



JCS10N70H

主要参数MAIN CHARACTERISTICS

I_D	10A
V_{DS}	700V
$R_{DS(on)-max}$ ($V_{GS}=10V$)	1.10 Ω
Q_g-Typ	38.0nC

用途

- 高频开关电源
- 电子镇流器
- LED 电源

APPLICATIONS

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

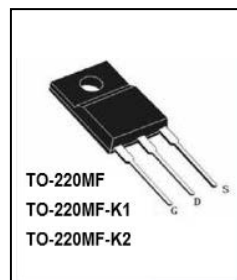
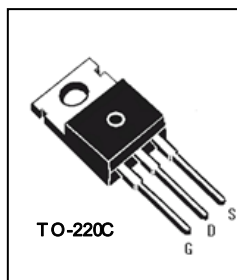
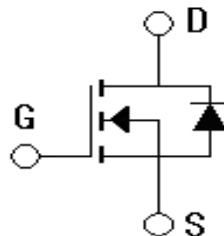
产品特性

- 低栅极电荷
- 低 C_{RSS} (典型值 10pF)
- 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 10pF)
- 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		
JCS10N70CH-C-B	JCS10N70CH-C-BR	N/A	N/A	JCS10N70CH	TO-220C
JCS10N70FH-F-B	JCS10N70FH-F-BR	N/A	N/A	JCS10N70FH	TO-220MF
JCS10N70FH-F1-B	JCS10N70FH-F1-BR	N/A	N/A	JCS10N70FH	TO-220MF-K1
JCS10N70FH-F2-B	JCS10N70FH-F2-BR	N/A	N/A	JCS10N70FH	TO-220MF-K2



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
		JCS10N70CH	JCS10N70FH	
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 $T=25^{\circ}\text{C}$	10	10*	A
	$T=100^{\circ}\text{C}$	6.3	6.3*	A
最大脉冲漏极电流 (注 1) Drain Current - pulse (note 1)	I_{DM}	40	40*	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}	338		mJ
雪崩电流 (注 1) Avalanche Current (note 1)	I_{AR}	10		A
重复雪崩能量 (注 1) Repetitive Avalanche Energy (note 1)	E_{AR}	23.9		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		V/ns
耗散功率 Power Dissipation	P_D $T_c=25^{\circ}\text{C}$ -Derate above 25°C	245	80	W
		2.0	2.16	W/ $^{\circ}\text{C}$
最高结温及存储温度 Operating and Storage Temperature Range	T_J, T_{STG}	$-55 \sim +150$		$^{\circ}\text{C}$
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	-	0.73	-	V/°C
MOSFET 的 dv/dt MOSFET dv/dt ruggedness	dv/dt	$V_{DS}=0\cdots 420V$	-	-	100	V/ns
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
		$V_{DS}=560V, T_C=125^\circ C$	-	-	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	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=250\mu A$	3.0	-	5.0	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=5A$	-	0.90	1.10	Ω
正向跨导 Forward Transconductance	g_{fs}	$V_{DS}=40V, I_D=5.0A$ (note 4)	-	9.5	-	S
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1.0MHz$	-	890	1300	pF
输出电容 Output capacitance	C_{oss}		-	120	200	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	10	14	pF





电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	$t_d(\text{on})$	$V_{DD}=350V, I_D=10A, R_G=10\Omega$ (note 4, 5)	-	37.3	50	ns
上升时间 Turn-On rise time	t_r		-	97.6	131	ns
延迟时间 Turn-Off delay time	$t_d(\text{off})$		-	88	115	ns
下降时间 Turn-Off Fall time	t_f		-	52	67	ns
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=560V$,	32.3	38	55	nC
栅—源电荷 Gate-Source charge	Q_{gs}	$I_D=10A$	9.35	11	15	nC
栅—漏电荷 Gate-Drain charge	Q_{gd}	$V_{GS}=10V$ (note 4, 5)	15.3	18	20	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		-	-	10	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}		-	-	40	A
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=10A$	-	0.93	1.40	V
反向恢复时间 Reverse recovery time	t_{rr}	$V_{GS}=0V, I_S=10A$	-	683	-	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}	$di_F/dt=100A/\mu s$ (note 4)	-	4.98	-	μC

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max		单 位 Unit
		JCS10N70CH	JCS10N70FH	
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.53	2.50	$^{\circ}C/W$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	62.5	58.0	$^{\circ}C/W$

注释:

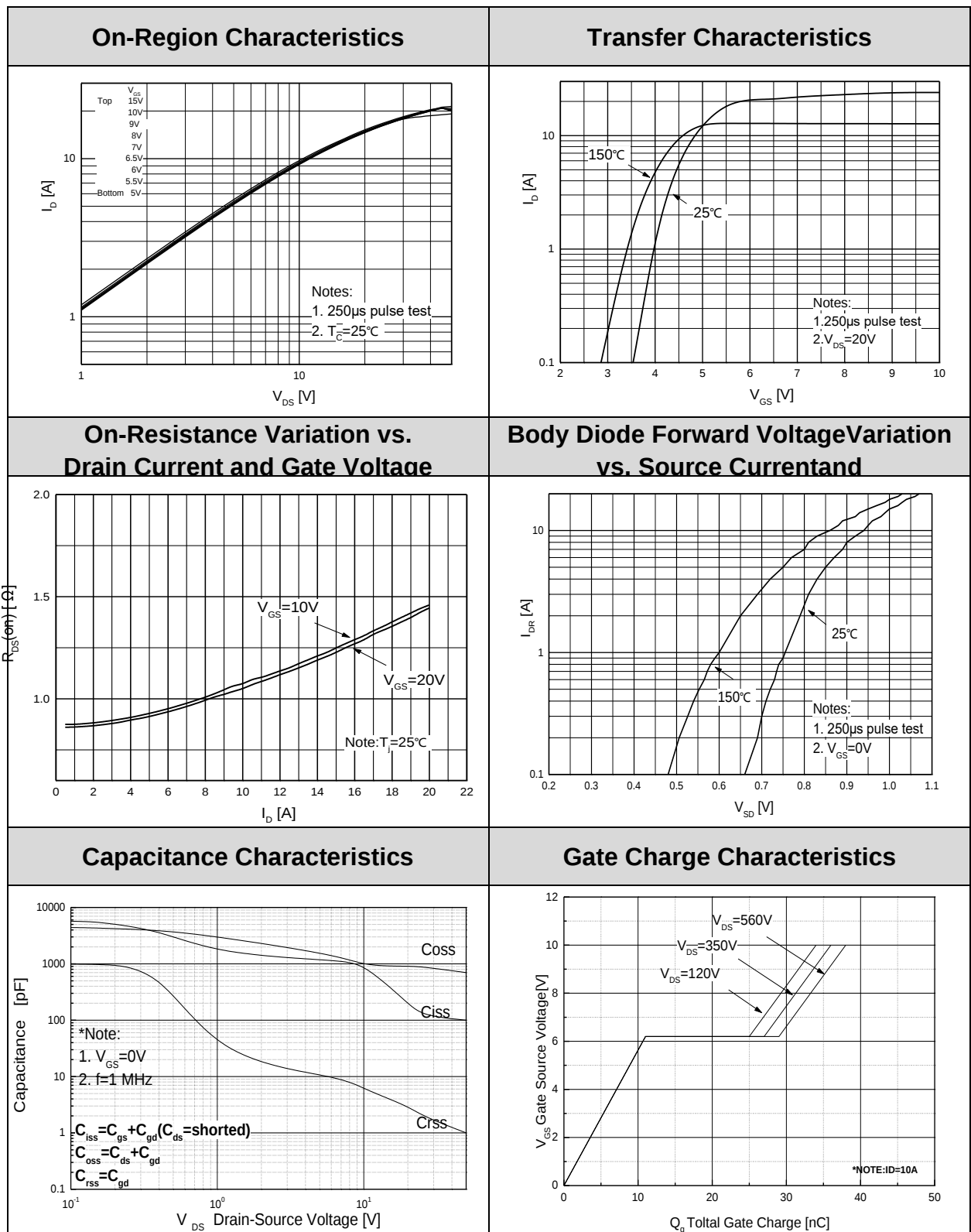
- 1: 脉冲宽度由最高结温限制
- 2: $L=2mH, I_{AS}=10A, V_{DD}=50V, R_G=25\Omega$, 起始结温 $T_J=25^{\circ}C$
- 3: $I_{SD} \leq 20A, di/dt \leq 300A/\mu s, V_{DD} \leq BV_{DSS}$, 起始结温 $T_J=25^{\circ}C$
- 4: 脉冲测试: 脉冲宽度 $\leq 300\mu s$, 占空比 $\leq 2\%$
- 5: 基本与工作温度无关

Notes:

- 1: Pulse width limited by maximum junction temperature
- 2: $L=2mH, I_{AS}=10A, V_{DD}=50V, R_G=25\Omega$, Starting $T_J=25^{\circ}C$
- 3: $I_{SD} \leq 20A, di/dt \leq 300A/\mu s, V_{DD} \leq BV_{DSS}$, 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

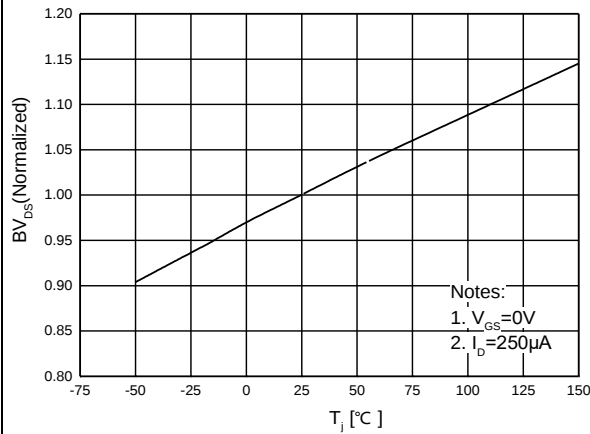


特征曲线ELECTRICAL CHARACTERISTICS (curves)

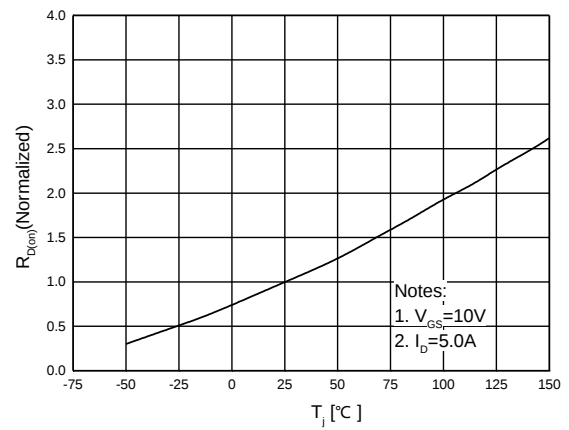


特征曲线ELECTRICAL CHARACTERISTICS (curves)

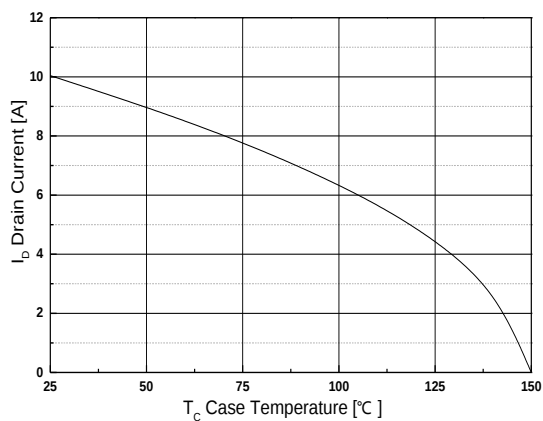
Breakdown Voltage Variation vs. Temperature



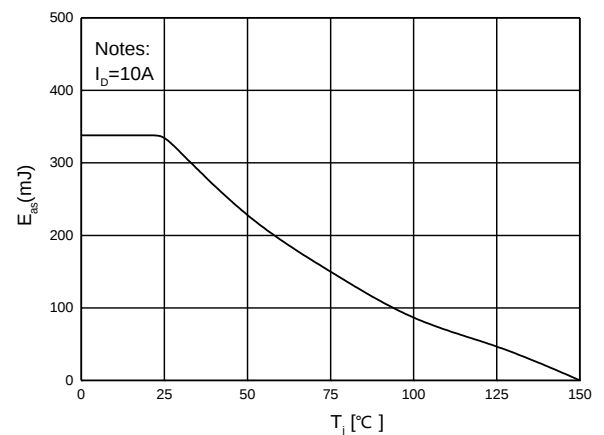
On-Resistance Variation vs. Temperature



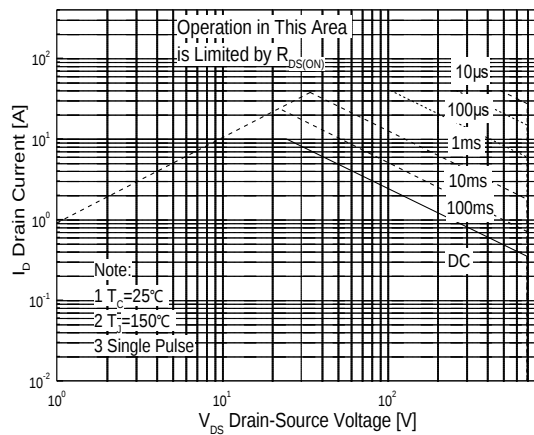
Maximum Drain Current vs. Case Temperature



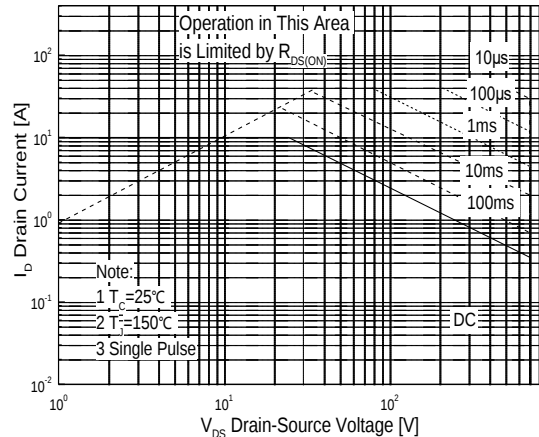
Maximum Avalanche Energy vs. Temperature



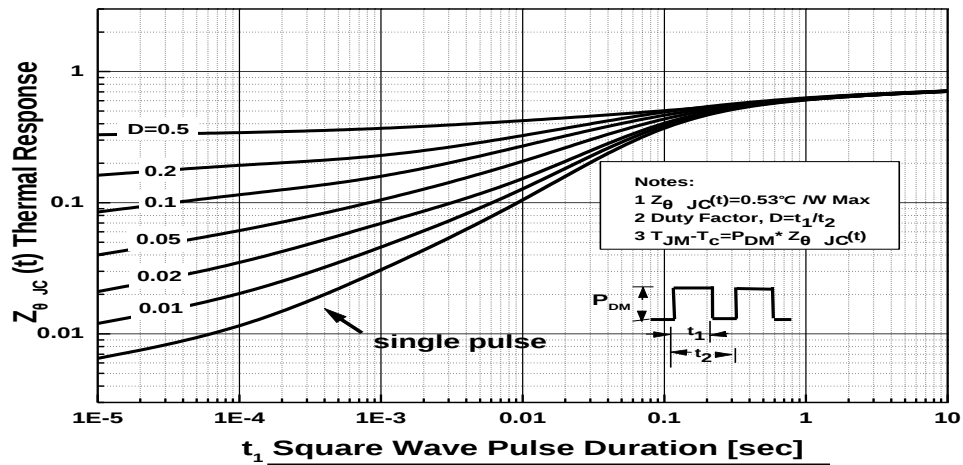
Maximum Safe Operating Area For JCS10N70CH



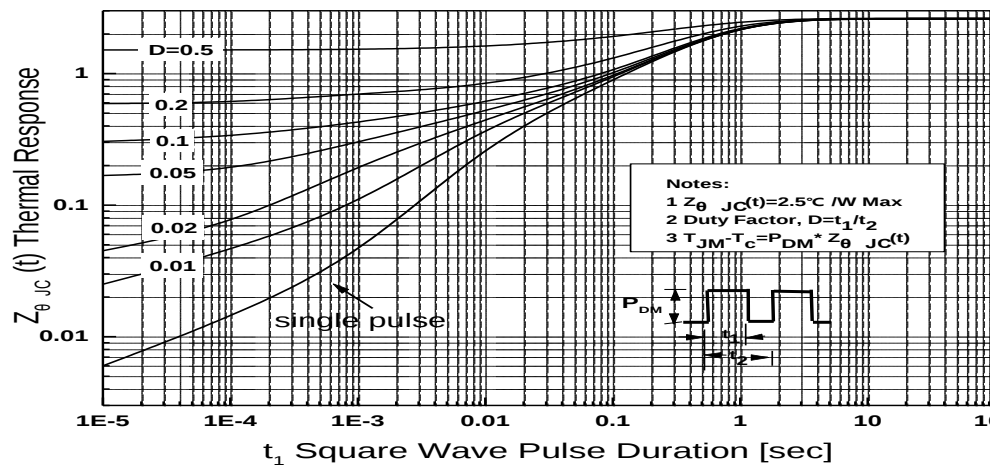
Maximum Safe Operating Area For JCS10N70FH



**Transient Thermal Response Curve
For JCS10N70CH**



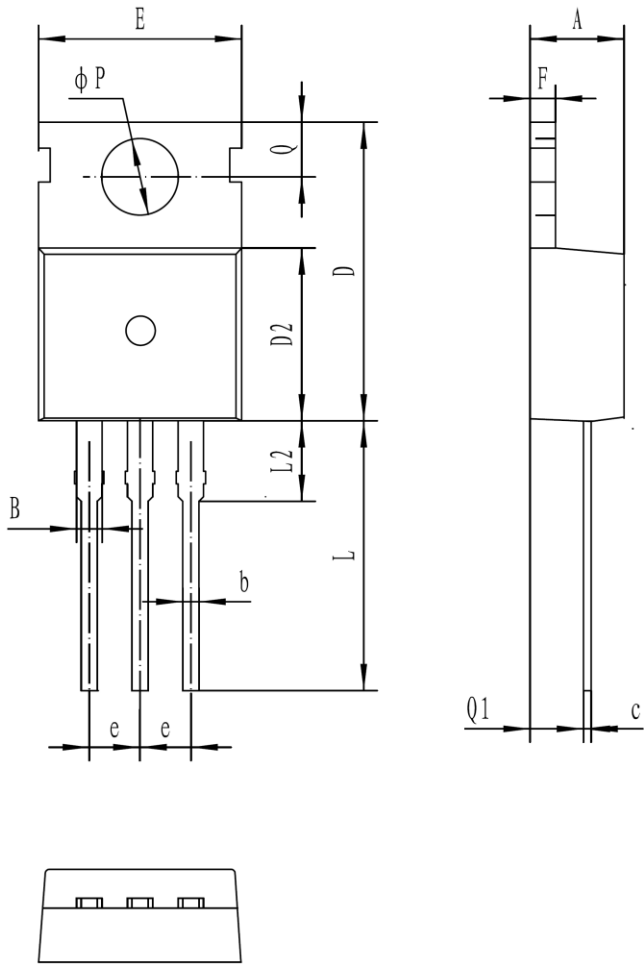
**Transient Thermal Response Curve
For JCS10N70FH**





TO-220C

单位 Unit: mm

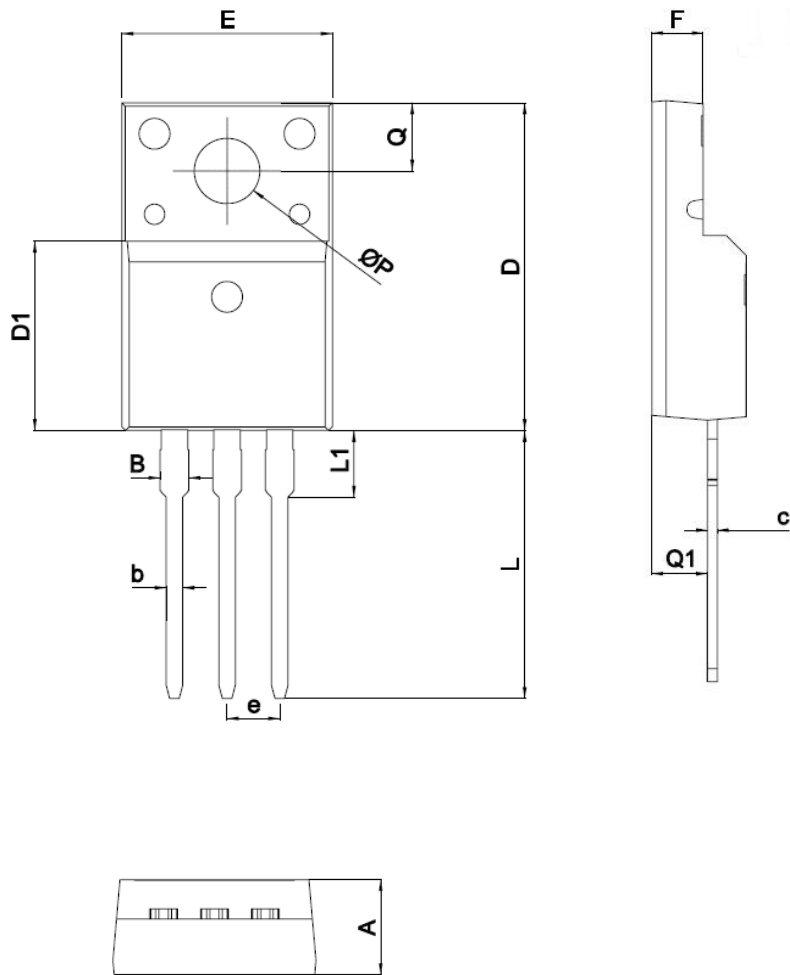


符号 symbol	MIN	MAX
A	4.30	4.70
B	1.22	1.47
b	0.70	0.95
c	0.40	0.65
D	15.20	16.20
D2	9.00	9.40
E	9.70	10.10
e	2.39	2.69
F	1.25	1.40
L	12.60	13.60
L2	2.80	3.20
Q	2.60	3.00
Q1	2.20	2.60
P	3.50	3.80



TO-220MF

单位 Unit: mm



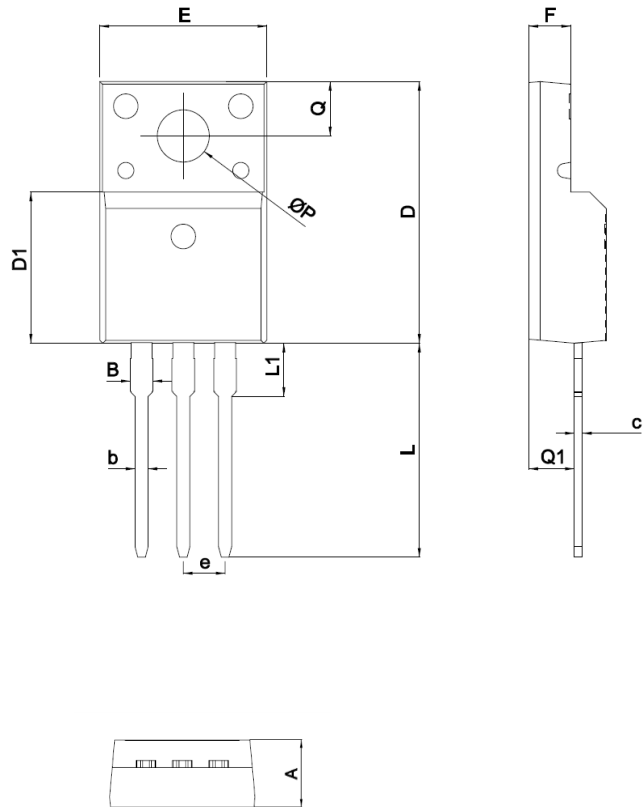
SYMBOL	mm	
	MIN	MAX
A	4.5	4.9
B		1.47
b	0.7	0.9
c	0.45	0.60
D	15.67	16.07
D1	9.04	9.20
e	2.54TYPE	
E	9.96	10.36
F	2.34	2.74
L	12.58	13.38
L1	3.13	3.33
Q	3.2	3.4
Q1	2.56	2.96
ΦP	3.08	3.28



外形尺寸 PACKAGE MECHANICAL DATA

TO-220MF-K1

单位 Unit: mm



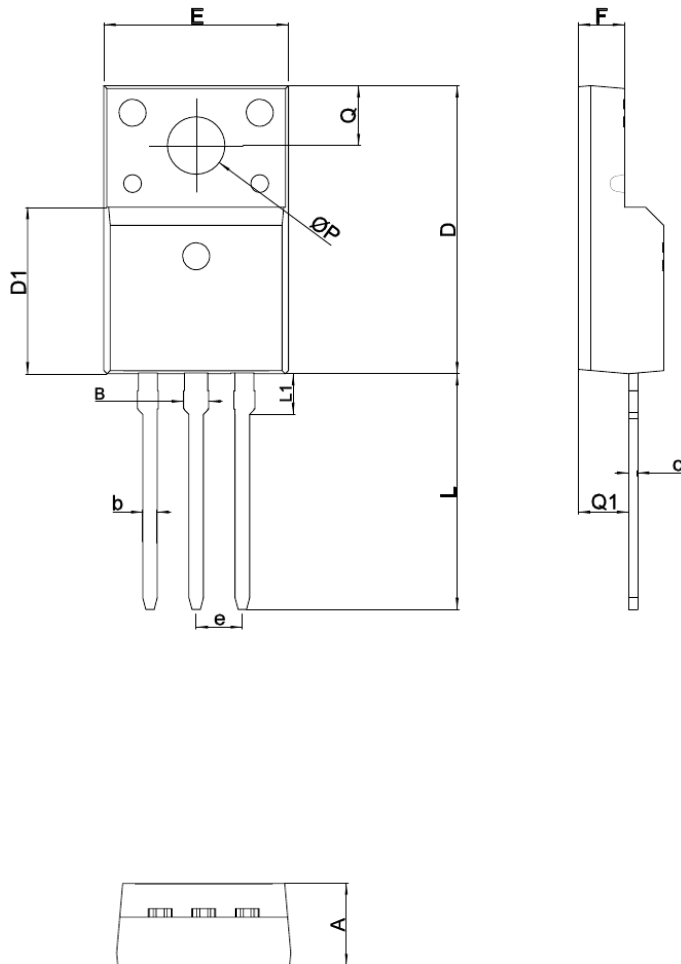
SYMBOL	mm	
	MIN	MAX
A	4.5	4.9
B	1.22	1.47
b	0.7	0.9
c	0.45	0.60
D	15.6	16.1
D1	9.0	9.3
e	2.54TYPE	
E	9.9	10.4
F	2.3	2.8
L	12.6	13.3
L1	3.1	3.4
Q	3.2	3.4
Q1	2.6	2.9
ΦP	3.0	3.5





TO-220MF-K2

单位 Unit: mm



SYMBOL	mm	
	MIN	MAX
A	4.5	4.9
B		1.27
b	0.59	0.79
c	0.45	0.60
D	15.67	16.07
D1	8.97	9.37
e	2.54TYPE	
E	9.96	10.36
F	2.34	2.74
L	12.65	13.35
L1	1.80	2.20
Q	3.2	3.4
Q1	2.56	2.96
ΦP	3.08	3.28



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