JT015N065FED/SED/CED

主要参数 MAIN CHARACTERISTICS

I_C	15 A
V_{CES}	650V
V_{CESAT}-TY (V_{GE}=15V)	1.6V

用途

- 逆变器
- UPS 电源
- 电机控制

APPLICATIONS

- General purpose inverters
- UPS
- Motor Control

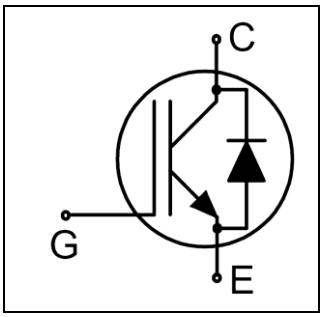
产品特性

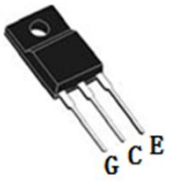
- 低栅极电荷
- Trench FS 技术
- RoHS 产品

FEATURES

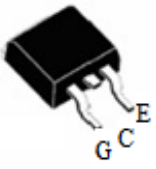
- Low gate charge
- Trench FS Technology
- RoHS product

封装 Package

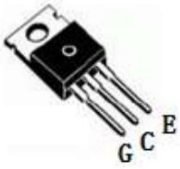




TO-220MF



TO-263



TO-220C

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 Non halogen-Tube	有卤-编带 Halogen-Reel	无卤-编带 Non halogen-Reel		
JT015N065SED-S-B	JT015N065SED-S-BR	JT015N065SED-S-A	JT015N065SED-S-AR	JT015N065SED	TO-263
JT015N065FED-F-B	JT015N065FED-F-BR	N/A	N/A	JT015N065FED	TO-220MF
JT015N065CED-C-B	JT015N065CED-C-BR	N/A	N/A	JT015N065CED	TO-220C

绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value			单 位 Unit
		JT015N065SED	JT015N065CED	JT015N065FED	
最高集电极－发射极直流电压 Collector-Emmiter Voltage	V_{CES}	650	650	650	V
*连续集电极电流 CollectorCurrent-continuous	I_C	30 (T_C=25°C)	30 (T_C=25°C)	30 (T_C=25°C)	A
		15(T_C=100°C)	15(T_C=100°C)	15(T_C=100°C)	A
最大脉冲集电极极电流 Collector Current – pulse	I_{CM}	60	60	60	A
二极管正向测试电流 Diode RMS forward current	I_F	30(T_C=25°C)	30(T_C=25°C)	30(T_C=25°C)	A
		15(T_C=100°C)	15(T_C=100°C)	15(T_C=100°C)	A
二极管正向不重复峰值电流（浪涌电流）Surge non repetitive forward current tp= 10 ms sinusoidal	I_{FSM}	60	60	60	A
最高栅极发射极电压 Gate-Emmiter Voltage	V_{GES}	±25	±25	±25	V
Turn-off safe area 安全工作区电流	-	60	60	60	A
耗散功率 Power Dissipation	P_D T_C=25°C	182	182	36	W
存储温度 Storage Temperature Range	T_{STG}	-55～+150	-55～+150	-55～+150	°C
结温 Junction Temperature Range	T_J	-55～+175	-55～+175	-55～+175	°C
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T_L	300	300	300	°C

*连续集电极电流由最高结温限制

*Collector 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						
集电极－发射极击穿电压 Collector-Emmiter Voltage	BV_{CES}	I_C=250μA, V_{GE}=0V	650	-	-	V
击穿电压温度特性 Breakdown Voltage Temperature Coefficient	$\Delta BV_{CES}/\Delta T_J$	I_C=1mA, referenced to 25℃	-	0.5	-	V/℃
零栅压下集电极漏电流 Zero Gate Voltage Collector Current	I_{CES}	V_{CE}=650V, V_{GE}=0V, T_C=25℃	-	-	10	uA
		V_{CE}=650V, V_{GE}=0V, T_C=175℃	-	-	2	mA
正向栅极体漏电流 Gate-body leakage current, forward	I_{GESF}	V_{CE}=0V, V_{GE} =20V	-	-	200	nA
反向栅极体漏电流 Gate-body leakage current, reverse	I_{GESR}	V_{CE}=0V, V_{GE} =-20V	-	-	-200	nA
通态特性 On-Characteristics						
阈值电压 Gate Threshold Voltage	$V_{GE(th)}$	V_{CE} = V_{GE} , I_C=250μA	4.5	-	6.5	V
饱和压降 Collector-Emmiter saturation Voltage	V_{CESAT}	V_{GE}=15V , I_C=15A Tc=25℃	-	1.6	2.0	V
		V_{GE}=15V , I_C=15A Tc=175℃	-	2.0	-	V
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{ies}	V_{CE}=25V, V_{GE}=0V, f=1.0MHz	-	980	-	pF
输出电容 Output capacitance	C_{oes}		-	96.5	-	pF
反向传输电容 Reverse transfer capacitance	C_{res}		-	21.5	-	pF
栅极电荷总量 Total Gate Charge	Qg	V_{CC}=400V,I_c=15A,R_G=10Ω V_{GE}=15 V T_C=25℃	-	32.9	-	nC
栅极-反射极 Gate to emitter charge	Qge		-	7.5	-	
栅极-集电极 Gate to collector charge	Qgc		-	14.2	-	
栅极电阻-Gate resistance	Rg	f=1 MHz, open collector	-	1.75	-	Ω
短路电流-short current	Isc	V_{GE}=15V,V_{CE}=360V, T_J≤150°C,t≤10μs	-	75	-	A

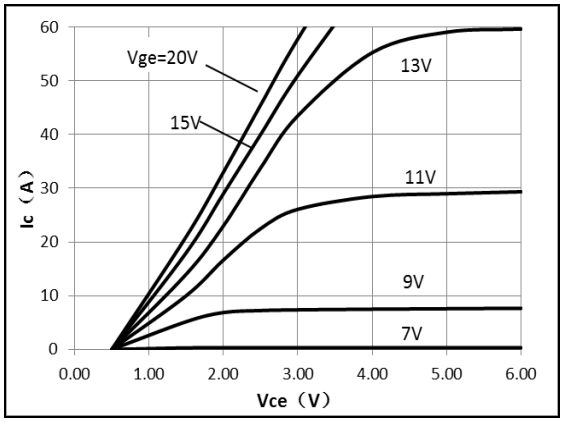
电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching 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
开启延迟时间 Turn-On delay time	td(on)	V_{CC}=400V ,Ic=15A	-	12	-	ns
上升时间 Turn-On rise time	tr	R_G=12Ω , V_{GE}=15 V	-	16	-	ns
关断延迟时间 Turn-Off delay time	td(off)	T_C=25℃	-	58	-	ns
下降时间 Turn-Off Fall time	tf		-	28	-	ns
开通损耗 Turn-On energy	Eon		-	0.29	-	mJ
关断损耗 Turn-off energy	Eoff		-	0.18	-	mJ
总开关损耗 Total switching energy	Etot		-	0.47	-	mJ
开启延迟时间 Turn-On delay time	td(on)	V_{CC}=400V ,Ic=15A	-	12.9	-	ns
上升时间 Turn-On rise time	tr	R_G=12Ω , V_{GE}=15 V	-	16.7	-	ns
关断延迟时间 Turn-Off delay time	td(off)	T_C=175℃	-	82	-	ns
下降时间 Turn-Off Fall time	tf		-	31	-	ns
开通损耗 Turn-On energy	Eon		-	0.45	-	mJ
关断损耗 Turn-off energy	Eoff		-	0.22	-	mJ
总开关损耗 Total switching energy	Etot		-	0.67	-	mJ
反并联二极管特性及最大额定值 **Anti-Parallel Diode Characteristics and Maximum Ratings**						
正向压降 Drain-Source Diode Forward Voltage	V_F	V_{GE}=0V, I_S=15A, T_C=25℃	-	1.4	2.2	V
		V_{GE}=0V, I_S=15A, T_C=175℃	-	1.15	-	V
反向恢复时间 Diode Reverse recovery time	t_{rr}	V_{GE}=0V, V_R=400V,I_F=15A dI$_F$/dt=1000A/μs ,T_C=25℃	-	150	-	ns
反向恢复电荷 Diode Reverse recovery charge	Qrr		-	1.24	-	uC
反向恢复电流 Diode Reverse recovery Current	I_{RRM}		-	15.5	-	A

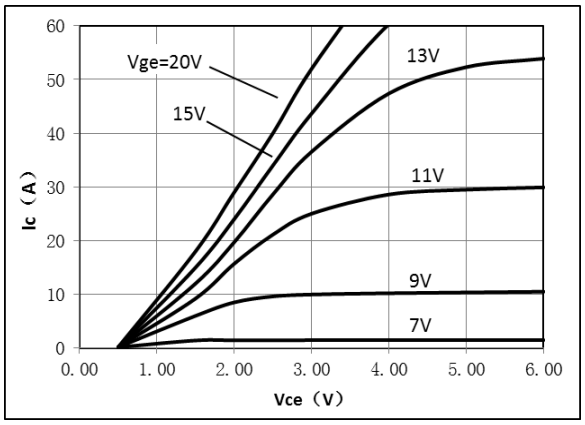
项 目 Parameter	符 号 Symbol	MAX		单 位 Unit
		JT015N065FED	JT015N065SED/CED	
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	4.15	0.82	℃/W
结到管壳的热阻（FRD） Thermal Resistance, Junction to Case	$R_{th(j-c)}$	8	2.13	℃/W
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	62.5	62.5	℃/W

特征曲线 ELECTRICAL CHARACTERISTICS (curves)

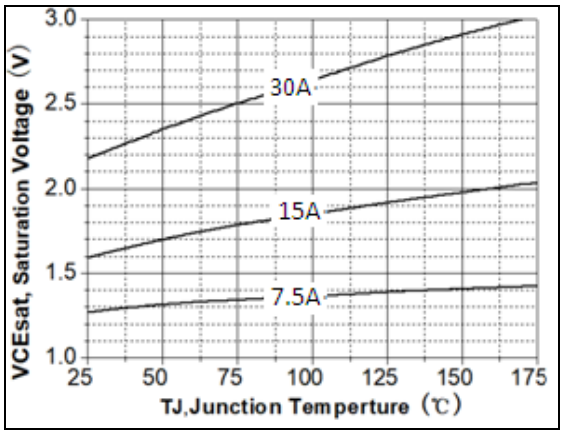
Output Characteristics T_J=25°C



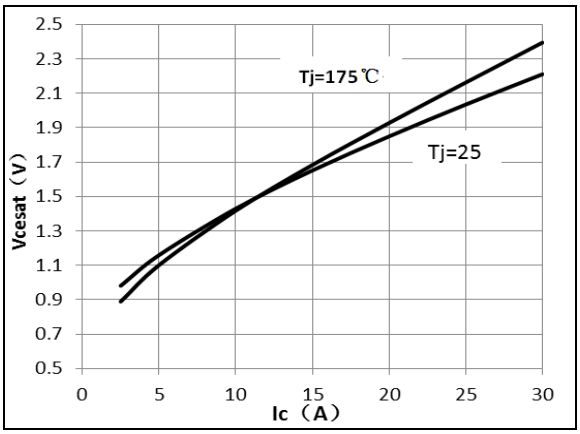
Output Characteristics T_J=175°C



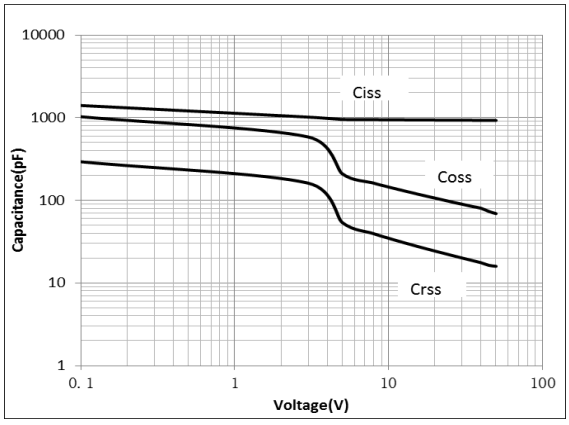
V_{CESAT} vs T_J



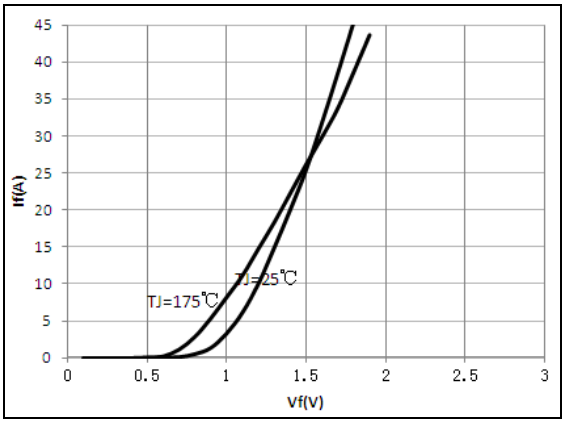
V_{CESAT} vs I_C



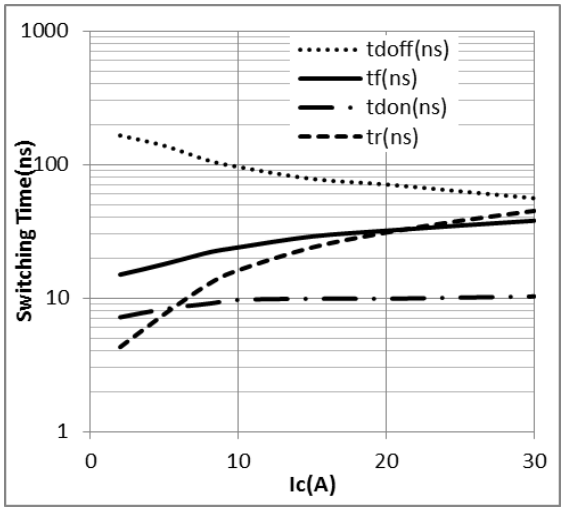
Capacitance Characteristic
VGE =0V,f=1.0MHZ



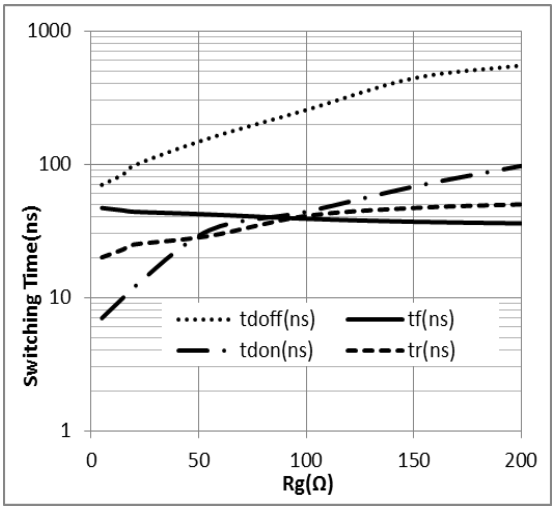
Diode Characteristic



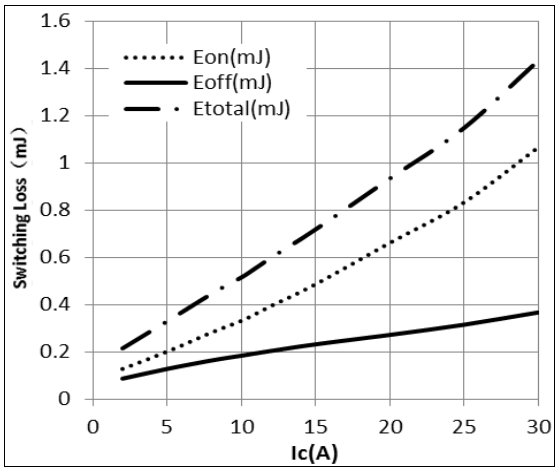
SwitchingTime vs. I_C
T_J=175°C,V_{GE}=15V,V_{CE}=400V,R_g=12Ω



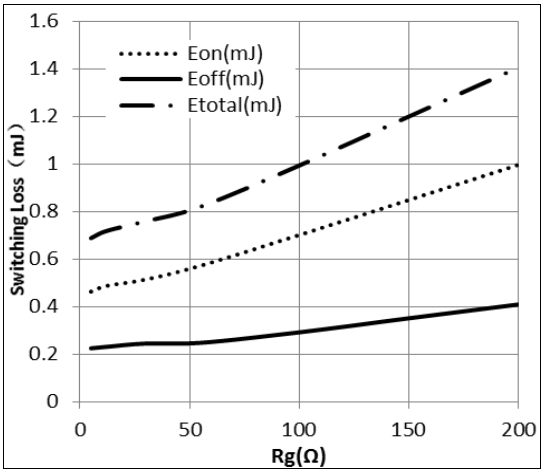
SwitchingTime vs. R_g
T_J=175°C,V_{GE}=15V,V_{CE}=400V,I_C=15A



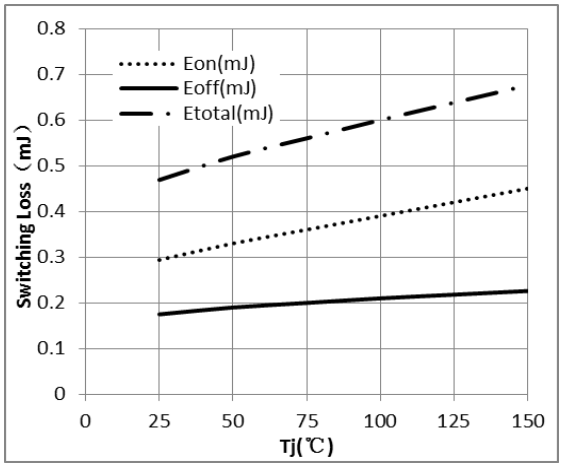
Switching Loss vs. I_C
T_J=175°C,V_{GE}=15V,V_{CE}=400V,R_g=12Ω



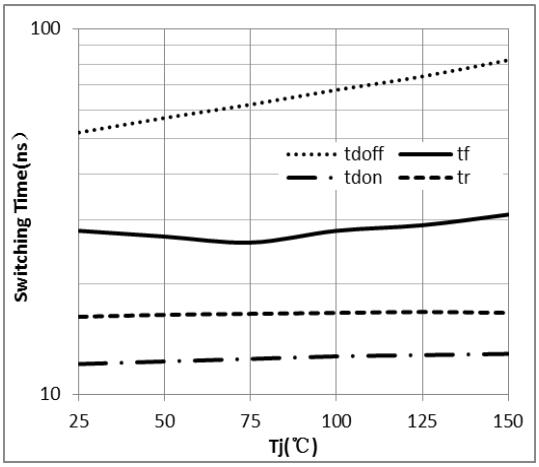
Switching Loss vs. R_g
T_J=175°C,V_{GE}=15V,V_{CE}=400V,I_C=15A



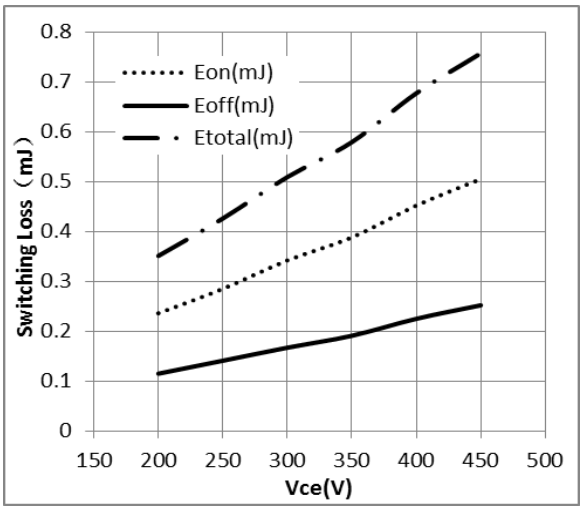
Switching Loss vs. T_J
V_{GE}=15V,V_{CE}=400V,I_C=15A R_g=12Ω



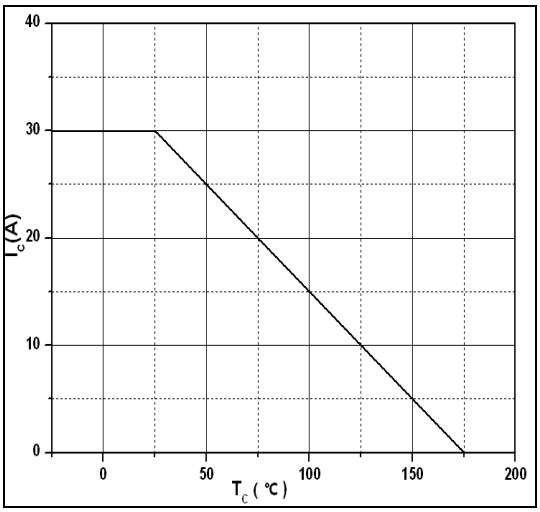
Switching Time vs. T_J
V_{GE}=15V,V_{CE}=400V,I_C=15A R_g=12Ω



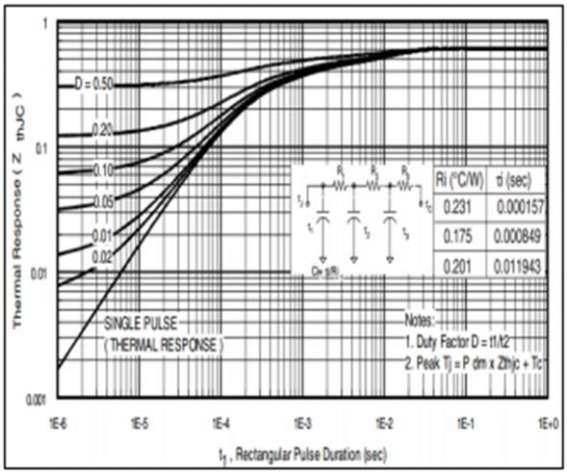
Switching Loss vs. V_{CE}(V)
T_J=175°C,V_{GE}=15V,I_C=15A,R_g=12Ω



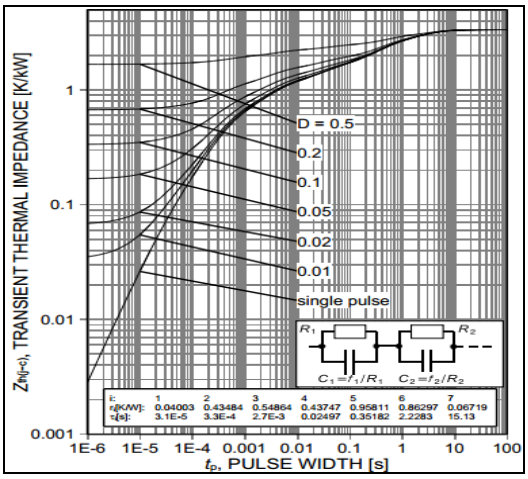
Ic vs. Tc



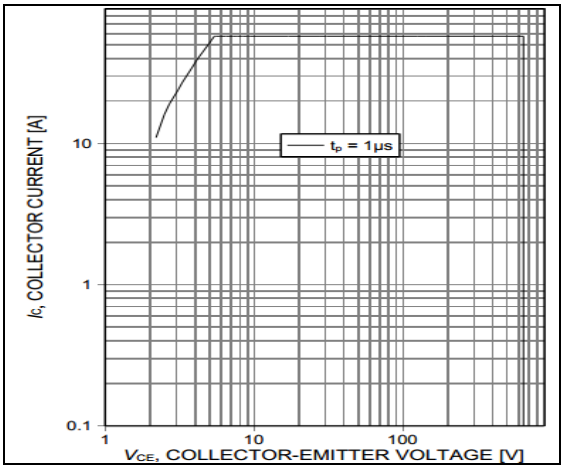
Normalized Maximum Transient Thermal Impedance for TO-263/TO-220C



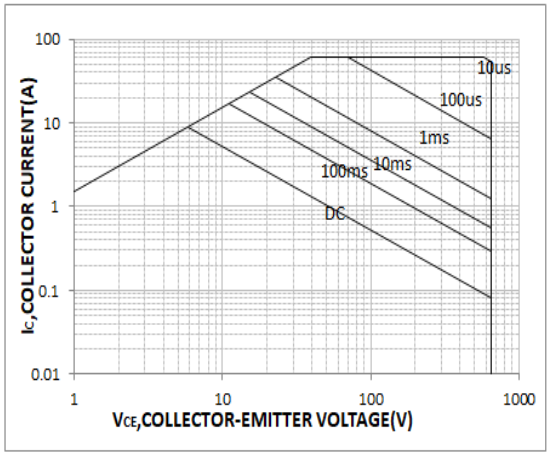
Normalized Maximum Transient Thermal Impedance for TO-220MF



Safe Operating Area TO-263/TO-220C



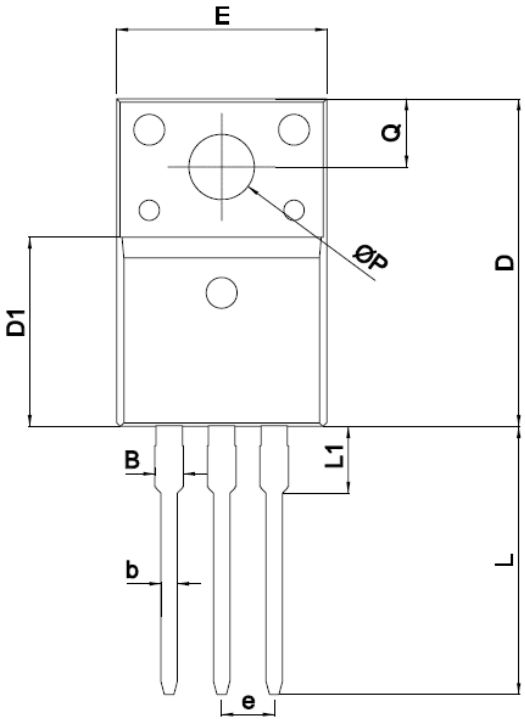
Safe Operating Area TO-220MF

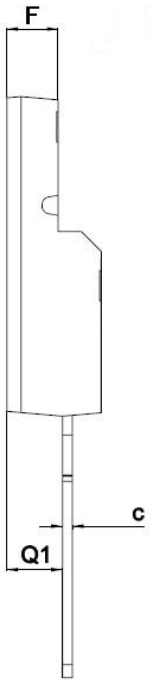


外形尺寸 PACKAGE MECHANICAL DATA

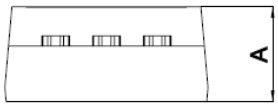
TO-220MF

单位 Unit：mm





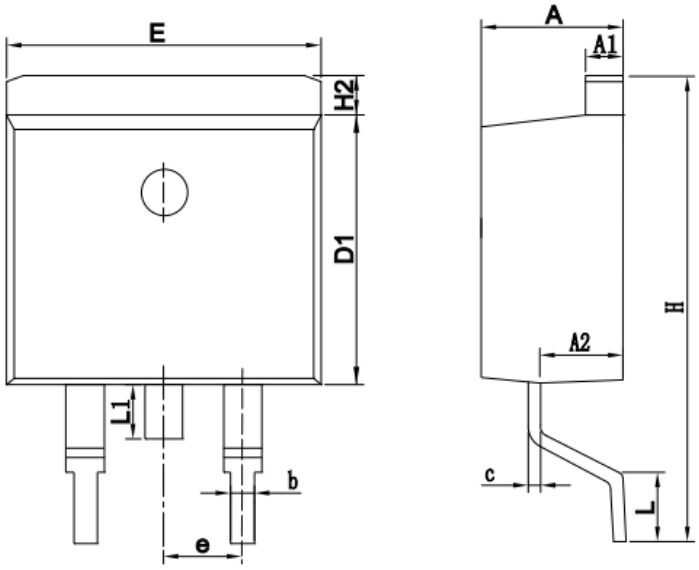
SYMBOL	mm	
	MIN	MAX
A	4.5	4.9
B		1.47
b	0.7	0.9
c	0.45	0.60
D	15.67	16.07
D1	9.04	9.20
e	2.54TYPE	
E	9.96	10.36
F	2.34	2.74
L	12.58	13.38
L1	3.13	3.33
Q	3.2	3.4
Q1	2.56	2.96
ΦP	3.08	3.28



外形尺寸 PACKAGE MECHANICAL DATA

TO-263

单位 Unit：mm

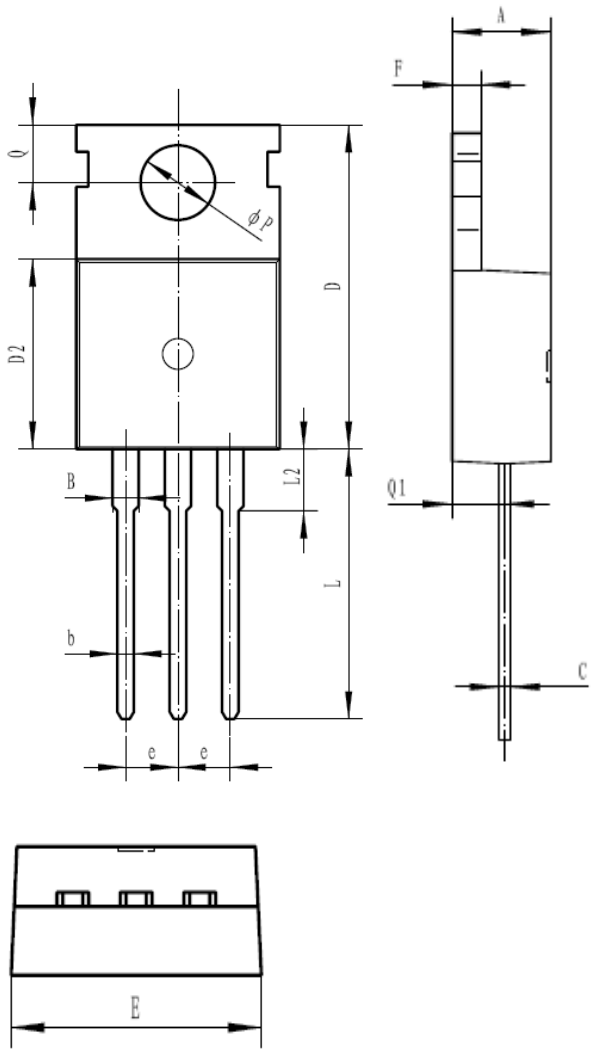


SYMBOL	MM	
	MIN	MAX
A	4.30	4.80
A1	1.12	1.42
A2	2.54	2.84
b	0.67	1.00
c	0.29	0.52
D1	8.40	9.00
E	9.80	10.46
e	2.54BSC	
H	14.00	16.00
H2	1.12	1.45
L	1.50	3.10
L1	1.45	1.70

外形尺寸 PACKAGE MECHANICAL DATA

TO-220C

单位 Unit：mm



符号 symbol	MIN	MAX
A	4.30	4.70
B	1.22	1.40
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

1. 吉林华微电子股份有限公司的产品销售分为直销和销售代理，无论哪种方式，订货时请与公司核实。
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。

NOTE

1. Jilin Sino-microelectronics co., Ltd sales its product either through direct sales or sales agent , thus, for customers, when ordering , please check with our company.
2. We strongly recommend customers check carefully on the trademark when buying our product, if there is any question, please don't be hesitate to contact us.
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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