

50R199

主要参数 MAIN CHARACTERISTICS

I_D	30A
V_{DS}	500V
$R_{ds(on)} (V_{GS}=10V)$	0.16 Ω

用途

- 负载开关
- 脉宽调制
- 电源管理

APPLICATIONS

- Load Switch
- PWM Application
- Power Management

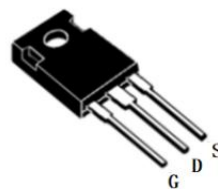
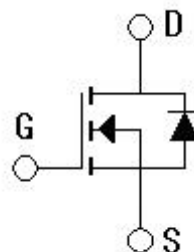
产品特性

- 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-247S

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	○	○	○	○	○	○
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}	500	V
连续漏极电流 Drain Current-continuous	I_D	30	A
最大脉冲漏极电流 Drain Current – pulse ^{Note 1}	I_{DM}	120	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}	430	mJ
耗散功率 Power Dissipation	P_D $T_C=25^{\circ}\text{C}$	320	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}	$I_D=250\mu A, V_{GS}=0V, T_J=25^\circ C$	500	-	-	V
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=500V, V_{GS}=0V, T_C=25^\circ C$	-	-	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	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=250\mu A$	1.9	-	3.9	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=10A$	-	160	175	m Ω
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1MHz$	-	1.80	-	nF
输出电容 Output capacitance	C_{oss}		-	900	-	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	16	-	pF

电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	$t_{d(on)}$	$V_{DD}=400V, I_D=10A, R_G=25\Omega$ $V_{GS}=10V$	-	35	-	ns
上升时间 Turn-On rise time	t_r		-	14	-	ns
延迟时间 Turn-Off delay time	$t_{d(off)}$		-	80	-	ns
下降时间 Turn-Off Fall time	t_f		-	10	-	ns
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=400V$, $I_D=10A$ $V_{GS}=10V$	-	34	-	nC
栅-源电荷 Gate-Source charge	Q_{gs}		-	9	-	nC
栅-漏电荷 Gate-Drain charge	Q_{gd}		-	11	-	nC
栅极电阻 Gate Resistance	R_g	$f=1MHz$	-	1.8	-	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}	$V_{GS}=0V, I_S=10A$	-	-	1.4	V
反向恢复时间 Reverse Recovery Time	T_{RR}	$V_{GS}=0V, I_S=10A,$ $di_F/dt=100A/\mu s$	-	340	-	ns
反向恢复电荷 Reverse Recovery Charge	Q_{RR}		-	4	-	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	$R_{th(j-c)}$	0.38	$^{\circ}C/W$
结到环境的热阻 Thermal Resistance, Junction-to-Ambient	$R_{th(j-A)}$	40	$^{\circ}C/W$

NOTES:

1. L = 0.5mH, VDD = 50V, RG=25 Ω , Starting at TJ = 25 $^{\circ}C$

特征曲线 ELECTRICAL CHARACTERISTICS

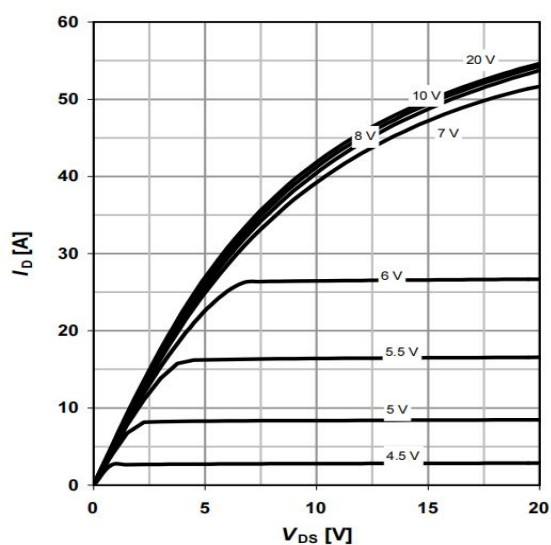
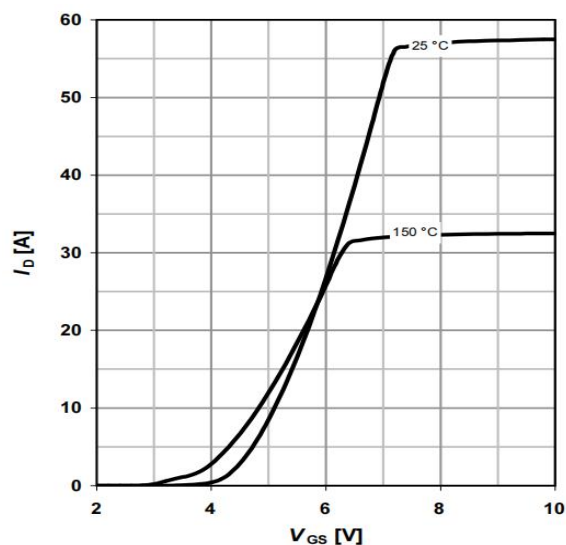
Fig1. Output characteristics $T_J = 25^\circ\text{C}$ 

Fig2. Transfer characteristics

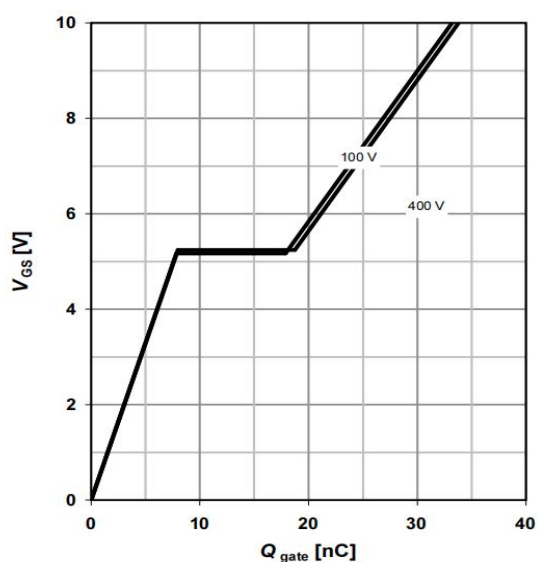


Fig3. Gate charge characteristics

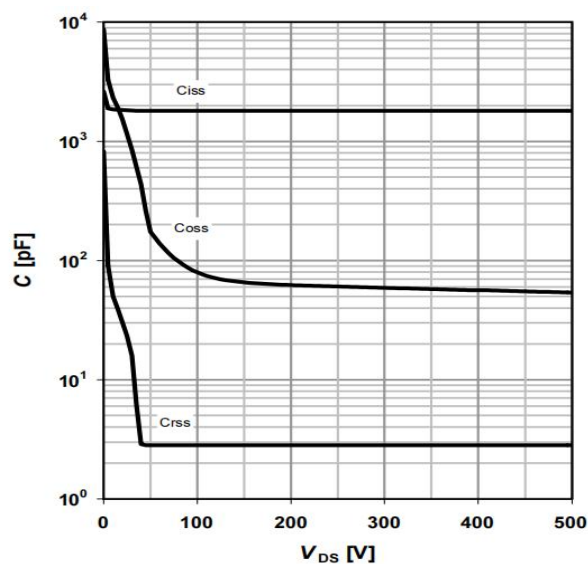


Fig 4. Capacitance Characteristics

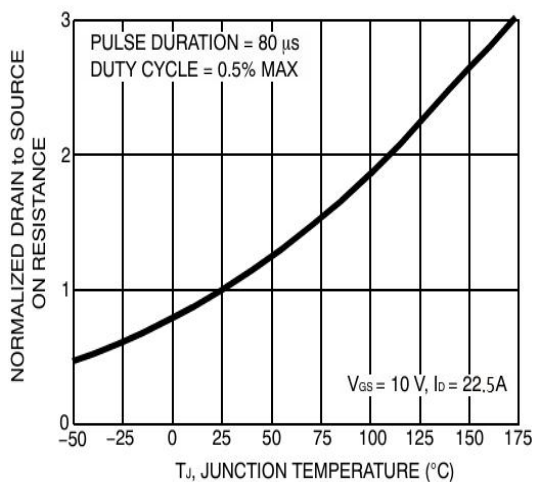
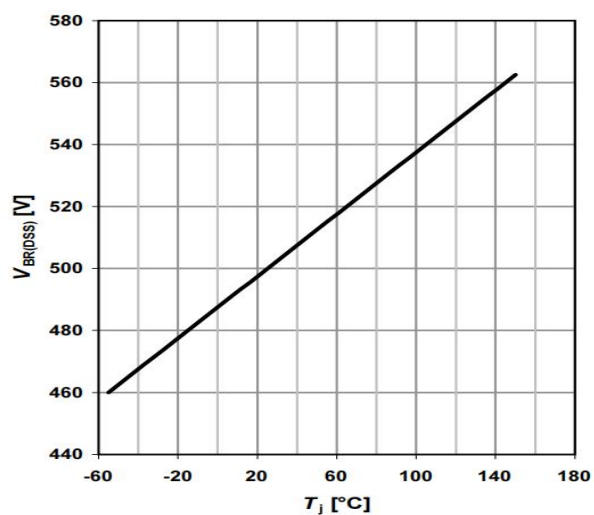
Fig 5. $R_{DS(ON)}$ vs junction temperature

Fig 6. Drain-source breakdown voltage

特征曲线 ELECTRICAL CHARACTERISTICS

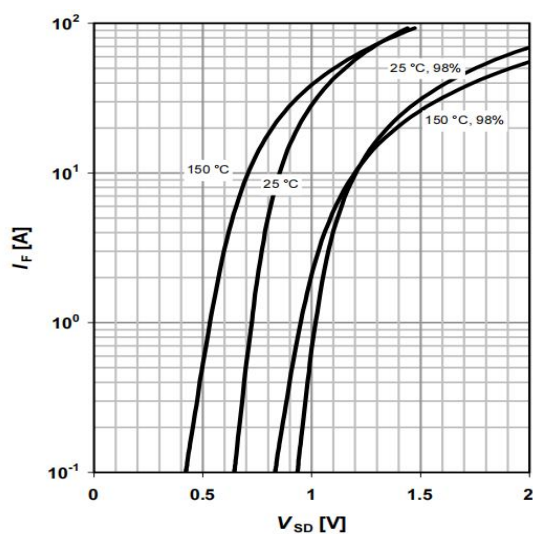


Fig 7 . Forward characteristics of reverse diode

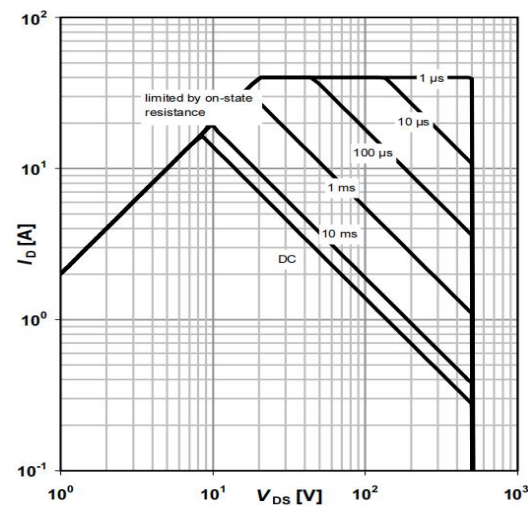


Fig 8 .Safe operating area

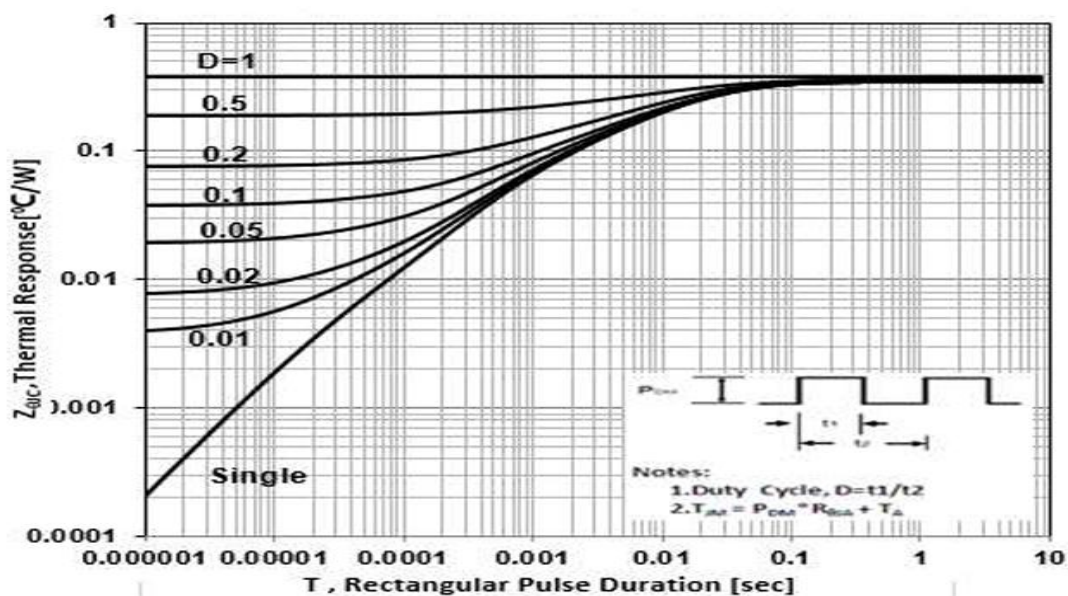
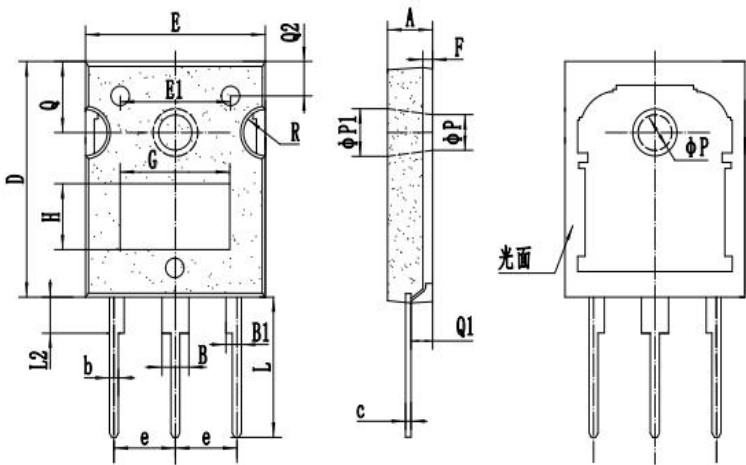


Fig 11 .Transient thermal impedance

外形尺寸 PACKAGE MECHANICAL DATA
TO-247S



*B1	1.95	2.05	2.15
*b	1.15	1.20	1.30
*c	0.48	0.55	0.63
*D	19.80	20.00	20.20
*E	15.40	15.60	15.80
E1	8.70	8.80	8.90
*e	5.38	5.44	5.50
F	1.22	1.27	1.32
G	9.70	9.80	9.90
H	5.95	6.00	6.05
*L	14.30	14.50	14.80
*L2	3.80	4.00	4.20
*Q	5.40	5.50	5.60
*Q1	2.40	2.50	2.60
Q2	2.25	2.30	2.35
*ΦP	3.50	3.60	3.70
ΦP1	4.00	4.10	4.20
R	2.45	2.50	2.55