ELLISON SEMICONDUCTOR

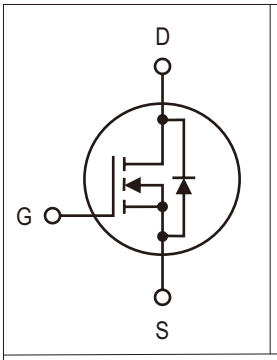
N-沟道功率MOS管/N-CHANNEL POWER MOSFET　SI10N40D/SI10N40K

- 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-251/TO-252

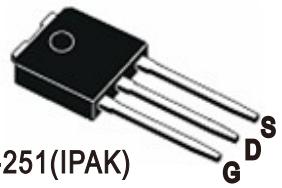
参数 PARAMETER	符号 SYMBOL	额定值 VALUE	单位 UNIT
漏-源电压 Drain-source Voltage	V_{DS}	400	V
栅-源电压 Gate-source Voltage	V_{GS}	±30	V
漏极电流 Continuous Drain Current Tc=25℃	I_D	10*	A
漏极电流 Continuous Drain Current Tc=100℃	I_D	6.3*	A
最大脉冲电流 Drain Current-Pulsed ①	I_{DM}	40*	A
耗散功率 Power Dissipation	P_D	50	W
最高结温 Junction 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	500	mJ



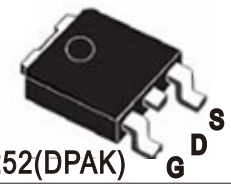
V_{DS}=400V

$R_{DS(ON)\,max}$=0.55Ω

I_D=10A



TO-251(IPAK)



TO-252(DPAK)

*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}			2.70	℃/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				
SI10N40K	SI10N40K	TO-251	Tube	80Pcs/Tube	75T/Box	6.0K/Box	5B/Carton	30K/Carton
SI10N40D	SI10N40D	TO-252	Tape Reel	2.5K/Reel		2.5K/Box	10B/Carton	25K/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 SI10N40D/SI10N40K

● 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	400			V
击穿电压温度系数 Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta Tj$	I_D=250μA, Referenced to 25℃		0.55		V/℃
栅极开启电压 Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS}, I_D=250μA	2.0		4.0	V
漏-源漏电流 Drain-source Leakage Current	I_{DSS}	V_{DS}=400V, V_{GS}=0V, Tj=25℃			1	μA
		V_{DS}=360V, V_{GS}=0V, Tj=125℃			10	μA
跨 导 Forward Transconductance	gfs	V_{DS}=15V, I_D=5.0A		5.0		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=5.5A ③		0.48	0.55	Ω
输入电容 Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, F=1.0MHz		1200		pF
输出电容 Onput Capacitance	C_{oss}			110		pF
反相转移电容 Reverse Transfer Capacitance	C_{rss}			15		pF
开启延迟时间 Turn-On Delay Time	$T_{d(on)}$	V_{DD}=200V, I_D=10A R_G=25Ω ③		14		ns
上升时间 Turn-On Rise Time	Tr			25		ns
关断延迟时间 Turn-Off Delay Time	$T_{d(off)}$			40		ns
下降时间 Turn-Off Fall Time	Tf			28		ns
栅极电荷 Total Gate Charge	Q_g	I_D=10.0A, V_{DS}=200V V_{GS}=10V ③		28		nC
栅源电荷 Gate-to-Source Charge	Q_{gs}			7		nC
栅漏电荷 Gate-to-Drain Charge	Q_{gd}			11		nC
二极管正向电流 Continuous Diode Forward Current	I_S				10	A
二极管正向压降 Diode Forward Voltage	V_{SD}	Tj=25℃, I_S=10.0A V_{GS}=,0V ③			1.5	V
反向恢复时间 Reverse Recovery Time	Trr	Tj=25℃, If=10.0A di/dt=100A/μS ③		370		ns
反向恢复电荷 Reverse Recovery Charge	Qrr			2.5		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

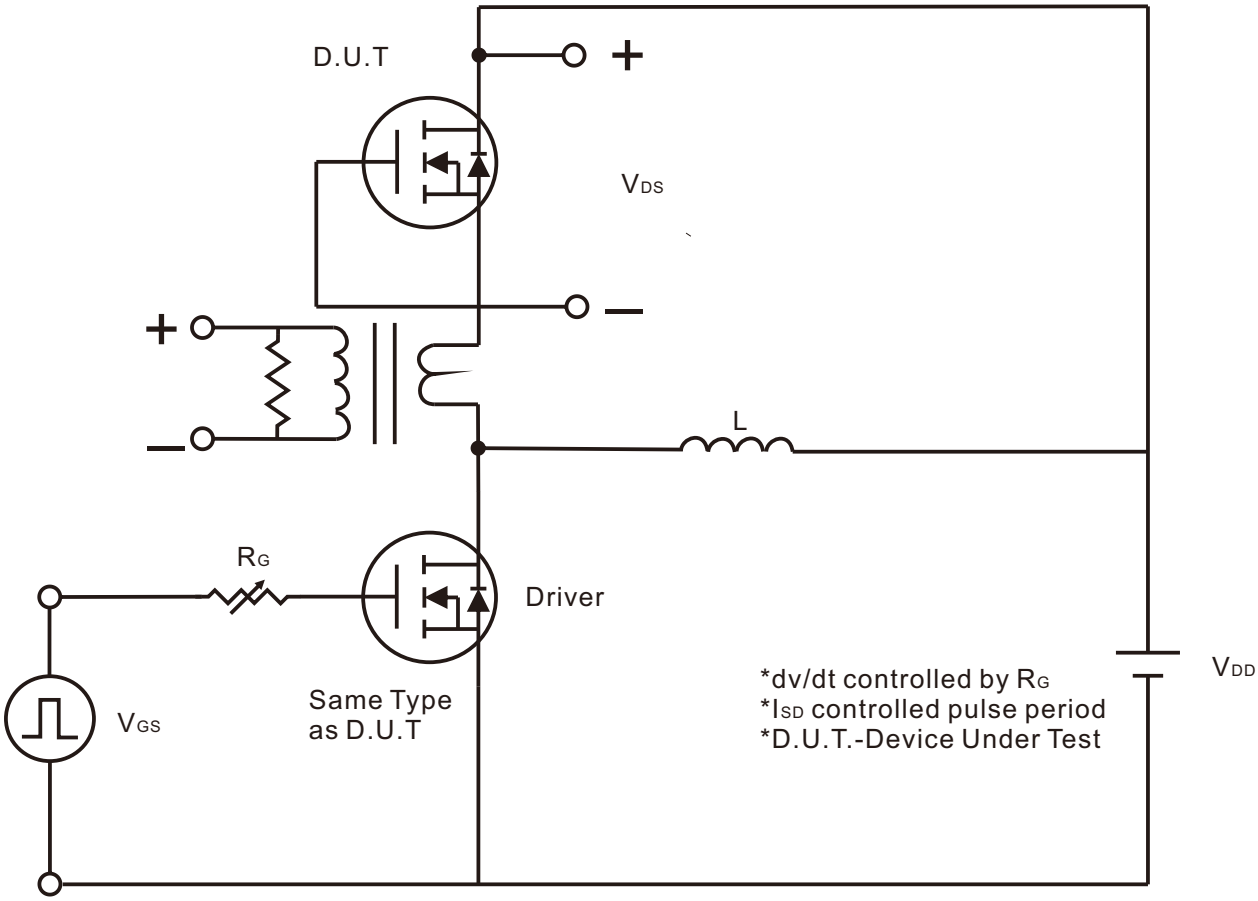
②初始结温=25℃，V_{DD}=50V, L=10mH, R_G=25Ω, I_{AS}=10.0A

Starting Tj=25℃，V_{DD}=50V, L=10mH, R_G=25Ω, I_{AS}=10.0A

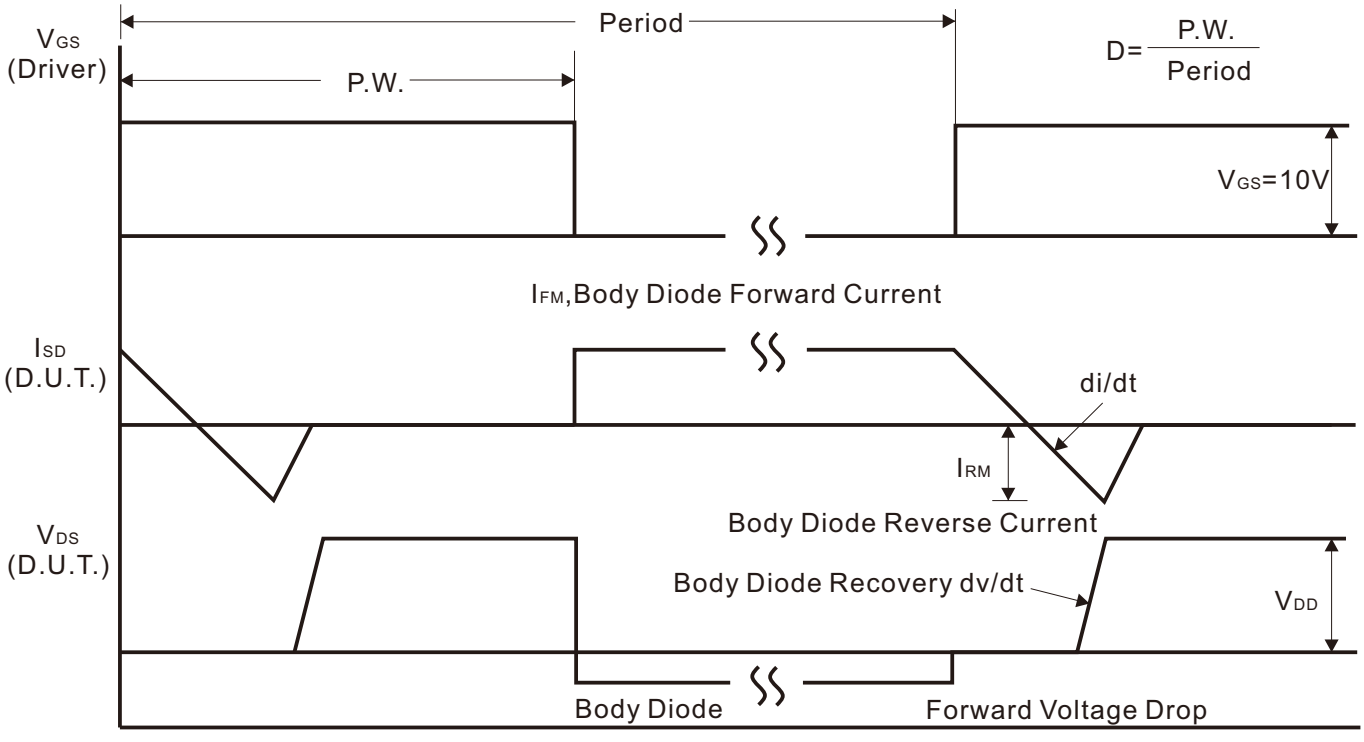
③脉冲测试：脉冲宽度≤300μs,占空比≤2%

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

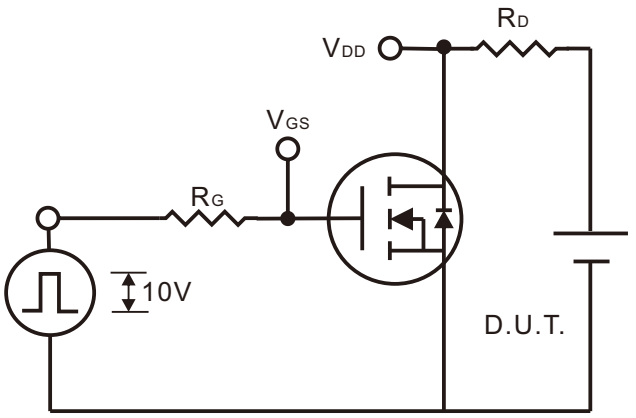
● TEST CIRCUITS AND WAVEFORMS



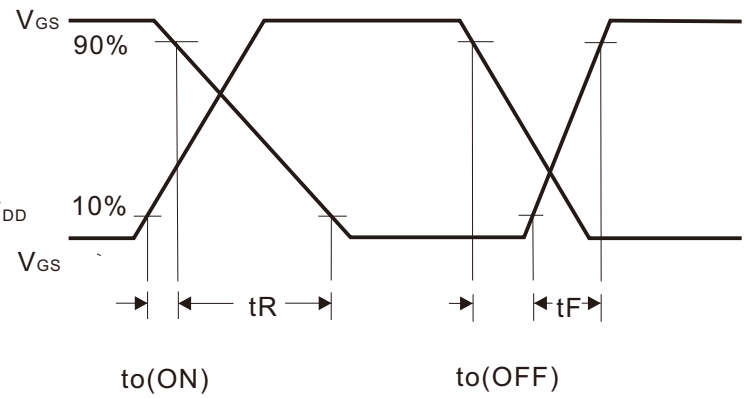
Peak Diode Recovery Test Circuit



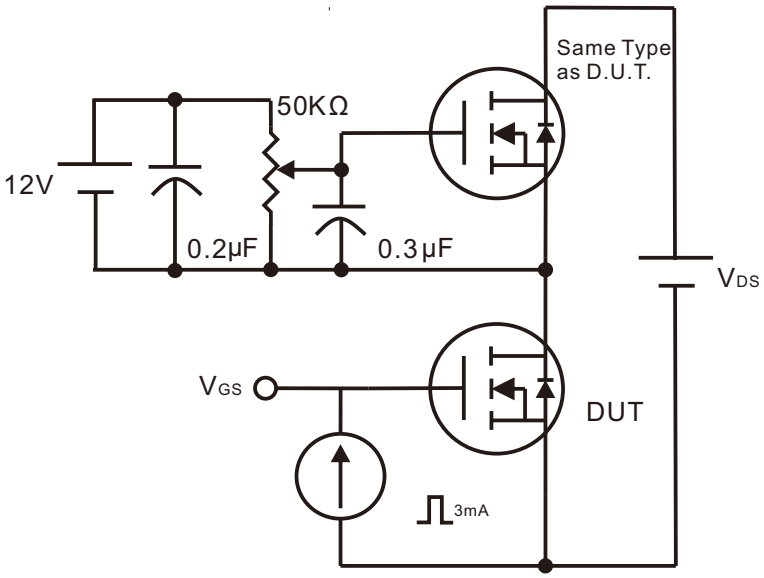
Peak Diode Recovery dv/dt Waveforms



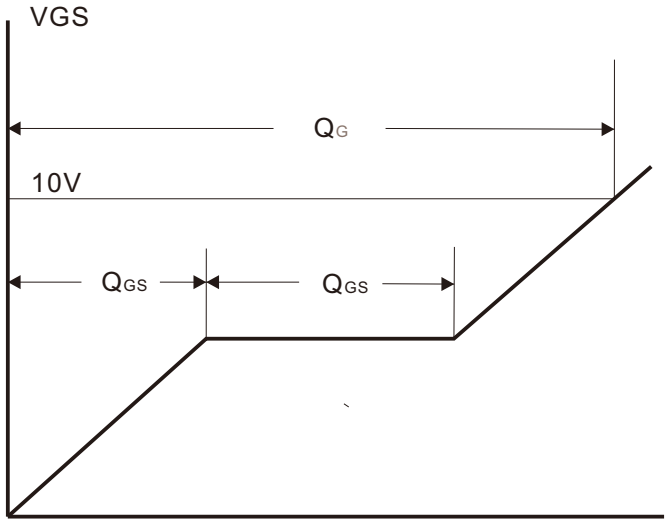
Switching Test Circuit



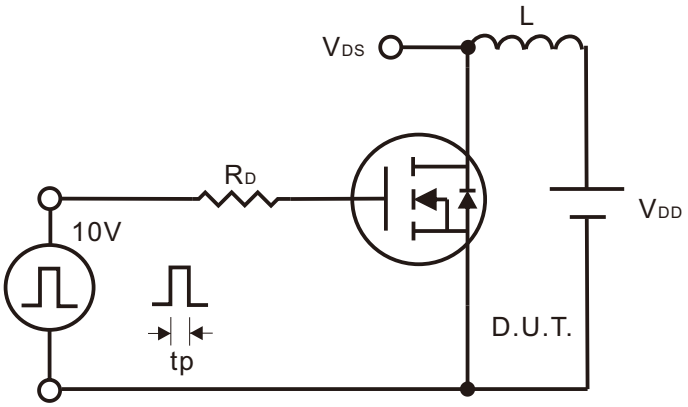
Switching Waveforms



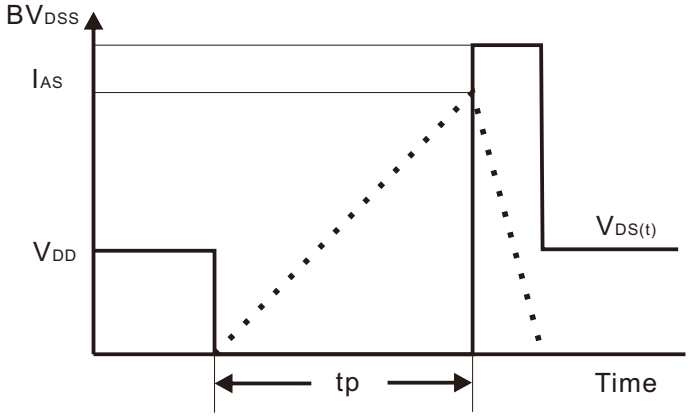
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

● 特征曲线 TYPICAL CHARCTERISTICS

Figure 1. Maximum Effective Thermal Impedance, Junction-to-Case

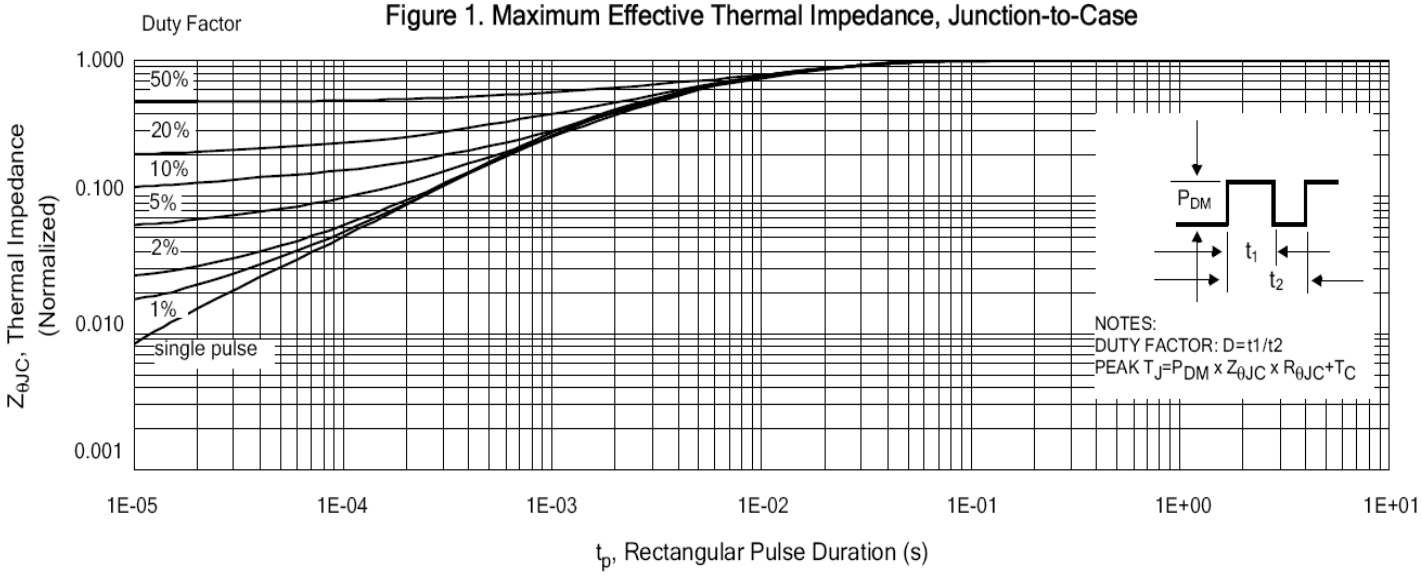


Figure 2. Maximum Power Dissipation vs Case Temperature

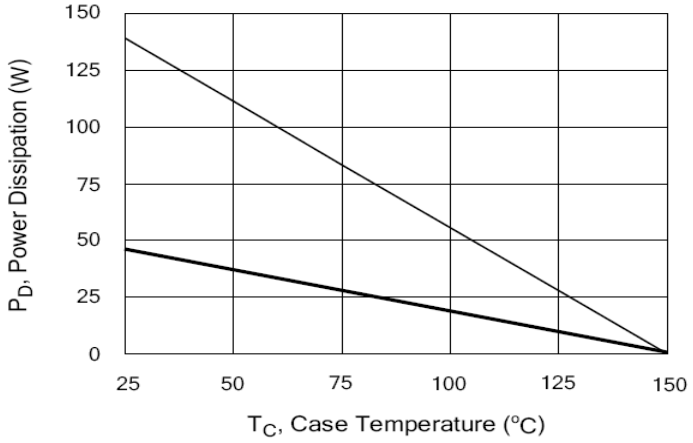


Figure 3 .Maximum Continuous Drain Current vs Tc

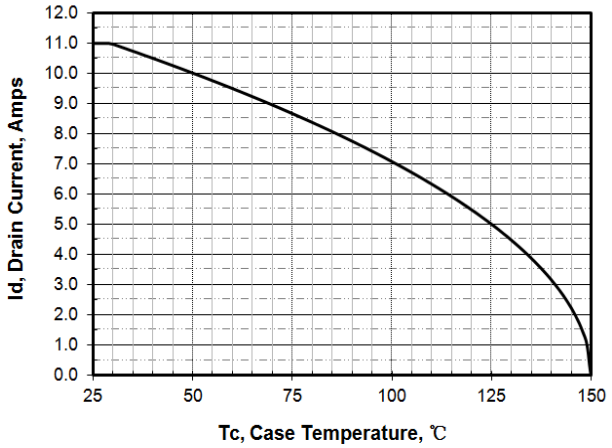


Figure 4. Typical Output Characteristics

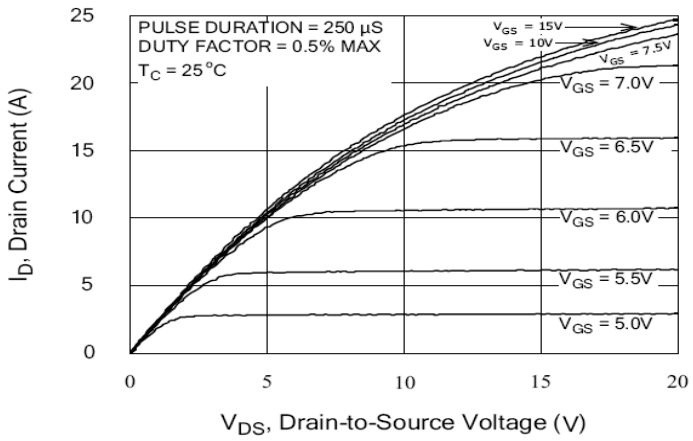
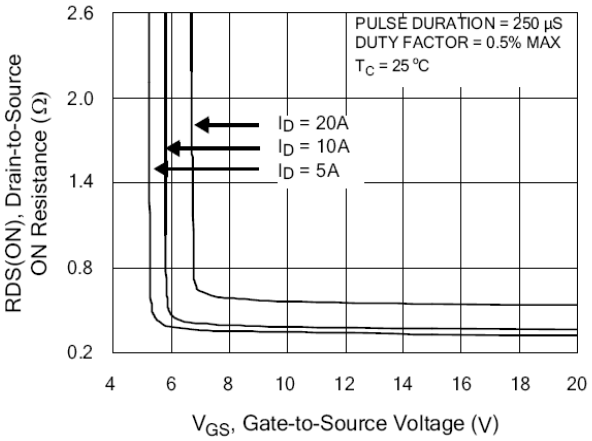


Figure5. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current



● 特征曲线 TYPICAL CHARACTERISTICS

Figure 11. Typical Breakdown Voltage vs Junction Temperature

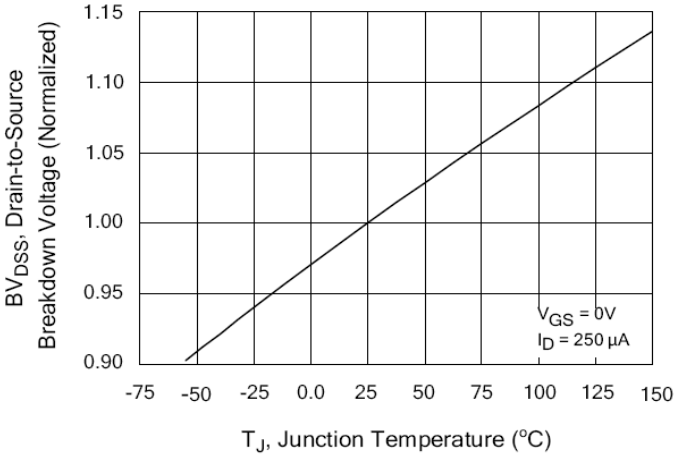


Figure 12. Typical Threshold Voltage vs Junction Temperature

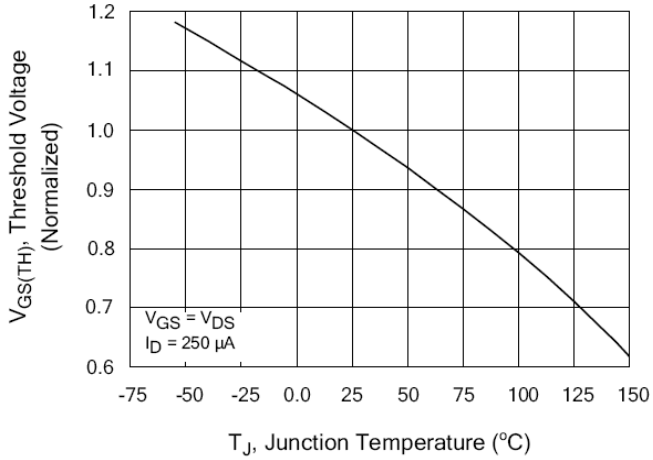


Figure 13 . Maximum Safe Operating Area

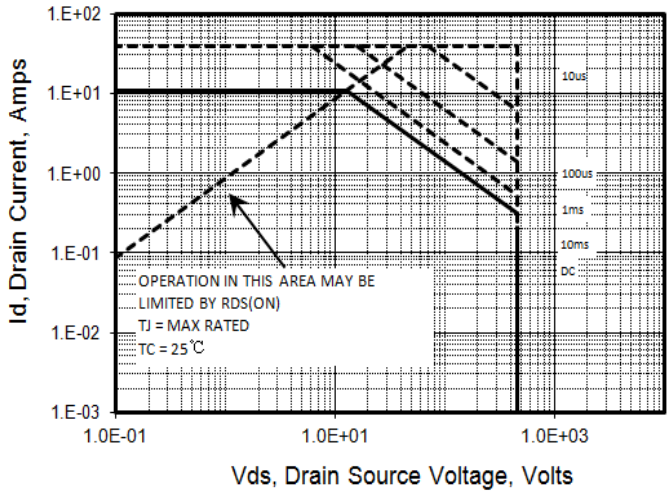


Figure 14. Typical Capacitance vs Drain-to-Source Voltage

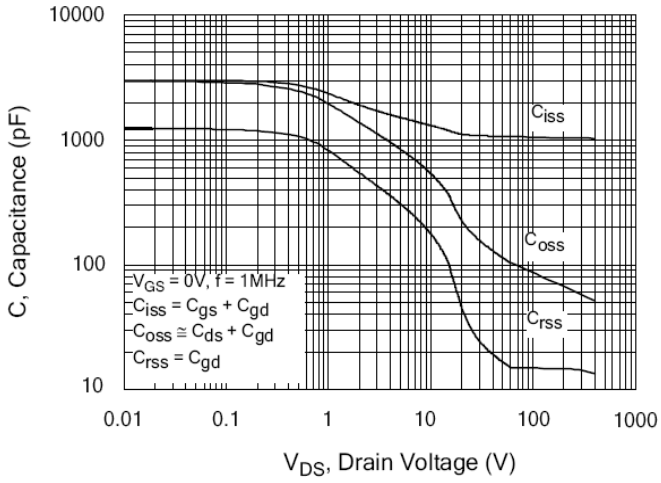


Figure 15. Typical Gate Charge vs Gate-to-Source Voltage

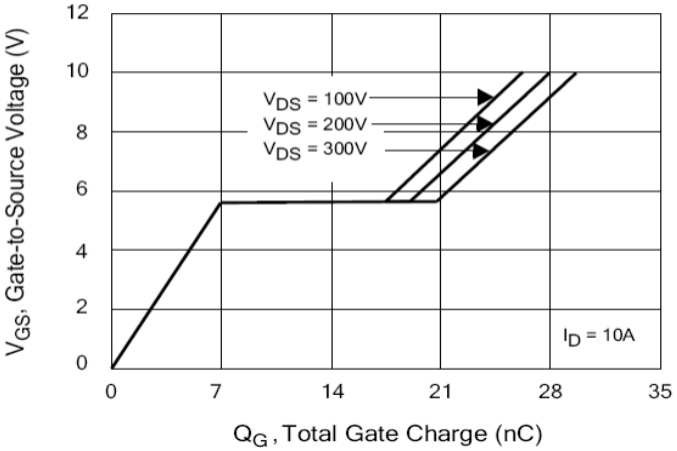
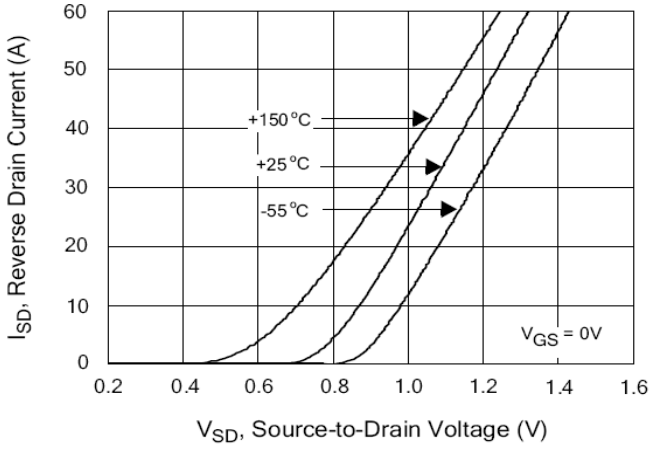
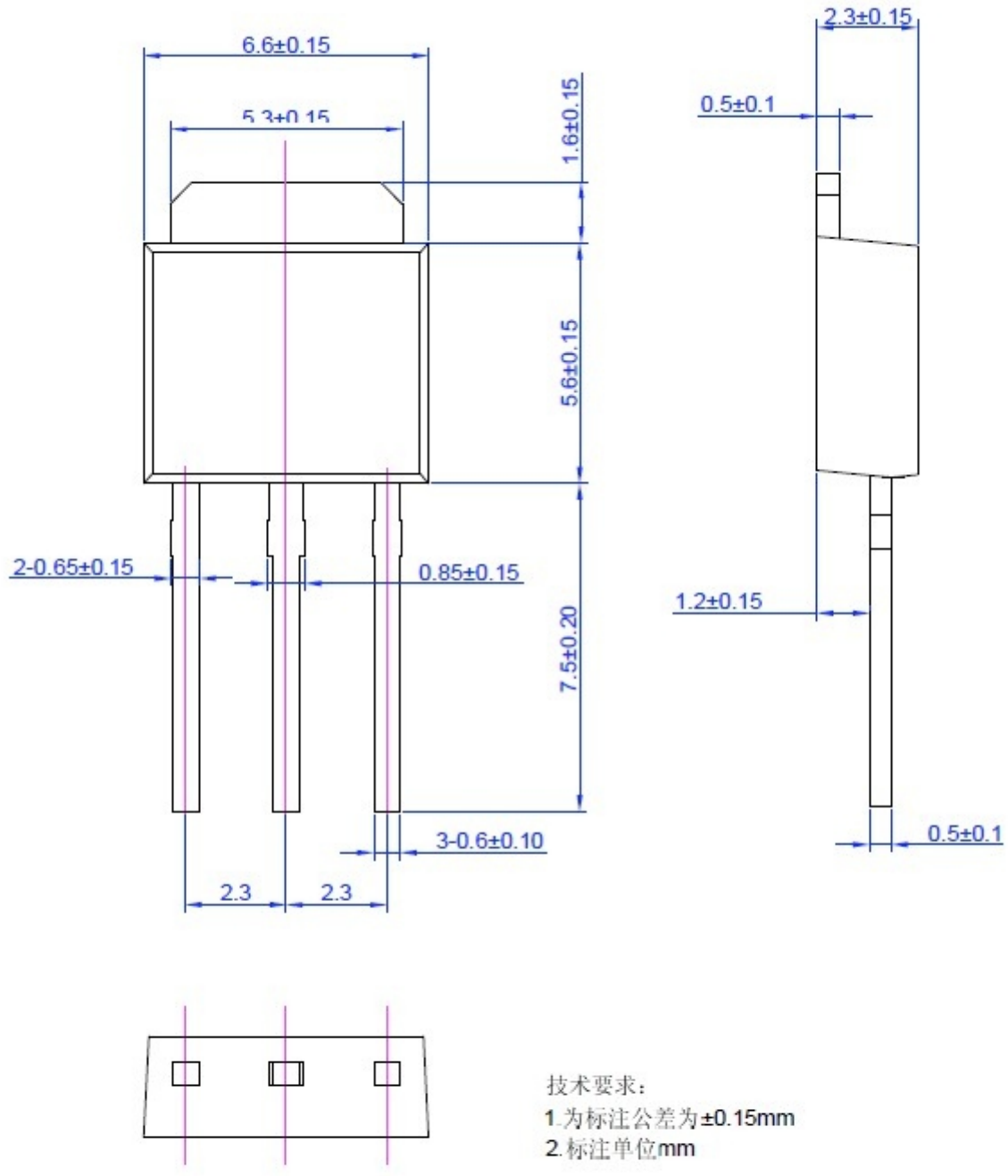


Figure 16. Typical Body Diode Transfer Characteristics



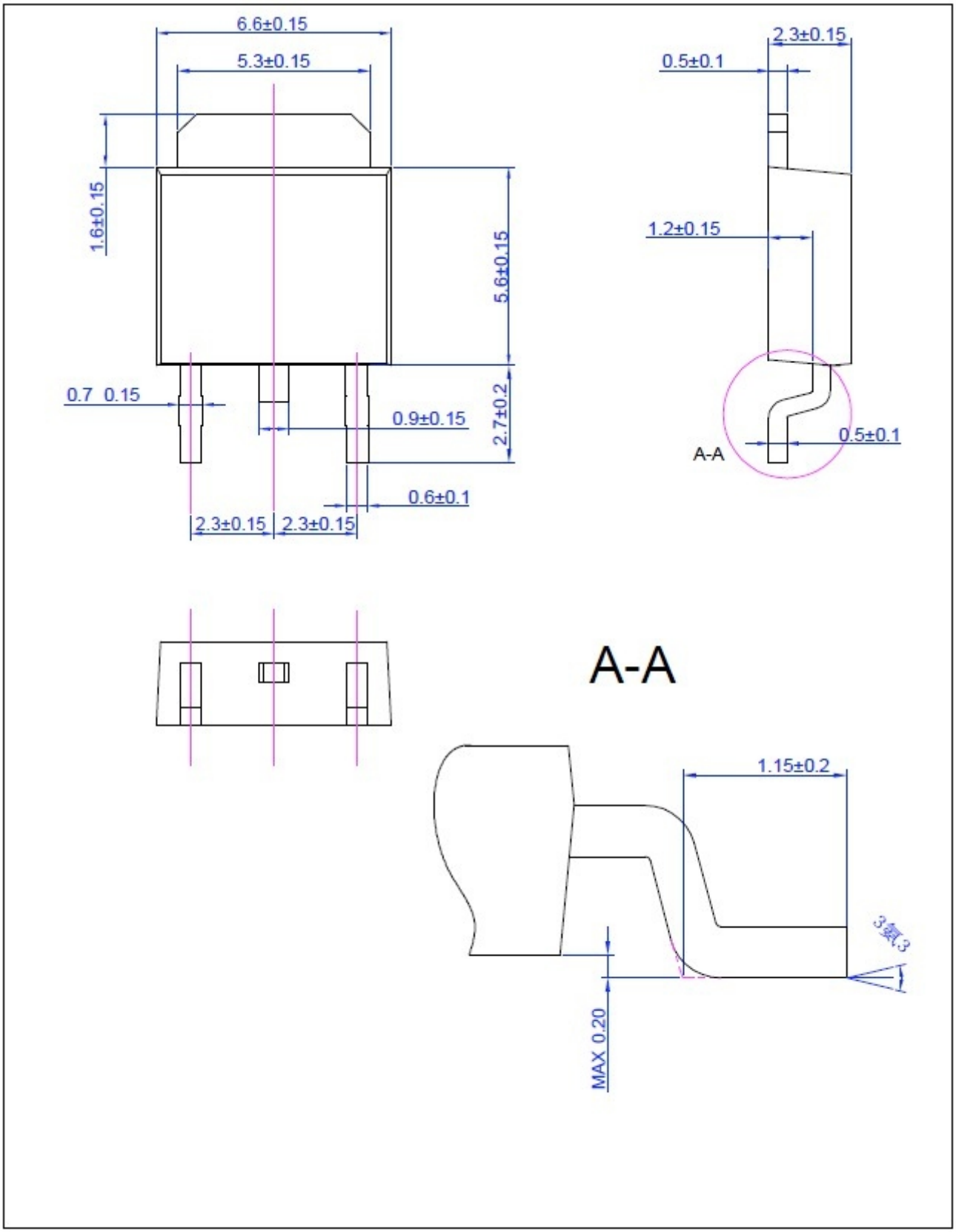
TO-251机械尺寸图



技术要求：
1.为标注公差为±0.15mm
2.标注单位mm

NAME.	TO-251	UNIT	mm	DESIGNED		THIRD ANGLE SYSTEM
DWGNO	HW-DT-006c	PAGE	1OF1	CHECKED		
VERSION	Ver.A	ISSUE DATE	Oct/10/2012	APPROVED		

TO-252机械尺寸图



NAME.	TO-252 outline	UNIT	mm	DESIGNED		THIRD ANGLE SYSTEM
DWGNO	HW-DT-007c	PAGE	1OF1	CHECKED		
VERSION	Ver.A	ISSUE DATE	Oct/10/2012	APPROVED		