

5210

主要参数 MAIN CHARACTERISTICS

I_D	-40A
V_{DSS}	-100V
$R_{dson}(V_{GS}=10V)$	47mΩ

用途

- 负载开关
- 脉宽调制
- 电源管理

APPLICATIONS

- Load Switch
- PWM Application
- Power Management

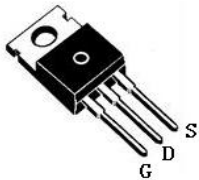
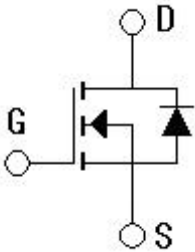
产品特性

- 先进沟槽技术
- 符合环保标准
- 产品无卤素
- 湿敏等级3级

FEATURES

- Advanced Trench Technology
- RoHS and Reach Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 3

封装 Package



TO-220C

产品中有害有害物质或元素的名称及含量

部件名称	有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六 价 铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
	≤0.1%	≤0.1%	≤0.01%	≤0.1%	≤0.1%	≤0.1%
引线框	○	○	○	○	○	○
塑封树脂	○	○	○	○	○	○
管 芯	○	○	○	○	○	○
内引线	○	○	○	○	○	○
焊 料	×	○	○	○	○	○
说 明	○: 表示该元素的含量在 SJ/T11363-2006 标准的限量要求以下。 ×: 表示该元素的含量超出 SJ/T11363-2006 标准的限量要求。 目前产品的焊料中含有铅 (Pb) 成分, 但属于欧盟 RoHS 指令豁免范围。					

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_{DS}	-100	V
连续漏极电流 Drain Current-continuous	I_D $T=25^{\circ}\text{C}$ $T=100^{\circ}\text{C}$	-40 -24	A
最大脉冲漏极电流 Drain Current – pulse ^{Note 1}	I_{DM}	-160	A
最高栅源电压 Gate-Source Voltage	V_{GS}	± 20	V
单脉冲雪崩能量 Single Pulsed Avalanche Energy ^{Note 1}	E_{AS}	790	mJ
耗散功率 Power Dissipation	P_D $T_c=25^{\circ}\text{C}$	200	W
最高结温及存储温度 Operating and Storage Temperature Range	T_J, T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

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
关态特性 Off –Characteristics						
漏—源击穿电压 Drain-Source Voltage	BV_{DSS}	$I_D = -250\mu A, V_{GS} = 0V, T_J = 25^\circ C$	-100	-	-	V
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -100V, V_{GS} = 0V, T_C = 25^\circ C$	-	-	-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	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	-5	-	-7	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = -10V, I_D = -24A$	-	47	55	m Ω
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	$V_{DS} = -25V,$ $V_{GS} = 0V,$ $f = 1MHz$	-	8.61	-	nF
输出电容 Output capacitance	C_{oss}		-	19.8	-	nF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	6.9	-	nF

电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching Characteristics							
延迟时间 Turn-On delay time	$t_d(\text{on})$	$V_{DD}=-50V, I_D=-21A, R_G=2.5\Omega$ $V_{GS}=-10V$	-	22	-	ns	
上升时间 Turn-On rise time	t_r		-	181	-	ns	
延迟时间 Turn-Off delay time	$t_d(\text{off})$		-	96	-	ns	
下降时间 Turn-Off Fall time	t_f		-	75	-	ns	
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=-80V$,	-	179	-	nC	
栅-源电荷 Gate-Source charge	Q_{gs}	$I_D=-21A$	-	11	-	nC	
栅-漏电荷 Gate-Drain charge	Q_{gd}	$V_{GS}=-10V$	-	54	-	nC	
栅极电阻 Gate Resistance	R_g	$f=1MHz$	-	0.6	-	Ω	
漏-源二极管特性及最大额定值 Drain-Source Diode Characteristics and Maximum Ratings							
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-21A$	-	-	1.4	V	
反向恢复时间 Reverse Recovery Time	T_{RR}	$V_{GS}=0V, I_S=-21A,$ $di_F/dt=100A/\mu s$	-	180	-	ns	
反向恢复电荷 Reverse Recovery Charge	Q_{RR}		-	1.3	-	μC	

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符号 Symbol	值 Value	单位 Unit
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.70	$^{\circ}C/W$
结到环境的热阻 Thermal Resistance, Junction-to-Ambient	$R_{th(j-A)}$	62	$^{\circ}C/W$

NOTES:

1. $L=0.5mH, V_{DD}=50V, R_G=25\Omega$, Starting at $T_J=25^{\circ}C$

特征曲线 ELECTRICAL CHARACTERISTICS

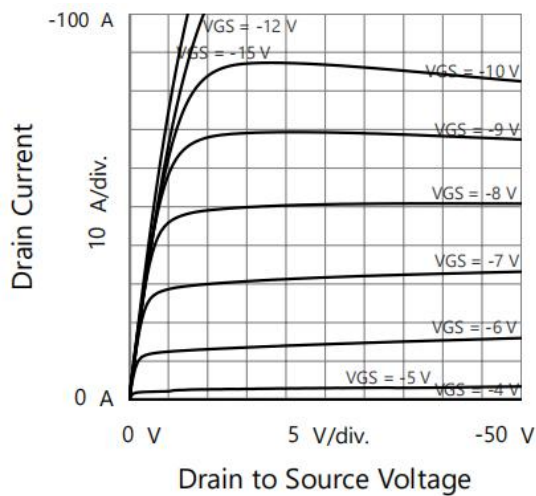
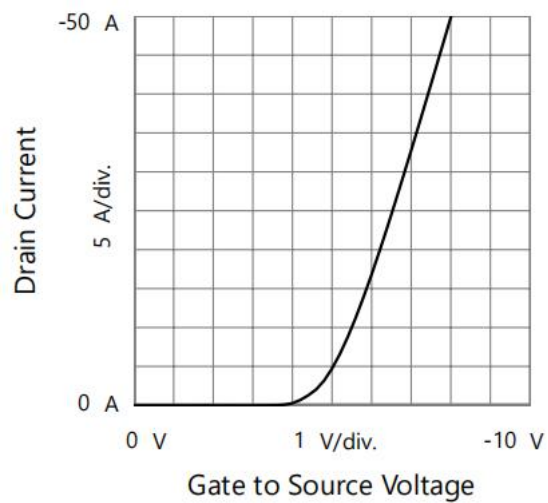
Fig1. Output characteristics $T_J = 25^\circ\text{C}$ 

Fig2. Transfer characteristics

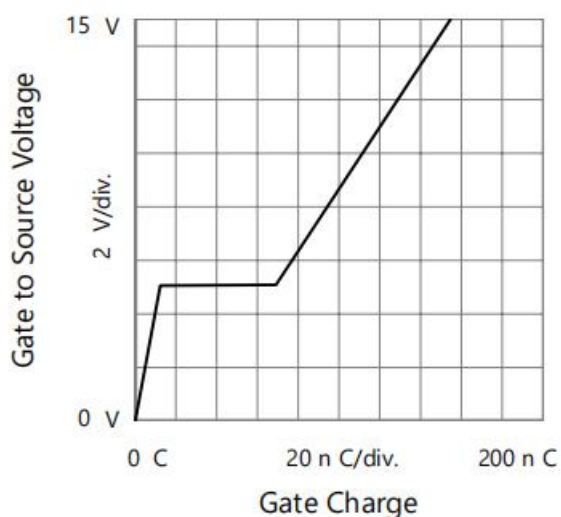


Fig3. Gate charge characteristics

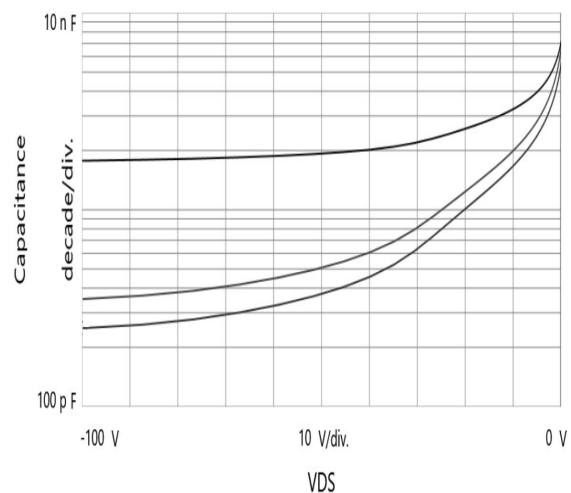
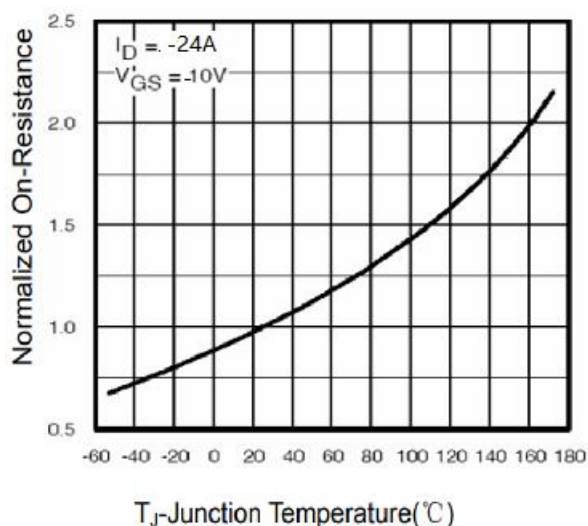
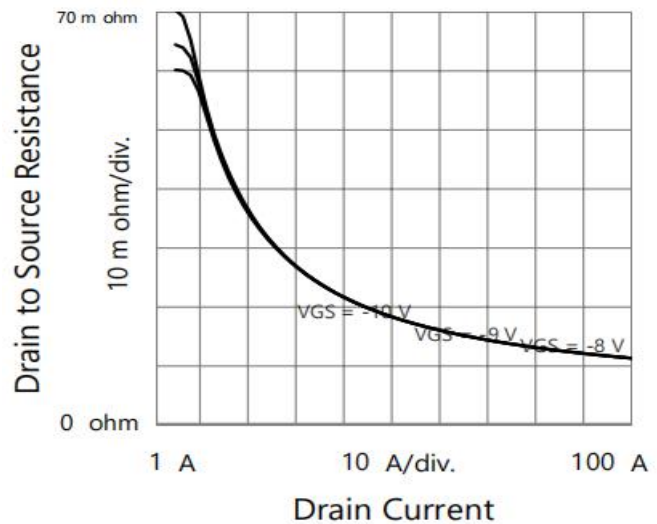


Fig 4. Capacitance Characteristics

Fig 5. $R_{DS(ON)}$ vs junction temperatureFig 6. I_D VS $R_{DS(on)}$

特征曲线 ELECTRICAL CHARACTERISTICS

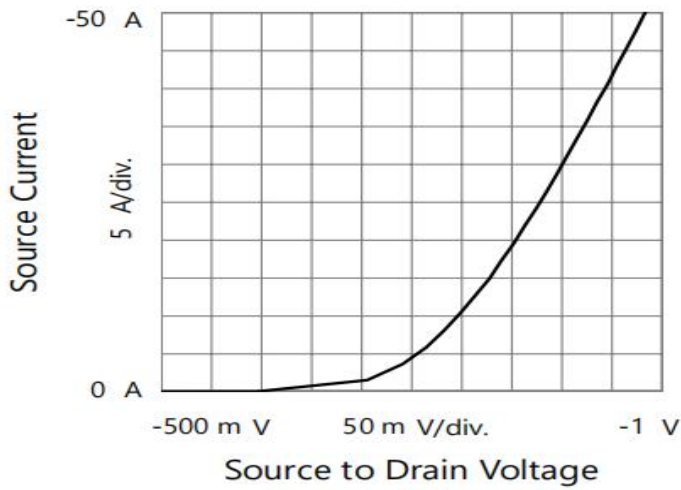


Fig 7 . Forward characteristics of reverse diode

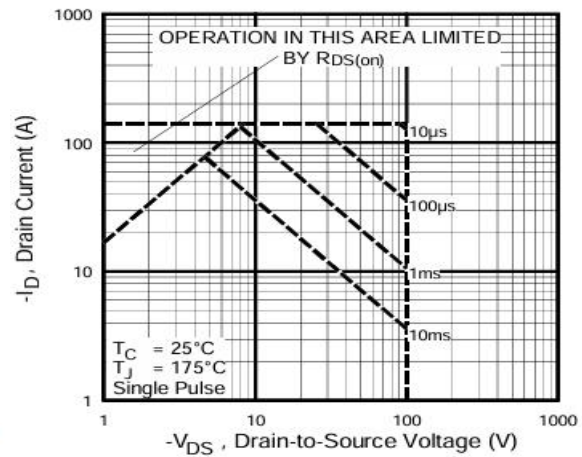


Fig 8 .Safe operating area

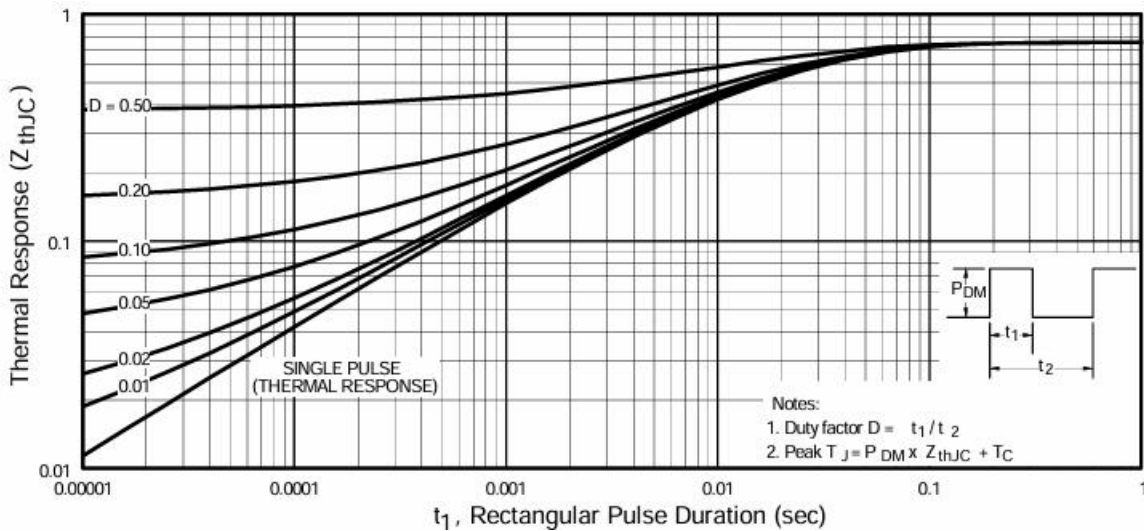
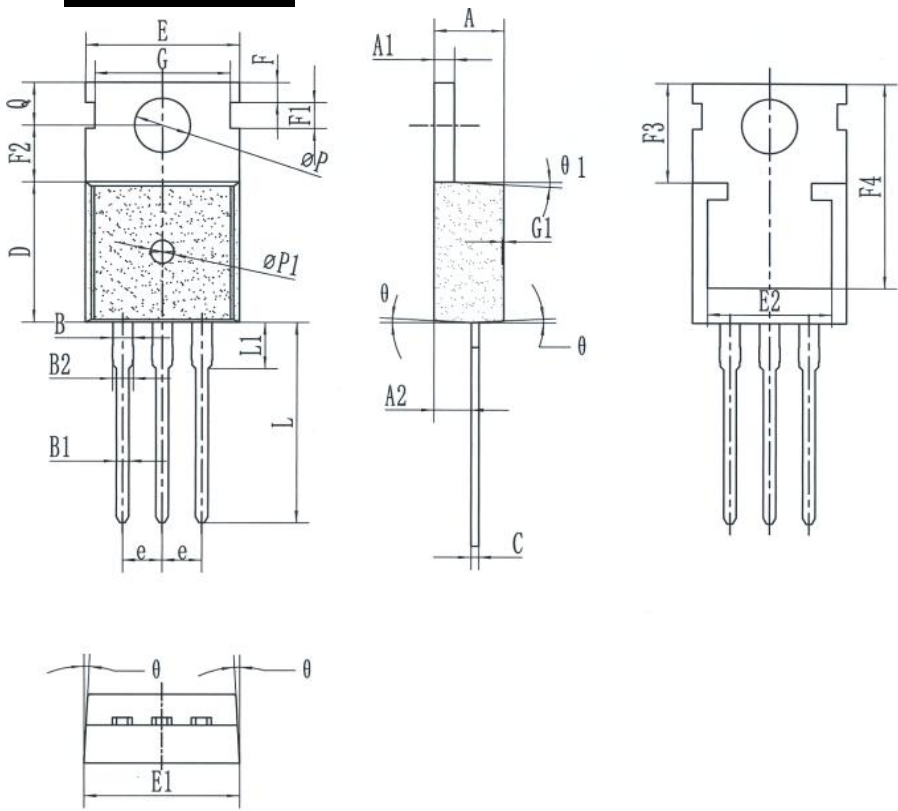


Fig 9 .Transient thermal impedance

外形尺寸 PACKAGE MECHANICAL DATA

TO-220C



COMMON DIMENSIONS			
SYMBOL	MM		
	MIN	NOM	MAX
A	4.40	4.50	4.60
A1	1.25	1.30	1.35
A2	2.30	2.40	2.50
B	1.22	1.27	1.32
B1	0.70	0.80	0.90
B2	1.32	1.37	1.42
C	0.45	0.50	0.55
D	9.10	9.20	9.30
E	9.70	9.90	10.10
E1	9.90	10.00	10.10
E2	7.80	8.00	8.20
e	2.54 BSC		
F	1.22	1.30	1.38
F1	1.60	1.70	1.80
F2	3.60	3.70	3.80
F3	6.30	6.50	6.70
F4	13.10	13.40	13.70
G	8.60	8.70	8.80
G1	0.05	0.10	0.15
L	12.80	13.10	13.40
L1	2.80	3.00	3.20
ΦP	3.50	3.60	3.70
ΦP1	1.40	1.50	1.60
Q	2.70	2.80	2.90
θ	1°	3°	5°
θ1	1°	3°	5°