



JCS6AN70E

主要参数MAIN CHARACTERISTICS

| | |
|------------------------------------|---------------|
| I_D | 6A |
| V_{DSS} | 700V |
| $R_{dson-max}$ ($V_{GS}=10V$) | 1.70 Ω |
| Q_g-Typ | 21.1nC |

用途

- 高频开关电源
- 电子镇流器
- LED 电源

产品特性

- 低栅极电荷
- 低 C_{RSS} (典型值 4.0pF)
- 开关速度快
- 产品全部经过雪崩测试
- 高抗 dv/dt 能力
- RoHS 产品

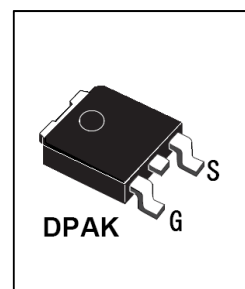
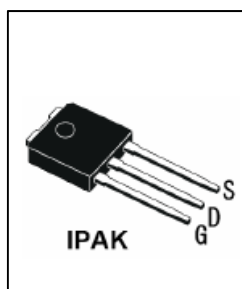
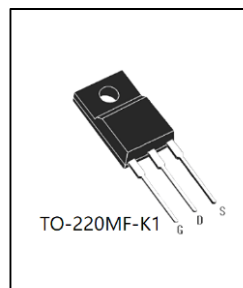
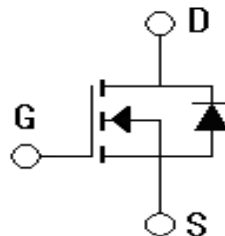
APPLICATIONS

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

FEATURES

- Low gate charge
- Low C_{RSS} (typical 4.0pF)
- 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 | JCS6AN70VE-V-BR | N/A | N/A | JCS6AN70V | IPAK |
| N/A | JCS6AN70RE-R-BR | N/A | JCS6AN70RE-R-AR | JCS6AN70R | DPAK |
| JCS6AN70FE-F1-B | JCS6AN70FE-F1-BR | N/A | N/A | JCS6AN70F | TO-220MF-K1 |



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 |
|--|---|---------------|------------|-----------------------|
| | | JCS6AN70VE/RE | JCS6AN70FE | |
| 最高漏极-源极直流电压 Drain-Source Voltage | V_{DSS} | 700 | 700 | V |
| 连续漏极电流 Drain Current -continuous | I_D $T=25^{\circ}\text{C}$ $T=100^{\circ}\text{C}$ | 6.0 | 6.0* | A |
| | | 3.6 | 3.6* | A |
| 最大脉冲漏极电流 (注1) Drain Current - pulse (note 1) | I_{DM} | 24 | 24* | 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} | 232.6 | | mJ |
| 雪崩电流 (注1) Avalanche Current (note 1) | I_{AR} | 6 | | A |
| 重复雪崩能量 (注1) Repetitive Avalanche Energy (note 1) | E_{AR} | 23.1 | | 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 | 5.5 | | V/ns |
| 耗散功率 Power Dissipation | P_D $T_C=25^{\circ}\text{C}$ -Derate above 25°C | 231 | 36.7 | W |
| | | 1.84 | 1.47 | W/ $^{\circ}\text{C}$ |
| 最高结温及存储温度 Operating and Storage Temperature Range | T_J, T_{STG} | -55~+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 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} | $I_D=250\mu A, V_{GS}=0V$ | 700 | - | - | 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°C | - | 0.7 | - | V/°C |
| 零栅压下漏极漏电流 Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=700V, V_{GS}=0V, T_C=25^\circ C$ | - | - | 1.0 | μA |
| | | $V_{DS}=560V, V_{GS}=0V, T_C=125^\circ C$ | - | - | 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 | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D=250\mu A$ | 2.0 | - | 4.0 | V |
| 静态导通电阻 Static Drain-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS} = 10V, I_D=3A$ | - | 1.38 | 1.7 | Ω |
| 正向跨导 Forward Transconductance | g_{fs} | $V_{DS} = 40V, I_D=6.0A$ (note 4) | - | 10.9 | - | S |
| 动态特性 Dynamic Characteristics | | | | | | |
| 输入电容 Input capacitance | C_{iss} | $V_{DS}=25V,$ $V_{GS}=0V,$ $f=1.0MHz$ | 820 | 1104 | 1436 | pF |
| 输出电容 Output capacitance | C_{oss} | | 35 | 70 | 155 | pF |
| 反向传输电容 Reverse transfer capacitance | C_{rss} | | 1.0 | 4.0 | 17.8 | pF |



电特性 ELECTRICAL CHARACTERISTICS

| 开关特性 Switching Characteristics | | | | | | |
|---|--------------|--|---|------|------|---------|
| 延迟时间 Turn-On delay time | $t_{d(on)}$ | VDD=350V, ID=6A, RG=25Ω (note 4, 5) | - | 19 | 47.5 | ns |
| 上升时间 Turn-On rise time | t_r | | - | 28.4 | 78 | ns |
| 延迟时间 Turn-Off delay time | $t_{d(off)}$ | | - | 60.8 | 105 | ns |
| 下降时间 Turn-Off Fall time | t_f | | - | 40.6 | 97 | ns |
| 栅极电荷总量 Total Gate Charge | Q_g | VDS =560V , ID=6A VGS =10V (note 4, 5) | | 21.1 | 34 | nC |
| 栅-源电荷 Gate-Source charge | Q_{gs} | | | 5.38 | - | nC |
| 栅-漏电荷 Gate-Drain charge | Q_{gd} | | | 6.21 | - | 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 | - | - | 6 | A |
| 正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current | | I_{SM} | - | - | 24 | A |
| 正向压降 Drain-Source Diode Forward Voltage | V_{SD} | $V_{GS}=0V, I_S=6.0A$ | - | - | 1.4 | V |
| 反向恢复时间 Reverse recovery time | t_{rr} | $V_{GS}=0V, I_S=6.0A$ $di_f/dt=100A/\mu s$ (note 4) | - | 384 | - | ns |
| 反向恢复电荷 Reverse recovery charge | Q_{rr} | | - | 2.16 | - | μC |

热特性 THERMAL CHARACTERISTIC

| 项 目 Parameter | 符 号 Symbol | 最大 Max | | 单 位 Unit |
|--|---------------|---------------|------------|---------------|
| | | JCS6AN70VE/RE | JCS6AN70FE | |
| 结到管壳的热阻 Thermal Resistance, Junction to Case | $R_{th(j-c)}$ | 0.541 | 3.4 | $^{\circ}C/W$ |
| 结到环境的热阻 Thermal Resistance, Junction to Ambient | $R_{th(j-A)}$ | 62.5 | 48 | $^{\circ}C/W$ |

注释:

- 1: 脉冲宽度由最高结温限制
- 2: $L=12mH, I_{AS}=6A, V_{DD}=50V, R_G=25\Omega$, 起始结温 $T_J=25^{\circ}C$
- 3: $I_{SD} \leq 6A, di/dt \leq 300A/\mu s, V_{DD} \leq BV_{DSS}$, 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

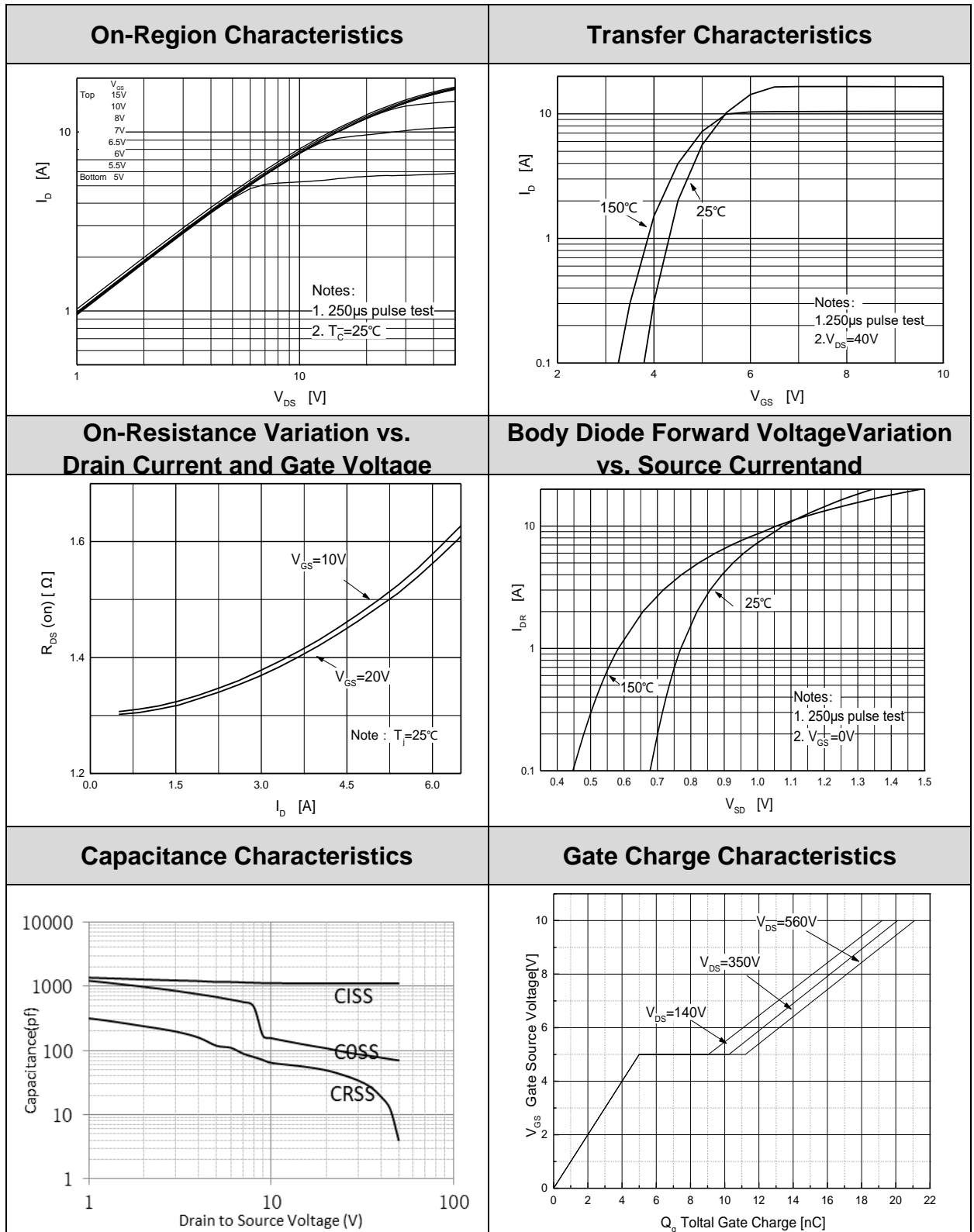
Notes:

- 1: Pulse width limited by maximum junction temperature
- 2: $L=12mH, I_{AS}=6A, V_{DD}=50V, R_G=25\Omega$, Starting $T_J=25^{\circ}C$
- 3: $I_{SD} \leq 6A, di/dt \leq 300A/\mu s, V_{DD} \leq BV_{DSS}$, Starting $T_J=25^{\circ}C$
- 4: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycles $\leq 2\%$
- 5: Essentially independent of operating temperature



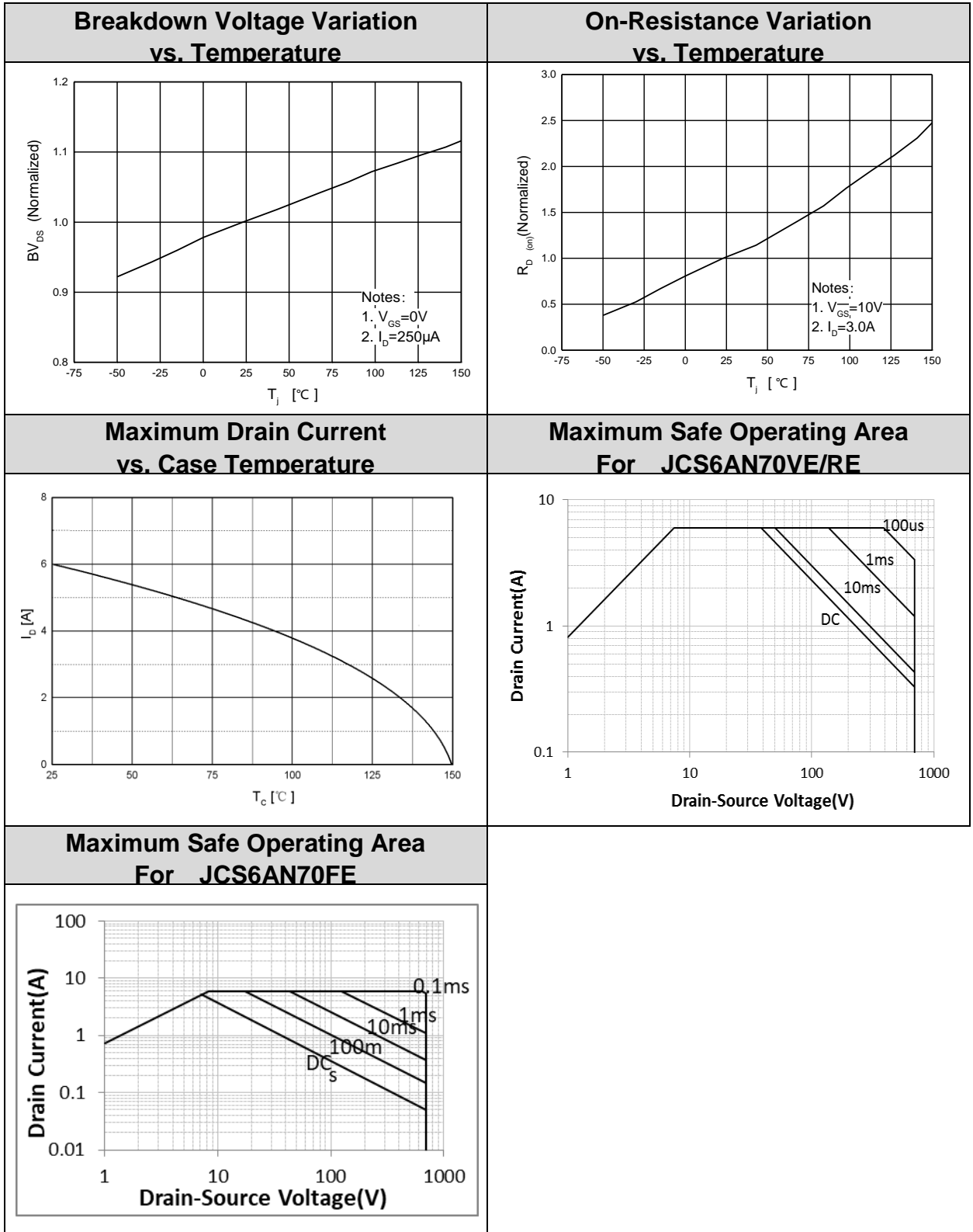


特征曲线ELECTRICAL CHARACTERISTICS (curves)

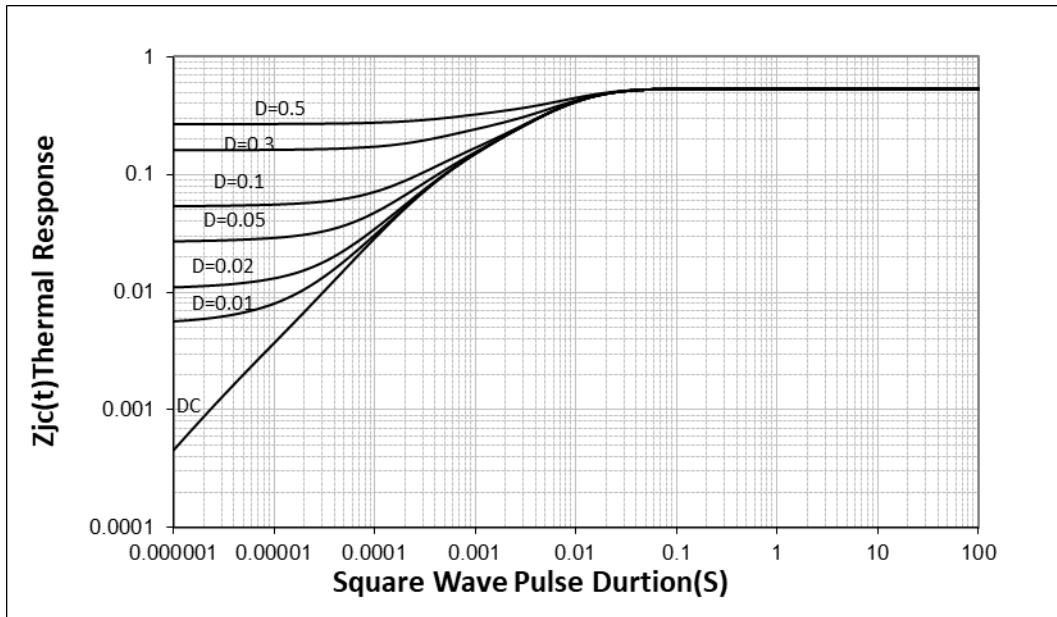




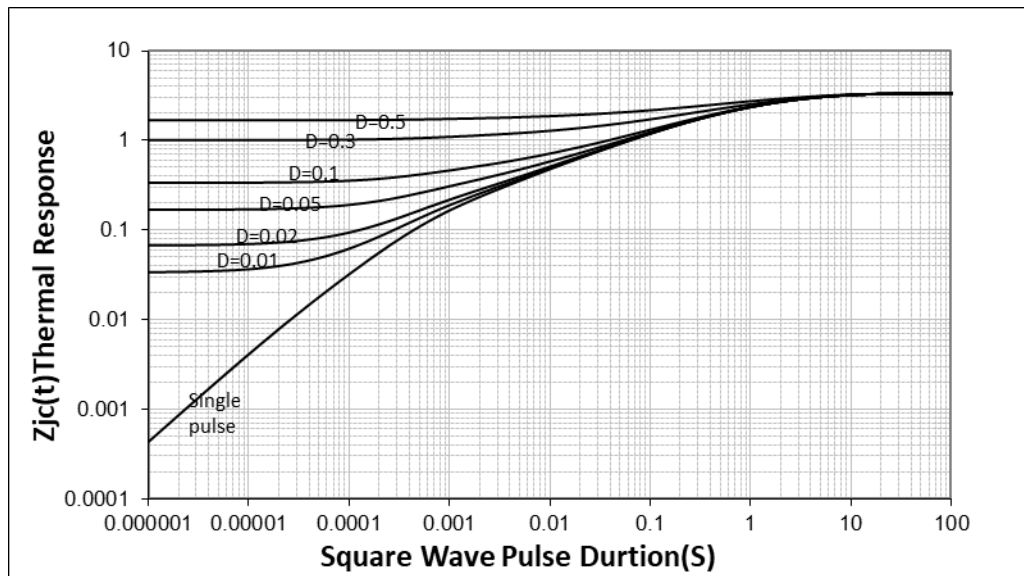
特征曲线ELECTRICAL CHARACTERISTICS (curves)



Transient Thermal Response Curve
For JCS6AN70VE/RE



Transient Thermal Response Curve
For JCS6AN70FE

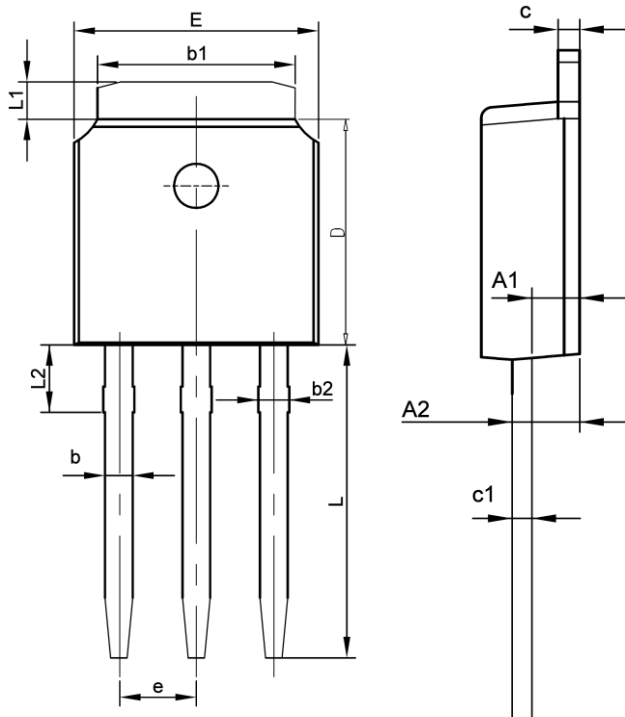




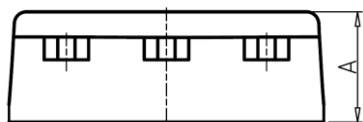
外形尺寸 PACKAGE MECHANICAL DATA

IPAK

单位 Unit: mm



| SYMBOL | MM | |
|--------|----------|------|
| | MIN | MAX |
| A | 2.10 | 2.50 |
| A1 | 0.87 | 1.27 |
| A2 | 1.37 | 1.77 |
| b | 0.63 | 0.93 |
| b1 | 5.13 | 5.53 |
| b2 | 0.67 | 1.00 |
| c | 0.40 | 0.60 |
| c1 | 0.40 | 0.60 |
| D | 5.80 | 6.40 |
| E | 6.30 | 6.90 |
| L | 9.10 | 9.70 |
| e | 2.286BSC | |
| L1 | 0.82 | 1.22 |
| L2 | 0.90 | 1.20 |

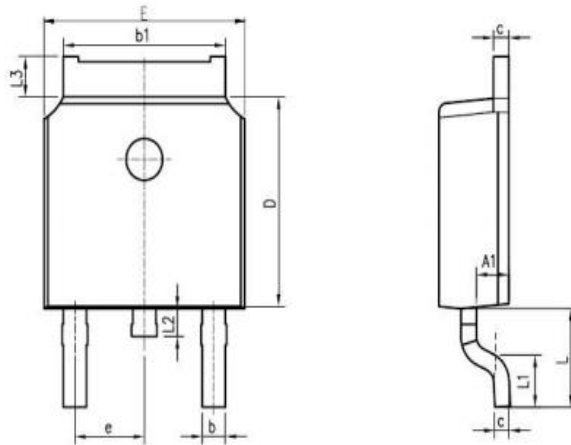




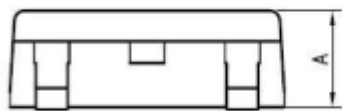
外形尺寸 PACKAGE MECHANICAL DATA

DPAK

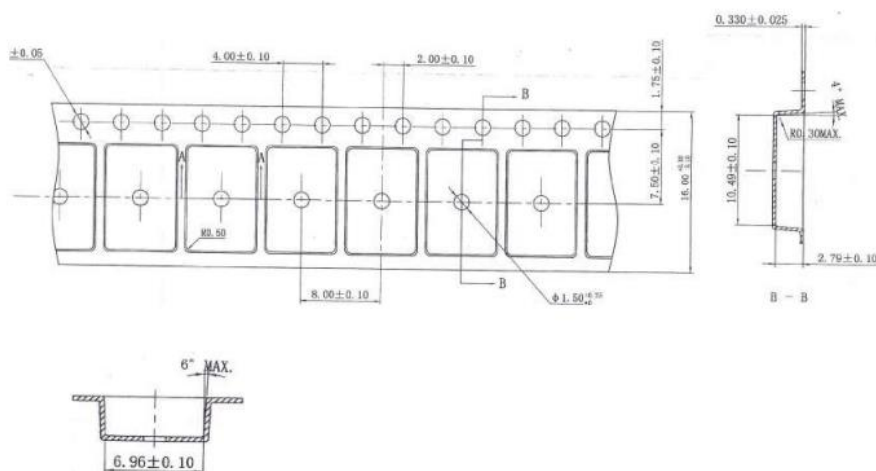
单位 Unit: mm



| SYMBOL | mm | |
|--------|----------|------|
| | MIN | MAX |
| A | 2.10 | 2.50 |
| A1 | 0.97 | 1.17 |
| b | 0.63 | 0.93 |
| b1 | 5.13 | 5.53 |
| c | 0.40 | 0.60 |
| D | 5.80 | 6.40 |
| E | 6.30 | 6.90 |
| e | 2.286BSC | |
| L | 2.50 | 3.30 |
| L1 | 1.20 | 1.80 |
| L2 | 0.60 | 1.00 |
| L3 | 0.85 | 1.30 |



编带 REEL

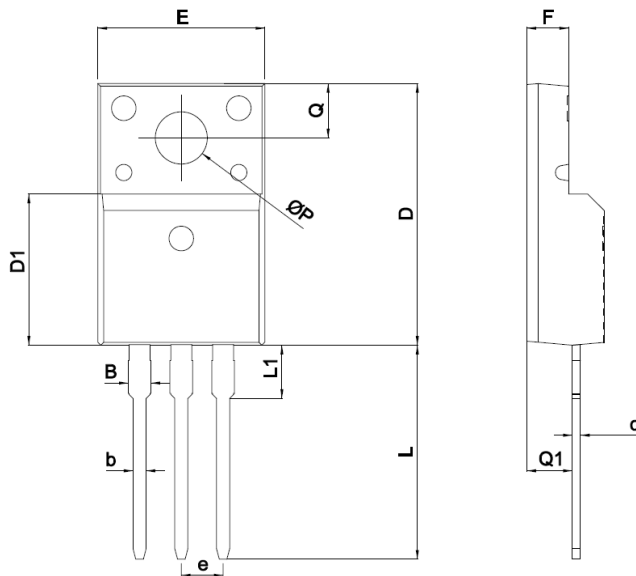




外形尺寸 PACKAGE MECHANICAL DATA

TO-220MF-K1

单位 Unit: mm



| SYMBOL | mm | |
|--------|----------|------|
| | MIN | MAX |
| A | 4.5 | 4.9 |
| B | 1.22 | 1.47 |
| b | 0.7 | 0.9 |
| c | 0.45 | 0.60 |
| D | 15.6 | 16.1 |
| D1 | 9.0 | 9.3 |
| e | 2.54TYPE | |
| E | 9.9 | 10.4 |
| F | 2.3 | 2.8 |
| L | 12.6 | 13.3 |
| L1 | 3.1 | 3.4 |
| Q | 3.2 | 3.4 |
| Q1 | 2.6 | 2.9 |
| ΦP | 3.0 | 3.5 |





注意事项

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联系方式

吉林华微电子股份有限公司

公司地址：吉林省吉林市深圳街 99 号

邮编：132013

总机：86-432-64678411

传真：86-432-64665812

网址：www.hwdz.com.cn

CONTACT

JILIN SINO-MICROELECTRONICS CO., LTD.

ADD: No.99 Shenzhen Street, Jilin City, Jilin Province, China.

Post Code: 132013

Tel: 86-432-64678411

Fax: 86-432-64665812

Web Site: www.hwdz.com.cn

