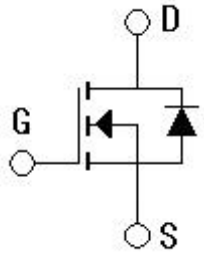
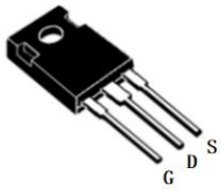
102N30P7

主要参数 MAIN CHARACTERISTICS

ID	102A
VDSS	300V
Rdson (Vgs=10V)	31mΩ

封装 Package





TO-247

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

产品中有毒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）
(含量要求)	≤0.1%	≤0.1%	≤0.01%	≤0.1%	≤0.1%	≤0.1%
引线框	o	o	o	o	o	o
塑封树脂	o	o	o	o	o	o
管 芯	o	o	o	o	o	o
内引线	o	o	o	o	o	o
焊 料	×	o	o	o	o	o
说 明	o：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 (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
最高漏极一源极直流电压 Drain-Source Voltage	V_{DSS}	300	V
连续漏极电流 Drain Current-continuous	I_D T=25℃ T=100℃	102 60	A
最大脉冲漏极电流 Drain Current – pulse[Note 1]	I_{DM}	408	A
最高栅源电压 Gate-Source Voltage	V_{GSS}	±30	V
单脉冲雪崩能量 Single Pulsed Avalanche Energy[Note 1]	E_{AS}	1450	mJ
耗散功率 Power Dissipation	P_D T_C=25℃	420	W
最高结温及存储温度 Operating and Storage Temperature Range	T_J，T_{STG}	-55～+150	℃

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						
漏一源击穿电压 Drain-Source Voltage	BV_{DSS}	I_D=250μA, V_{GS}=0V,T_J=25℃	300	-	-	V
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=300V,V_{GS}=0V, T_C=25℃	-	-	10	μA
正向栅极体漏电流 Gate-body leakage current, forward	I_{GSSF}	V_{DS}=0V, V_{GS} =30V	-	-	100	nA
反向栅极体漏电流 Gate-body leakage current, reverse	I_{GSSR}	V_{DS}=0V, V_{GS} = -30V	-	-	-100	nA
通态特性 On-Characteristics						
阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D=250μA	2.3	-	4.3	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} =10V , I_D=51A	-	31	39	mΩ
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	V_{DS}=25V, V_{GS} =0V, f=1MHz	-	8.6	-	nF
输出电容 Output capacitance	C_{oss}		-	976	-	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	48	-	pF

电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	t_d(on)	V_{DD}=150V,I_D=102A,R_G=25Ω	-	41	-	ns
上升时间 Turn-On rise time	t_r	V_{GS}=10V	-	186	-	ns
延迟时间 Turn-Off delay time	t_d(off)		-	65	-	ns
下降时间 Turn-Off Fall time	t_f		-	21	-	ns
栅极电荷总量 Total Gate Charge	Q_g	V_{DS}=240V ,	-	150	-	nC
栅一源电荷 Gate-Source charge	Q_{gs}	I_D=102A	-	46	-	nC
栅一漏电荷 Gate-Drain charge	Q_{gd}	V_{GS} =10V	-	50	-	nC
栅极电阻 Gate Resistance	R_g	f=1MHz	-	2	-	Ω
漏一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=51A	-	-	1.4	V
反向恢复时间 Reverse Recovery Time	T_{RR}	V_{GS} = 0V, I_S = 102A, dI_F/dt =100A/μs	-	122	-	ns
反向恢复电荷 Reverse Recovery Charge	Q_{RR}		-	0.5	-	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	$R_{th(j-c)}$	0.3	℃/W
结到环境的热阻 Thermal Resistance, Junction-to-Ambient	$R_{th(j-A)}$	40	℃/W

NOTES:

1 . L =0.5mH, VDD = 50V, RG=25Ω, Starting at TJ = 25℃

特征曲线 ELECTRICAL CHARACTERISTICS

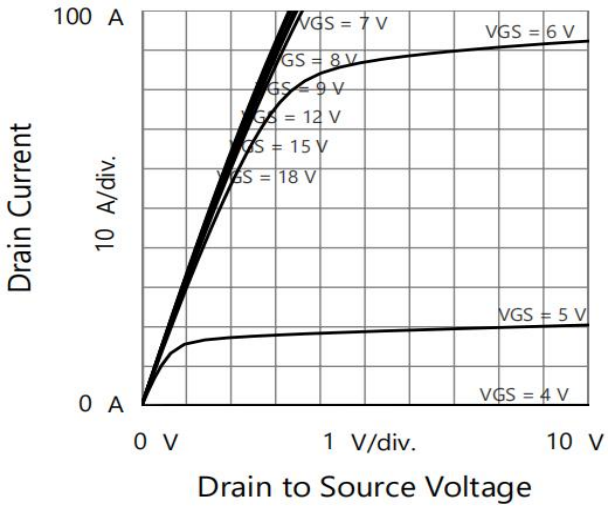


Fig1. Output characteristics TJ= 25ºC

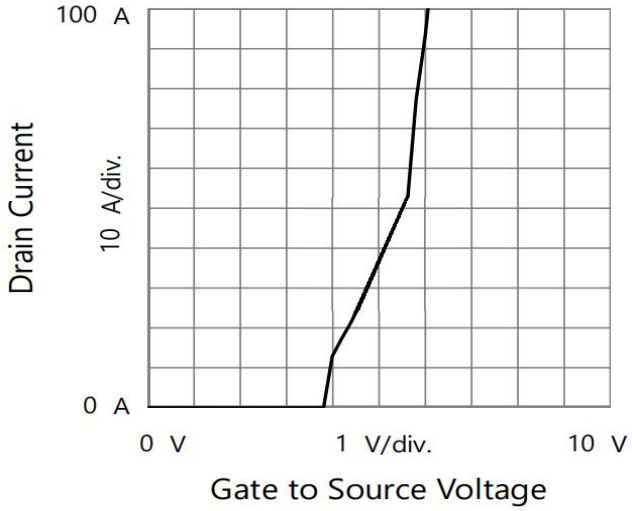


Fig2. Transfer characteristics

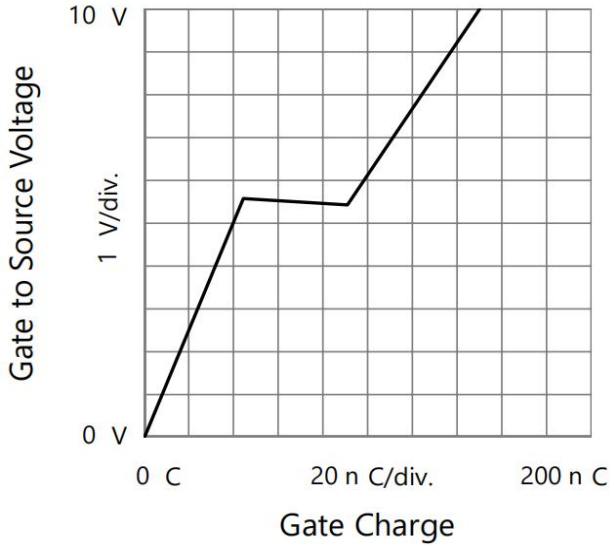


Fig3. Gate charge characteristics

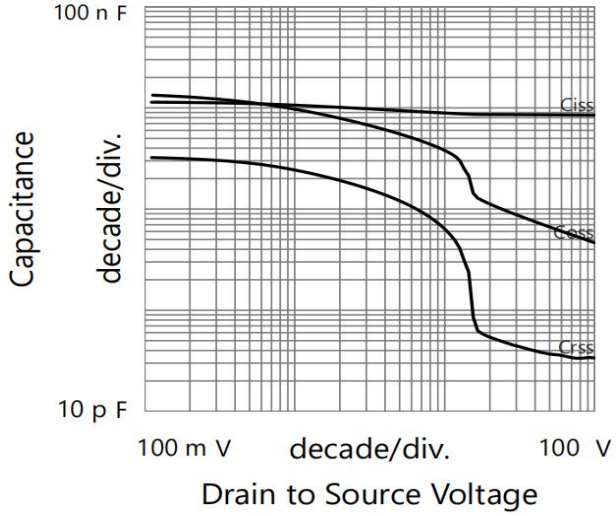


Fig 4. Capacitance Characteristics

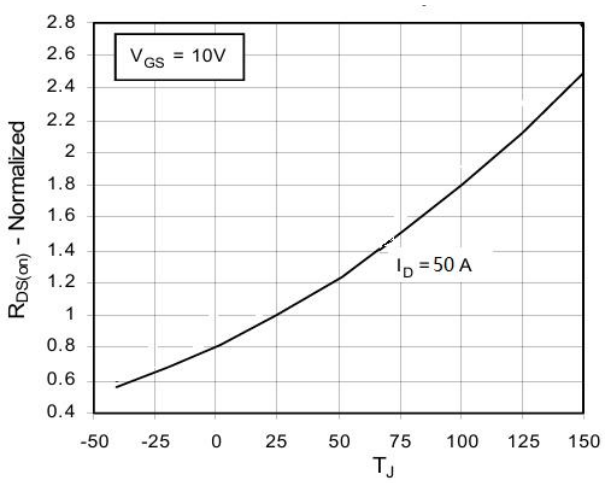


Fig 5. RDS(ON) vs junction temperature

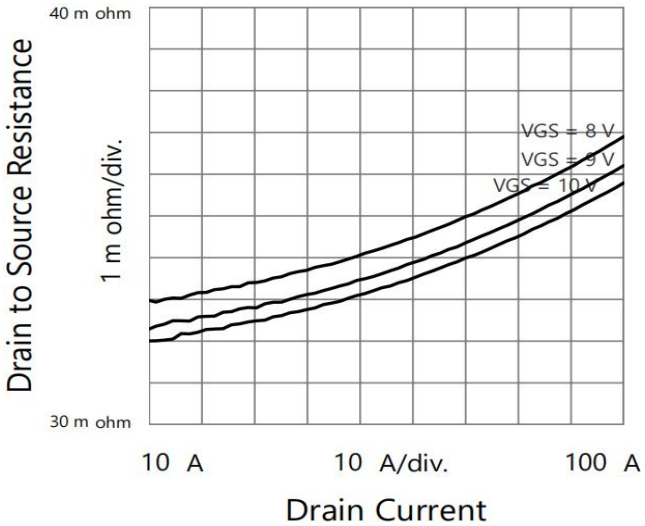


Fig 6. ID VS RDson

特征曲线 ELECTRICAL CHARACTERISTICS

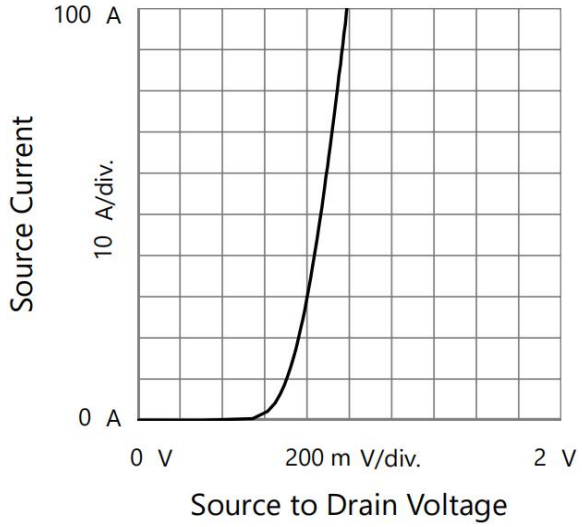


Fig 7 . Forward characteristics of reverse diode

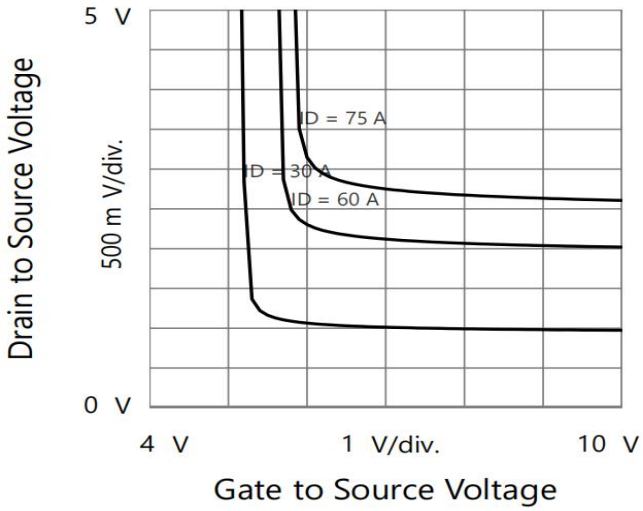


Fig 8 .Drain to Source Voltage vs. Gate to Source Voltage

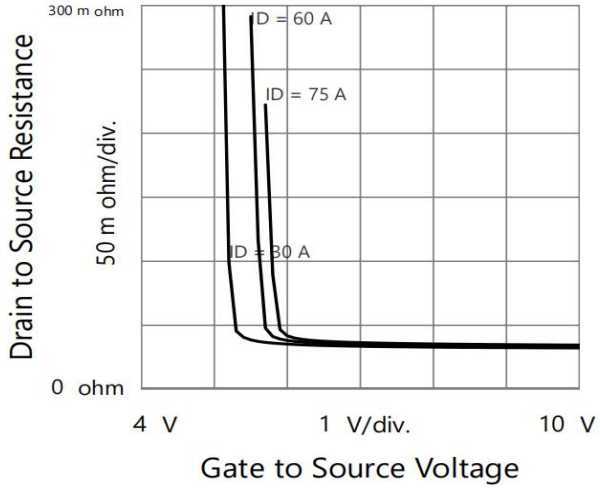


Fig 9 .Drain to Source Resistance vs. Gate to Source Voltage

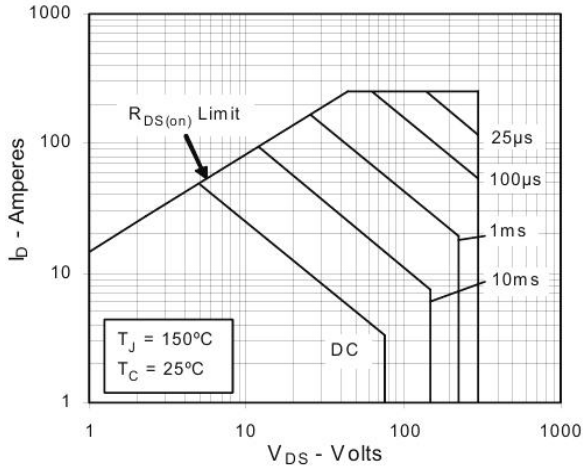


Fig 10 .Safe operating area

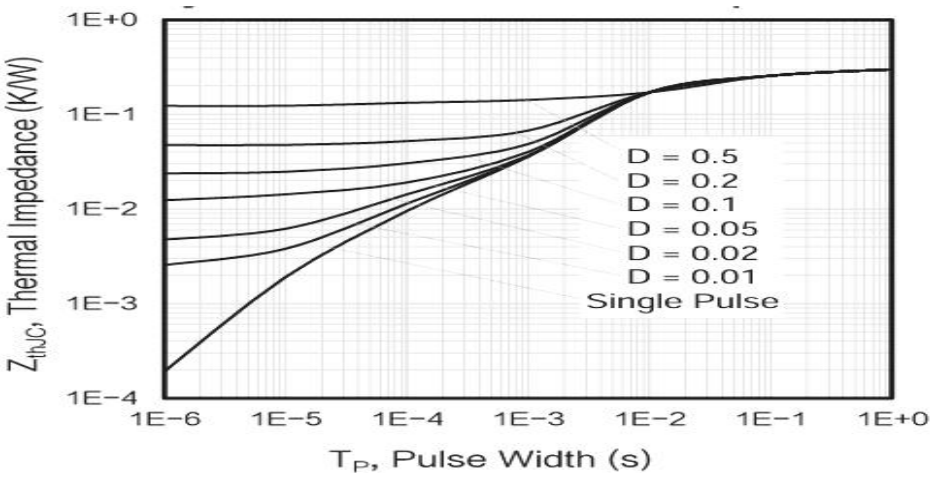


Fig 11 .Transient thermal impedance

外形尺寸 PACKAGE MECHANICAL DATA

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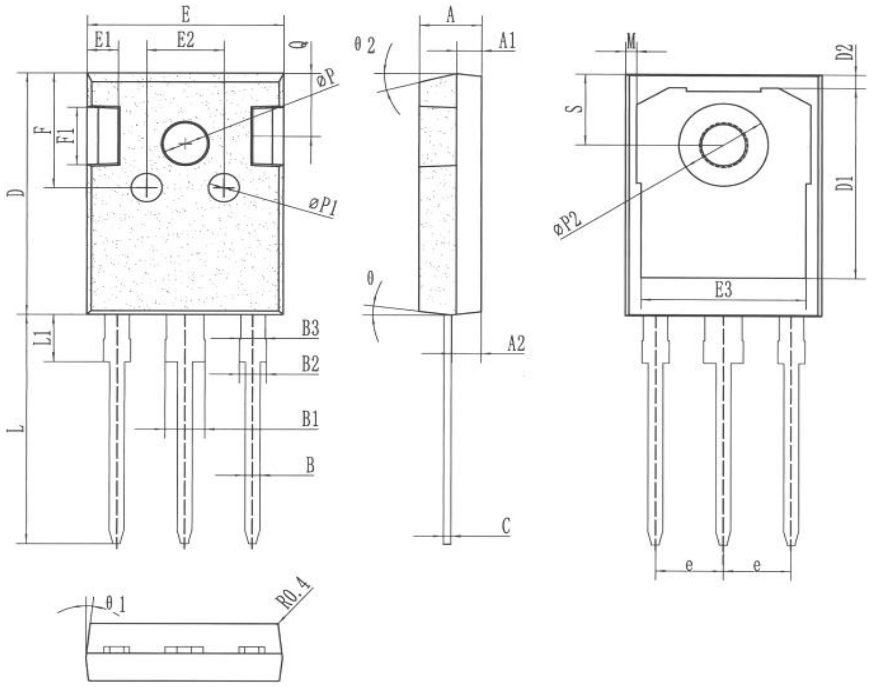

COMMON DIMENSIONS

SYMBOL	MM		
	MIN	NOM	MAX
A	4.90	5.00	5.10
A1	1.90	2.00	2.10
A2	2.30	2.40	2.50
B	1.15	1.20	1.25
B1	3.05	3.15	3.25
B2	2.00	2.10	2.20
B3	1.90	2.00	2.10
C	0.55	0.60	0.65
D	20.90	21.00	21.10
D1	16.35	16.55	16.75
D2	1.02	1.17	1.32
E	15.70	15.80	15.90
E1	2.40	2.50	2.60
E2	6.10	6.20	6.30
E3	13.10	13.30	13.50
F	9.80	10.00	10.20
F1	4.90	5.00	5.10
e	5.44 BSC		
L	19.72	19.92	20.12
L1	3.90	4.10	4.30
ΦP	3.50	3.60	3.70
ΦP1	2.40	2.50	2.60
ΦP2	7.10	7.20	7.30
S	6.05	6.15	6.25
M	0.45	—	0.95
Q	5.60	5.80	6.00
θ	5°	7°	9°
θ1	5°	7°	9°
θ2	13°	15°	17°