



JS65R220U

主要参数 MAIN CHARACTERISTICS

I_D	15A
V_{DS}	650 V
$R_{DS(on)-max}$ (@ $V_{GS}=10V$)	0.27 Ω
Q_g-typ	24.7 nC

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
- 开关速度快
- 产品全部经过雪崩测试
- 高抗 dv/dt 能力
- RoHS 产品
- 超结产品

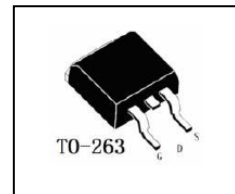
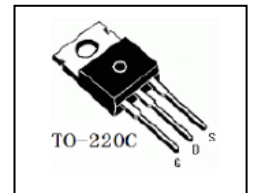
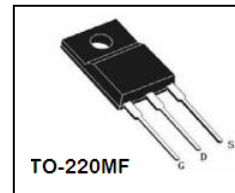
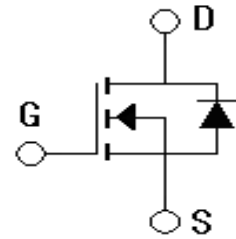
APPLICATIONS

- High frequency switching mode power supply
- Electronic ballast
- LED power supply

FEATURES

- Low gate charge
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS product
- Super Junction MOS

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	无卤-条管	有卤-编带	无卤-编带		
Halogen-Tube	Halogen-Free-Tube	Halogen-reel	Halogen-Free-Reel		
JS65R220FU-F-B	JS65R220FU-F-BR	N/A	N/A	JS65R220FU	TO-220MF
JS65R220CU-C-B	JS65R220CU-C-BR	N/A	N/A	JS65R220CU	TO-220C
JS65R220SU-S-B	JS65R220SU-S-BR	JS65R220SU-S-A	JS65R220SU-S-AR	JS65R220SU	TO-263



绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value		单 位 Unit
		JS65R220CU/SU	JS65R220FU	
最高漏极-源极直流电压 Drain-Source Voltage	V_{DSS}	650		V
连续漏极电流 Drain Current -continuous	I_D T=25℃ T=100℃	15*		A
		10*		A
最大脉冲漏极电流 (注1) Drain Current - pulse (note 1)	I_{DM}	60*		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}	304		mJ
雪崩电流 (注1) Avalanche Current (note 1)	I_{AR}	3		A
重复雪崩能量 (注1) Repetitive Avalanche Energy (note 1)	E_{AR}	1.6		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	15		V/ns
耗散功率 Power Dissipation	P_D T _C =25℃ -Derate above 25℃	131	33.2	W
		1.05	0.265	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 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}	$I_D=250\mu A, V_{GS}=0V$	650	-	-	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 $25^\circ C$	-	0.65	-	V/ $^\circ C$
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=650V, V_{GS}=0V, T_C=25^\circ C$	-	-	1	μA
		$V_{DS}=650V, T_C=125^\circ C$	-	-	100	μA
正向栅极体漏电流 Gate-body leakage current, forward	I_{GSSF}	$V_{DS}=0V, V_{GS}=20V$	-	-	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	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=250\mu A$	3.0	-	4.0	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=8A$	-	0.22	0.27	Ω
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, f=1.0MHz$	-	1210	-	pF
输出电容 Output capacitance	C_{oss}		-	74	-	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	0.2	-	pF

电特性 ELECTRICAL CHARACTERISTICS





开关特性 Switching Characteristics							
延迟时间 Turn-On delay time	$t_d(\text{on})$	$V_{DD}=380V, I_D=8A, R_G=2.3\Omega,$ $V_{GS}=10V$ (note 4, 5)	-	14	-	ns	
上升时间 Turn-On rise time	t_r		-	8	-	ns	
延迟时间 Turn-Off delay time	$t_d(\text{off})$		-	55	-	ns	
下降时间 Turn-Off Fall time	t_f		-	7	-	ns	
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=480V,$ $I_D=15A$ $V_{GS}=10V$ (note 4, 5)	-	24.7	-	nC	
栅-源电荷 Gate-Source charge	Q_{gs}		-	8.2	-	nC	
栅-漏电荷 Gate-Drain charge	Q_{gd}		-	8.5	-	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		-	-	15	A	
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}		-	-	60	A	
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V,$ $I_S=15A$	-	0.9	1.2	V	
反向恢复时间 Reverse recovery time	t_{rr}	$V_r=400V,$ $I_F=I_S$ $dI_F/dt=100A/\mu s$ (note 4)	-	240	-	ns	
反向恢复电荷 Reverse recovery charge	Q_{rr}		-	2.0	-	μC	

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max		单 位 Unit
		JS65R220U-DPAK	JS65R220U-TO-220MF	
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.95	3.76	$^{\circ}C/W$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	62	80	$^{\circ}C/W$

注释:

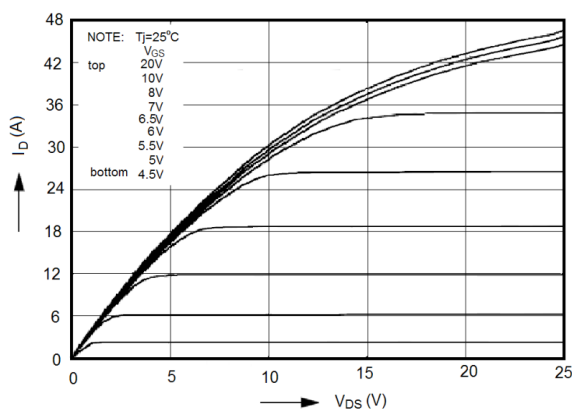
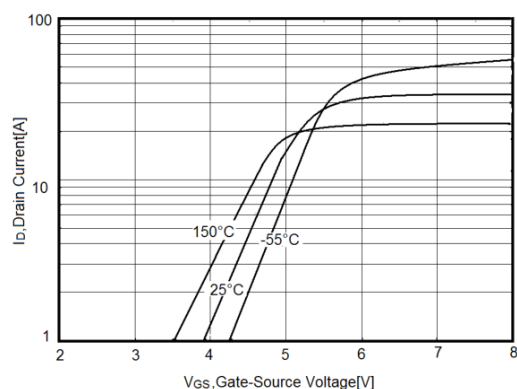
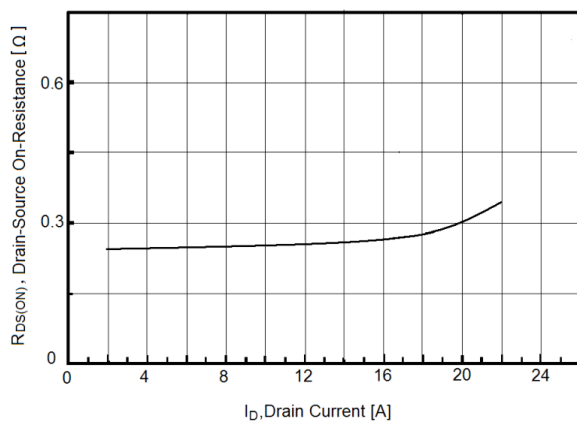
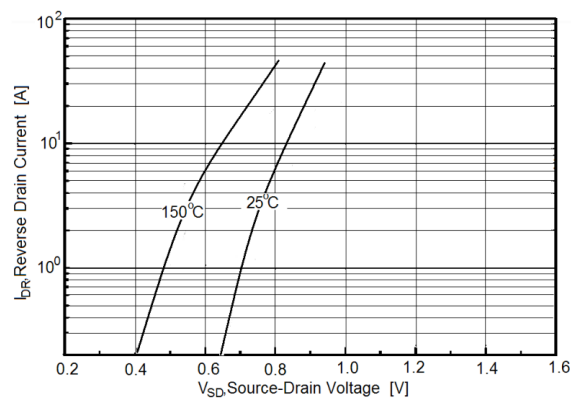
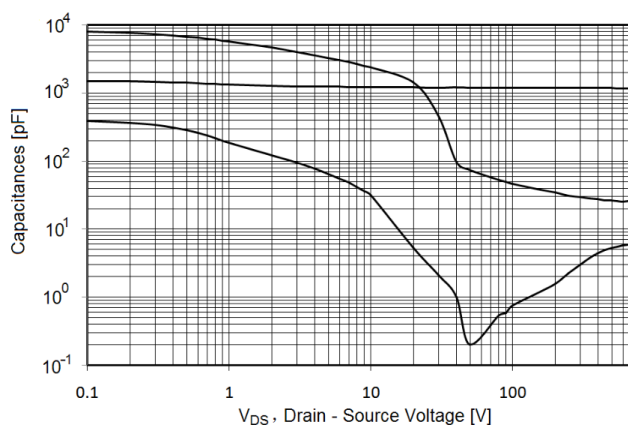
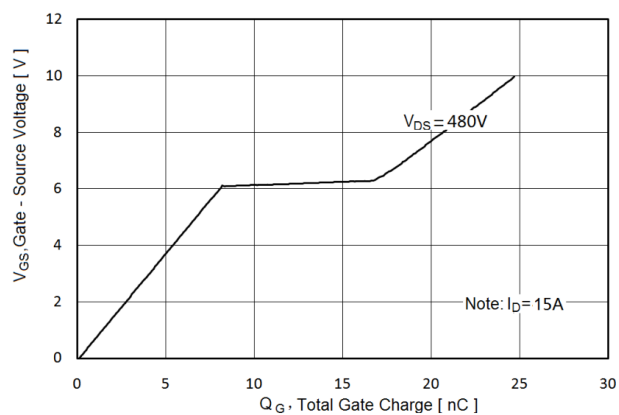
- 1: 脉冲宽度由最高结温限制
- 2: $V_{DD}=50V, R_G=25\Omega$, 起始结温 $T_J=25^{\circ}C$
- 3: $I_{SD}\leq 11A, di/dt\leq 300A/\mu s, V_{DD}\leq BV_{DSS}$, 起始结温 $T_J=25^{\circ}C$
- 4: 脉冲测试: 脉冲宽度 $\leq 300\mu s$, 占空比 $\leq 2\%$
- 5: 基本与工作温度无关

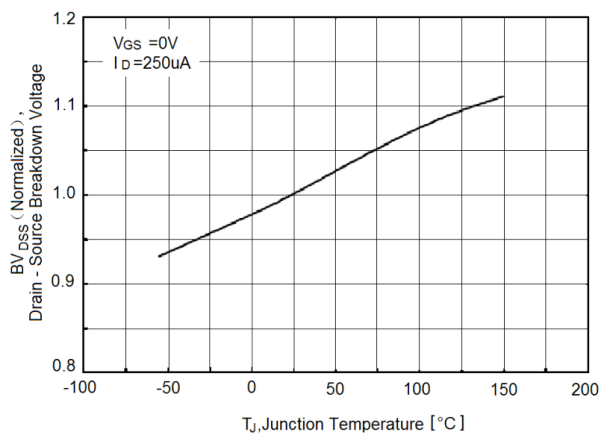
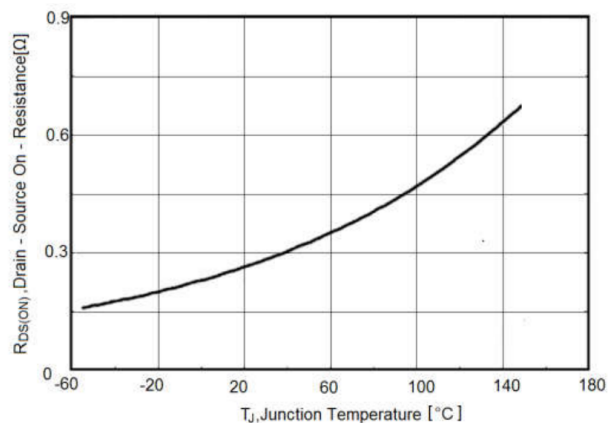
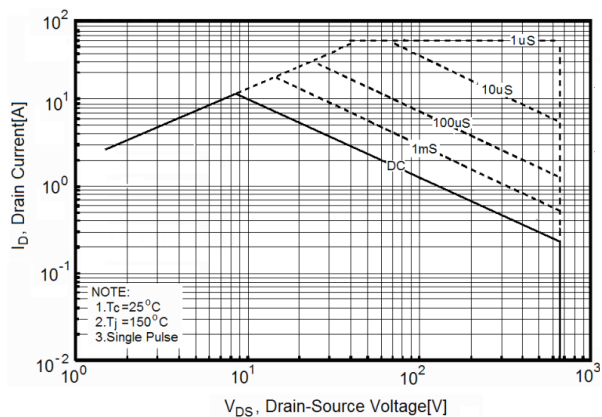
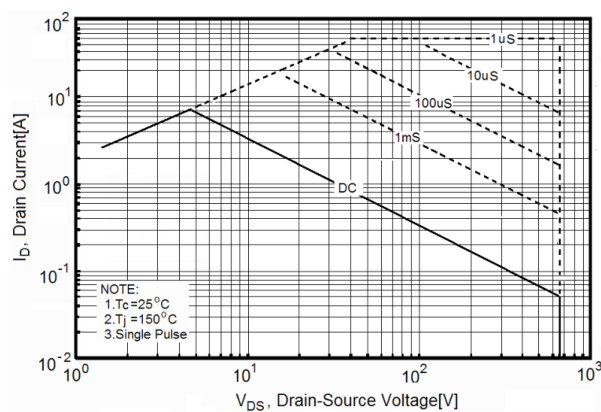
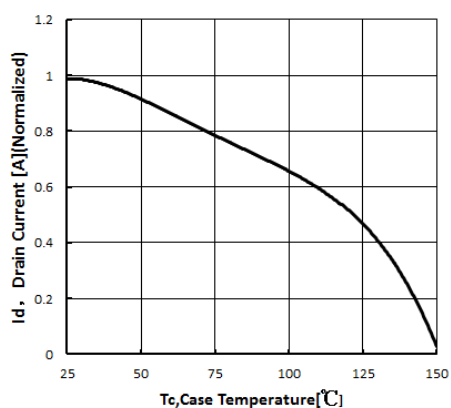
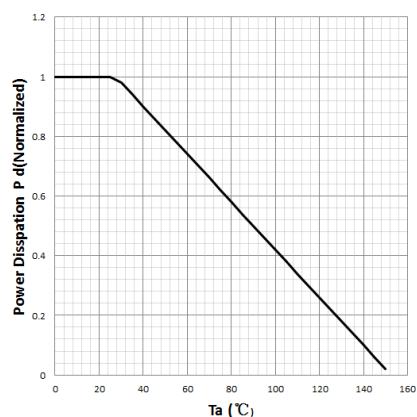
Notes:

- 1: Pulse width limited by maximum junction temperature
- 2: $V_{DD}=50V, R_G=25\Omega$, Starting $T_J=25^{\circ}C$
- 3: $I_{SD}\leq 11A, di/dt\leq 300A/\mu s, V_{DD}\leq BV_{DSS}$, 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)



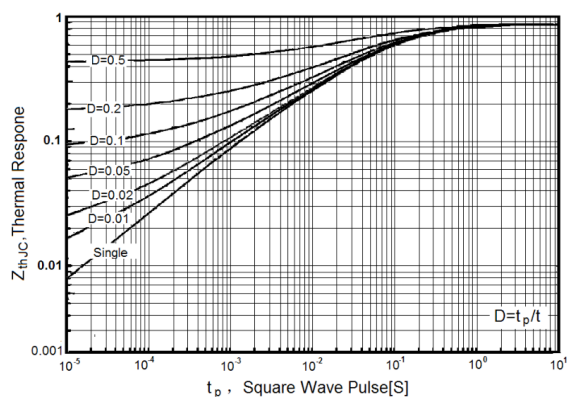
**On-Region Characteristics****Transfer Characteristics****On-Resistance Variation vs. Drain Current and Gate Voltage****Body Diode Forward Voltage Variation vs. Source Current and Temperature****Gate Charge Characteristics****Capacitance Characteristics****特征曲线 ELECTRICAL CHARACTERISTICS (curves)**

**Breakdown Voltage Variation
vs. Temperature****On-Resistance Variation
vs. Temperature****Maximum Safe Operating Area
For JS65R220SU/CU****Maximum Safe Operating Area
For JS65R220FU****Maximum Drain Current
vs. Case Temperature****Power Dissipation vs. Temperature**

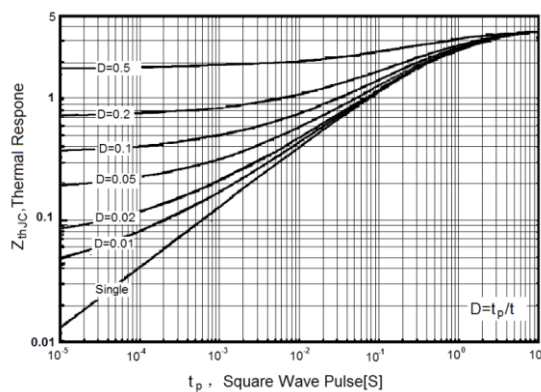
特征曲线 ELECTRICAL CHARACTERISTICS (curves)



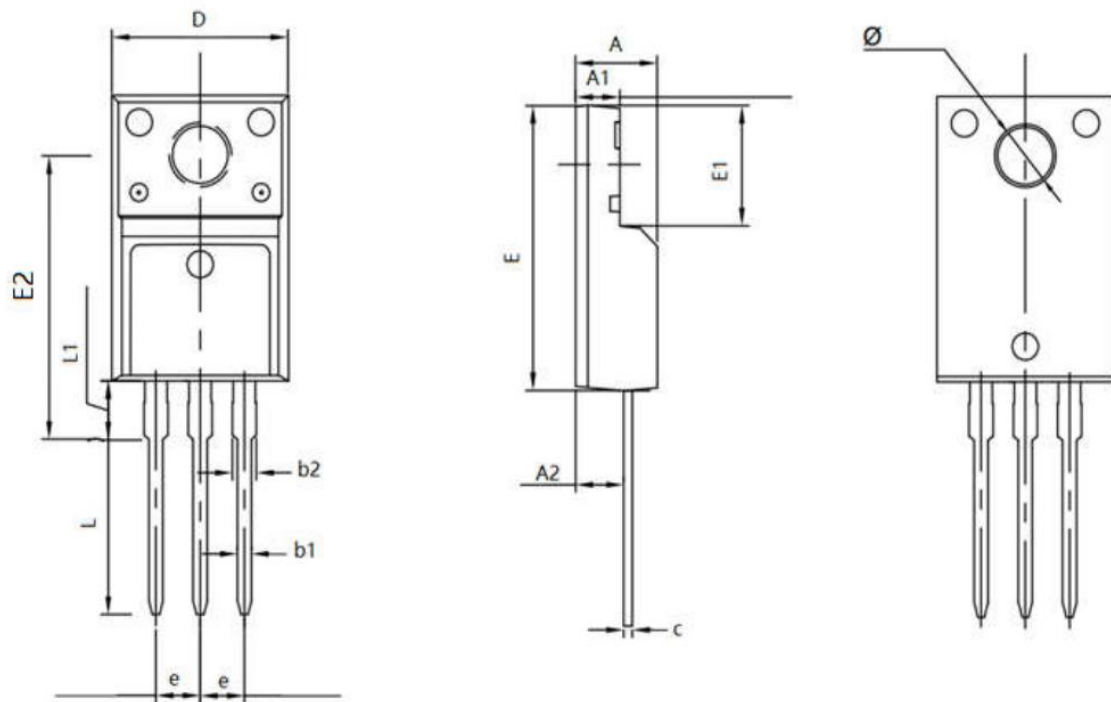
Transient Thermal Response Curve For JS65R220SU/CU



Transient Thermal Response Curve For JS65R220FU



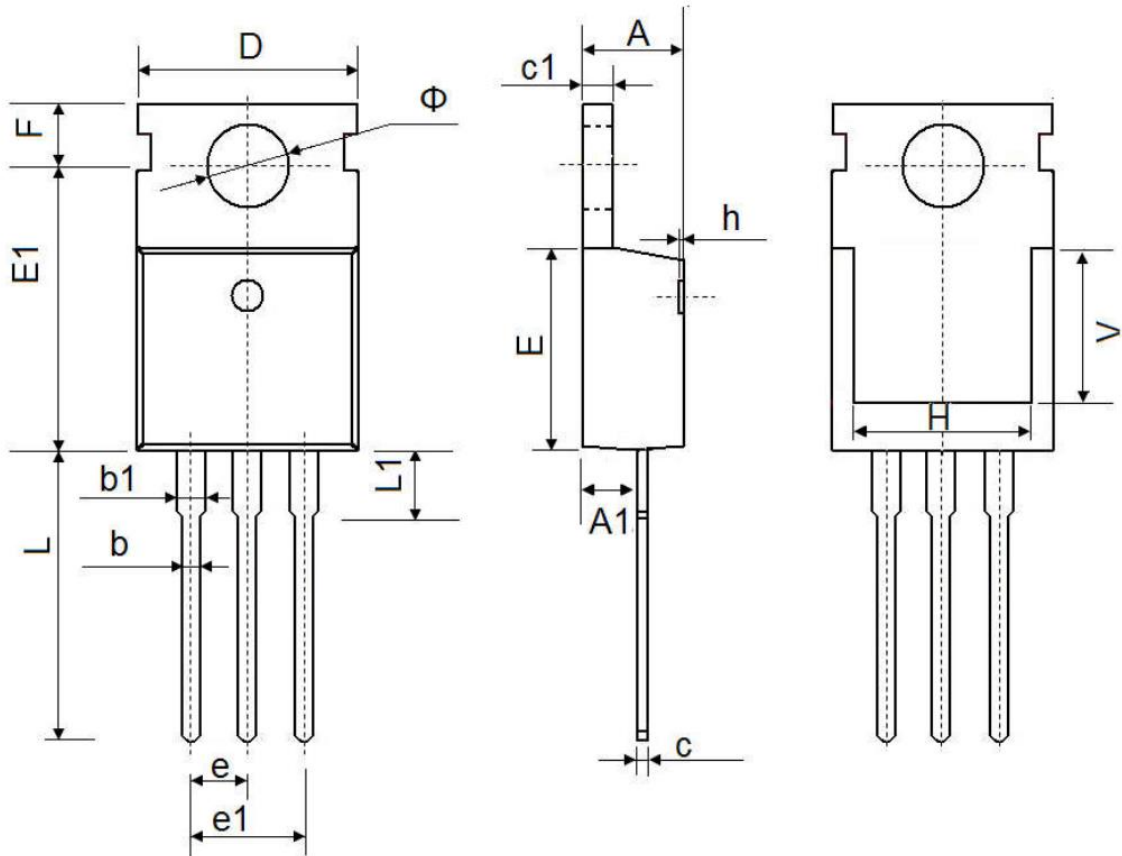
外形尺寸 PACKAGE MECHANICAL DATA



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	4.500	4.900
A1	2.340	2.740
A2	2.560	2.960
b1	0.700	0.900
b2	1.180	1.580
c	0.400	0.600
D	9.960	10.360
E	15.670	15.970
E1	6.500	6.900
E2	15.500	16.100
e	2.540 TYP	
Φ	3.080	3.280
L	12.640	13.240
L1	3.030	3.430

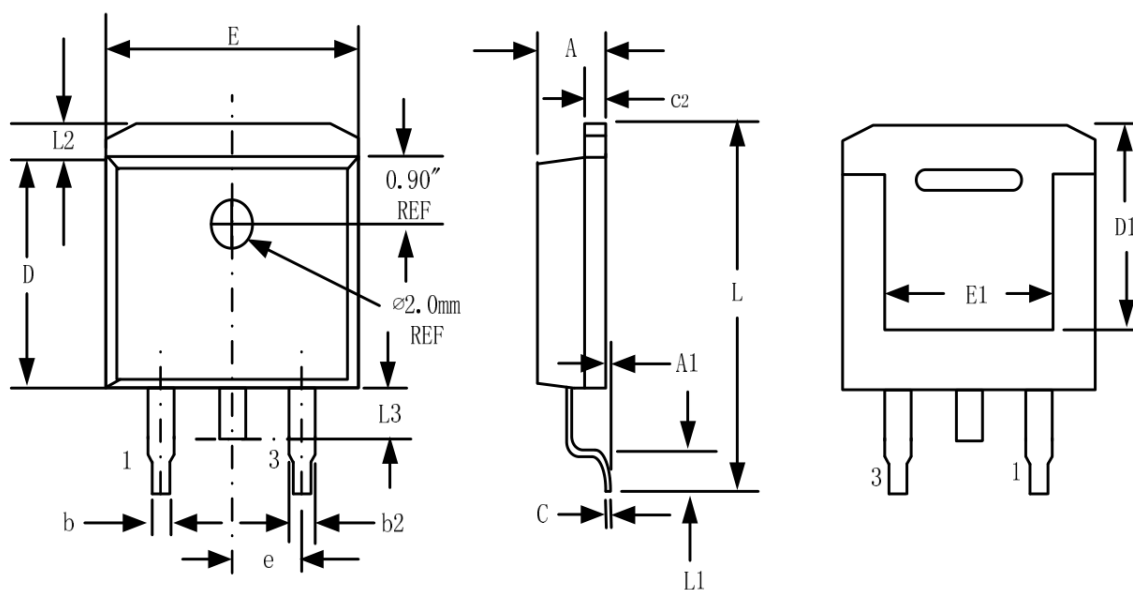
外形尺寸 PACKAGE MECHANICAL DATA





Symbol	Dimensions In Millimeters	
	Min.	Max.
A	4.400	4.600
A1	2.250	2.550
b	0.710	0.910
b1	1.170	1.370
c	0.330	0.650
c1	1.200	1.400
D	9.910	10.250
E	8.9500	9.750
E1	12.650	12.950
e	2.540 TYP.	
e1	4.980	5.180
F	2.650	2.950
H	7.900	8.100
h	0.000	0.300
L	12.900	13.400
L1	2.850	3.250
V	7.500 REF.	
Φ	3.400	3.800

外形尺寸 PACKAGE MECHANICAL DATA



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	4.32	4.57
A1	-	0.25
b	0.71	0.94
b2	1.15	1.40
c	0.46	0.61
c2	1.22	1.40
D	8.89	9.40
D1	8.01	8.23
E	10.04	10.28
E1	7.88	8.08
e	2.54 BSC	
L	14.73	15.75
L1	2.29	2.79
L2	1.15	1.39
L3	1.27	1.77

注意事项

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核实。

2. 购买时请认清公司商标，如有疑问请与公司本部联系。
3. 在电路设计时请不要超过器件的绝对最大额定值，否则会影响整机的可靠性。
4. 本说明书如有版本变更不另外告知。

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3. Please do not exceed the absolute maximum ratings of the device when circuit designing.
4. Jilin Sino-microelectronics co., Ltd reserves the right to make changes in this. specification sheet and is subject to change without prior notice.

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