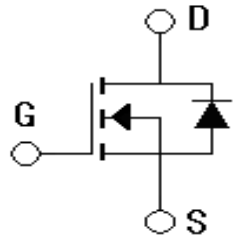
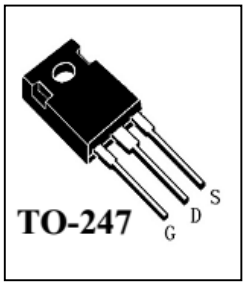
JCS24N50H

主要参数 MAIN CHARACTERISTICS

ID	24 A
VDSS	500 V
Rdson-max (@Vgs=10V))	0.19Ω
Qg-typ	81nC

封装 Package





用途

- 高频开关电源
- 电子镇流器
- UPS 电源

APPLICATIONS

- High efficiency switch mode power supplies
- Electronic lamp ballasts based on half bridge
- UPS

产品特性

- 低栅极电荷
- 低 C_{rss} (典型值 34pF)
- 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 34pF)
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS product

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		
JCS24N50WH-GE-B	JCS24N50WT-GE-BR	N/A	N/A	JCS24N50WH	TO-247
JCS24N50ABH-GD-B	JCS24N50ABH-GD-BR	N/A	N/A	JCS24N50ABH	TO-3PB

绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value JCS24N50ABH/WH	单 位 Unit
最高漏极－源极直流电压 Drain-Source Voltage	V_{DSS}	500	V
连续漏极电流 Drain Current -continuous	I_D T=25℃	24.0*	A
	T=100℃	14.0*	A
最大脉冲漏极电流（注 1） Drain Current -pulse （note 1）	I_{DM}	96*	A
最高栅源电压 Gate-Source Voltage	V_{GSS}	±30	V
单脉冲雪崩能量（注 2） Single Pulsed Avalanche Energy（note 2）	E_{AS}	1760	mJ
雪崩电流（注 1） Avalanche Current （note 1）	I_{AR}	24.0	A
重复雪崩能量（注 1） Repetitive Avalanche Current （note 1）	E_{AR}	2.8	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	4.5	V/ns
耗散功率 Power Dissipation	P_D T_C=25℃	271	W
	-Derate above 25℃	2.22	W/℃
最高结温及存储温度 Operating and Storage Temperature Range	T_J，T_{STG}	-55～+150	℃
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T_L	300	℃

*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						
漏一源击穿电压 Drain-Source Voltage	BV_{DSS}	I_D=250μA, V_{GS}=0V	500	-	-	V
击穿电压温度特性 Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	I_D=250μA, referenced to 25℃	-	0.5	-	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℃	-	-	10	μA
		V_{DS}=400V, T_C=125℃	-	-	100	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	3.0	-	5.0	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} =10V , I_D=12A	-	0.16	0.19	Ω
正向跨导 Forward Transconductance	g_{fs}	V_{DS} = 40V , I_D=12A（note 4）	-	27.5	-	S
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	V_{DS}=25V, V_{GS} =0V, f=1.0MHz	-	3100	4160	pF
输出电容 Output capacitance	C_{oss}		-	465	620	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	34	55	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}=250V,I_D=24A,R_G=25Ω	-	48	105	ns
上升时间 Turn-On rise time	t_r	（note 4，5）	-	107	225	ns
延迟时间 Turn-Off delay time	t_d(off)		-	165	340	ns
下降时间 Turn-Off Fall time	t_f		-	85	180	ns
栅极电荷总量 Total Gate Charge	Q_g	V_{DS} =400V ,	-	81	100	nC
栅一源电荷 Gate-Source charge	Q_{gs}	I_D=24A	-	20	-	nC
栅一漏电荷 Gate-Drain charge	Q_{gd}	V_{GS} =10V（note 4，5）	-	30	-	nC
漏一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		-	-	24	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}		-	-	96	A
正向最大连续电流 Maximum Continuous Drain-Source Diode Forward Current	V_{SD}	V_{GS}=0V, I_S=24A	-		1.4	V
反向恢复时间 Reverse recovery time	t_{rr}	V_{GS}=0V, I_S=24A		530		ns
反向恢复电荷 Reverse recovery charge	Q_{rr}	dI_F/dt=100A/μs (note 4)		8.2		μC

热特性 THERMAL CHARACTERISTIC

项　目 Parameter	符　号 Symbol	最大值 Value JCS24N50ABH/WH	单　位 Unit
结到管壳的热阻 Thermal Resistance, Junction to Case	Rth(j-c)	0.45	℃/W
结到环境的热阻 Thermal Resistance, Junction to Ambient	Rth(j-A)	40.0	℃/W

注：

1：脉冲宽度由最高结温限制

2：L=5.5mH, I_{AS}=24A, V_{DD}=50V,　R_G=25 Ω,起始结温 T_J=25℃

3：I_{SD} ≤24A,di/dt ≤200A/μs, VDD≤BV_{DSS},起始结温 T_J=25℃

4：脉冲测试：脉冲宽度≤300μs,占空比≤2%

5：基本与工作温度无关

Notes:

1：Pulse width limited by maximum junction temperature

2：L=5.5mH, I_{AS}=24A, V_{DD}=50V, R_G=25 Ω,Starting T_J=25℃

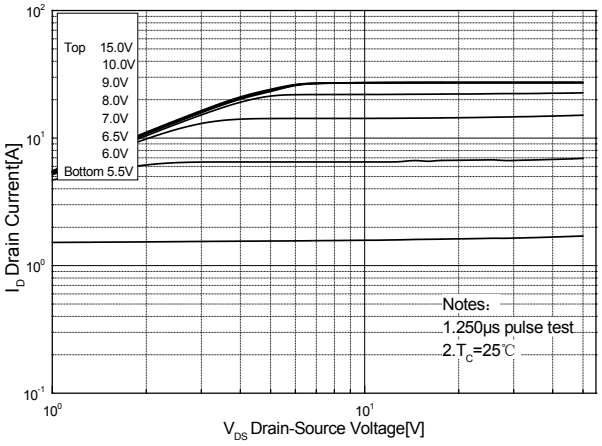
3：I_{SD} ≤24A,di/dt ≤200A/μs, VDD≤BV_{DSS}, Starting T_J=25℃

4：Pulse Test：Pulse Width ≤300μs, Duty Cycle≤2%

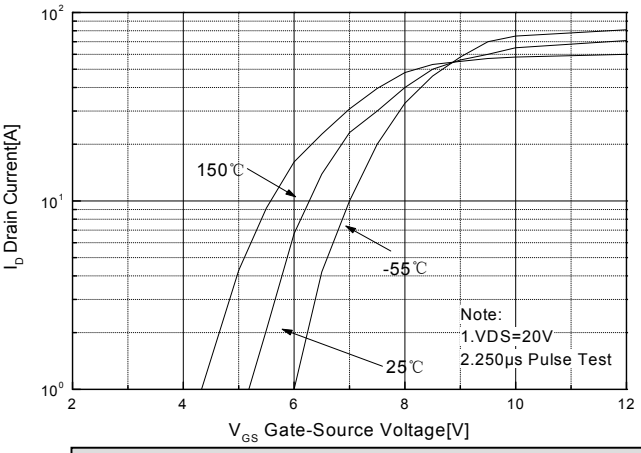
5：Essentially independent of operating temperature

特征曲线 ELECTRICAL CHARACTERISTICS (curves)

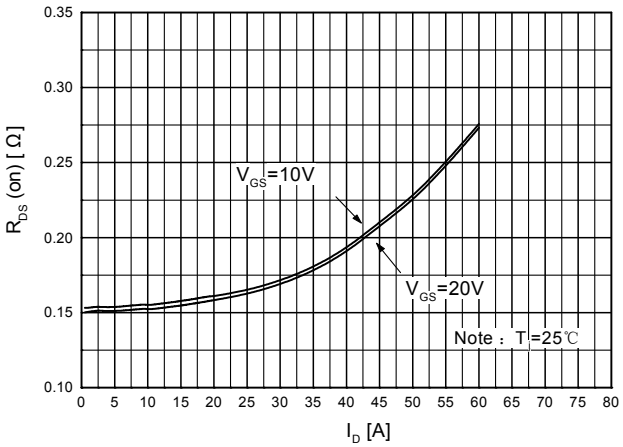
On-Region Characteristics



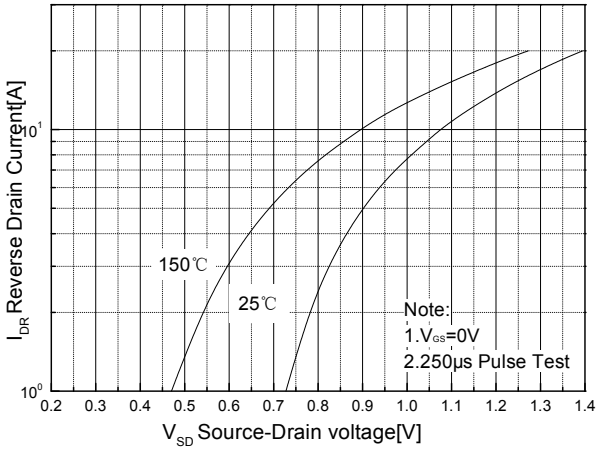
Transfer Characteristics



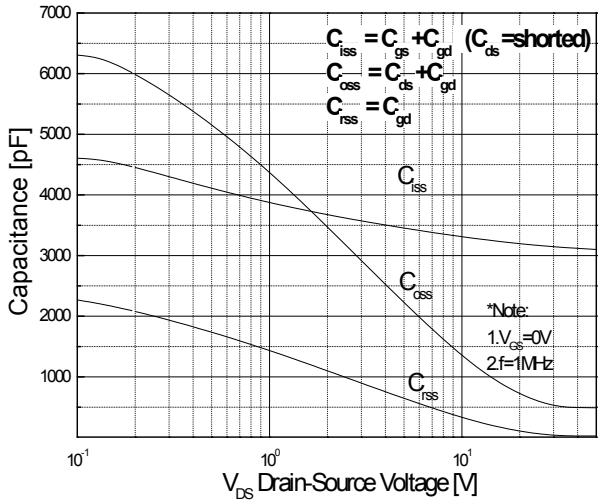
On-Resistance Variation vs Drain Current and Gate Voltage



Body Diode Forward Voltage Variation vs. Source Current and Temperature



Capacitance Characteristics



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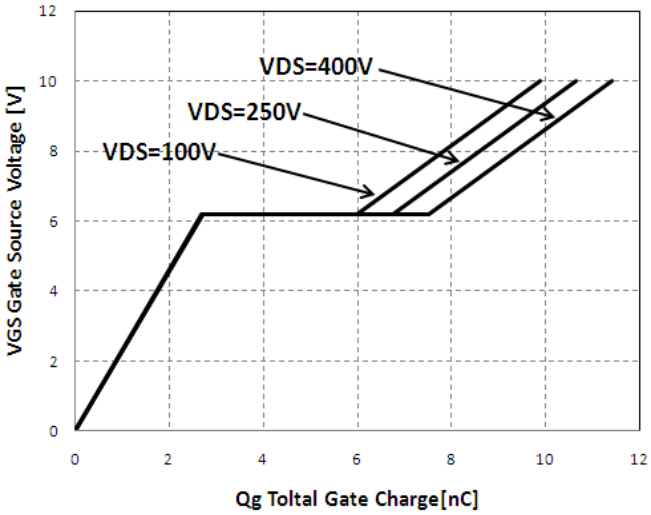
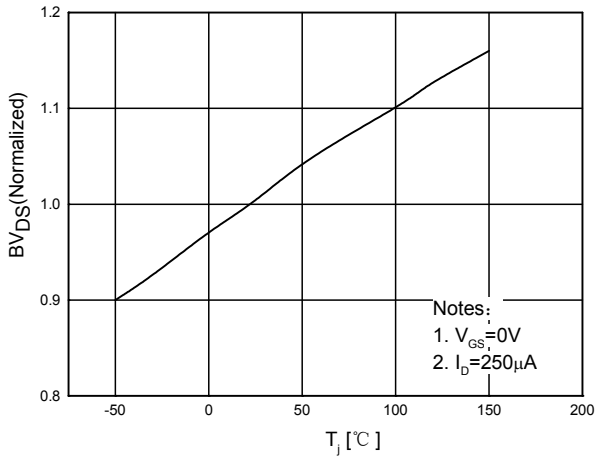
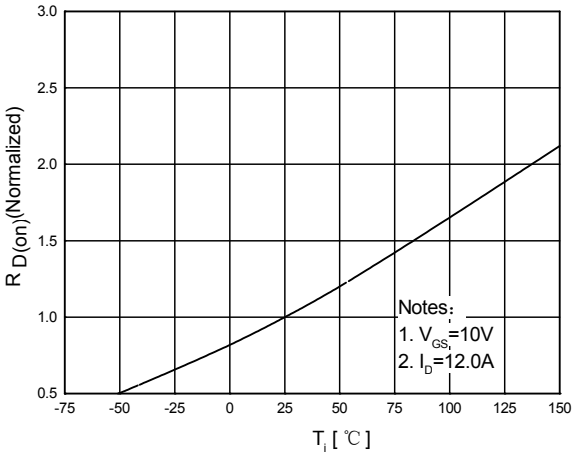


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

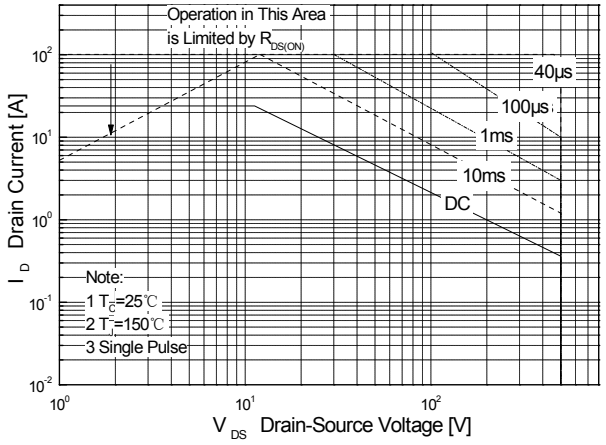
Breakdown Voltage Variation vs. Temperature



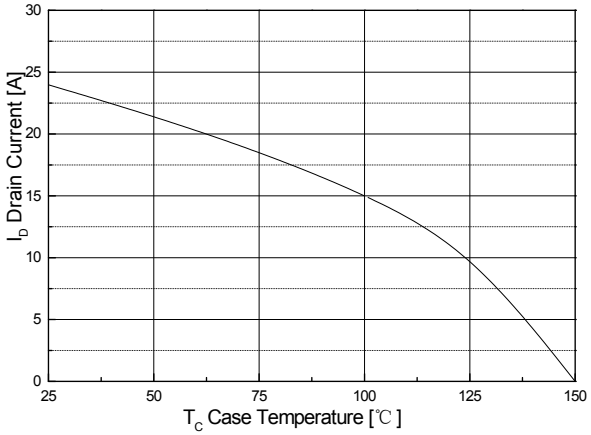
On-Resistance Variation vs. Temperature



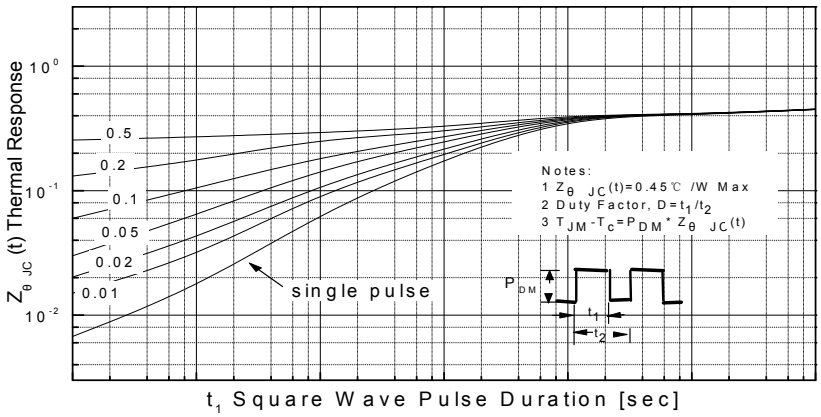
Maximum Safe Operating Area



Maximum Drain Current vs. Case Temperature



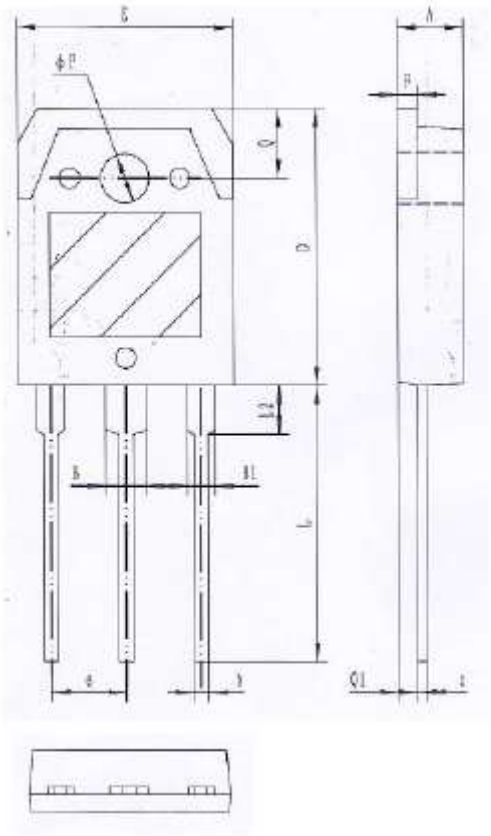
Transient Thermal Response Curve



外形尺寸 **PACKAGE MECHANICAL DATA**

TO-3PB

单位 Unit ：mm

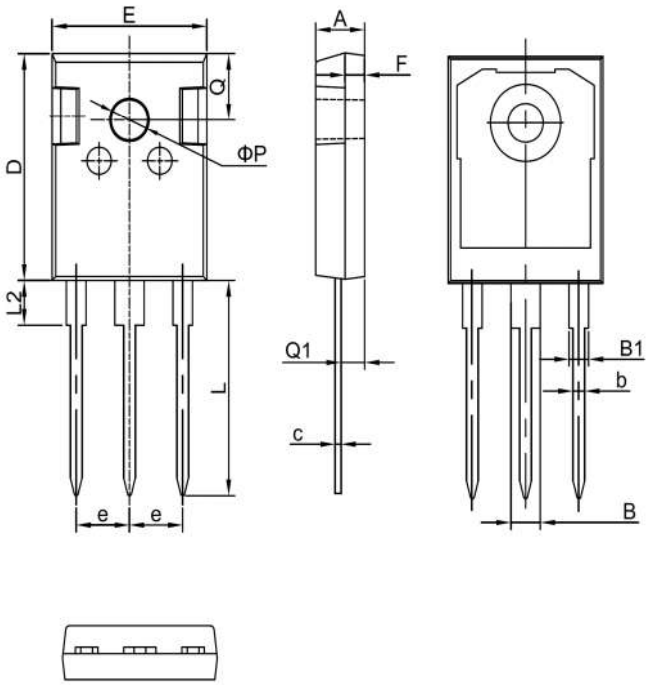


符号 symbol	MIN	MAX
A	4.60	5.00
B	2.90	3.20
B1	1.90	2.20
b	0.90	1.10
c	0.50	0.70
D	19.40	20.40
E	15.40	15.80
e	5.45(TYP)	
F	1.40	1.60
L	19.50	20.50
L2	3.30	3.70
Q	4.90	5.10
Q1	1.30	1.50
P	3.10	3.50

外形尺寸 PACKAGE MECHANICAL DATA

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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