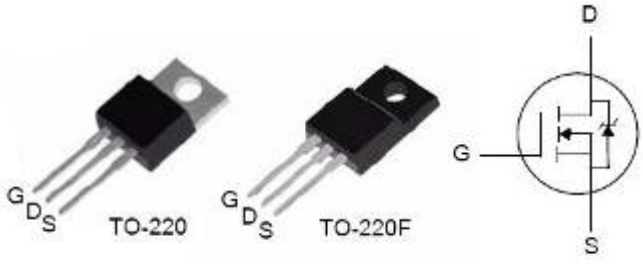
500V N 沟道 MOS 场效应管

BV_{DSS}	$R_{DS(ON)}$ (Max.)	I_D
500V	0.9Ω	8.0A

产品名称

- 低的导通电阻
- 低的栅极电荷(典型值为33nC)
- 开关速度快
- 100%雪崩测试
- 符合RoHS标准/无铅封装



产品应用

- 高效率开关电源
- 适配器/充电器
- 有源功率因数校正
- 液晶面板电源

订购代码

器件名称	封装形式	标识
FTP08N50	TO-220	FTP08N50
FTA08N50	TO-220F	FTA08N50

极限值

除非另有说明，均指T_C=25℃

符号	参数描述	FTP08N50	FTA08N50	单位
V_{DSS}	漏极-源极电压[1]	500		V
I_D	漏极电流连续值（T_C=25℃）	8.0	8.0*	A
I_D@100℃	漏极电流连续值（T_C=100℃）	Figure 3		
I_{DM}	漏极电流脉冲值[2]	Figure 6		
P_D	功耗（T_C=25℃）	125	31	W
	功耗减额因子（T_C > 25℃）	1.0	0.25	W/℃
V_{GS}	栅极-源极电压	±30		V
E_{AS}	单脉冲雪崩能量 L=7mH, I_D=8.0A	220		mJ
dv/dt	二极管反向恢复dv/dt尖峰值[3]	4.5		V/ns
T_L	焊接温度 (距离管壳1.6mm处，10秒)	300		℃
T_J 和T_{STG}	结温和储存温度	-55 to 150		

*漏极电流受最高结温的限制。

注意：施加的电的或热的应力大于“极限值”表中所列参数值，可能导致器件永久的损坏。

热特性

符号	参数描述	FTP08N50	FTA08N50	单位
$R_{\theta JC}$	结-管壳热阻	1.0	4.0	℃/W
$R_{\theta JA}$	结-环境热阻	60	60	

电特性

关断特性

除非另有说明，均指T_C=25℃

符号	参数描述	最小值	典型值	最大值	单位	测试条件
BV_{DSS}	漏极-源极击穿电压	500	--	--	V	V_{GS}=0V, I_D=250μA
$\triangle BV_{DSS}/\triangle T_J$	击穿电压温度系数	--	0.6	--	V/℃	以25℃为参考，I_D=250μA
I_{DSS}	漏极-源极泄漏电流	--	--	12	μA	V_{DS}=500V, V_{GS}=0V
		--	--	100		V_{DS}=400V, V_{GS}=0V, T_C=125℃
I_{GSS}	栅极-源极泄漏电流	--	--	100	nA	V_{GS}=+30V
		--	--	-100		V_{GS}=-30V

导通特性

除非另有说明，均指T_C=25℃

符号	参数描述	最小值	典型值	最大值	单位	测试条件
$R_{DS(ON)}$	漏极-源极导通电阻	--	0.75	0.9	Ω	V_{GS}=10V, I_D=4.8A[4]
$V_{GS(TH)}$	栅极阈值电压	2.0	--	4.0	V	V_{DS} = V_{GS}, I_D=250μA
gfs	正向跨导	--	7.9	--	S	V_{DS} =15V, I_D=8.0A[4]

动态特性

基本上与工作温度无关

符号	参数描述	最小值	典型值	最大值	单位	测试条件
C_{ISS}	输入电容	--	1110	--	pF	V_{GS}=0V V_{DS}=25V f=1.0MHz Figure 14
C_{OSS}	输出电容	--	101	--		
C_{RSS}	反向传输电容	--	21	--		
Q_G	栅极总电荷	--	33	--	nC	V_{DD}=250V I_D=8.0A Figure 15
Q_{GS}	栅极-源极电荷	--	3.2	--		
Q_{GD}	栅极-漏极（密勒）电荷	--	12.5	--		

开关特性

基本上与工作温度无关

符号	参数描述	最小值	典型值	最大值	单位	测试条件
$t_{d(ON)}$	开启延迟时间	--	31	--	ns	V_{DD}=250V I_D=8.0A V_{GS}=10V R_G=20Ω
t_{rise}	上升时间	--	72	--		
$t_{d(OFF)}$	关断延迟时间	--	74	--		
t_{fall}	下降时间	--	51	--		

体二极管特性

除非另有说明，均指T_C=25℃

符号	参数描述	最小值	典型值	最大值	单位	测试条件
I_{SD}	体二极管连续电流	--	--	8.0	A	Integral P-N diode in MOSFET
I_{SM}	体二极管最大脉冲电流	--	--	32	A	
V_{SD}	体二极管正向压降	--	--	1.2	V	I_S=8.0A, V_{GS}=0V
t_{rr}	反向恢复时间	--	320	--	ns	V_{GS}=0V I_F=8.0 A,di/dt=100A/μs
Q_{rr}	反向恢复电荷	--	1980	--	nC	

注意：

[1] T_J=+25℃ to +150℃
[2] 重复性极限值，脉冲宽度受最高结温限制
[3] I_{SD}=8.0A, di/dt≤100A/μs, V_{DD}≤BV_{DSS}, T_J=+150℃
[4] 脉冲宽度≤380μs; 占空比≤2%.

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

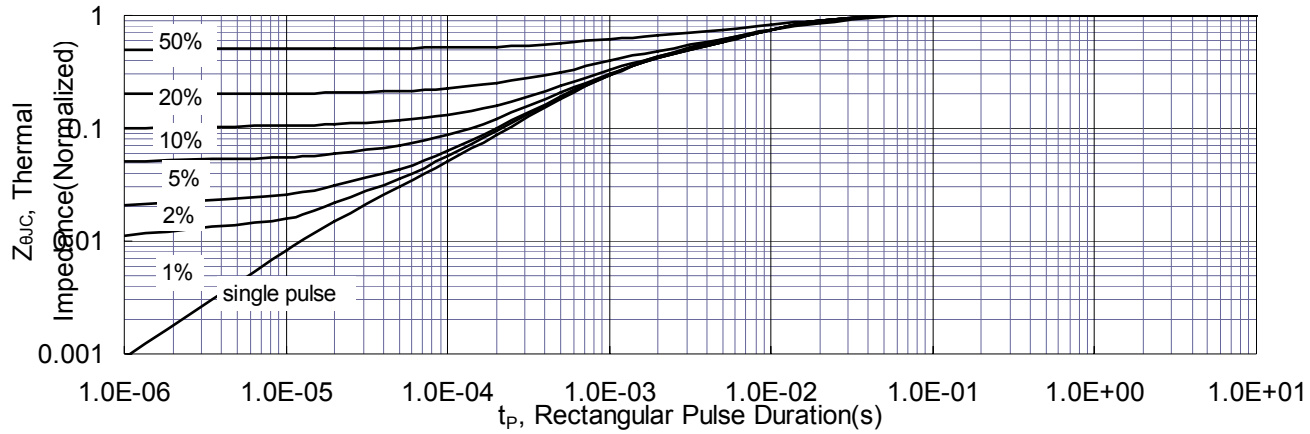


Figure 2. Maximum Power Dissipation vs. Case Temperature

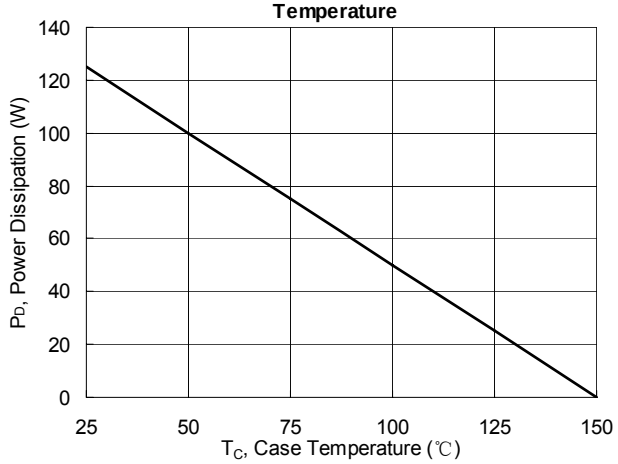


Figure 3. Maximum Continuous Drain Current vs Case Temperature

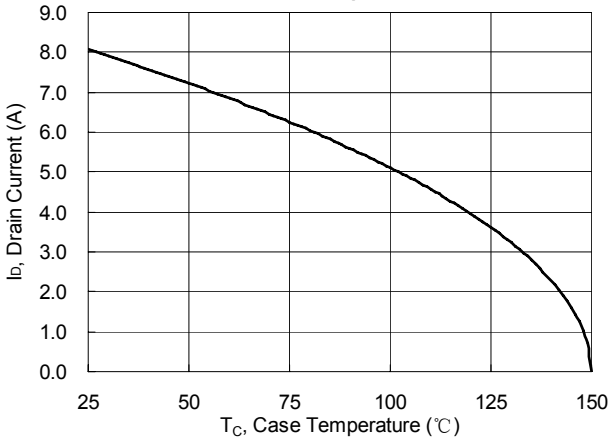


Figure 4. Typical Output Characteristics

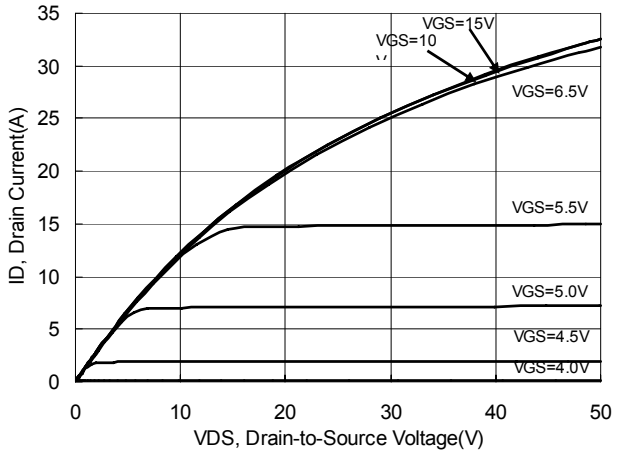


Figure 5. Typical Drain-to-Source ON Resistance vs. Gate Voltage and Drain Current

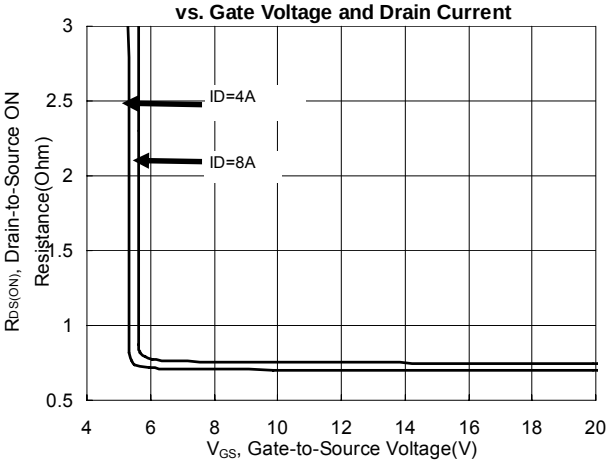


Figure 6. Maximum Peak Current Capability

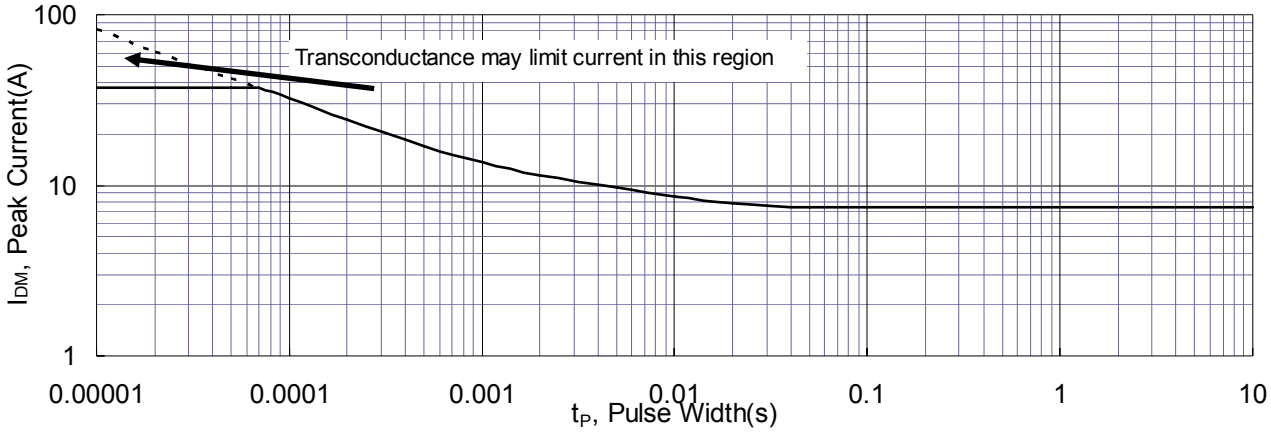


Figure 7. Typical Transfer Characteristics

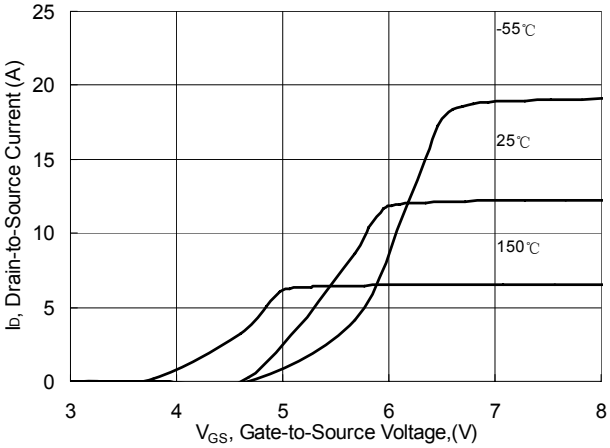


Figure 8. Unclamped Inductive Switching Capability

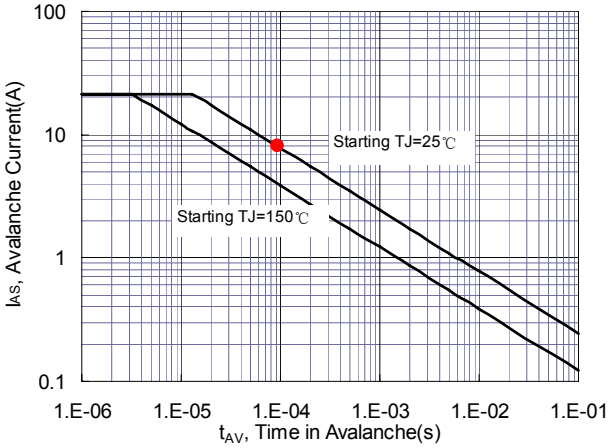


Figure 9. Typical Drain-to-Source ON Resistance

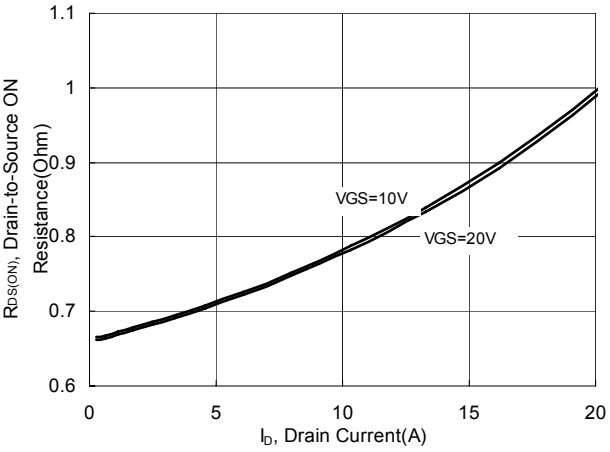


Figure 10. Typical Drain-to-Source On Resistance vs. Junction Temperature

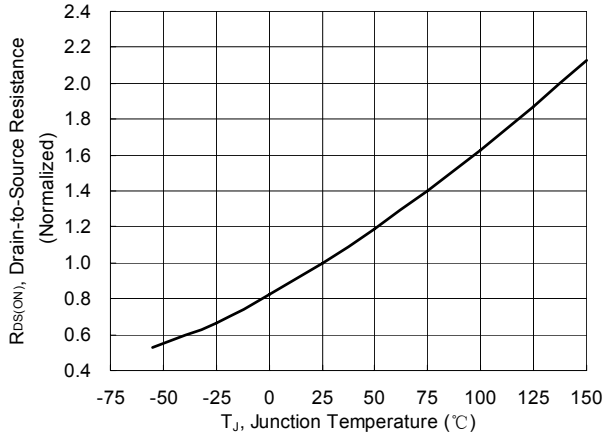


Figure 11.Typical Breakdown Voltage vs. Junction Temperature

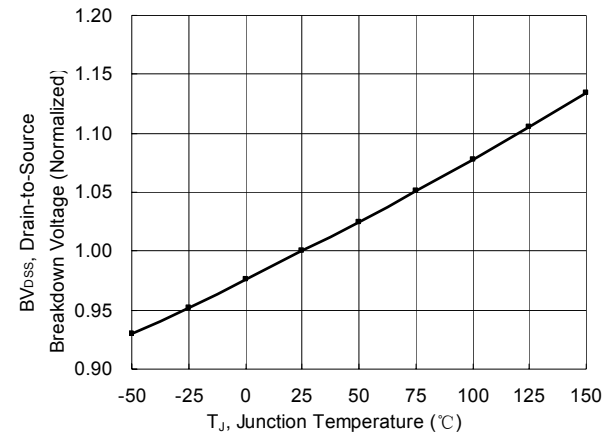


Figure 12.Typical Threshold Voltage vs. Junction Temperature

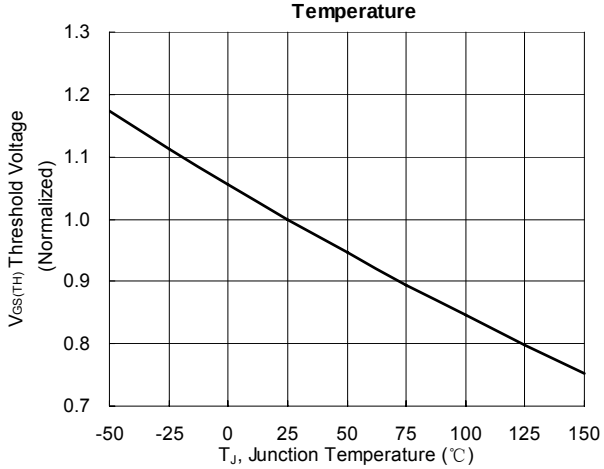


Figure 13. Maximum Forward Safe Operation Area

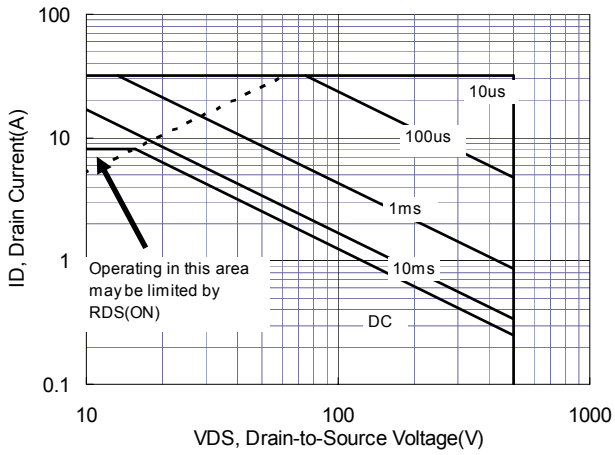


Figure 14. Typical Capacitance vs. Drain-to-Source Voltage

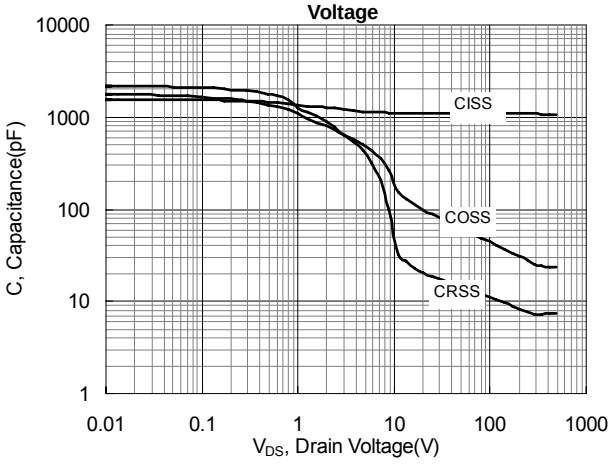


Figure 15. Typical Gate Charge vs. Gate-to-Source Voltage

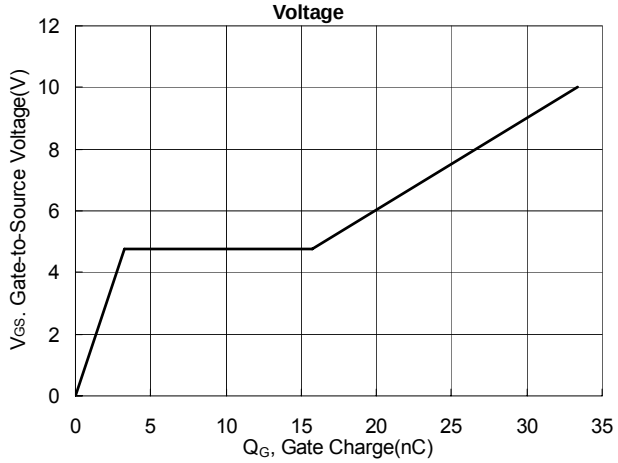
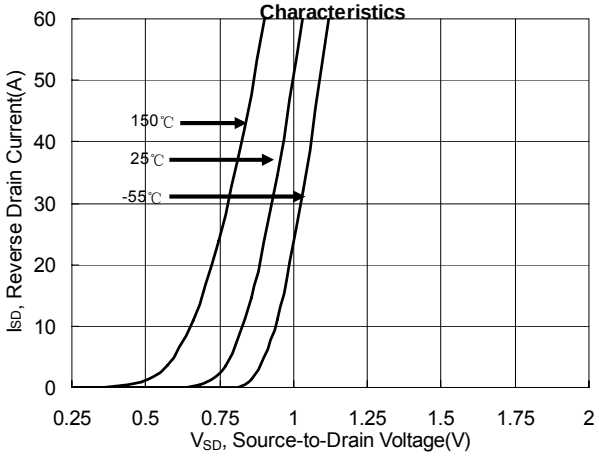


Figure 16. Typical Body Diode Transfer Characteristics



测试电路

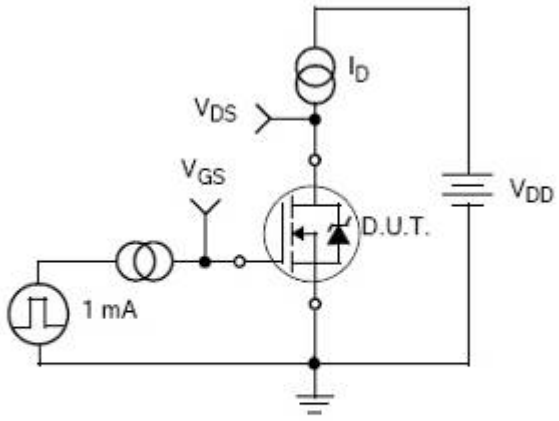


Figure 17. Gate Charge Test Circuit

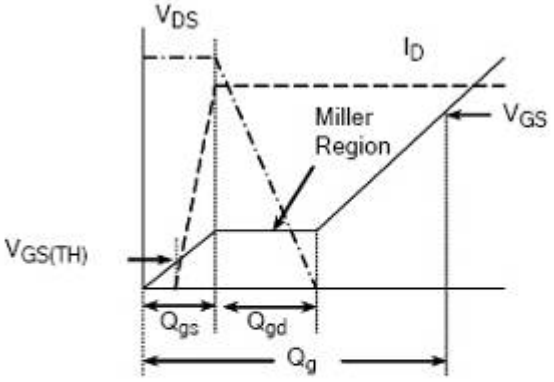


Figure 18. Gate Charge Waveform

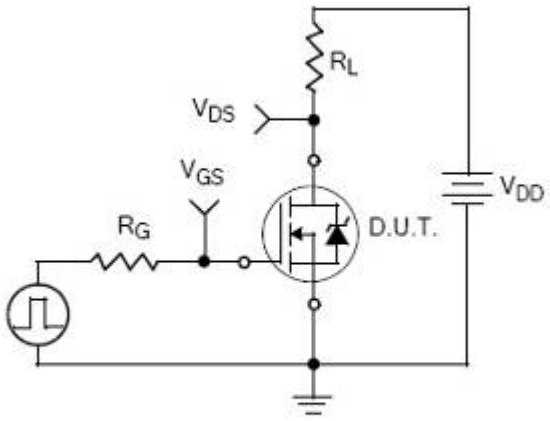


Figure 19. Resistive Switching Test Circuit

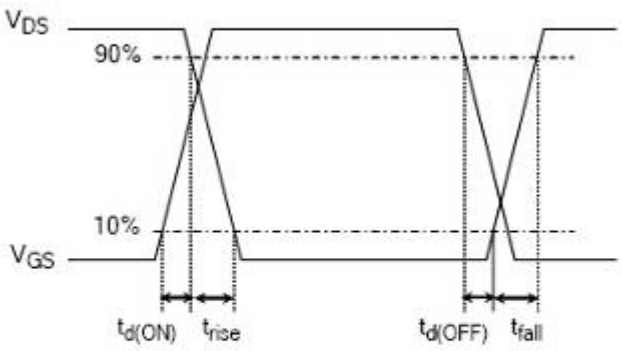


Figure 20. Resistive Switching Waveforms

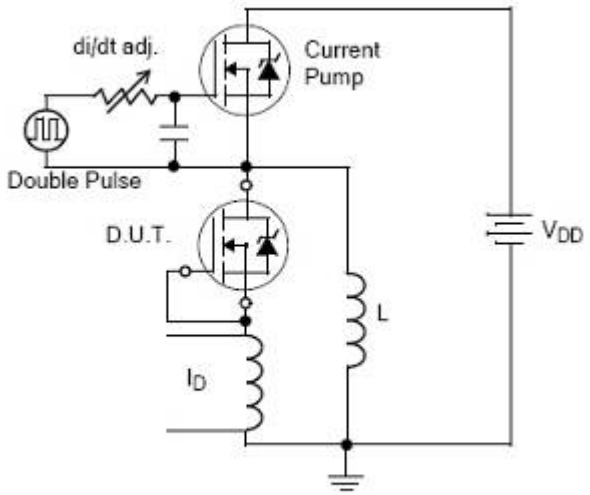


Figure 21. Diode Reverse Recovery Test Circuit

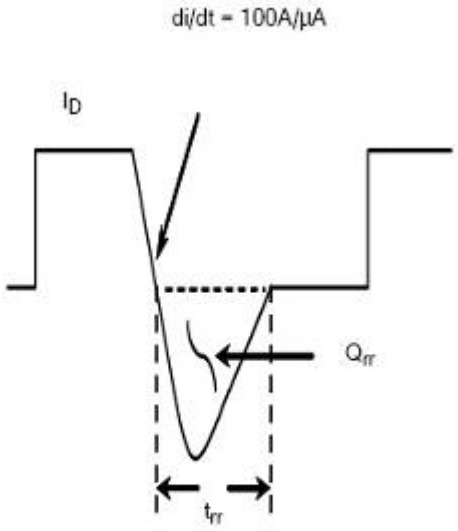


Figure 22. Diode Reverse Recovery Waveform

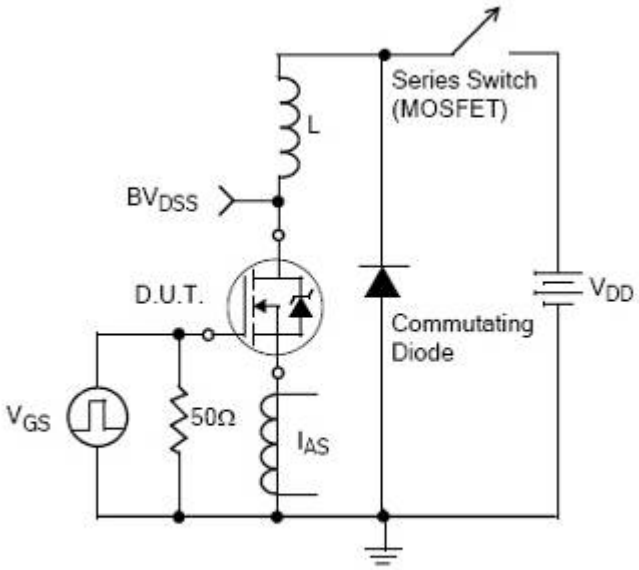


Figure 23. Unclamped Inductive Switching Test Circuit

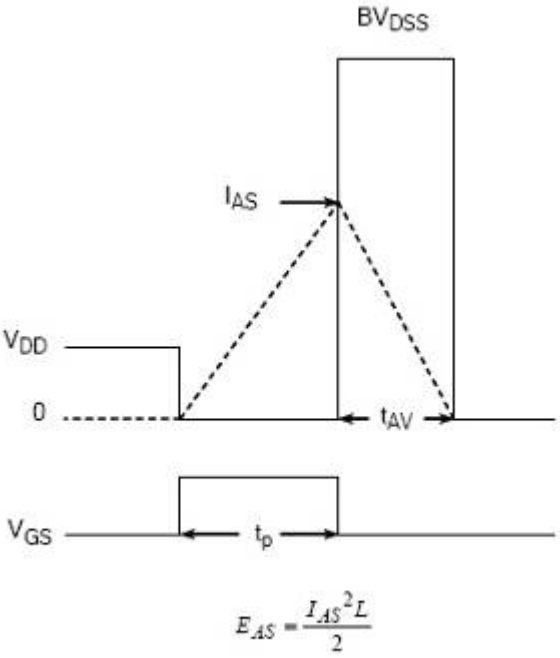
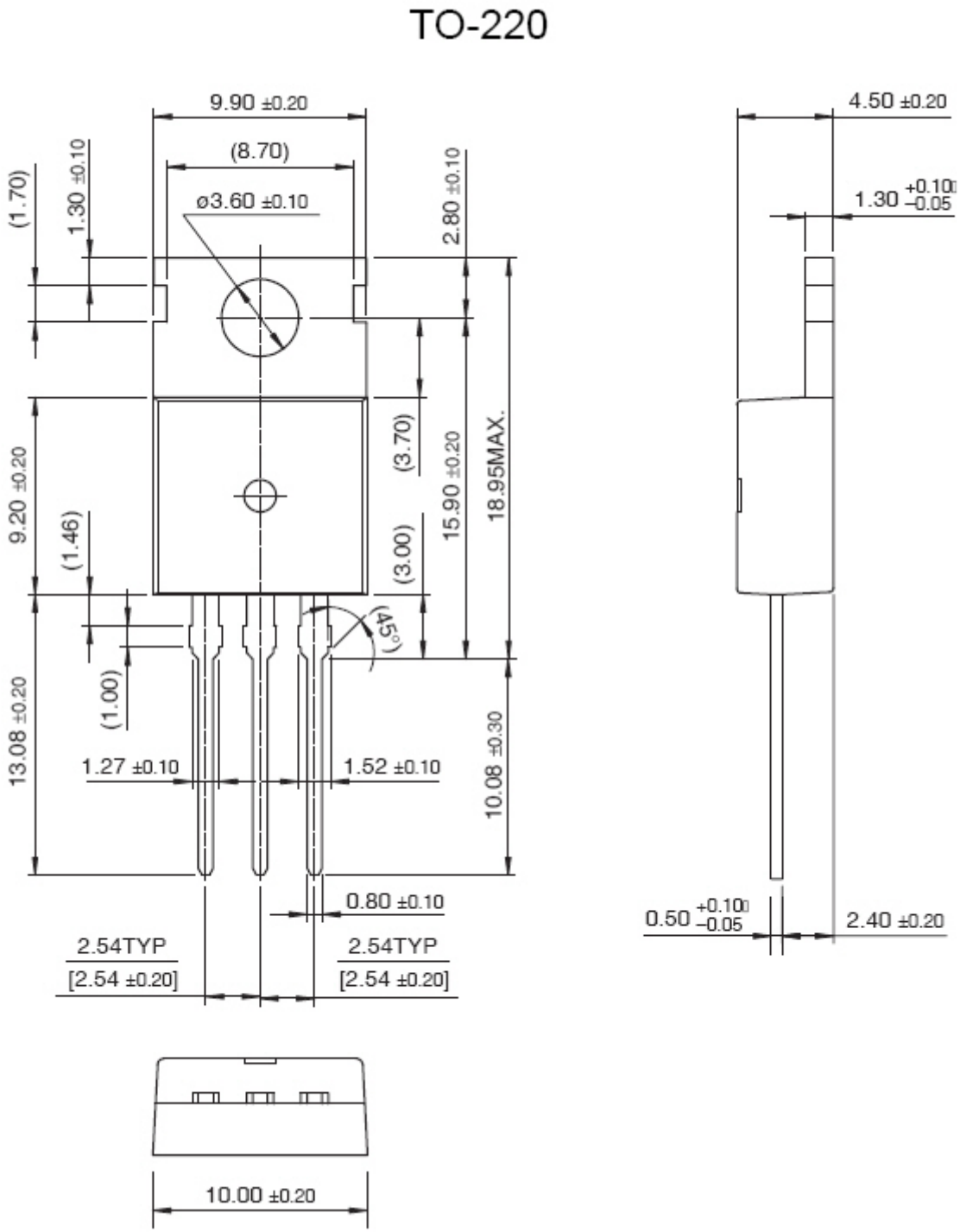
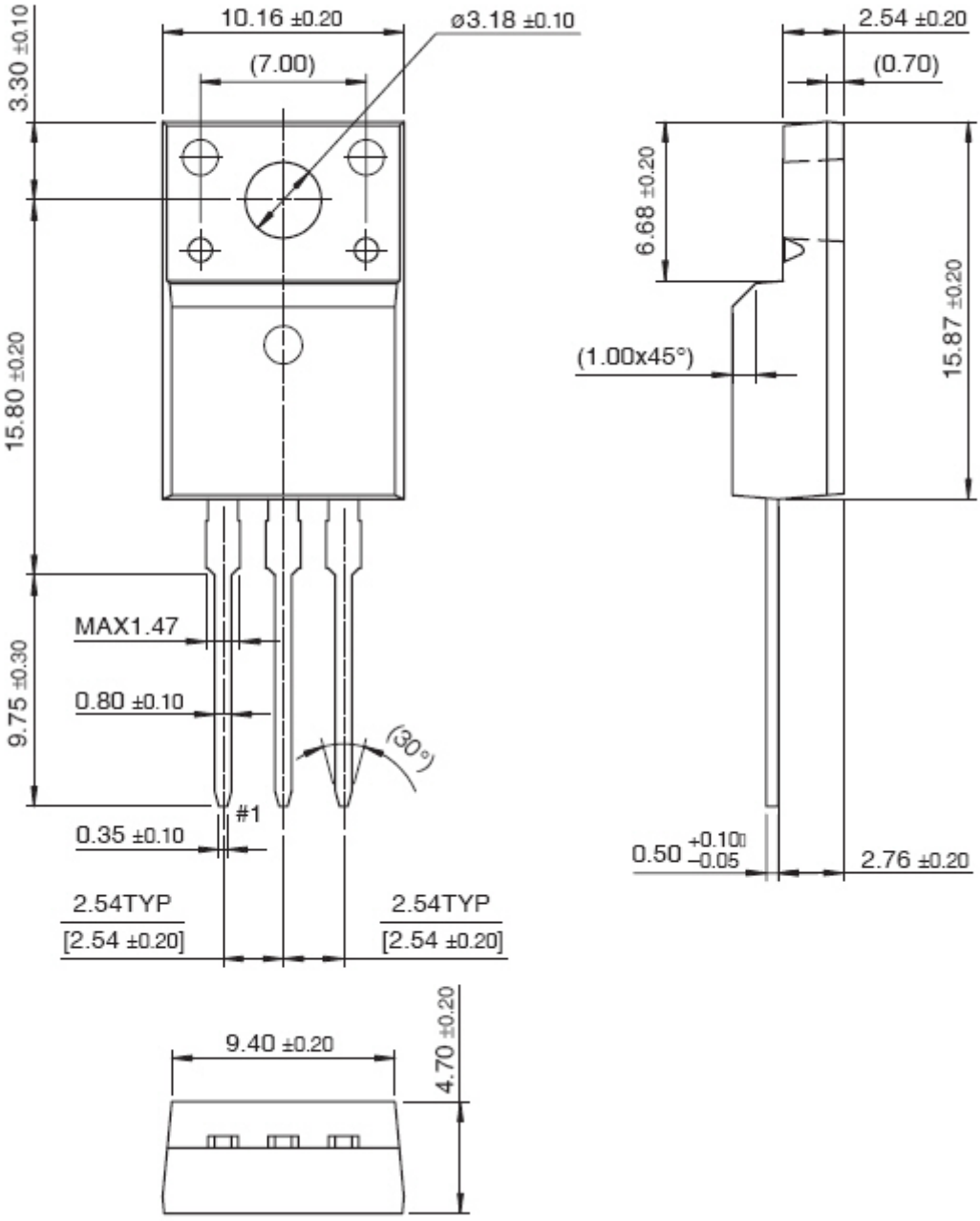


Figure 24. Unclamped Inductive Switching Waveforms

封装尺寸


TO-220
9.90 ±0.20
(8.70)
ø3.60 ±0.10
(1.70)
1.30 ±0.10
2.80 ±0.10
9.20 ±0.20
(1.46)
(3.70)
(3.00)
15.90 ±0.20
18.95MAX.
(1.00)
13.08 ±0.20
1.27 ±0.10
1.52 ±0.10
10.08 ±0.30
(45°)
0.80 ±0.10
2.54TYP
[2.54 ±0.20]
2.54TYP
[2.54 ±0.20]
10.00 ±0.20
4.50 ±0.20
1.30 +0.10 −0.05
0.50 +0.10 −0.05
2.40 ±0.20

TO-220F


10.16 ±0.20
ø3.18 ±0.10
(7.00)
3.30 ±0.10
15.80 ±0.20
9.75 ±0.30
MAX1.47
0.80 ±0.10
(30°)
#1
0.35 ±0.10
2.54TYP
[2.54 ±0.20]
2.54TYP
[2.54 ±0.20]
2.54 ±0.20
(0.70)
6.68 ±0.20
15.87 ±0.20
(1.00x45°)
0.50 +0.10 −0.05
2.76 ±0.20
9.40 ±0.20
4.70 ±0.20

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