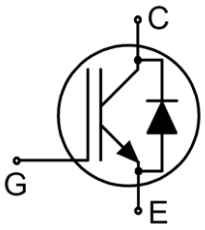
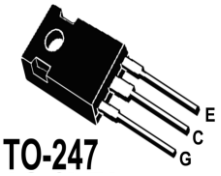
TT075U065GQA

主要参数 MAIN CHARACTERISTICS

I_C	75 A
V_{CE}	650V
$V_{CEsat-typ}(V_{ge}=15V)$	1.7V

封装 **Package**





TO-247

用途

- UPS
- 储能
- 光伏

APPLICATIONS

- Uninterruptible power supply
- Energy storage
- Photovoltaic

产品特性

- 第七代 Trench FS 技术
- 低栅极电荷
- 低开关损耗
- 快开关速度
- RoHS 产品

FEATURES

- Gen 7 Trench FS technology
- Low gate charge
- Low switching losses
- Fast switching speed
- RoHS product

订货信息 ORDER MESSAGE

订 货 型 号 Order codes 无卤-条管 Halogen-Free-Tube	印 记 Marking	封 装 Package
TT075U065GQA-GE-BR	TT075U065GQA	TO-247

绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
最高集电极－发射极直流电压 Collector-emitter voltage	V_{CE}	650	V
*连续集电极电流 Collector current-continuous	I_C Tc=25℃	90	A
	I_C Tc=100℃	75	A
最大脉冲集电极极电流（注 1） Collector current – pulse （note 1）	I_{CM}	300	A
二极管正向测试电流 Diode RMS forward current	I_F Tc=25℃	90	A
	I_F Tc=100℃	75	A
二极管正向脉冲电流 Diode pulse current	I_{FSM}	300	A
最高栅极发射极电压 Gate-emitter voltage	V_{GE}	±20	V
最高瞬态栅极发射极电压 Transient gate-emmiter voltage(t_p≤10us)	V_{GE}	±30	V
安全工作区 Turn-off safe area	-	300	A
耗散功率 Power dissipation	P_D T_C=25℃	428	W
工作结温 Operating junction temperature range	T_{vj}	-40～+175	℃
存储温度 Storage temperature	T_{STG}	-55～+150	℃
引线焊接温度 Soldering temperature, wave soldering 1.6mm from case for 10s	T_L	260	℃

*连续集电极电流由最高结温限制

*Collector current limited by maximum junction temperature

注释：

1：脉冲宽度由最高结温限制

Notes:

1：Pulse width 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-emitter voltage	BV_{CES}	I_C=1mA, V_{GE}=0V，T_{vj}=25℃	650	-	-	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_{vj}=25℃	-	-	75	uA
正向栅极体漏电流 Gate-body leakage current, forward	I_{GESF}	V_{CE}=0V, V_{GE} =20V，T_{vj}=25℃	-	-	200	nA
反向栅极体漏电流 Gate-body leakage current, reverse	I_{GESR}	V_{CE}=0V, V_{GE} =-20V，T_{vj}=25℃	-	-	-200	nA
通态特性 On-Characteristics						
阈值电压 Gate threshold voltage	$V_{GE(th)}$	V_{CE} = V_{GE} , I_C=0.75mA，T_{vj}=25℃	3.2	4.0	4.8	V
饱和压降 Collector-emitter saturation voltage	V_{CESAT}	V_{GE}=15V , I_C=75A, T_{vj}=25℃	-	1.7	2.1	V
		V_{GE}=15V , I_C=75A,T_{vj}=175℃	-	2.1	-	V
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{ies}	V_{CE}=25V, V_{GE}=0V, f=1.0MHz	-	2785	-	pF
输出电容 Output capacitance	C_{oes}		-	248	-	pF
反向传输电容 Reverse transfer capacitance	C_{res}		-	13	-	pF
栅极电荷总量 Total gate charge	Q_G	V_{CC}=520V, I_c=75A, V_{GE}=15 V	-	97	-	nC
栅极-发射极 Gate to emitter charge	Q_{GE}		-	23	-	
栅极-集电极 Gate to collector charge	Q_{GC}		-	25	-	

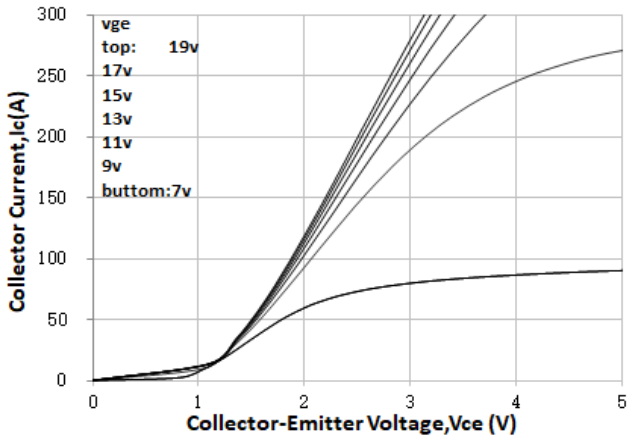
项　　目 Parameter	符　号 Symbol	Max	单 位 Unit
结到管壳的热阻 Thermal Resistance, Junction to case IGBT	$R_{th(j-c)}$	0.35	℃/W
结到管壳的热阻 Thermal Resistance, Junction to case Diode	$R_{th(j-c)}$	0.42	℃/W
结到环境的热阻 Thermal Resistance, Junction to ambient	$R_{th(j-a)}$	40	℃/W

电特性 ELECTRICAL CHARACTERISTICS

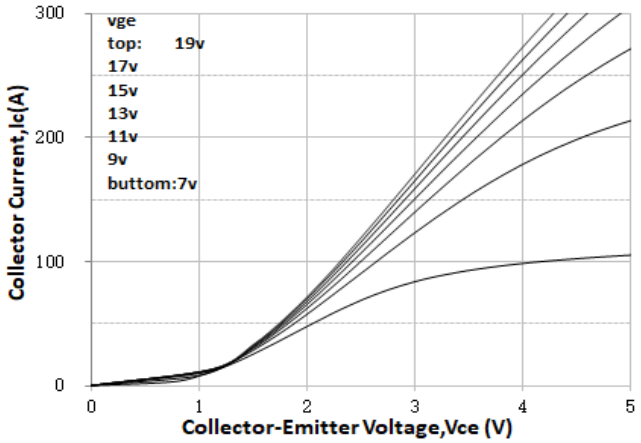
开关特性 Switching Characteristics						
项　　目 Parameter	符　号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单位 Units
开启延迟时间 Turn-on delay time	t_d(on)	V_{CC}=400V,I_c=75A,R_G=8Ω V_{GE}=15 V, T_{vj}=25℃	-	26	-	ns
上升时间 Turn-on rise time	t_r		-	81	-	ns
关断延迟时间 Turn-off delay time	t_d(off)		-	121	-	ns
下降时间 Turn-off fall time	t_f		-	111	-	ns
开通损耗 Turn-on energy	Eon		-	1.77	-	mJ
关断损耗 Turn-off energy	Eoff		-	1.37	-	mJ
总开关损耗 Total switching energy	Etot		-	3.14	-	mJ
开启延迟时间 Turn-on delay time	t_d(on)	V_{CC}=400V,I_c=75A,R_G=8Ω V_{GE}=15 V, T_{vj}=150℃	-	24	-	ns
上升时间 Turn-on rise time	t_r		-	81	-	ns
关断延迟时间 Turn-off delay time	t_d(off)		-	139	-	ns
下降时间 Turn-off fall time	t_f		-	124	-	ns
开通损耗 Turn-on energy	Eon		-	1.91	-	mJ
关断损耗 Turn-off energy	Eoff		-	1.45	-	mJ
总开关损耗 Total switching energy	Etot		-	3.36	-	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 Diode forward voltage	V_F	V_{GE}=0V, I_F=75A,T_{vj}=25°C	-	1.95	2.5	V
		V_{GE}=0V, I_F=75A,T_{vj}=150°C	-	1.6	-	V
反向恢复时间 Diode reverse recovery time	t_{rr}	V_R=400V, I_F=75A dI_F/dt=200A/μs T_{vj}=25℃	-	60	-	ns
反向恢复电荷 Diode reverse recovery charge	Q_{rr}		-	125	-	nC
反向恢复电流 Diode reverse recovery current	I_{rrm}		-	4.5	-	A

特征曲线 ELECTRICAL CHARACTERISTICS (curves)

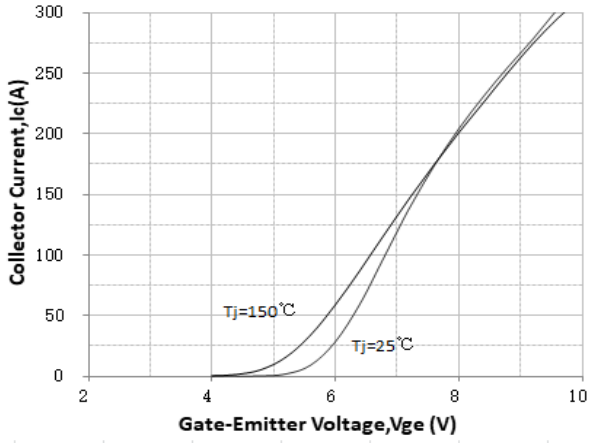
Output Characteristics（25℃）



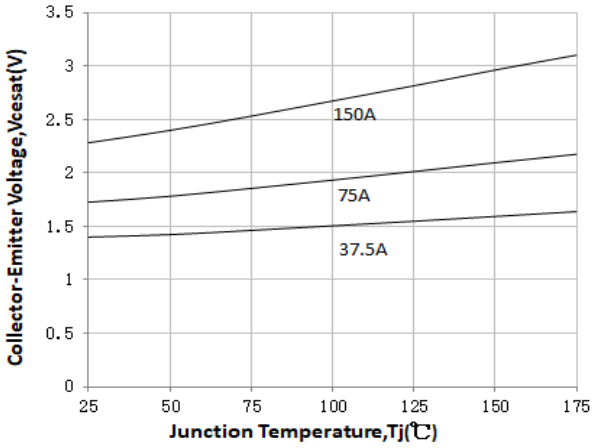
Output Characteristics（150℃）



Transfer Characteristics

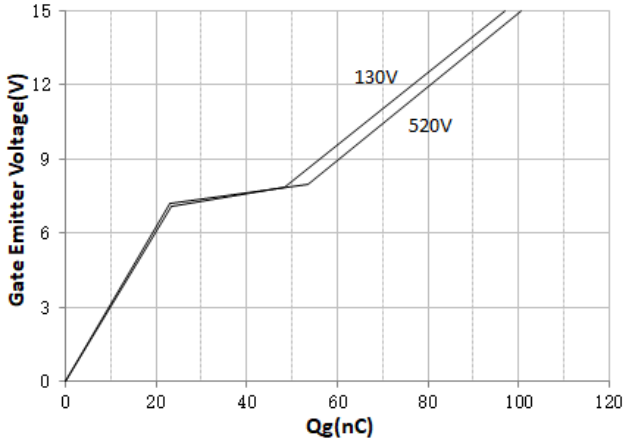


Vcesat vs. Tj



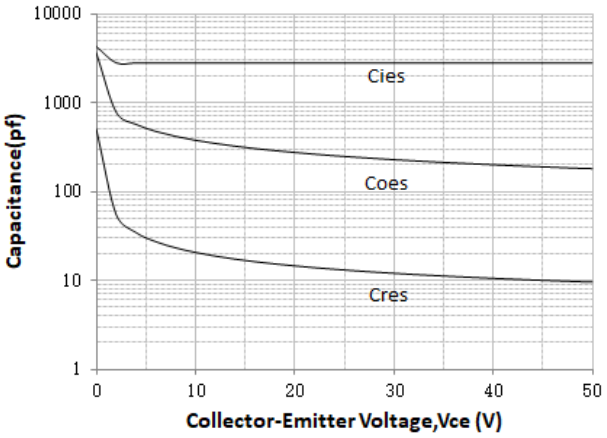
Gate Charge Characteristics

V_{GE}=15V，V_{CC}=520V, I_C=75A



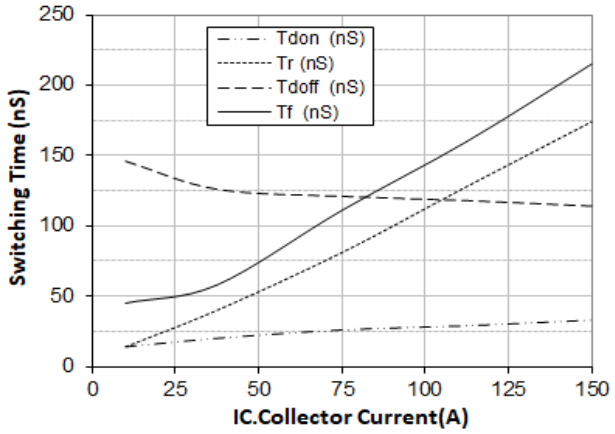
Capacitance Characteristic

V_{GE} =0V，f=1.0MHZ



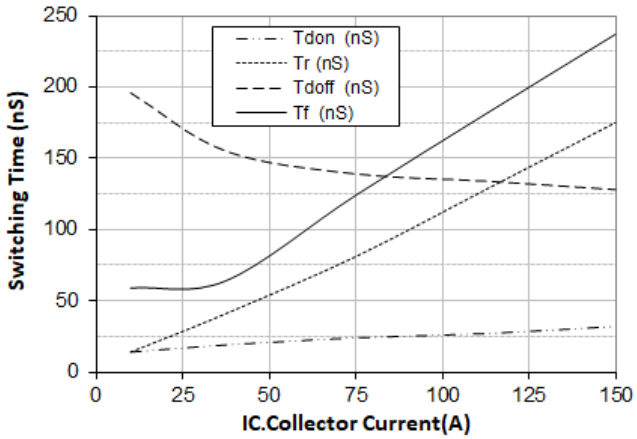
Switching Time vs. Ic(25℃)

V_{CE}=400V，V_{GE}=15V，R_G=8Ω



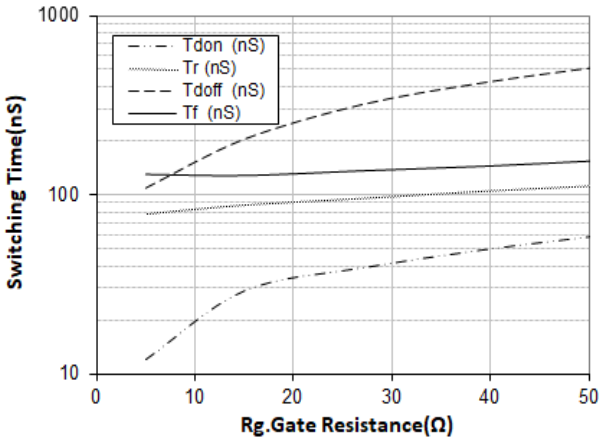
Switching Time vs. Ic(150℃)

V_{CE}=400V，V_{GE}=15V，R_G=8Ω



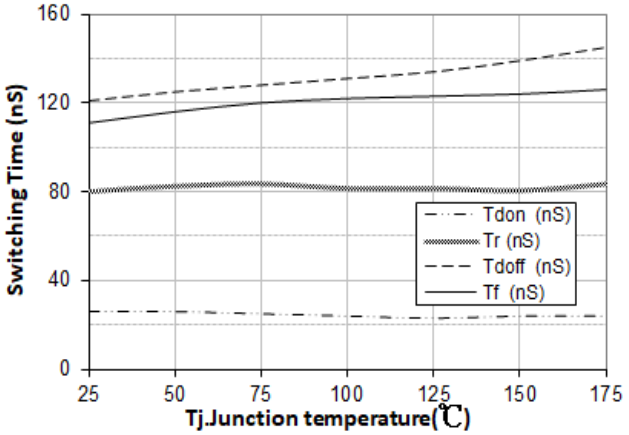
Switching Time vs. Rg(150℃)

V_{GE}=15V，V_{CE}=400V，I_C=75A



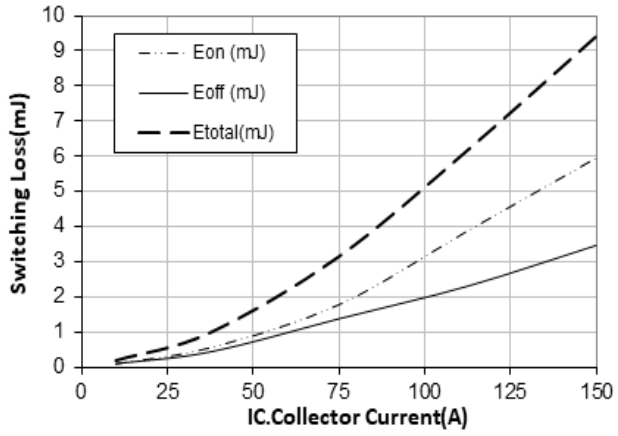
Switching Time vs.Tj

V_{GE}=15V，V_{CE}=400V，I_C=75A，R_G=8Ω



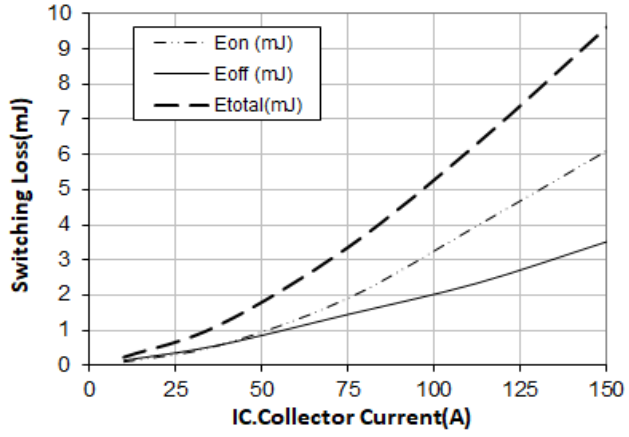
Switching Loss vs. Ic(25℃)

V_{GE}=15V，V_{CE}=400V，R_G=8Ω



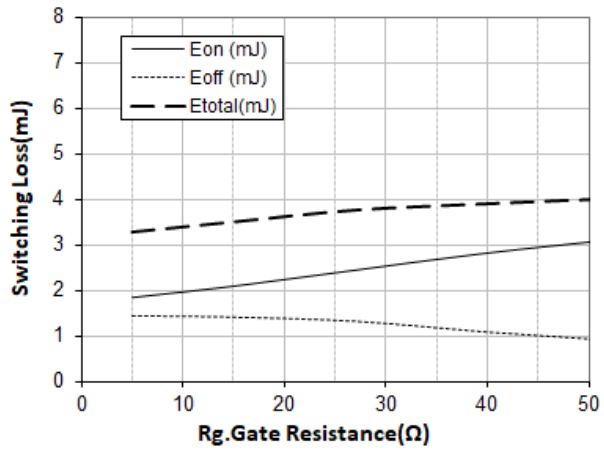
Switching Loss vs. Ic(150℃)

V_{GE}=15V，V_{CE}=400V，R_G=8Ω



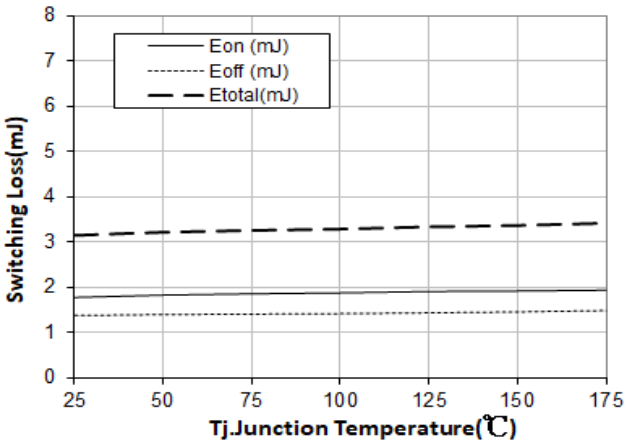
Switching Loss vs. Rg(150℃)

V_{GE}=15V，V_{CE}=400V，I_C=75A



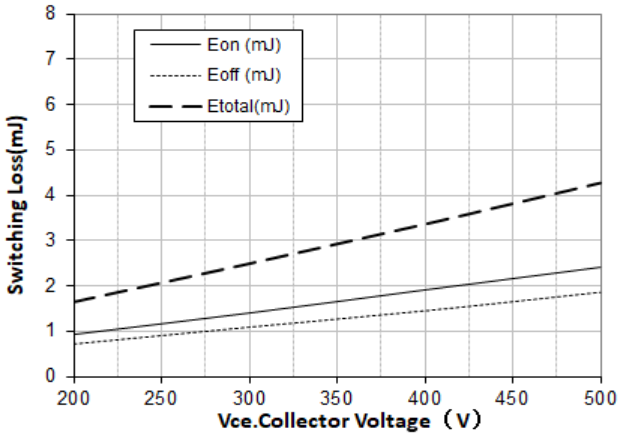
Switching Loss vs. Tj

V_{GE}=15V，V_{CE}=400V，I_C=75A，R_G=8Ω



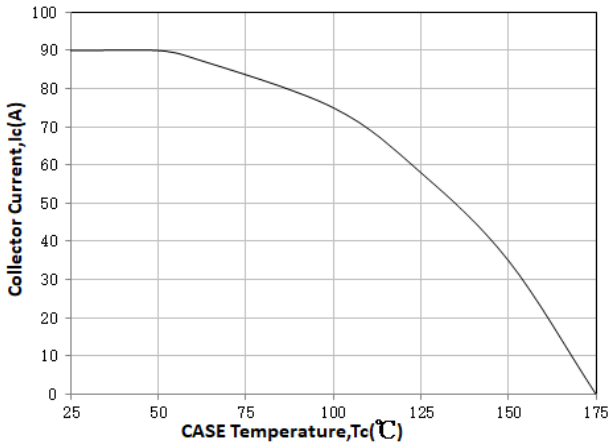
Switching Loss vs. Vce(150℃)

V_{GE}=15V，V_{CE}=400V，R_G=8Ω

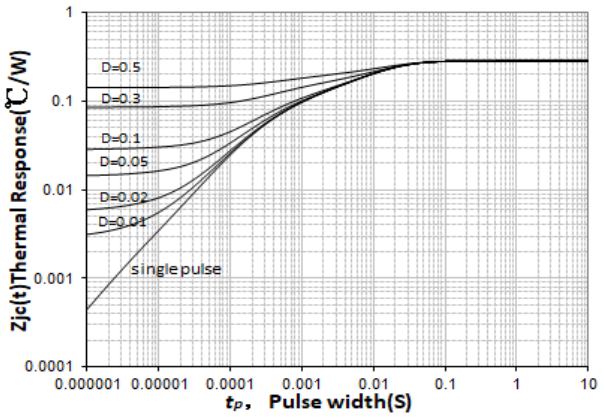


Colletcor current vs.case temperature

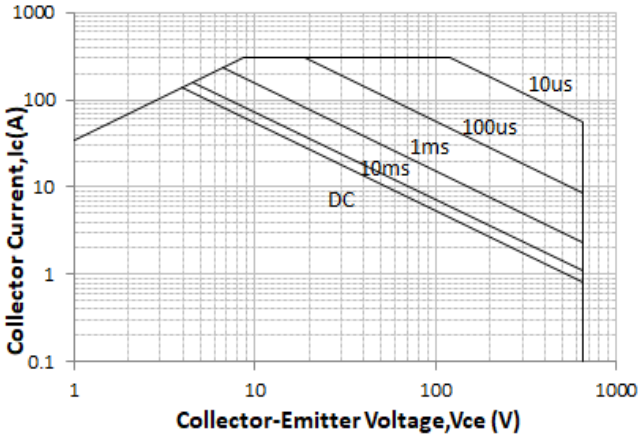
V_{GE}≥15V，Tvj≤175℃



IGBT Transient Thermal Impedance



Forward Bias SOA



外形尺寸 PACKAGE MECHANICAL DATA

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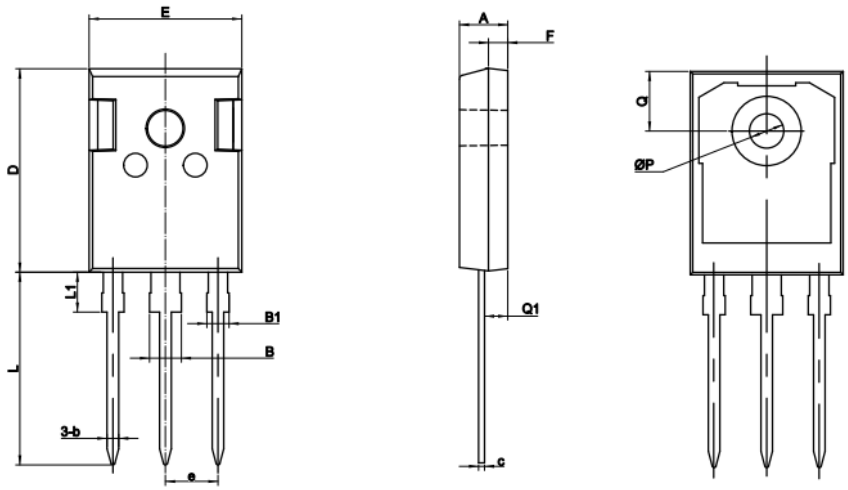
单位 Unit ： mm



符号 symbol	mm	
	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
L1	4.03	4.23
Q	6.00	6.40
Q1	2.30	2.50
P	3.50	3.70

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4. 本说明书如有版本变更不另外告知。

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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.

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