

5N65

主要参数 MAIN CHARACTERISTICS

I_D	5.0 A
V_{DS}	650 V
$R_{DS(on)}$ ($V_{GS}=10V$)	2.5 Ω
Q_g	9nC

用途

- 高频开关电源
- 电子镇流器
- UPS 电源

APPLICATIONS

- High frequency switching mode power supply
- Electronic ballast
- UPS

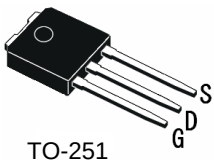
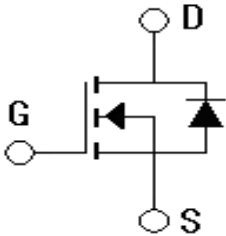
产品特性

- 低栅极电荷
- 低 C_{RSS} (典型值 12pF)
- 开关速度快
- 产品全部经过雪崩测试
- 高抗 dv/dt 能力
- RoHS 产品

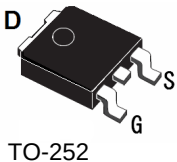
FEATURES

- Low gate charge
- Low C_{RSS} (typical 12pF)
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS product

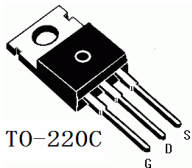
封装 Package



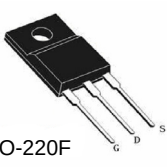
TO-251



TO-252



TO-220C



TO-220F

产品中有毒有害物质或元素的名称及含量

部件名称 (含量要求)	有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
	≤0.1%	≤0.1%	≤0.01%	≤0.1%	≤0.1%	≤0.1%
引线框	○	○	○	○	○	○
塑封树脂	○	○	○	○	○	○
管芯	○	○	○	○	○	○
内引线	○	○	○	○	○	○
焊料	×	○	○	○	○	○
说明	○：表示该元素的含量在 SJ/T11363-2006 标准的限量要求以下。 ×：表示该元素的含量超出 SJ/T11363-2006 标准的限量要求。 目前产品的焊料中含有铅 (Pb) 成分，但属于欧盟 RoHS 指令豁免范围。					

绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value			单 位 Unit
		5N65VC/RC	5N65CC	5N65FC	
最高漏极-源极直流电压 Drain-Source Voltage	V _{DSS}	650			V
连续漏极电流 Drain Current -continuous	I _D T=25℃ T=100℃	5.0		5.0*	A
		2.5		2.5*	A
最大脉冲漏极电流 (注1) Drain Current - pulse (note 1)	I _{DM}	20		20*	
最高栅源电压 Gate-Source Voltage	V _{GSS}	±30			V
单脉冲雪崩能量 (注2) Single Pulsed Avalanche Energy note 2)	E _{AS}	256			mJ
雪崩电流 (注1) Avalanche Current (note 1)	I _{AR}	5			A
重复雪崩能量 (注1) Repetitive Avalanche Current (note 1)	E _{AR}	11.0			mJ
二极管反向恢复最大电压变化 速率 (注3) Peak Diode Recovery dv/dt (note 3)	dv/dt	5.5			V/ns
耗散功率 Power Dissipation	P _D T _C =25℃ -Derate above 25℃	51	100	33	W
		0.39	0.80	0.26	W/ ℃
最高结温及存储温度 Operating and Storage Temperature Range	T _J , T _{STG}	-55~+150			℃
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T _L	300			℃

*漏极电流由最高结温限制

*Drain current limited by maximum junction temperature

电特性 ELECTRICAL CHARACTERISTICS

项 目 Parameter	符 号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单位 Units
关态特性 Off –Characteristics						
漏—源击穿电压 Drain-Source Voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	650	-	-	V
击穿电压温度特性 Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	$I_D=250\mu A$, referenced to $25^\circ C$	-	0.65	-	V/ $^\circ C$
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=650V, V_{GS}=0V, T_C=25^\circ C$	-	-	10	μA
		$V_{DS}=520V, T_C=125^\circ C$	-	-	100	μA
正向栅极体漏电流 Gate-body leakage current, forward	I_{GSSF}	$V_{DS}=0V, V_{GS}=30V$	-	-	100	nA
反向栅极体漏电流 Gate-body leakage current, reverse	I_{GSSR}	$V_{DS}=0V, V_{GS}=-30V$	-	-	-100	nA
通态特性 On-Characteristics						
阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=250\mu A$	2.0	-	4.0	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=2.5A$	-	2.1	2.5	Ω
正向跨导 Forward Transconductance	g_{fs}	$V_{DS}=40V, I_D=2A$ (note 4)	-	3.7	-	S
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1.0MHz$	-	690	810	pF
输出电容 Output capacitance	C_{oss}		-	62	82	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	12	17	pF

电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching Characteristics							
延迟时间 Turn-On delay time	$t_d(\text{on})$	$V_{DD}=300V, I_D=5A, R_G=25\Omega$ (note 4, 5)	-	30	50	ns	
上升时间 Turn-On rise time	t_r		-	75	120	ns	
延迟时间 Turn-Off delay time	$t_d(\text{off})$		-	60	150	ns	
下降时间 Turn-Off Fall time	t_f		-	55	120	ns	
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=520V$, $I_D=5A$ $V_{GS}=10V$ (note 4, 5)	-	9	14	nC	
栅-源电荷 Gate-Source charge	Q_{gs}		-	2.9	-	nC	
栅-漏电荷 Gate-Drain charge	Q_{gd}		-	4.0	-	nC	
漏-源二极管特性及最大额定值 Drain-Source Diode Characteristics and Maximum Ratings							
正向最大连续电流 Maximum Continuous Drain-Source Diode Forward Current	I_S		-	-	5	A	
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}		-	-	20	A	
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=5.0A$			1.4	V	
反向恢复时间 Reverse recovery time	t_{rr}	$V_{GS}=0V, I_S=5.0A$ $dI_F/dt=100A/\mu s$ (note 4)	-	330	-	ns	
反向恢复电荷 Reverse recovery charge	Q_{rr}		-	2.67	-	μC	

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max			单位 Unit
		5N65VC/RC	5N65CC		
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	2.50	1.25	3.79	$^{\circ}C/W$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	83	62.5	62.5	$^{\circ}C/W$

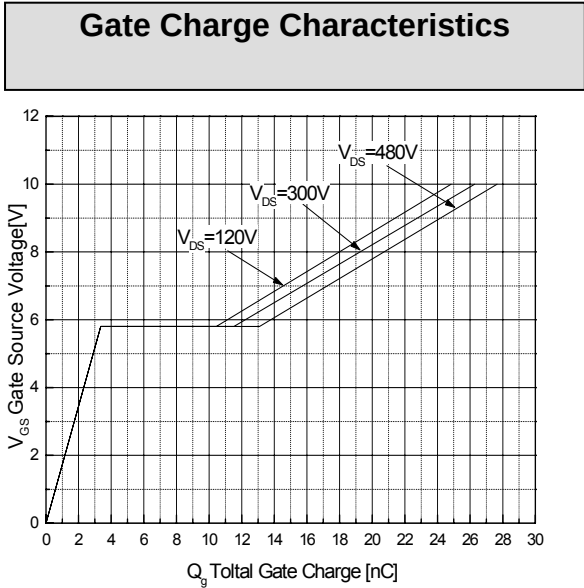
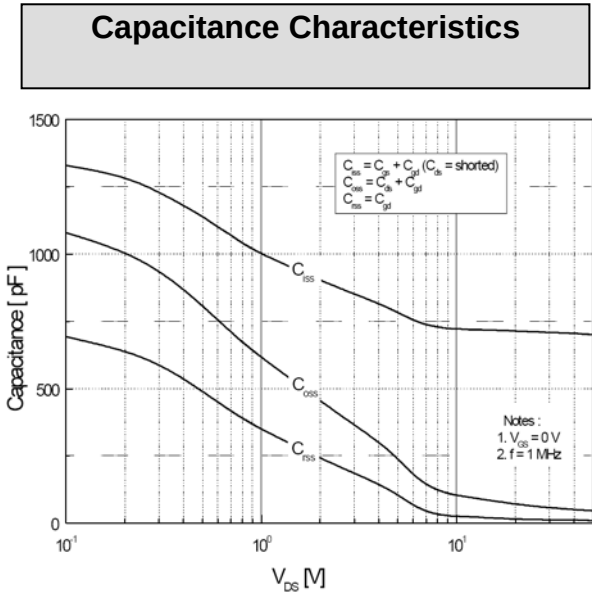
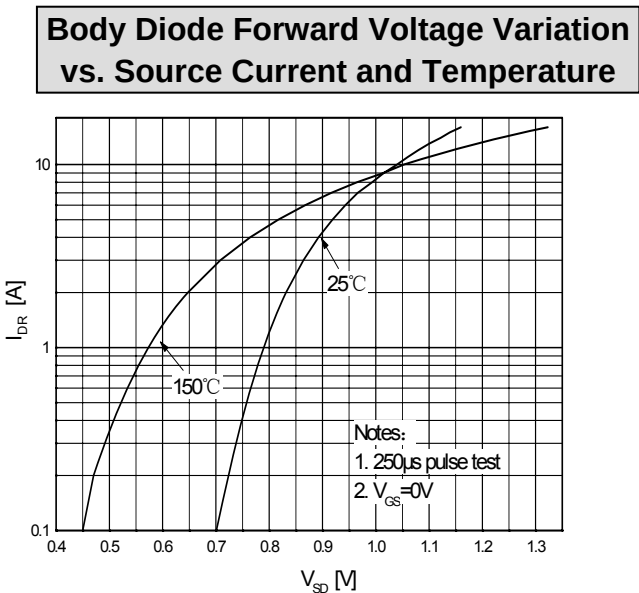
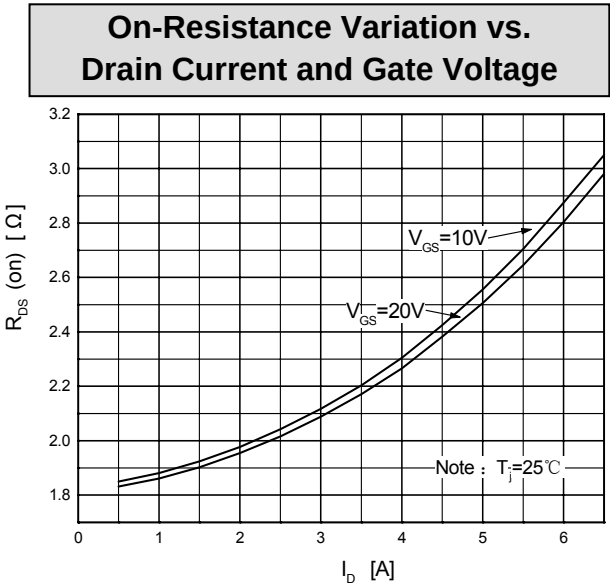
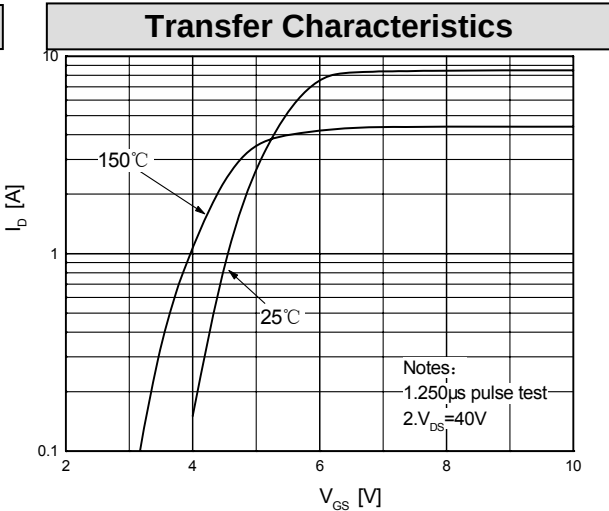
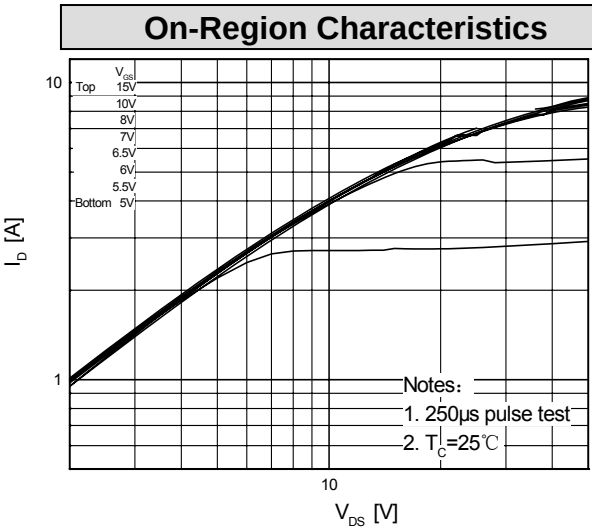
注释:

- 1: 脉冲宽度由最高结温限制
- 2: $L=25mH, I_{AS}=5.0A, V_{DD}=50V, R_G=25\Omega$, 起始结温 $T_J=25^{\circ}C$
- 3: $I_{SD} \leq 5.0A, di/dt \leq 200A/\mu s, V_{DD} \leq BV_{DSS}$, 起始结温 $T_J=25^{\circ}C$
- 4: 脉冲测试: 脉冲宽度 $\leq 300\mu s$, 占空比 $\leq 2\%$
- 5: 基本与工作温度无关

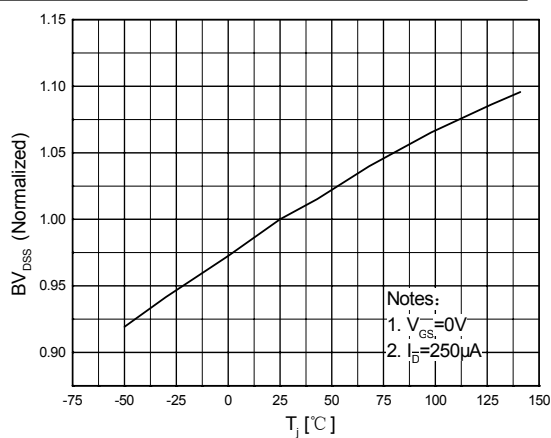
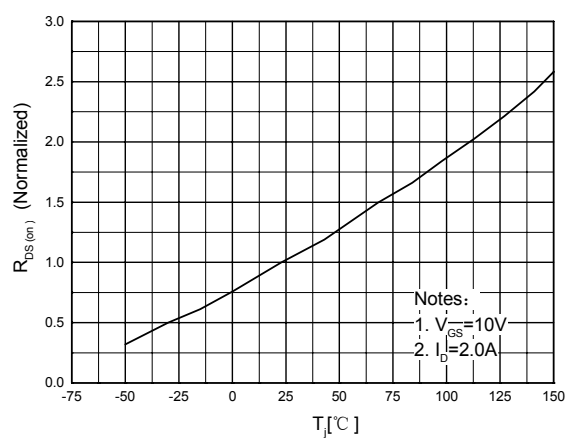
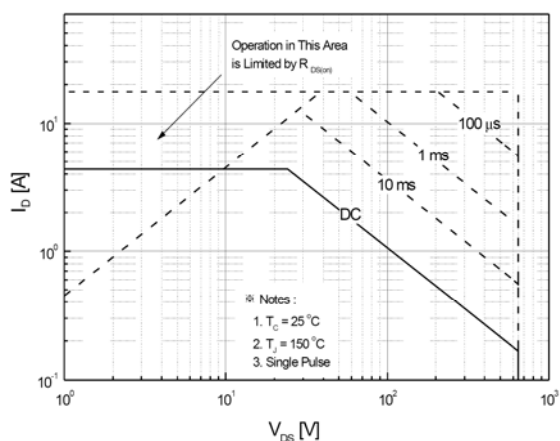
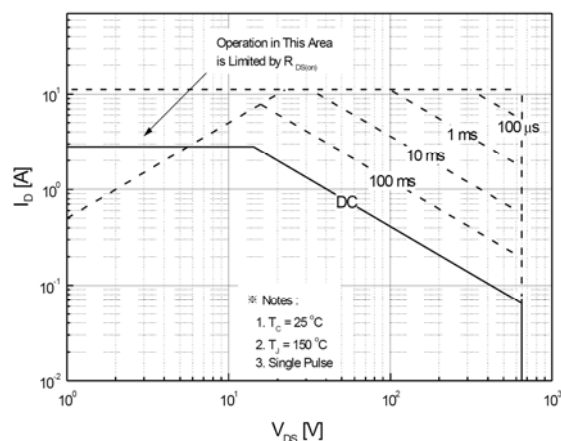
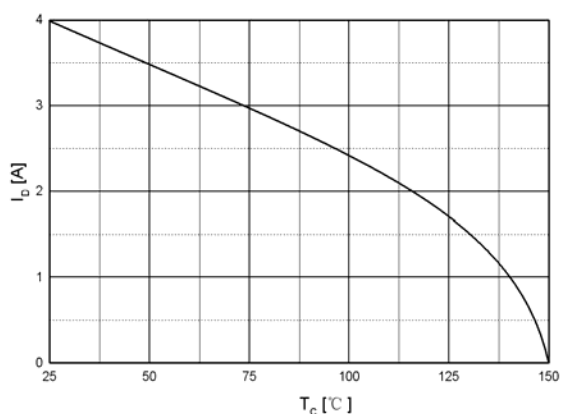
Notes:

- 1: Pulse width limited by maximum junction temperature
- 2: $L=25mH, I_{AS}=5.0A, V_{DD}=50V, R_G=25\Omega$, Starting $T_J=25^{\circ}C$
- 3: $I_{SD} \leq 5.0A, di/dt \leq 200A/\mu s, V_{DD} \leq BV_{DSS}$, Starting $T_J=25^{\circ}C$
- 4: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
- 5: Essentially independent of operating temperature

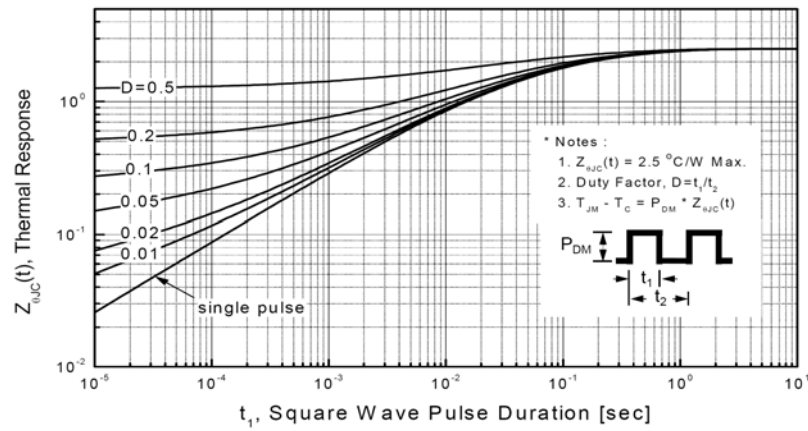
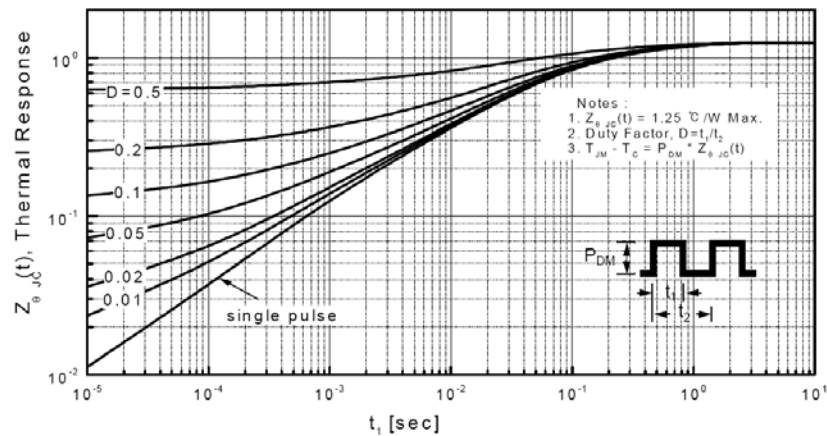
特征曲线 ELECTRICAL CHARACTERISTICS (curves)



特征曲线 ELECTRICAL CHARACTERISTICS (curves)

Breakdown Voltage Variation
vs. TemperatureOn-Resistance Variation
vs. TemperatureMaximum Safe Operating Area
For 5N65V/R/S/B/CMaximum Safe Operating Area
For 5N65FCMaximum Drain Current
vs. Case Temperature

特征曲线 ELECTRICAL CHARACTERISTICS (curves)

Transient Thermal Response Curve
For 5N65VC/RCTransient Thermal Response Curve
For 5N65CCTransient Thermal Response Curve
For 5N65FC