



AMP160N06TL

主要参数 MAIN CHARACTERISTICS

ID	160 A
VDSS	60 V
Rdson-max (@Vgs=10V)	9.0 mΩ
Qg-typ	188.16 nC

用途

- 高频开关电源
- UPS 电源

APPLICATIONS

- High efficiency switch mode power supplies
- UPS

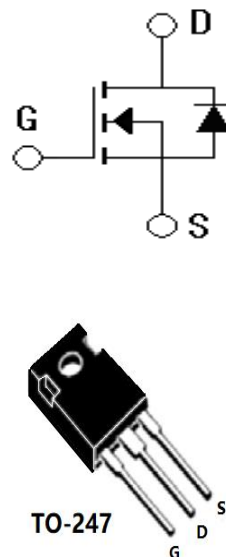
产品特性

- 低栅极电荷
- 低 C_{RSS} (典型值 221pF)
- 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 221pF)
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS product

封装 Package



订货信息 ORDER MESSAGE

订货型号 Order codes				印记 Marking	封装 Package
有卤-条管 Halogen-Tube	无卤-条管 Halogen-Free-Tube	有卤-编带 Halogen-Reel	无卤-编带 Halogen-Free-Reel		
N/A	AMP160N06TL-GE-BR	N/A	N/A	AMP160N06TL	TO-247



绝对最大额定值 ABSOLUTE RATINGS ($T_C=25^{\circ}\text{C}$)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
最高漏极—源极直流电压 Drain-Source Voltage	V_{DSS}	60	V
连续漏极电流 Drain Current -continuous	I_D $T=25^{\circ}\text{C}$ $T=100^{\circ}\text{C}$	160*	A
		100*	A
最大脉冲漏极电流 (注 1) Drain Current -pulse (note 1)	I_{DM}	640*	A
最高栅源电压 Gate-Source Voltage	V_{GSS}	± 20	V
单脉冲雪崩能量 (注 2) Single Pulsed Avalanche Energy (note 2)	E_{AS}	2754	mJ
雪崩电流 (注 1) Avalanche Current (note 1)	I_{AR}	160.0	A
重复雪崩能量 (注 1) Repetitive Avalanche Current (note 1)	E_{AR}	1296	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 $T_C=25^{\circ}\text{C}$ -Derate above 25°C	723	W
		5.8	W/ $^{\circ}\text{C}$
最高结温及存储温度 Operating and Storage Temperature Range	T_J, T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T_L	300	$^{\circ}\text{C}$

*漏极电流由最高结温限制

*Drain current limited by maximum junction temperature



电特性 ELECTRICAL CHARACTERISTIC

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}	$I_D=250\mu A, V_{GS}=0V$	60	-	-	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 $25^\circ C$	-	0.48	-	V/ $^\circ C$
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V, T_C=25^\circ C$	-	-	10	μA
		$V_{DS}=48V, T_C=125^\circ C$	-	-	10	μA
正向栅极体漏电流 Gate-body leakage current, forward	I_{GSSF}	$V_{DS}=0V, V_{GS}=20V$	-	-	100	nA
反向栅极体漏电流 Gate-body leakage current, reverse	I_{GSSR}	$V_{DS}=0V, V_{GS}=-20V$	-	-	-100	nA
通态特性 On-Characteristics						
阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=250\mu A$	1.0	-	3.0	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	6.9	9.0	m Ω
正向跨导 Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=160.0A$ (note 4)	-	151	-	S
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	7589	9866	pF
输出电容 Output capacitance	C_{oss}		-	1280	1664	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	221	287	pF





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
开关特性 Switching –Characteristics						
延迟时间 Turn-On delay time	$t_{d(on)}$	$V_{DD}=30V, I_D=160A, V_{GS}=10V, R_G=25\Omega$ (note 4, 5)	-	45	59	ns
上升时间 Turn-On rise time	t_r		-	147	191	ns
延迟时间 Turn-Off delay time	$t_{d(off)}$		-	629	818	ns
下降时间 Turn-Off Fall time	t_f		-	109	142	ns
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=48V,$	-	188.16	244.6	nC
栅—源电荷 Gate-Source charge	Q_{gs}	$I_D=80A$	-	33.66	-	nC
栅—漏电荷 Gate-Drain charge	Q_{gd}	$V_{GS}=10V$ (note 4, 5)	-	39.66	-	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		-	-	160	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}		-	-	640	A
正向最大连续电流 Maximum Continuous Drain-Source Diode Forward Current	V_{SD}	$V_{GS}=0V, I_S=160A$	-	-	1.4	V
反向恢复时间 Reverse recovery time	t_{rr}	$V_{GS}=0V, I_S=60A$	-	69	-	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}	$di_F/dt=100A/\mu s$ (note 4)	-	193.32	-	μC

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大值 Value	单 位 Unit
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.173	$^{\circ}C/W$

注:

- 1: 脉冲宽度由最高结温限制
- 2: $L=1.0mH, I_{AS}=160A, V_{DD}=50V, R_G=25\Omega$, 起始结温 $T_J=25^{\circ}C$
- 3: $I_{SD} \leq 160A, di/dt \leq 200A/\mu s, V_{DD} \leq BV_{DSS}$, 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:

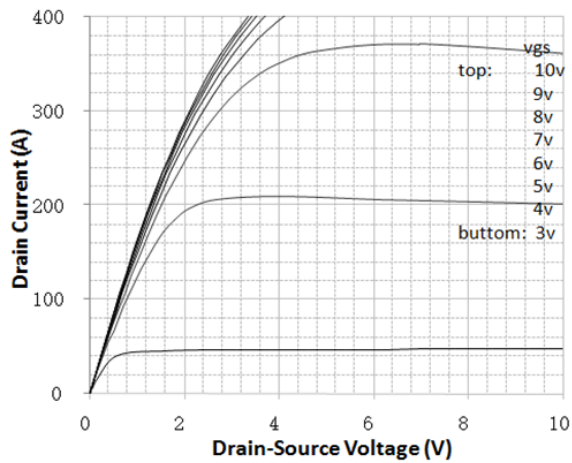
- 1: Pulse width limited by maximum junction temperature
- 2: $L=1.0mH, I_{AS}=160A, V_{DD}=50V, R_G=25\Omega$, Starting $T_J=25^{\circ}C$
- 3: $I_{SD} \leq 160A, di/dt \leq 200A/\mu s, V_{DD} \leq BV_{DSS}$, Starting $T_J=25^{\circ}C$
- 4: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
- 5: Essentially independent of operating temperature



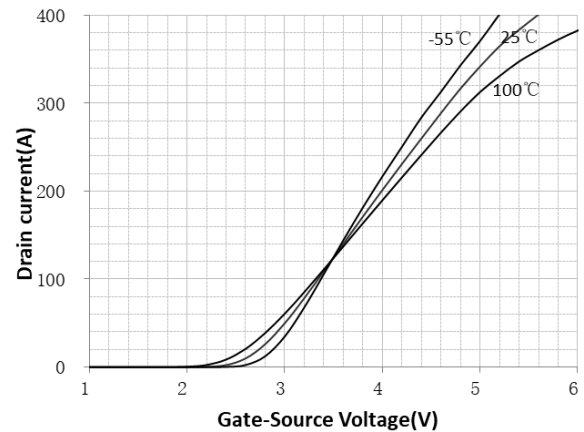


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

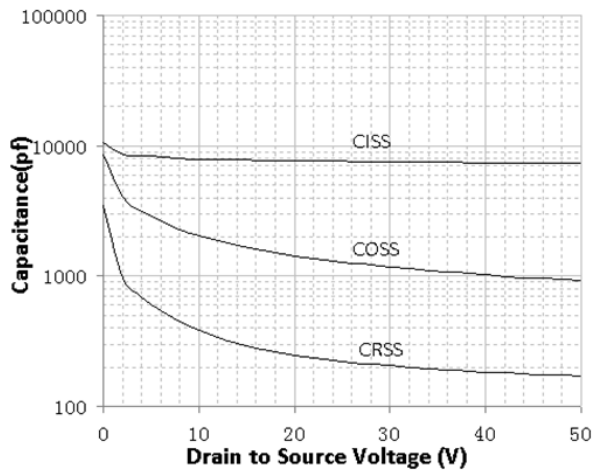
On-Region Characteristics



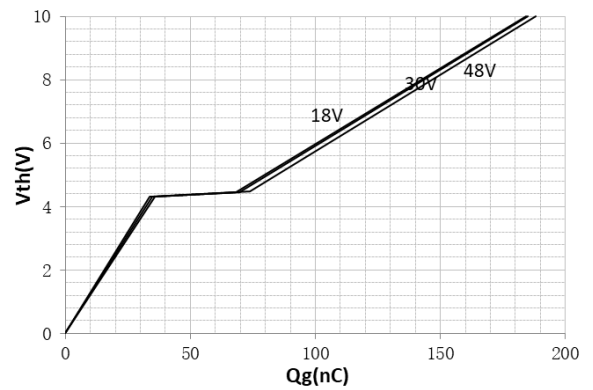
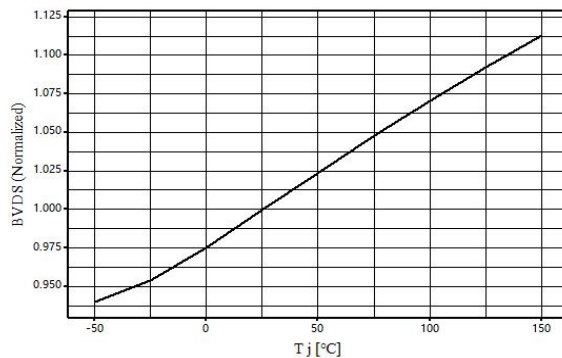
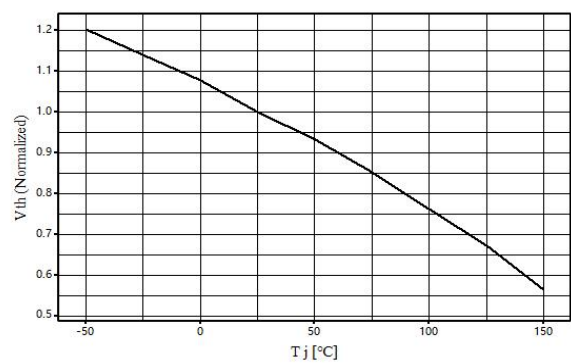
Transfer Characteristics



Capacitance Characteristics

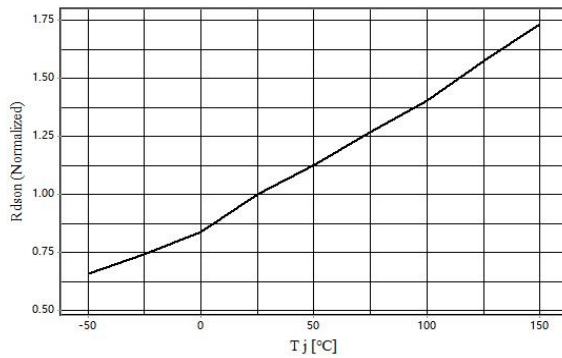


Gate Charge Characteristics

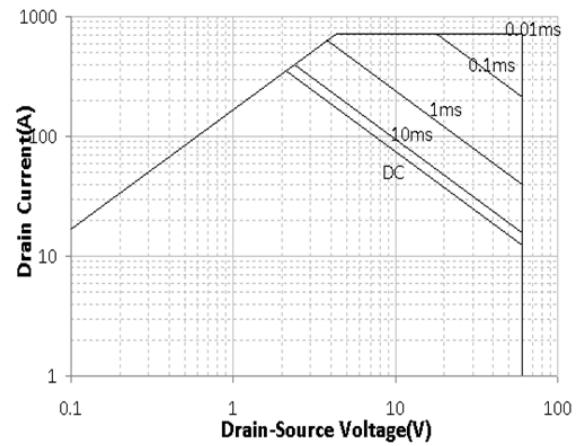
Breakdown Voltage Variation
vs. TemperatureGate Threshold Voltage
vs. Case Temperature



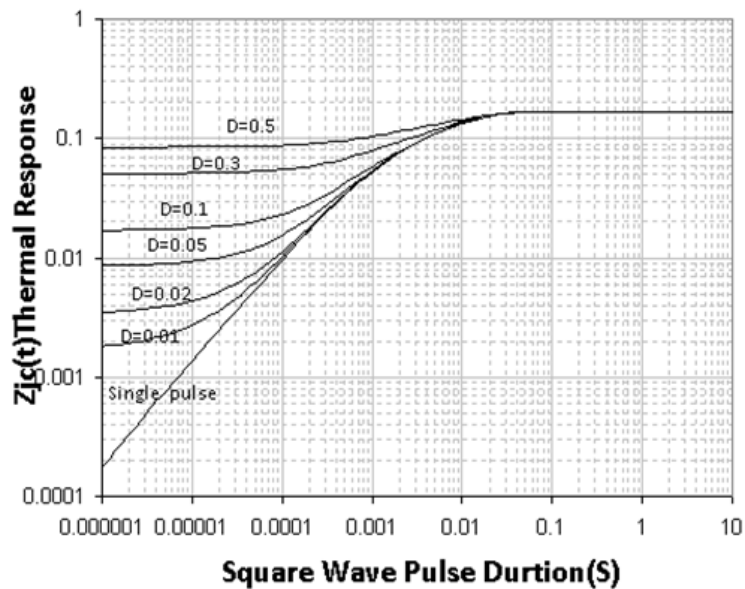
特征曲线 ELECTRICAL CHARACTERISTICS (curves)

Maximum $R_{ds(on)}$ vs. Case Temperature

Maximum Safe Operating Area



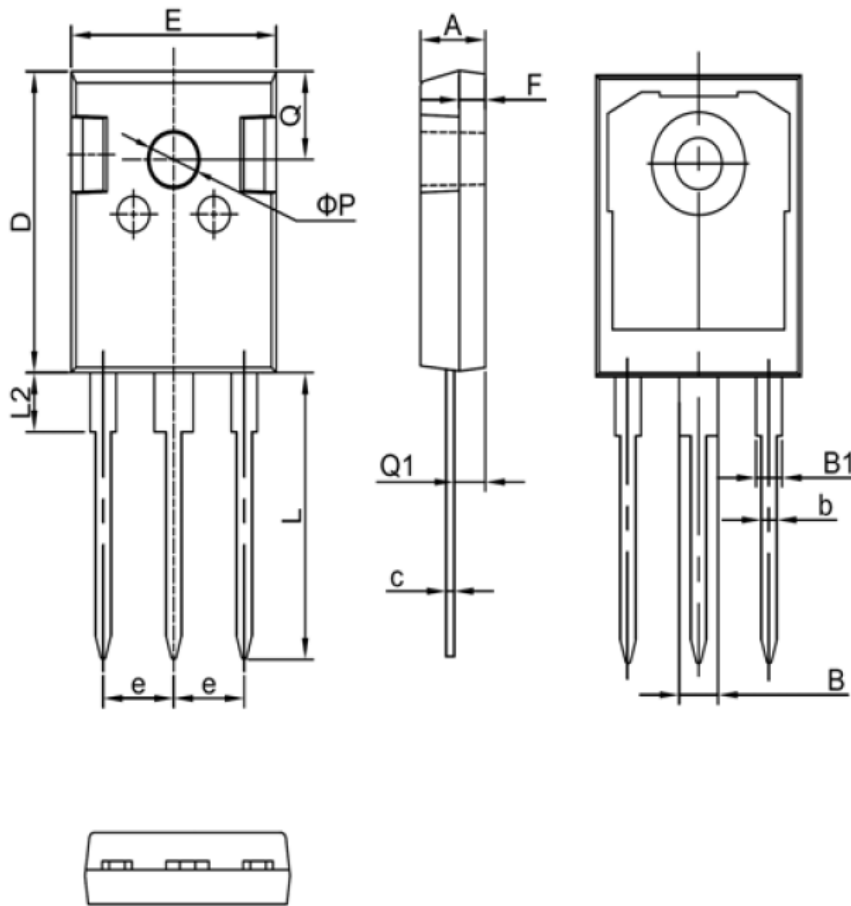
Transient Thermal Response Curve





TO-247

单位 Unit: mm



符号 symbol	MIN	MAX
A	4.90	5.10
B	2.95	3.35
B1	1.95	2.35
b	1.15	1.35
c	0.50	0.70
D	20.90	21.10
E	15.70	15.90
e	5.34	5.54
F	1.90	2.10
L	19.40	20.40
L2	4.03	4.23
Q	6.00	6.40
Q1	2.30	2.50
P	3.50	3.70



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