ELLISON SEMICONDUCTOR

N-沟道功率MOS管/N-CHANNEL POWER MOSFET

SI7N65F

● 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：电子镇流器 电子变压器 开关电源 LED驱动器

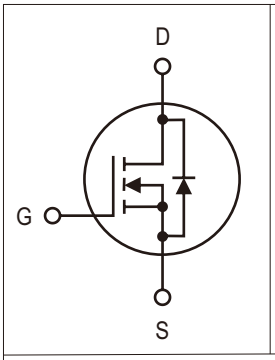
● APPLICATION: ■ELECTRONIC BALLAST ■ELECTRONIC TRANSFORMER ■SWITCH MODE POWER SUPPLY ■LED DRIVER

● 最大额定值： (Tc=25℃)

● Absolute Maximum Ratings (Tc=25℃)

TO-220F/TO-220C

参数 PARAMETER	符号 SYMBOL	额定值 VALUE	单位 UNIT
漏-源电压 Drain-source Voltage	V_{DS}	650	V
栅-源电压 Gate-source Voltage	V_{GS}	±30	V
漏极电流 Continuous Drain Current Tc=25℃	I_D	7.0*	A
漏极电流 Continuous Drain Current Tc=100℃	I_D	3.85*	A
最大脉冲电流 Drain Current-Pulsed ①	I_{DM}	28*	A
耗散功率 Power Dissipation	P_D	48	W
最高结温 Junction Temperature	Tj	150	℃
存储温度 Storage Temperature	T_{STG}	-55-150	℃
单脉冲雪崩能量 Single Pulse Avalanche Energy ②	EAS	300	mJ

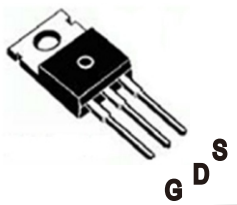


V_{DS}=650V

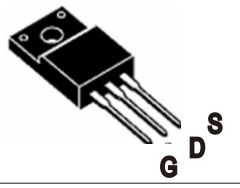
$R_{DS(ON)\,max}$=1.28Ω

I_D=7.0A

TO-220C



TO-220F



*漏极电流由最高结温限制

*Drain current limited by maximum junction temperature

● 热特性

● Thermal Characteristics

参数 PARAMETER	符号 SYMBOL	最小值 MIN	典型值 TYP	最大值 MAX	单位 UNIT
热阻结-壳 Thermal Resistance Junction-case	Rth_{JC}			1.98	℃/W
热阻结-环境 Thermal Resistance Junction-ambient	Rth_{JA}			62.5	℃/W

● 订购信息

● Ordering Information

普通塑封料 Lead Free	产品丝印 Marking	封装外形 Package	包装形式 Packing	包装数量 packing quantity				
SI7N65F	SI7N65F	TO-220F	Tube	50Pcs/Tube	20T/Box	1.0K/Box	5B/Carton	5K/Carton
SI7N65P	SI7N65P	TO-220C	Tube	50Pcs/Tube	20T/Box	1.0K/Box	5B/Carton	5K/Carton

Note: T: Tube/管 R:Reel/卷盘 B:Box/内盒 C:Carton/箱

ELLISON SEMICONDUCTOR

N-沟道功率MOS管/N-CHANNEL POWER MOSFET SI7N65F

● 电特性： (Tc=25℃)

● Electronic Characteristics (Tc=25℃)

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	650			V
击穿电压温度系数 Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta Tj$	I_D=250μA,Referenced to 25℃		1.05		V/℃
栅极开启电压 Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS}, I_D=250μA	3.0		4.0	V
漏-源漏电流 Drain-source Leakage Current	I_{DSS}	V_{DS}=650V, V_{GS}=0V, Tj=25℃			1	μA
		V_{DS}=520V, V_{GS}=0V, Tj=125℃			100	μA
跨 导 Forward Transconductance	gfs	V_{DS}=40V, I_D=3.5A		11		S
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=3.5A ③		1.10	1.28	Ω
输入电容 Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, F=1.0MHz		1000		pF
输出电容 Onput Capacitance	C_{oss}			94		pF
反相转移电容 Reverse Transfer Capacitance	C_{rss}			2.3		pF
开启延迟时间 Turn-On Delay Time	$T_{d(on)}$	V_{DD}=400V, I_D=3.7A R_G=2.5Ω ③		3.3		ns
上升时间 Turn-On Rise Time	Tr			9.2		ns
关断延迟时间 Turn-Off Delay Time	$T_{d(off)}$			23.8		ns
下降时间 Turn-Off Fall Time	Tf			11.6		ns
栅极电荷 Total Gate Charge	Q_g	I_D=3.5A, V_{DS}=400V V_{GS}=10V ③		21.5		nC
栅源电荷 Gate-to-Source Charge	Q_{gs}			5.4		nC
栅漏电荷 Gate-to-Drain Charge	Q_{gd}			7.5		nC
二极管正向电流 Continuous Diode Forward Current	I_S				7.0	A
二极管正向压降 Diode Forward Voltage	V_{SD}	Tj=25℃, I_S=7.0A V_{GS}=,0V ③			1.5	V
反向恢复时间 Reverse Recovery Time	Trr	Tj=25℃, If=3.5A di/dt=100A/μS ③		293		ns
反向恢复电荷 Reverse Recovery Charge	Qrr			1.7		uC

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

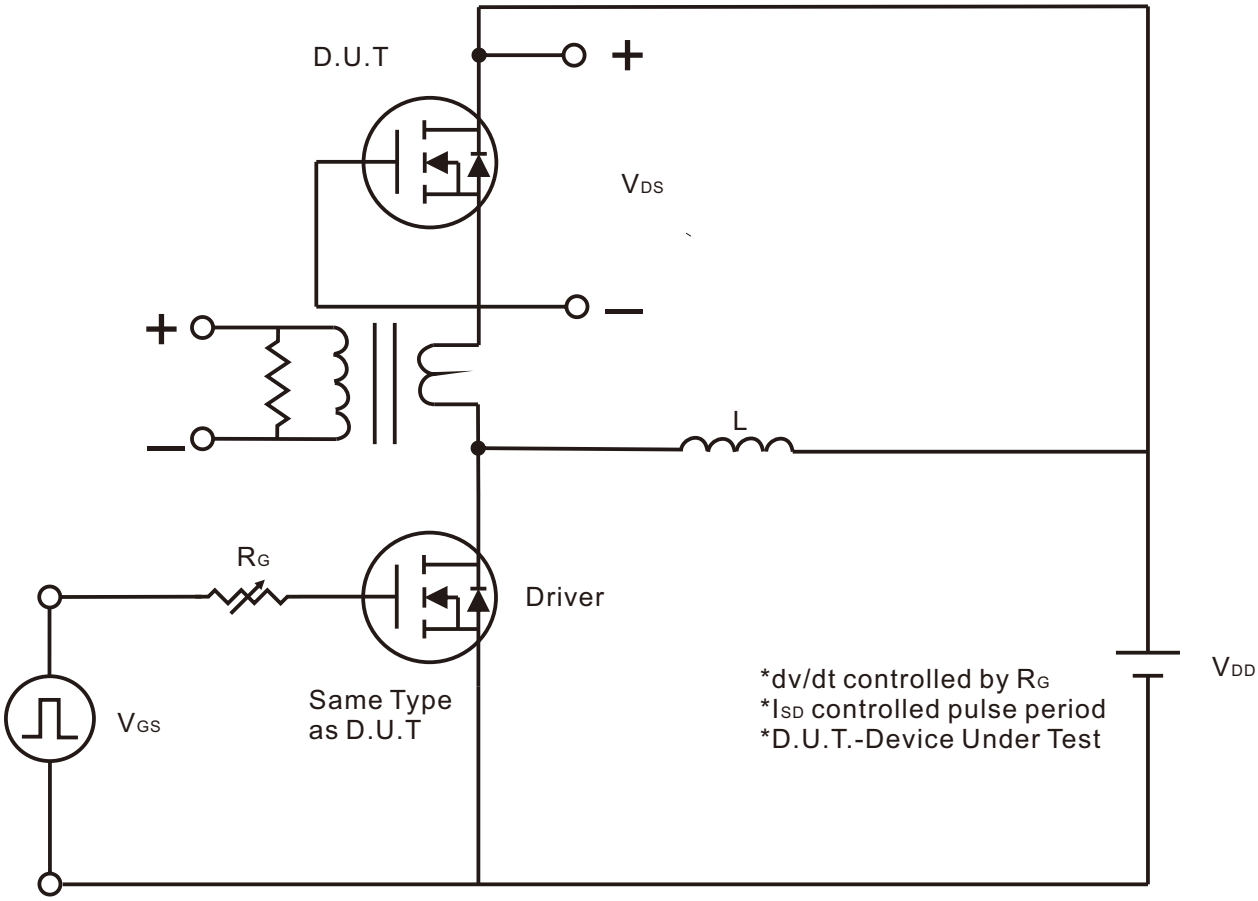
②初始结温=25℃， V_{DD}=50V, L=10mH, R_G=25Ω, I_{AS}=7.0A

Starting Tj=25℃， V_{DD}=50V, L=10mH, R_G=25Ω, I_{AS}=7.0A

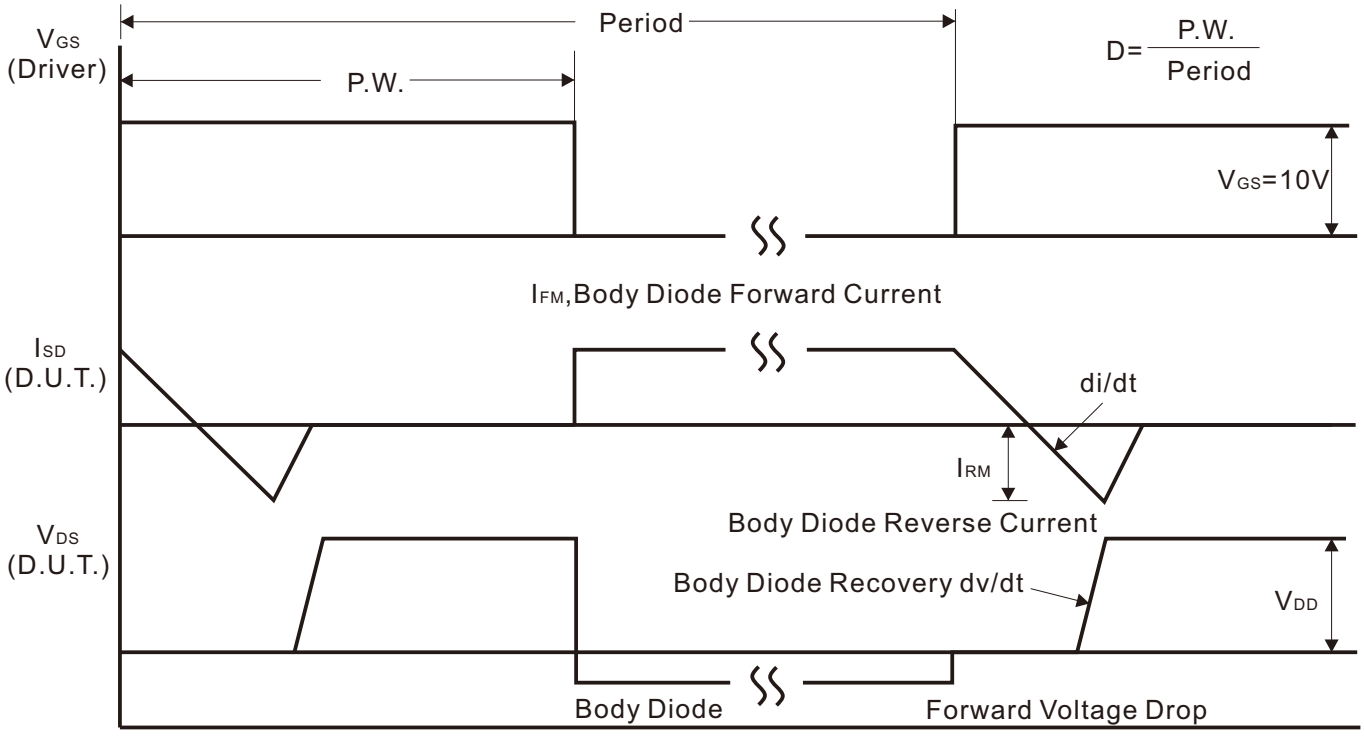
③脉冲测试：脉冲宽度≤300μs,占空比≤2%

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

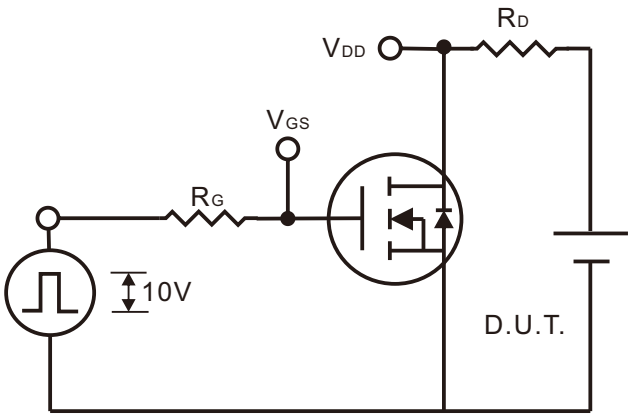
● TEST CIRCUITS AND WAVEFORMS



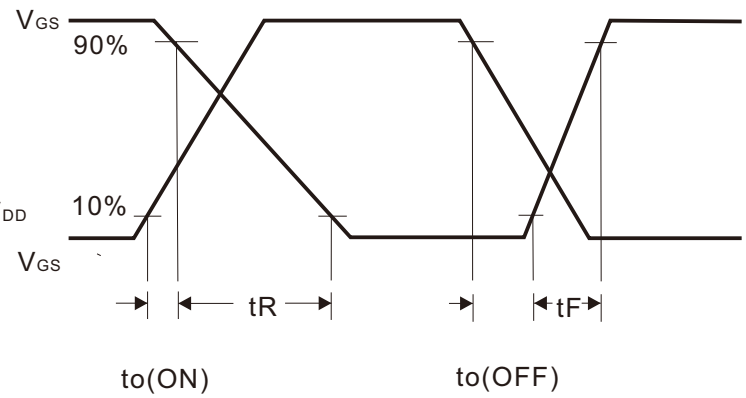
Peak Diode Recovery Test Circuit



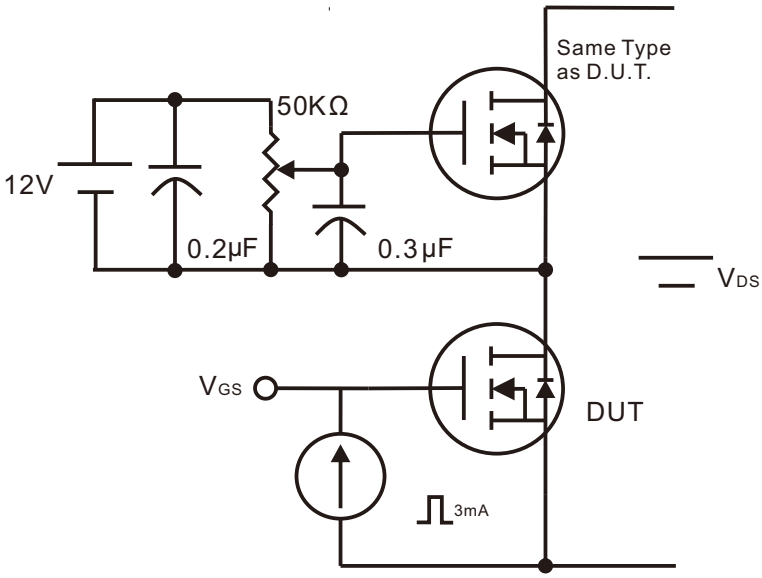
Peak Diode Recovery dv/dt Waveforms



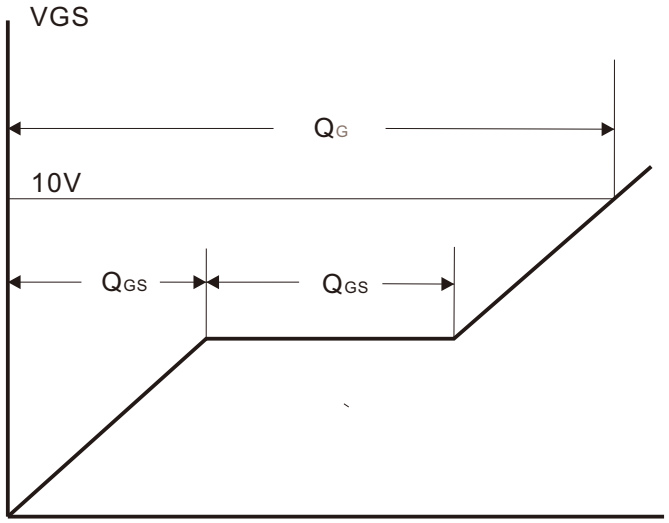
Switching Test Circuit



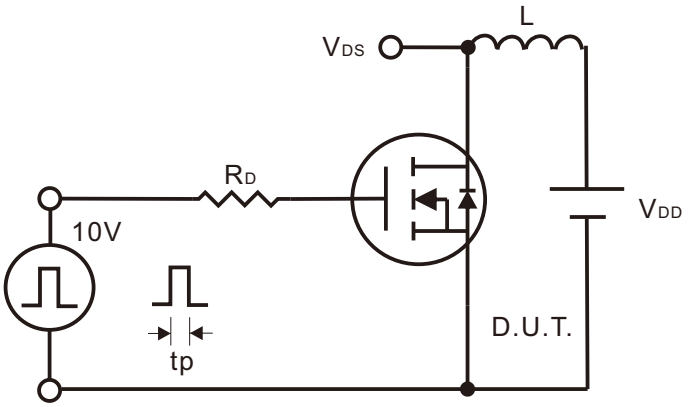
Switching Waveforms



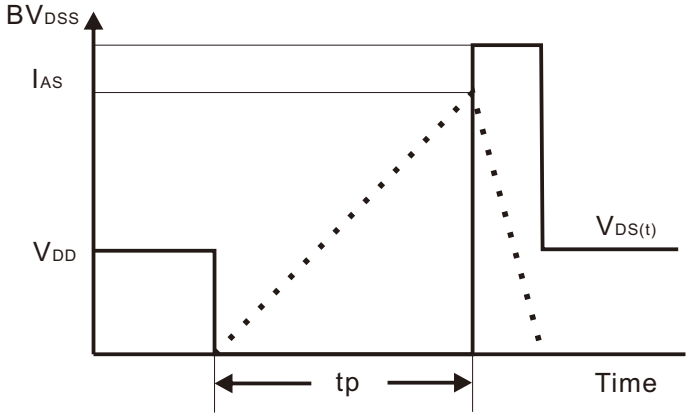
Gate Charge Test Circuit



Gate Charge Waveform



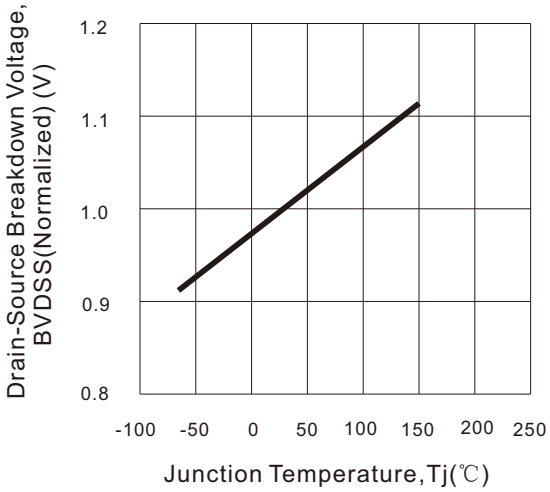
Unclamped Inductive Switching Test Circuit



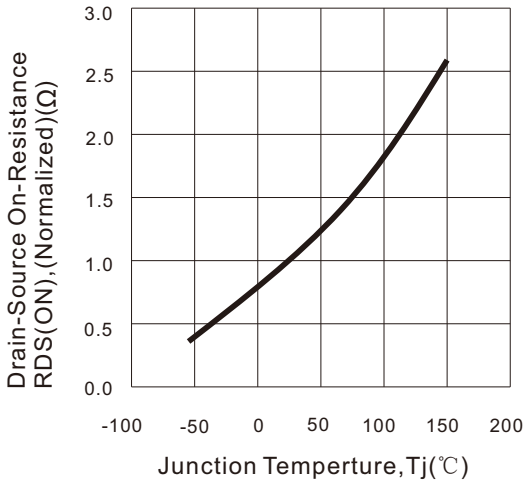
Unclamped Inductive Switching Waveforms

● 特征曲线 TYPICAL CHARCTERISTICS

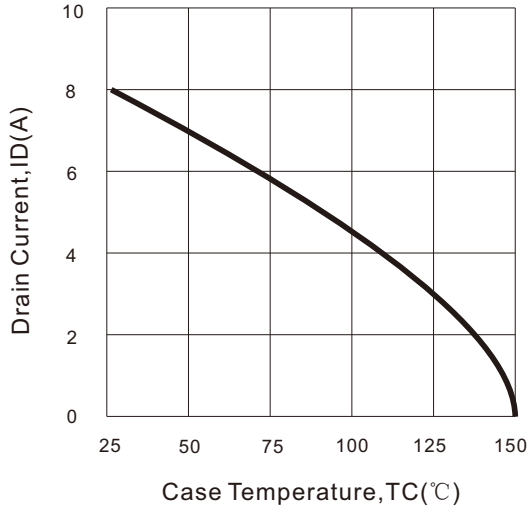
Breakdown Voltage Variation VS. Temperayure



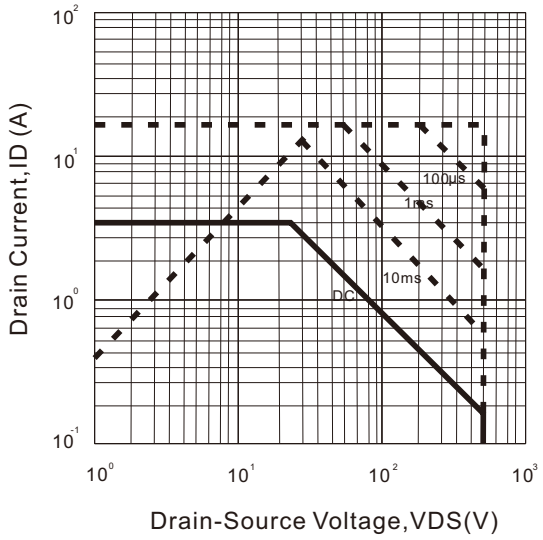
On-Resistance Junction Temperature



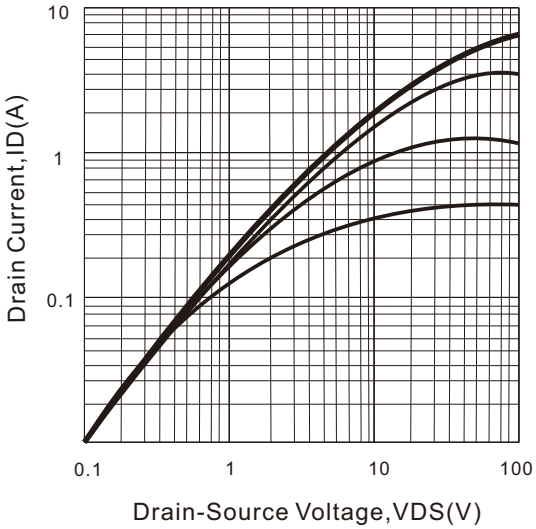
Maximum Drain Current VS.Case Temperature



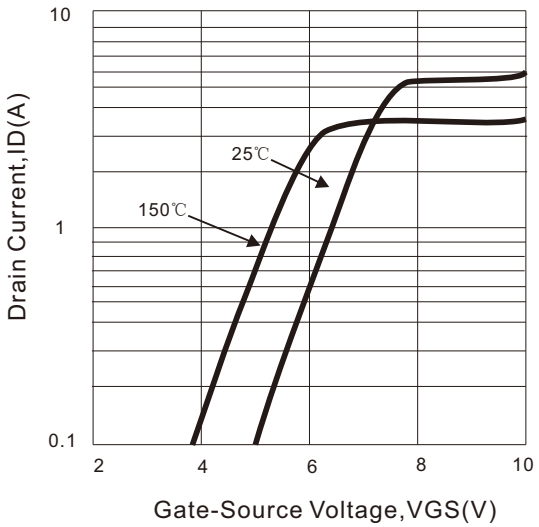
Maximum Safe Operating Area



On-State Characteristics

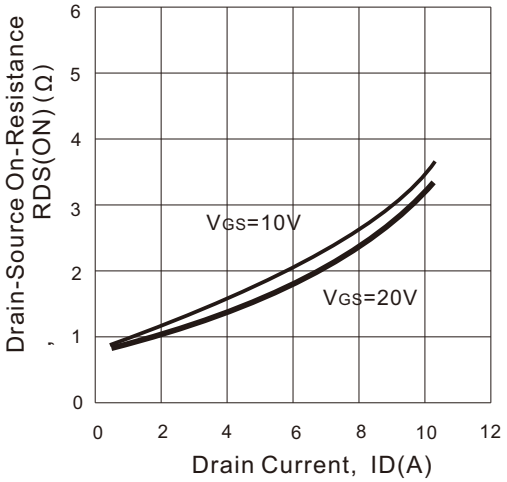


Transfer Characteristics

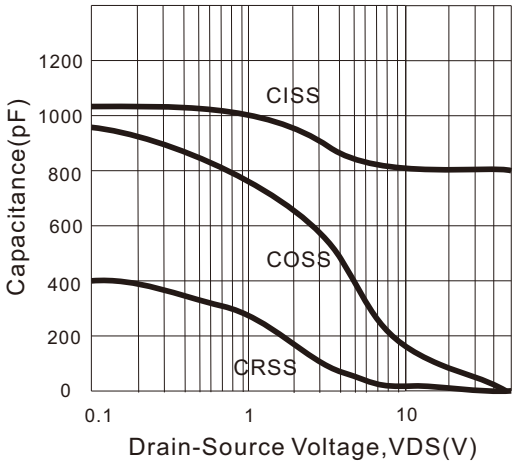


● 特征曲线 TYPICAL CHARACTERISTICS

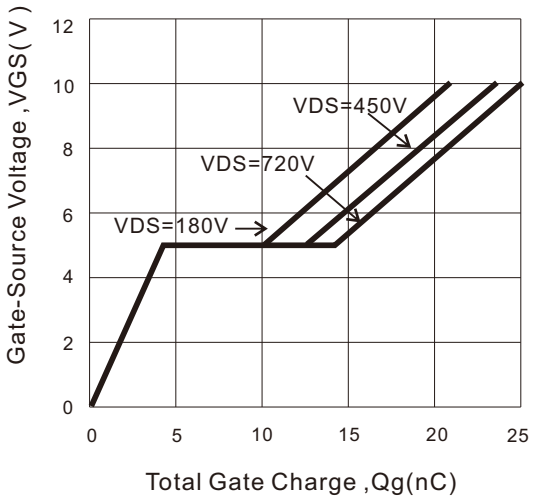
On-Resistance Variation vs.
Drain Currentand Gate Voltage



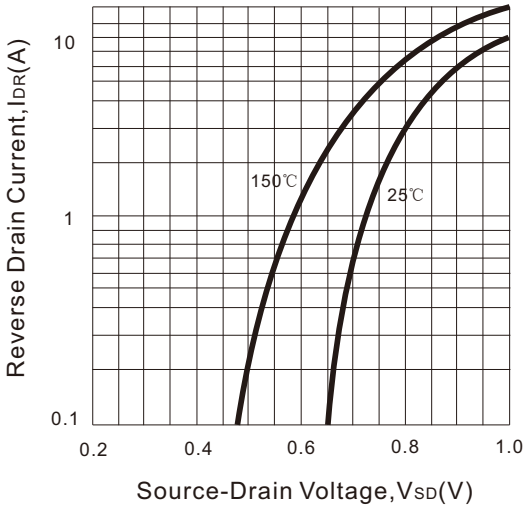
Capacitance Characteristics
(Non-Repetitive)



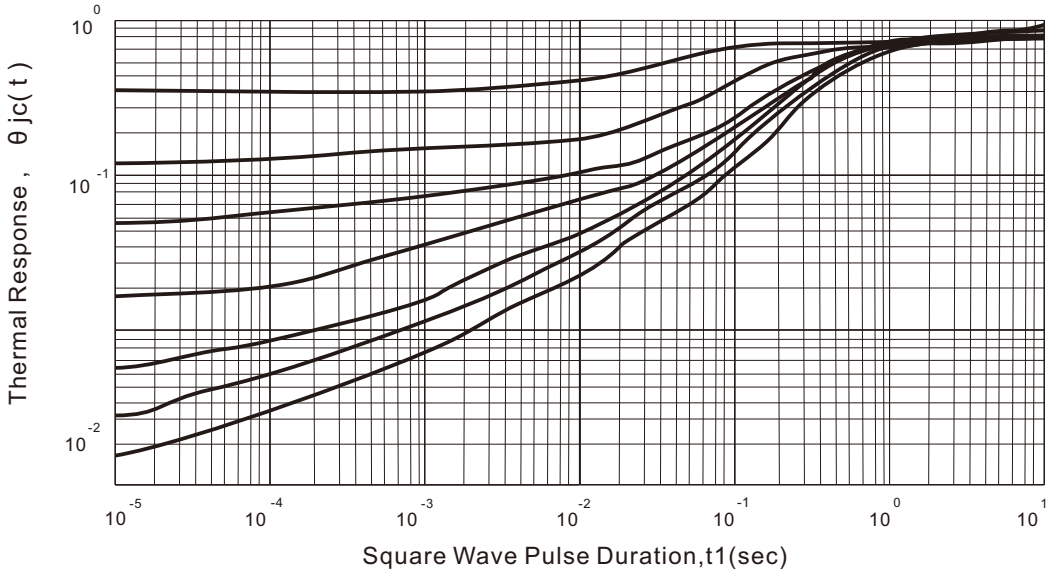
Gate Charge Characteristics



Body Diode Forward Voltage Variation
With Source Current and Temperature

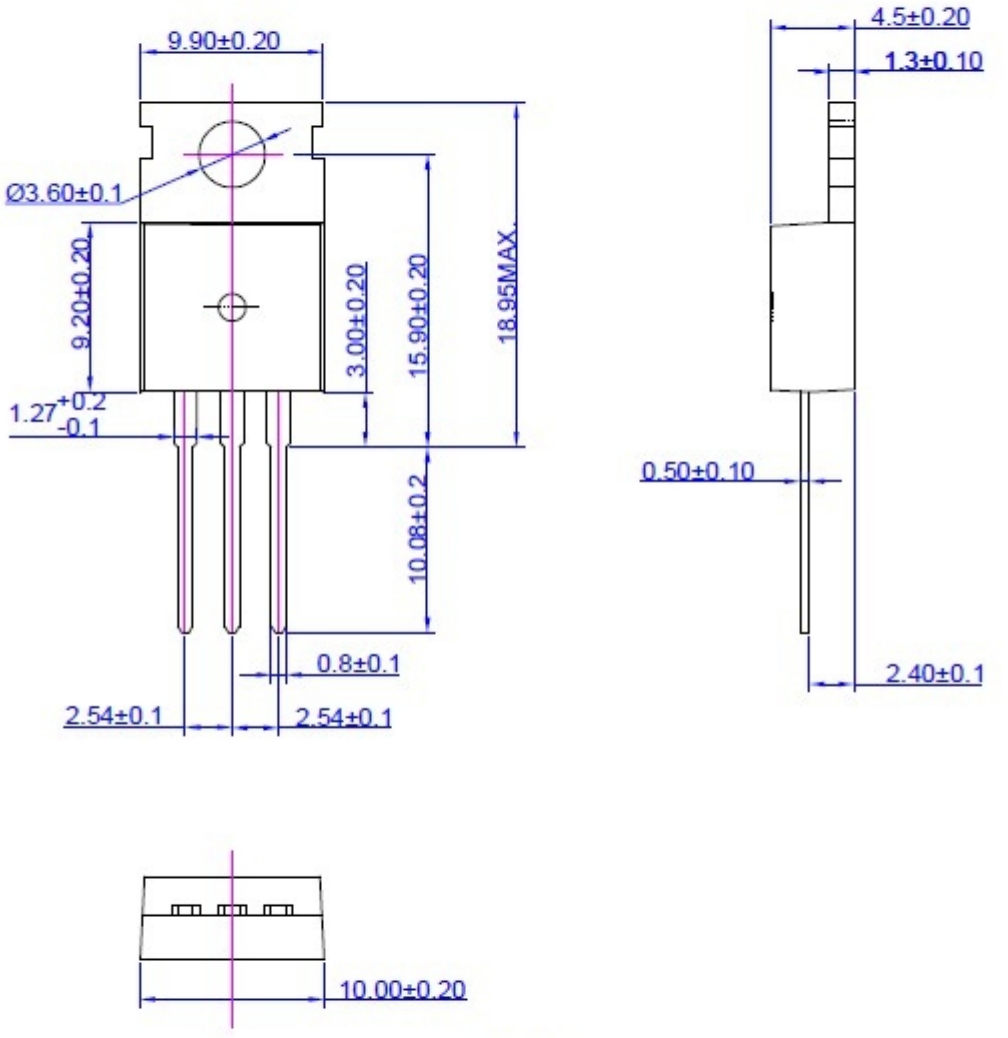


Transient Thermal Response Curve



TO-220C机械尺寸图

SI7N65F



技术要求：

1.未注公差±0.15mm;

2.树脂体不准有缺损，缩孔，裂纹、气泡等有害缺陷

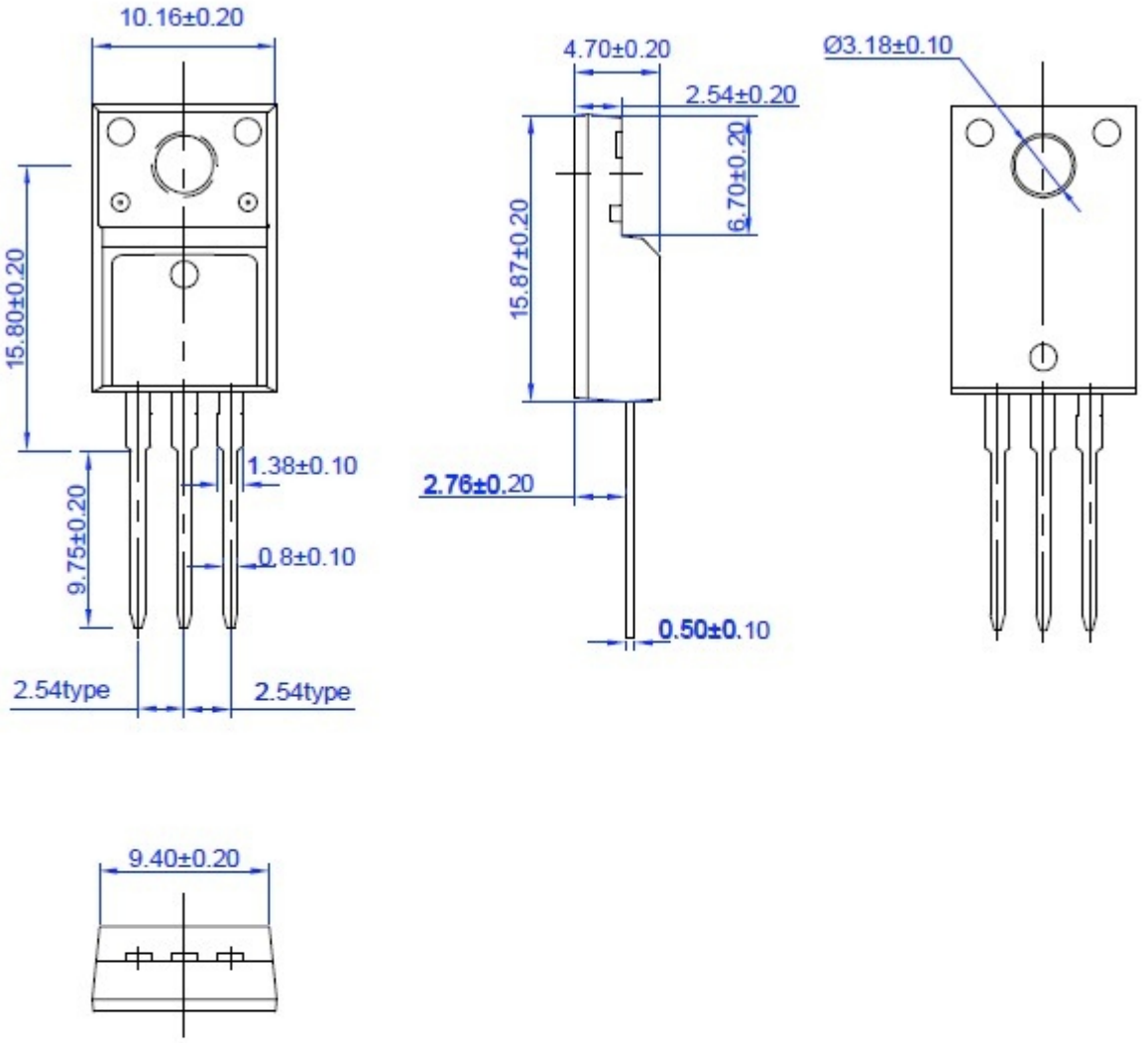
3.此图标明管腿有加强筋

NAME.	TO-220C	UNIT	mm	DESIGNED		THIRD ANGLE SYSTEM
DWGNO	HW-DT-004c	PAGE	1OF1	CHECKED		
VERSION	Ver.C	ISSUE DATE	Oct/10/2012	APPROVED		

ELLISON SEMICONDUCTOR

TO-220F机械尺寸图

SI7N65F



技术要求：

1. 图中所指亚光面对应表面粗糙度Ra0.8，光面对应表面粗糙度为Ra0.2
2. 上、下塑封体错位≤0.1；塑封体中心与引线框架中心错位≤0.1
3. 塑封体外形未注棱边R0.2
4. 未标注公差±0.15

NAME.	TO-220F	UNIT	mm	DESIGNED		THIRD ANGLE SYSTEM
DWGNO	HW-DT-008c	PAGE	1OF1	CHECKED		
VERSION	Ver.C	ISSUE DATE	Oct/10/2012	APPROVED		