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-262 条管装/TUBE PACKING	SIF70N100A TO-262-TU	SIF70N100A TO-262-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
输入电容 Input Capacitance	Ciss	$V_{GS} = 0V, V_{DS} = 25V$ $F = 1.0MHz$		3100		pF
输出电容 Output Capacitance	Coss			355		
反向传输电容 Reverse Transfer Capacitance	Crss			237		
栅极电荷 Total Gate Charge	Qg	$I_D = 20A, V_{DS} = 80V$ $V_{GS} = 10V$		71		nC
栅源电荷 Gate-to-Source Charge	Qgs			12		nC
栅漏电荷 Gate-to-Drain Charge	Qgd			30		nC
导通延迟 Turn -On Delay Time	Td(on)	$V_{DD} = 50V, I_D = 20A$ $V_{GS} = 10V, R_{GEN} = 2.5\Omega$		15		ns
开启上升时间 Turn -On Rise Time	T _r			50		ns
关断延迟 Turn -Off Delay Time	Td(off)			40		ns
关断下降时间 Turn -Off Fall Time	T _f			55		ns
二极管正向压降 Diode Forward Voltage	V _{SD}	$T_j = 25^\circ C, I_F = 20A$ $V_{GS} = 0V$ ③			1.2	V
反向恢复时间 Reverse Recovery Time	t _{rr}	$I_f = 40A, di/dt = 100A/\mu s$ $T_j = 25^\circ C, \text{③}$		38	80	ns
反向恢复电荷 Reverse Recovery Charge	Q _{rr}			53	100	nC

● 热特性

● Thermal Characteristics

参数 PARAMETER	符号 SYMBOL	最大值 MAX	单位 UNIT
		TO-262	
热阻结-壳 Thermal Resistance Junction-case	R _{thJC}	0.89	°C/W
热阻结-环境 Thermal Resistance Junction-ambient	R _{thJA}	62.5	°C/W

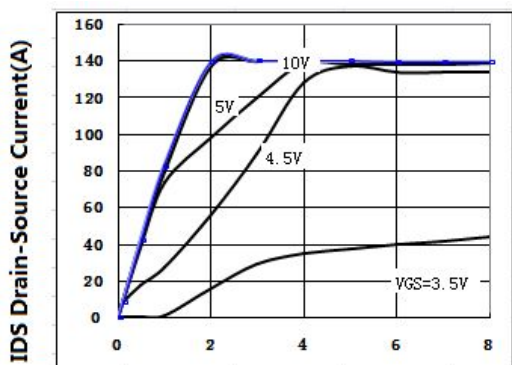
注释(Notes):

- ① 以最高结温为限制， T_c=25°C时测试。
I_D & P_D base on maximum allowable junction temperature, test at T_c=25°C.
- ② 初始结温=25°C, L=1mH.
Starting T_j=25°C, L=1mH
- 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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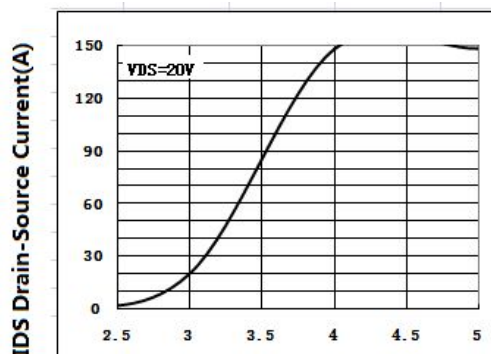
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● 特性曲线



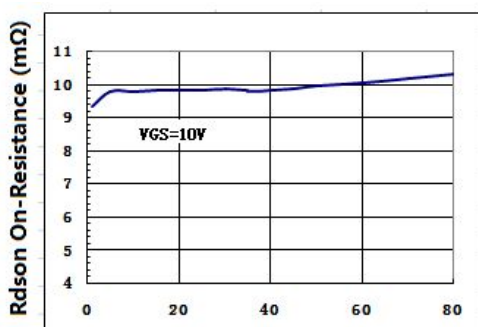
VDS Drain-Source Voltage(V)
Figure 1 Output Characteristics

图1 输出特性曲线, $T_c=25^\circ\text{C}$



VGS Gate-Source Voltage(V)
Figure 2 Transfer Characteristics

图2 转移特性曲线



IDS Drain-Source Current(A)
Figure 3 ID & Rdson

图3 导通电阻与漏极电流 曲线

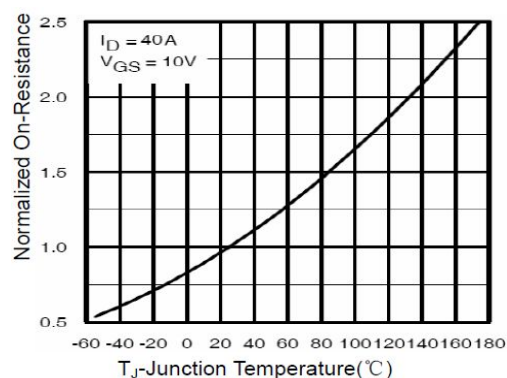


Figure 4 Rdson-Junction Temperature

图4 导通电阻与结温度 曲线

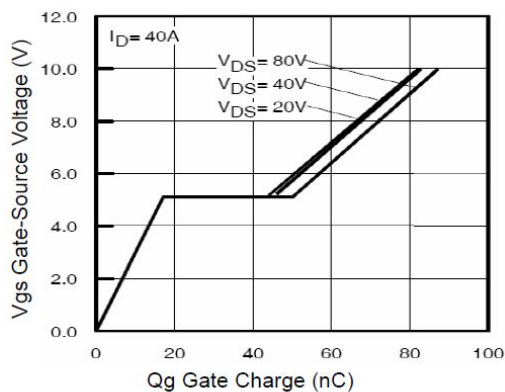


Figure 5 Gate Charge

图5 栅电荷 曲线

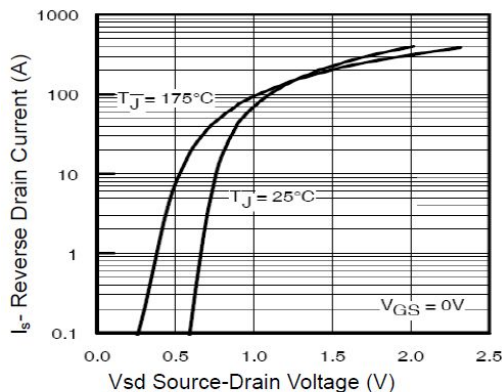


Figure 6 Source- Drain Diode Forward

图6.二极管正向压降与源极电流 曲线

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● 特性曲线

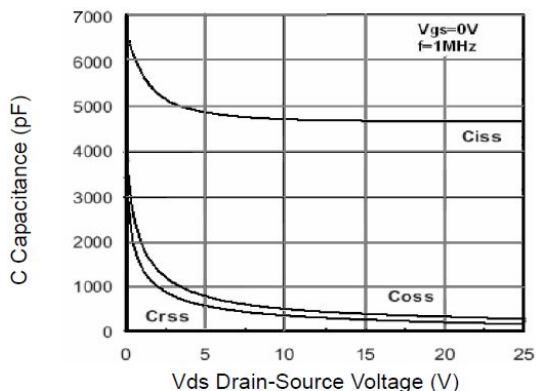


Figure 7 Capacitance vs Vds

图 7 电容特性曲线

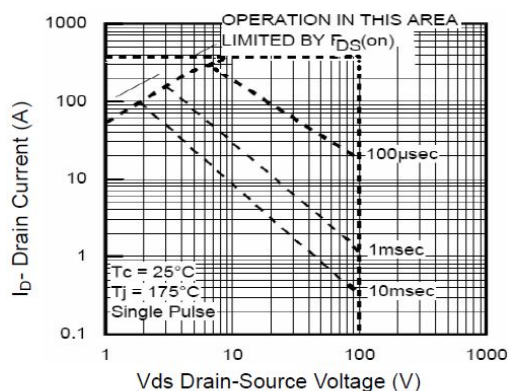


Figure 8 Safe Operation Area

图 8 SOA 曲线

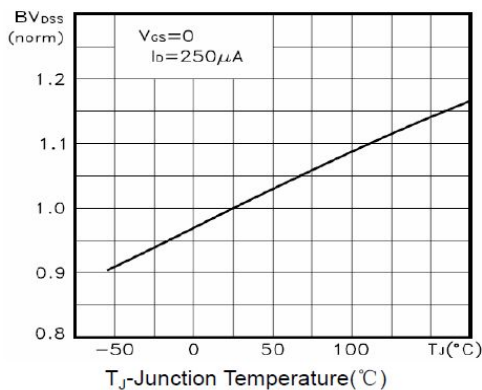


Figure 9 BV_{DSS} vs Junction Temperature

图 9 BV_{DSS}-结温曲线

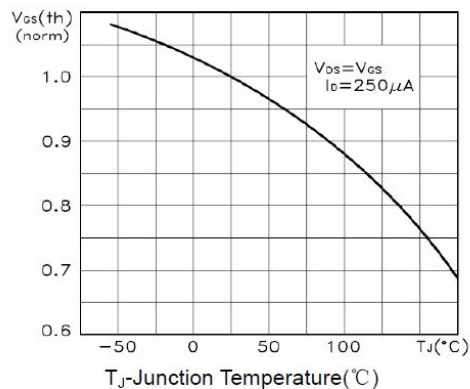


Figure 10 V_{GS(th)} vs Junction Temperature

图 10 V_{GS(th)}-结温曲线

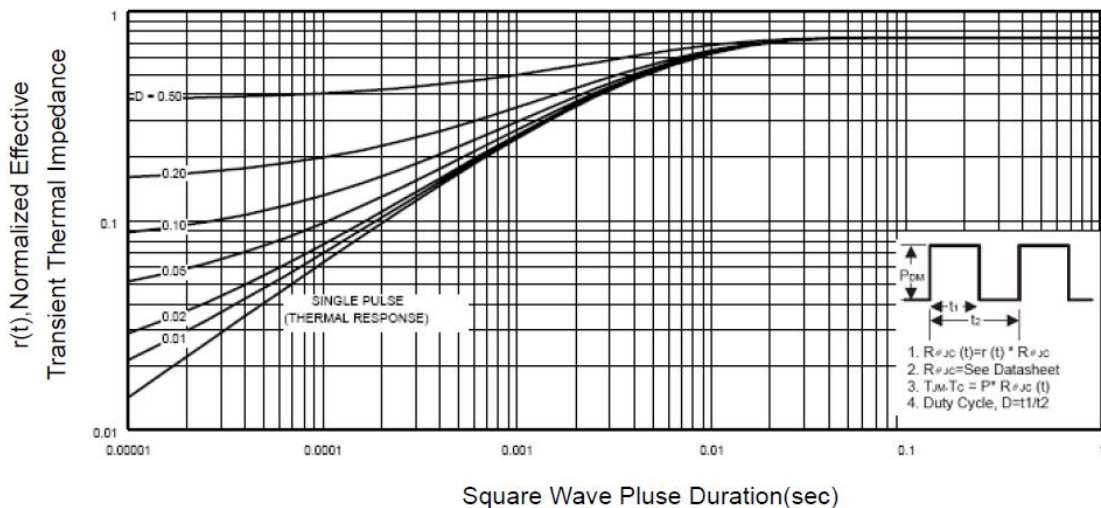


Figure 11 Normalized Maximum Transient Thermal Impedance

图 11 标准化瞬态热阻曲线

TO-262 封装机械尺寸

TO-262 MECHANICAL DATA

单位：毫米/UNIT: mm

符号 SYMBOL	最小值 min	典型值 nom	最大值 max	符号 SYMBOL	最小值 min	典型值 nom	最大值 max
A	3.80		4.80	e		2.54	
A1	2.00		2.80	e1			5.30
b	0.60		1.00	E	9.90		10.70
b1	1.20		1.40	L	12.50		14.50
c	0.40		0.70	L1	0.80	1.00	1.20
c2	1.10		1.40	L2			1.50
D			9.60				

