1、主要参数 Main Characteristics

V_{DSS}	30	V
I_D	150	A
P_D	150	W
$R_{DSONTYP}$	2.5	mΩ

2、用途 Applications

- 直流电动机控制 DC Motor Control
- D 类放大器 Class D Amplifier
- UPS 电源 Uninterruptible Power Supply
- 电池保护电路 Battery protection circuit
- 大功率开关电源 High power switching power supply

3、产品特性 Features

- 沟槽工艺 MOSFET Trench FET Power MOSFET
- 低栅极电荷 Low gate charge
- 低 Crss（典型值 300pF）Low Crss (typical 300pF)
- 通态电阻低 Low ON Resistance
- 产品全部经过雪崩测试 100% avalanche tested
- RoHS 产品 RoHS product

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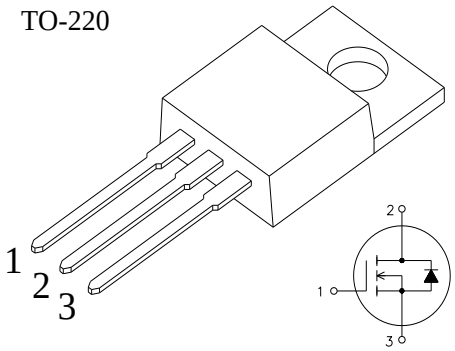


1 栅极(G) 2 漏极 (D) 3 源极(S)

4. 电特性 Electrical Characteristics

4.1 极限值 Absolute Ratings (T_C = 25℃)

参 数 名 称 Parameter	符号 Symbol	额定值 Value		单位 Unit
漏极-源极电压 Drain-Source Voltage	V_{DSS}	30		V
连续漏极电流 Drain Current -continuous	I_D	T_C = 25 ℃	150	A
		T_C = 100 ℃	104	
最大脉冲漏极电流（注 1） Drain Current - pulse（note 1）	I_{DM}	600		A
栅源电压 Gate-Source Voltage	V_{GS}	±20		V
单脉冲雪崩能量（注 2） Single Pulsed Avalanche Energy（note 2）	E_{AS}	400		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	5.0		V/ns
耗散功率 Power Dissipation	P_D	150		W
结温，贮存温度 Operating and Storage Temperature Range	T_j，T_{stg}	150，-55～150		℃

4.2 电参数 Electrical Characteristics (T_C = 25℃)

参数名称 Parameter	符号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单位 Units
截止特性 Off –Characteristics						
漏源击穿电压 Drain-Source Voltage	BV_{DSS}	V_{GS}=0V，I_D=250μA	30			V
漏源击穿电压温度系数 Breakdown Voltage Temperature Coefficient	△BV_{DSS}/△T_J	I_D = 250μA		0.08		V/℃
漏源漏电流 Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, VGS=0 , 25℃			1	μA
		V_{DS}=24V,VGS=0 , 125℃			10	
栅源漏电流 Gate-body leakage current	I_{GSS}	V_{GS}= ±20V			±100	nA
导通特性 On-Characteristics						
静态导通电阻 Static Drain-Source On-Resistance	R_{DSON}*	V_{GS}=10V，I_D=30A		2.5	3.5	mΩ
		V_{GS}=4.5V，I_D=20A		4.6	6.5	
阈值电压 Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}，I_D=250μA	1		2	V
跨导 Forward Transconductance	g_{fs}	V_{DS}=15V, I_D=15A		10		S
脉冲宽度 tp≤380μs,占空比 δ≤2%						
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	V_{GS}=0V，V_{DS}=15V f=1.0MH		3500		pF
输出电容 Output capacitance	C_{oss}			613		
反向传输电容 Reverse transfer capacitance	C_{rss}			537		
开关特性 Switching Characteristics						
开启延迟(时间) Turn-On delay time	$t_{d(ON)}$	I_D =50A V_{DD} = 15V V_{GS} = 10V R_G = 6Ω		30.4		nS
上升时间 Turn-On rise time	t_r			30.9		
关断延迟(时间) Turn-Off delay time	$t_{d(OFF)}$			121		
下降时间 Turn-Off Fall time	t_f			56		
栅极电荷 Total Gate Charge	Qg	I_D=50A,V_{DD}=15V V_{GS} = 10V		75.8		nC
栅源电荷 Gate-Source charge	Qgs			10		
栅漏电荷 Gate-Drain charge	Qgd			21.5		

源-漏二极管特性 Drain-Source Diode Characteristics						
源漏二极管连续电流 Maximum Continuous Drain –Source Diode Forward Current	I_{SD}	Tc = 25℃			150	A
源漏二极管脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SDM}				600	A
源漏二极管正向压降 Drain-Source Diode Forward Voltage	V_{FSD}	I_{SD}=50A,V_{GS}=0			1.5	V
反向恢复时间 Reverse recovery time	t_{rr}	I_{SD}=50A,Tj = 25℃ dI_F/dt=100A/us, V_{GS}=0V		37		nS
反向恢复电荷 Reverse recovery charge	Q_{rr}			35		nC

参数名称 Parameter	符号 Symbol	额定值 Value	单位 Unit
热阻（结到壳） Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.83	℃/W
热阻（结到环境） Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	℃/W

注：

1 重复脉冲, 宽度由最高结温限制

2 L=2mH, I_D=20 A, 起始结温 T_J=25℃

3 I_{SD} =150A,di/dt ≤100A/us,V_{DD}≤BV_{DS}, 起始结温 T_J=25℃

Notes:

1 Pulse width limited by maximum junction temperature

2 L=2mH, I_D=20A, Starting T_J=25℃

3 I_{SD} =150A,di/dt ≤100A/us,V_{DD}≤BV_{DS}, StartingT_J=25℃

5. 特性曲线 Characteristics Curve

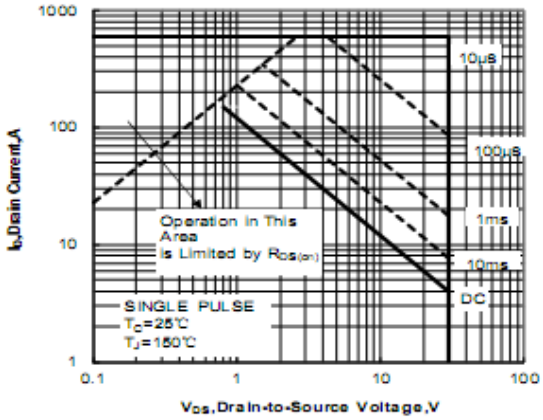


Figure 1 . Maximum Safe Operating Area

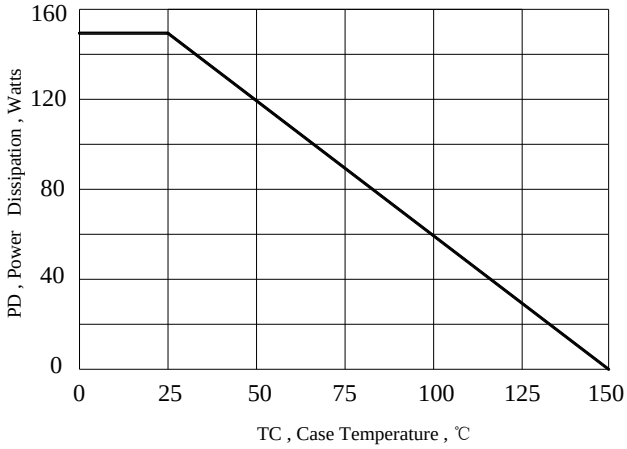


Figure 2 , Maximum Power Dissipation vs Case Temperature

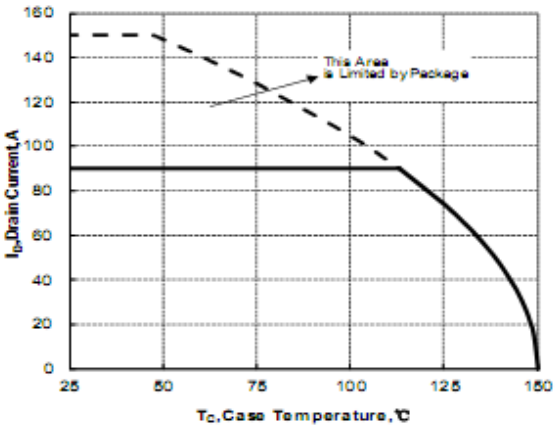


Figure 3. Maximum Continuous Drain Current vs Case Temperature

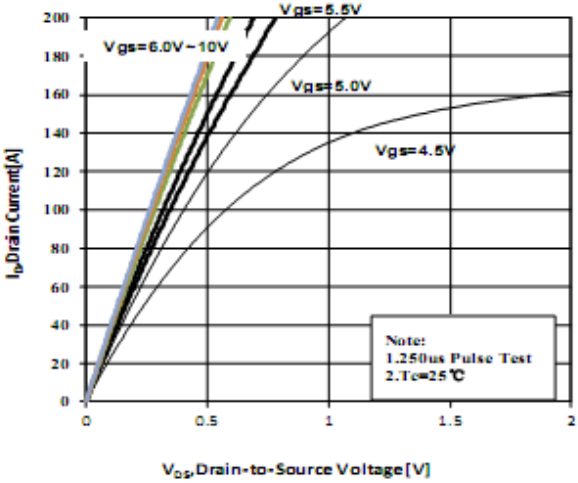


Figure 4. Typical output Characteristics

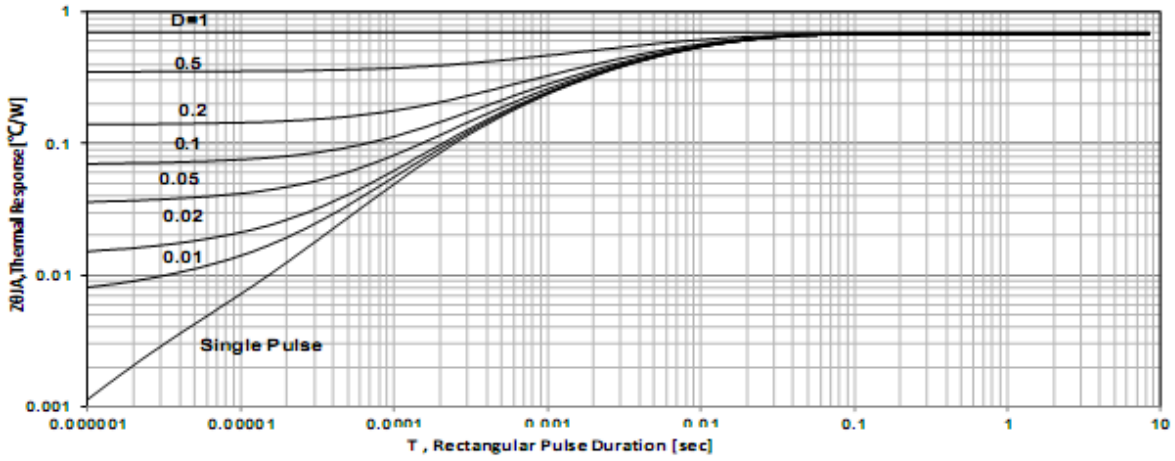


Figure 5 Maximum Effective Thermal Impedance , Junction to Case

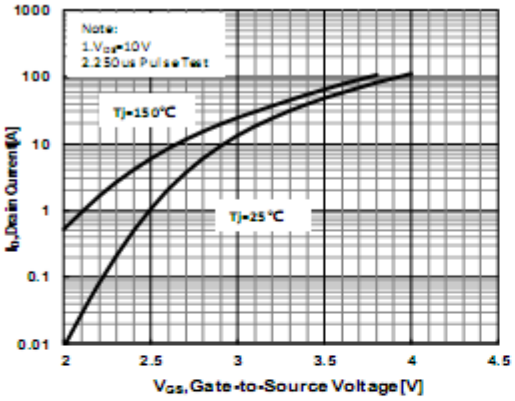


Figure 6 Typical Transfer Characteristics

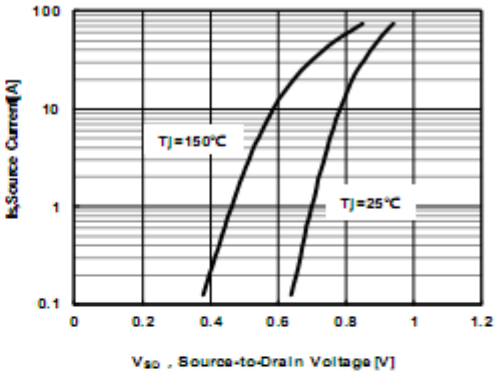


Figure 7 Typical Body Diode Transfer Characteristics

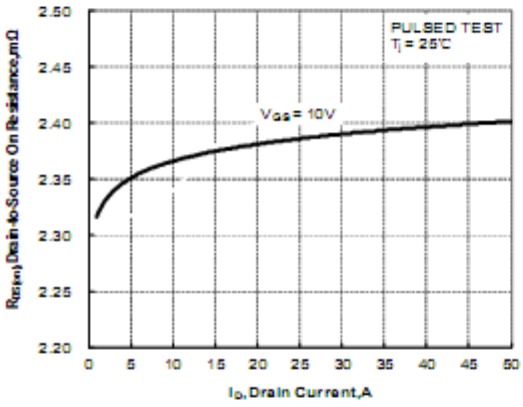


Figure 8. Drain-to-Source On Resistance vs Drain Current

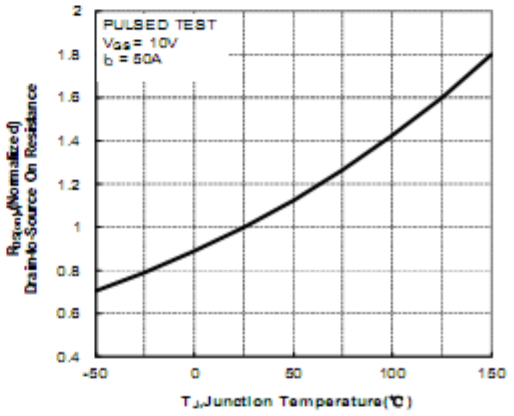


Figure 9. Normalized On Resistance vs Junction Temperature

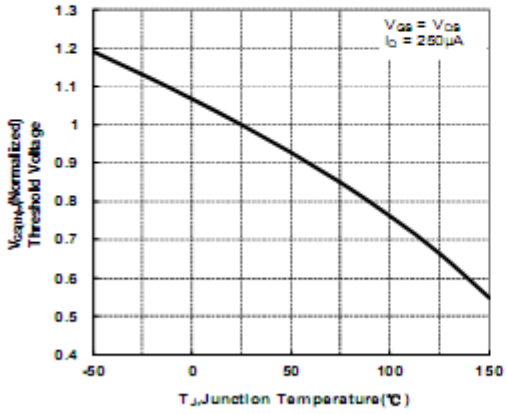


Figure10. Normalized Threshold Voltage vs Junction Temperature

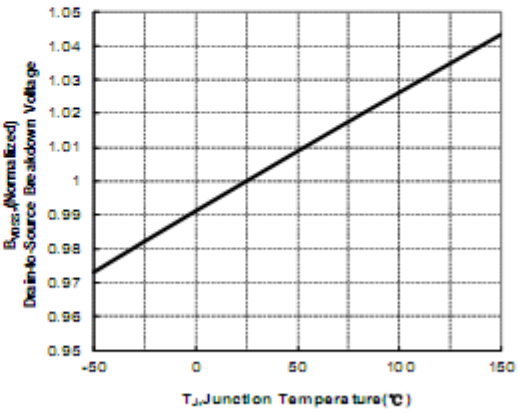


Figure 11. Normalized Breakdown Voltage vs Junction Temperature

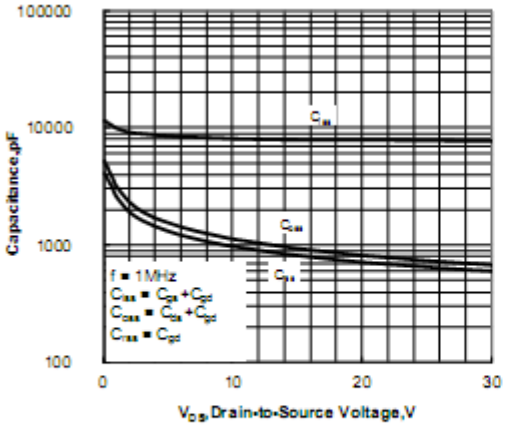


Figure 12. Capacitance Characteristics

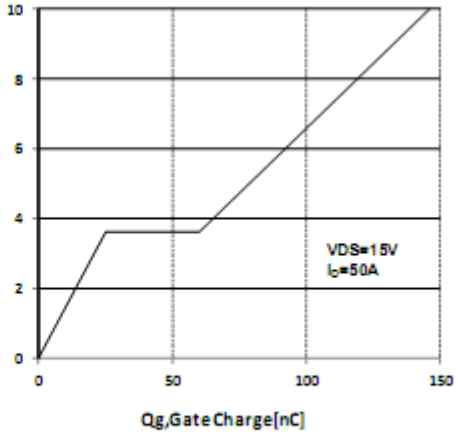


Figure 13 Typical Gate Charge vs Gate to Source Voltage

Test Circuit and Waveform

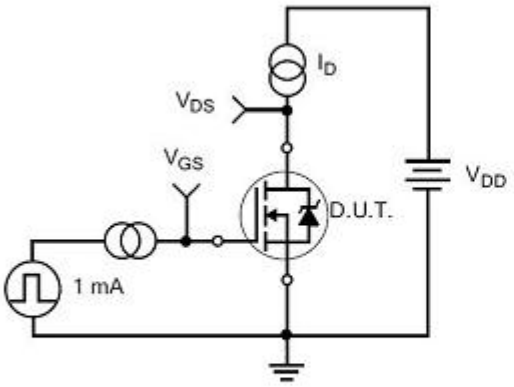


Figure 14. Gate Charge Test Circuit

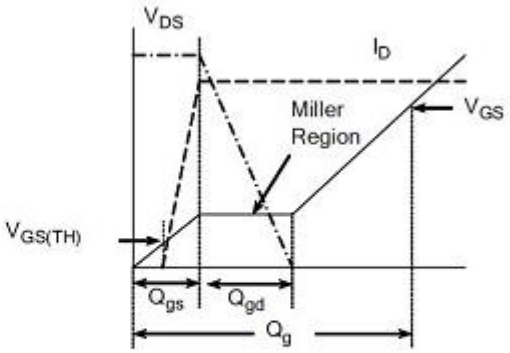


Figure 15. Gate Charge Waveforms

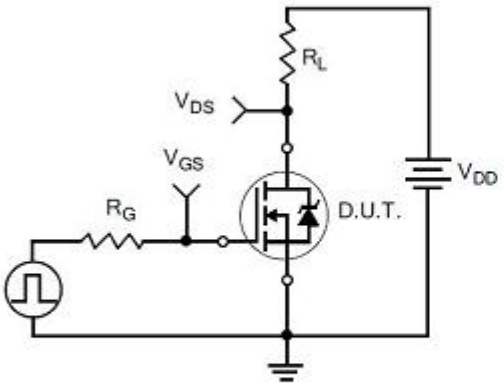


Figure 16. Resistive Switching Test Circuit

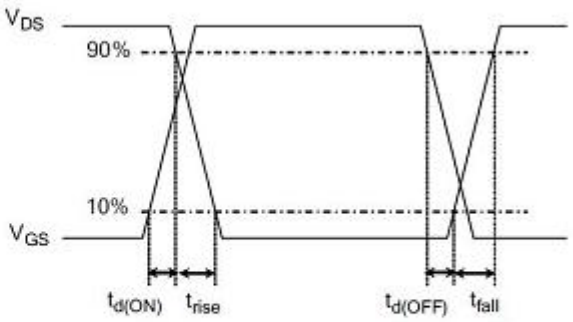


Figure 17. Resistive Switching Waveforms

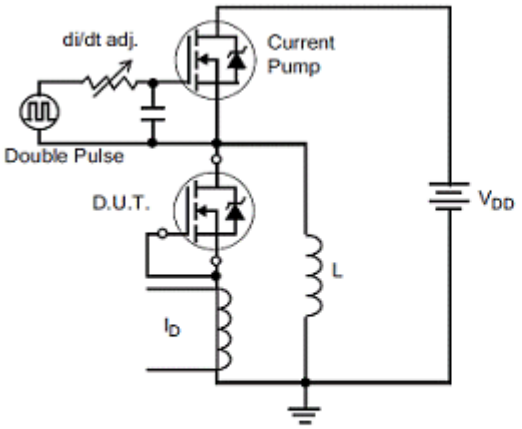


Figure 18. Diode Reverse Recovery Test Circuit

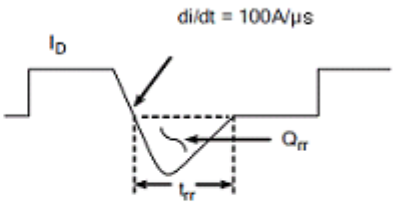


Figure 19. Diode Reverse Recovery Waveform

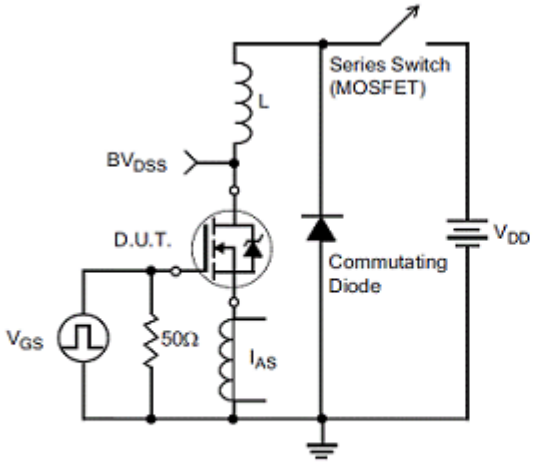


Figure20.Unclamped Inductive Switching Test Circuit

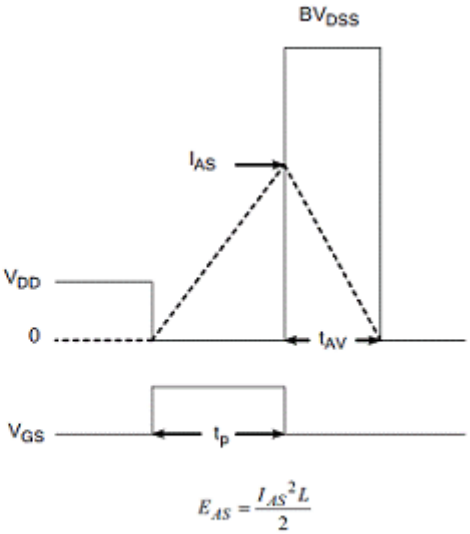
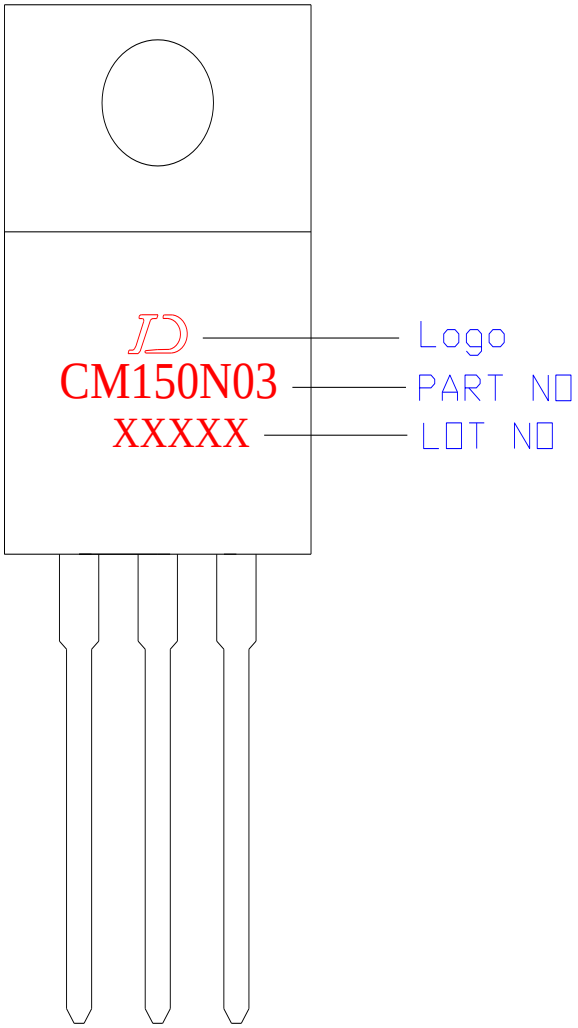


Figure21.Unclamped Inductive Switching Waveform

6. Marking(印章说明)



7. 产品外形尺寸图(单位：mm) Package Dimentions(Unit：mm)

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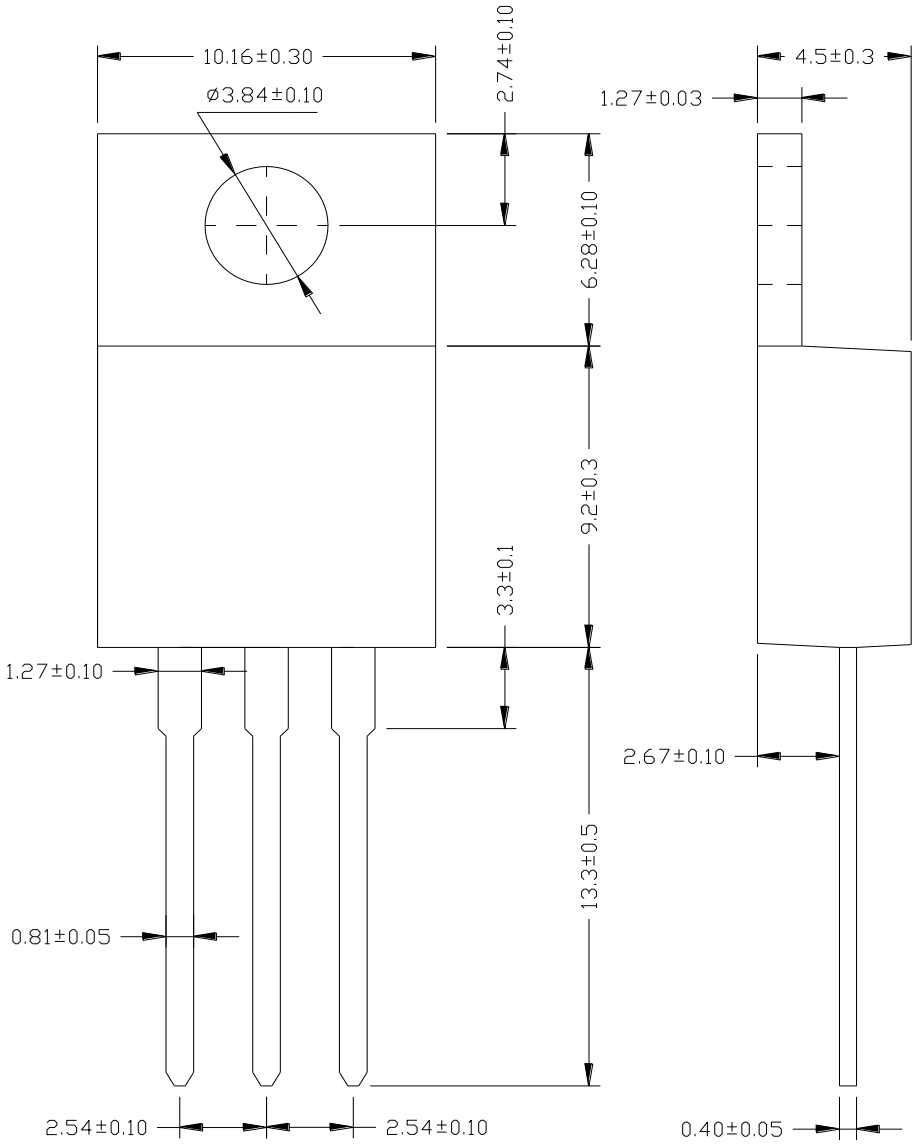

The name and content of poisonous and harmful material in products

Part's Name	Hazardous Substance					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
Limit	≤0.1%	≤0.1%	≤0.01%	≤0.1%	≤0.1%	≤0.1%
Lead Frame	○	○	○	○	○	○
Molding Compound	○	○	○	○	○	○
Chip	○	○	○	○	○	○
Wire Bonding	○	○	○	○	○	○
Solder	×	○	○	○	○	○
Note	○：means the hazardous material is under the criterion of SJ/T11363-2006. ×：means the hazardous material exceeds the criterion of SJ/T11363-2006. The plumbum element of solder exist in products presently, but within the allowed range of Eurogroup's RoHS.					

Warnings

1. Exceeding the maximum ratings of the device in performance may cause damage to the device, even the permanent failure, which may affect the dependability of the machine. It is suggested to be used under 80 percent of the maximum ratings of the device.
2. When installing the heatsink, please pay attention to the torsional moment and the smoothness of the heatsink.
3. VDMOSFETs is the device which is sensitive to the static electricity, it is necessary to protect the device from being damaged by the static electricity when using it.
4. This publication is made by Jingdao Electronic and subject to regular change without notice.