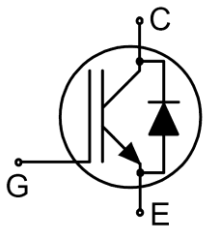
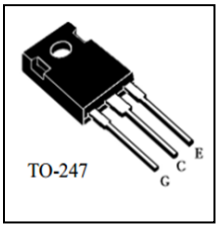
TT075U065FQB

主要参数 MAIN CHARACTERISTICS

I_C	75A
V_{CE}	650V
$V_{CEsat-TYP}$	1.8V

封装 **Package**





用途 APPLICATIONS

- ●充电桩
- ●UPS 电源
- ●光伏

- ●Charging pile
- ●UPS
- ●Solar converters

产品特性 FEATURES

- ●低栅极电荷
- ●Trench FS 技术
- ●RoHS 产品
- ●快开关速度
- ●低开关损耗
- ● VCE(sat)正温度系数

- ●Low gate charge
- ●Trench FS Technology
- ●RoHS product
- ●Fast switching speed
- ●Low switching losses
- ●VCE(sat) with positive temperature coefficient

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
TT075U065FQB-GE-BR	TT075U065FQB	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	150(T_C=25°C)	A
		75(T_C=100°C)	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	150(T_C=25°C)	A
		75 (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}	300	A
最高栅极发射极电压 Gate-Emitter Voltage	V_{GE}	±20	V
瞬态栅极发射极电压 Transient Gate-emitter voltage(t_p≤10us，*D*＜0.010)	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℃ T_C=100℃	428 214	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 (0.063in.) 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=250μA,　V_{GE}=0V	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,	-	-	80	uA
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=1mA	3.5	4.5	5.5	V
饱和压降 Collector-Emitter saturation Voltage	V_{CESAT}	V_{GE}=15V,　I_C=75A Tc=25℃	-	1.8	2.2	V
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{ies}	V_{CE}=25V, V_{GE}=0V f=1.0MHz	-	2643	-	pF
输出电容 Output capacitance	C_{oes}		-	325	-	pF
反向传输电容 Reverse transfer capacitance	C_{res}		-	58	-	pF
栅极电荷总量 Total gate Charge	Q_G	V_{CC}=520V,I_c=75A,V_{GE}=15V	-	146	-	nC
栅极-反射极电荷 Gate to emitter charge	Q_{GE}		-	23	-	
栅极-集电极电荷 Gate to collector charge	Q_{GC}		-	81	-	

电特性 ELECTRICAL CHARACTERISTICS

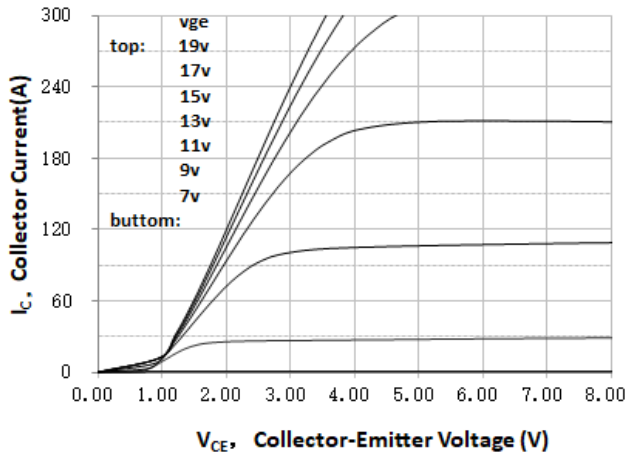
开关特性 Switching Characteristics						
项　目 Parameter	符　号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单位 Units
开启延迟时间 Turn-on delay time	t_d(on)	V_{CC}=400V,I_c=75A,R_G=5Ω V_{GE}=15 V T_C=25℃	-	12	-	ns
上升时间 Turn-on rise time	t_r		-	87	-	ns
关断延迟时间 Turn-off delay time	t_d(off)		-	101	-	ns
下降时间 Turn-off Fall time	t_f		-	75	-	ns
开通损耗 Turn-on energy	Eon		-	1.93	-	mJ
关断损耗 Turn-off energy	Eoff		-	1.29	-	mJ
总开关损耗 Total switching energy	Etot		-	3.22	-	mJ
开启延迟时间 Turn-on delay time	t_d(on)	V_{CC}=400V,I_c=75A,R_G=5Ω V_{GE}=15 V T_C=175℃	-	15	-	ns
上升时间 Turn-on rise time	t_r		-	83	-	ns
关断延迟时间 Turn-off delay time	t_d(off)		-	115	-	ns
下降时间 Turn-off Fall time	t_f		-	98	-	ns
开通损耗 Turn-on energy	Eon		-	2.05	-	mJ
关断损耗 Turn-off energy	Eoff		-	1.97	-	mJ
总开关损耗 Total switching energy	Etot		-	4.02	-	mJ
开启延迟时间 Turn-on delay time	t_d(on)	V_{CC}=400V,I_c=37.5A,R_G=5Ω V_{GE}=15 V T_C=25℃	-	8	-	ns
上升时间 Turn-on rise time	t_r		-	42	-	ns
关断延迟时间 Turn-off delay time	t_d(off)		-	115	-	ns
下降时间 Turn-off Fall time	t_f		-	56	-	ns
开通损耗 Turn-on energy	Eon		-	0.53	-	mJ
关断损耗 Turn-off energy	Eoff		-	0.67	-	mJ
总开关损耗 Total switching energy	Etot		-	1.20	-	mJ
开启延迟时间 Turn-on delay time	t_d(on)	V_{CC}=400V,I_c=37.5A,R_G=5Ω V_{GE}=15 V T_C=175℃	-	6	-	ns
上升时间 Turn-on rise time	t_r		-	42	-	ns
关断延迟时间 Turn-off delay time	t_d(off)		-	146	-	ns
下降时间 Turn-off Fall time	t_f		-	125	-	ns
开通损耗 Turn-On energy	Eon		-	0.54	-	mJ
关断损耗 Turn-off energy	Eoff		-	0.79	-	mJ
总开关损耗 Total switching energy	Etot		-	1.33	-	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	I_F=75A, T_C=25℃	-	1.45	1.85	V
		I_F=75A, T_C=150℃	-	1.40	-	V
反向恢复时间 Diode Reverse recovery time	t_{rr}	V_R=200V I_F=75A dI_F/dt=200A/μs T_C=25℃	-	152	-	ns
反向恢复电荷 Diode Reverse recovery charge	Q_{rr}		-	748	-	nC
反向恢复电流	I_{rrm}		-	9.2	-	A

Diode Reverse recovery Current						
反向恢复时间 Diode Reverse recovery time	t_{rr}	V_{GE}=0V, V_R=200V I_F=75A dI_F/dt=200A/μs T_C=175℃	-	270	-	ns
反向恢复电荷 Diode Reverse recovery charge	Q_{rr}		-	3.3	-	uC
反向恢复电流 Diode Reverse recovery Current	I_{rrm}		-	21	-	A

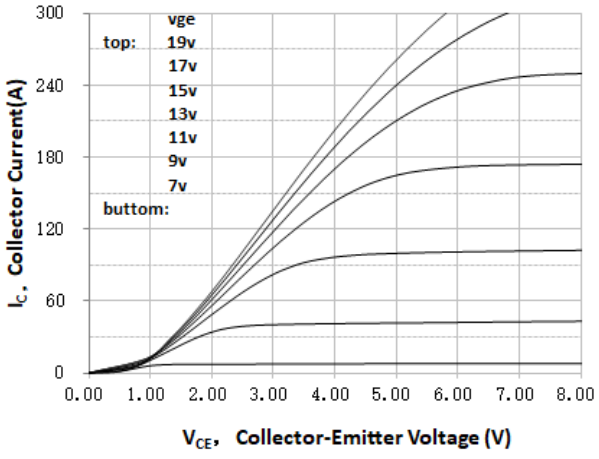
项　　目 Parameter	符　号 Symbol	典型值 TYP	最大值 MAX	单　位 Unit
结到管壳的热阻 Junction to Case IGBT	$R_{th(j-c)}$	0.28	0.35	℃/W
结到管壳的热阻 Junction to Case diode	$R_{th(j-c)}$	0.34	0.42	℃/W
结到环境的热阻 Junction to Ambient	$R_{th(j-A)}$	-	40	℃/W

特征曲线 ELECTRICAL CHARACTERISTICS (curves)

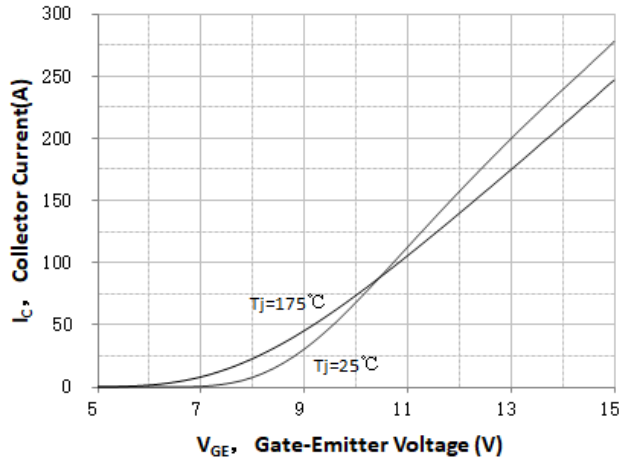
Output Characteristics（25℃）



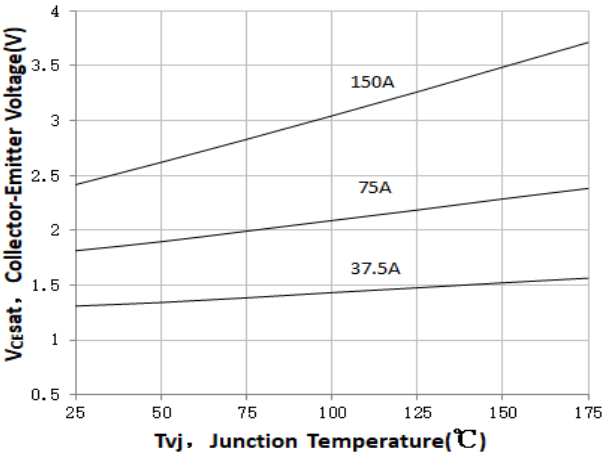
Output Characteristics（175℃）



Transfer Characteristics

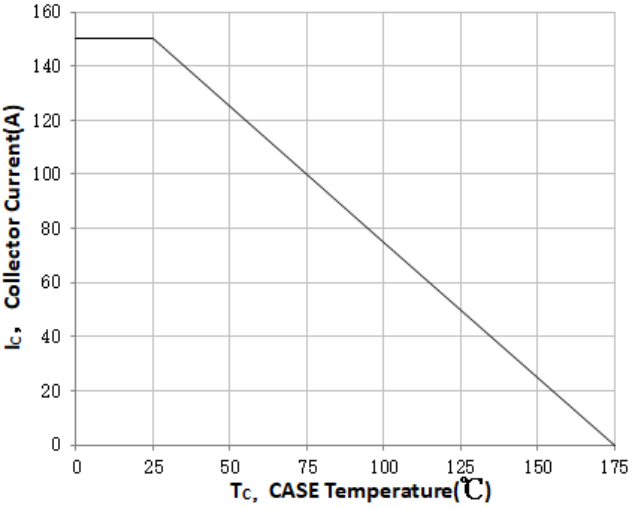


VCEsat vs. Tvj



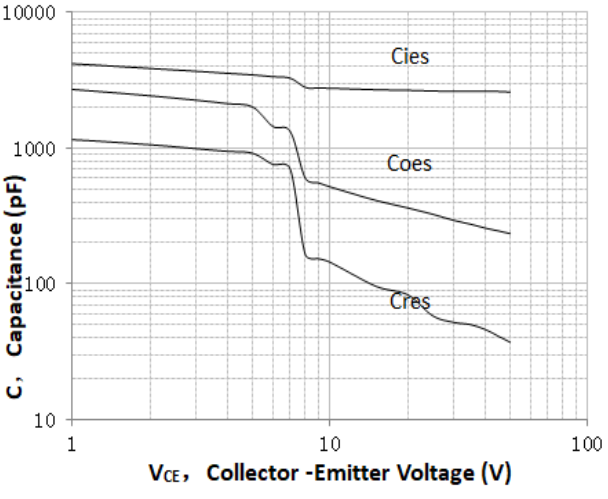
Colletcor current vs.case temperature

V_{GE}≥15V，Tvj≤175℃



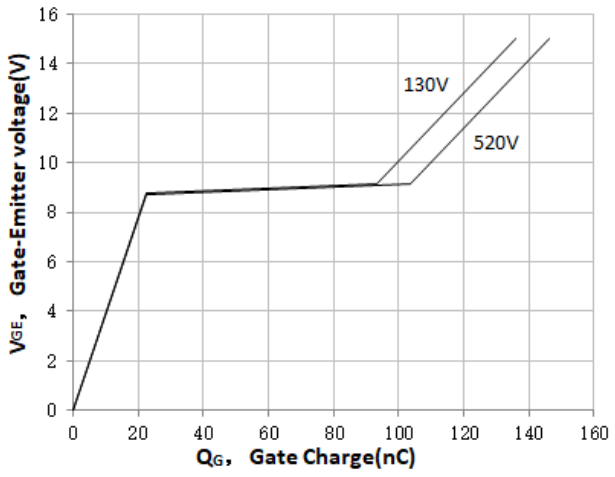
Capacitance Characteristic

V_{GE} =0V,f=1MHZ



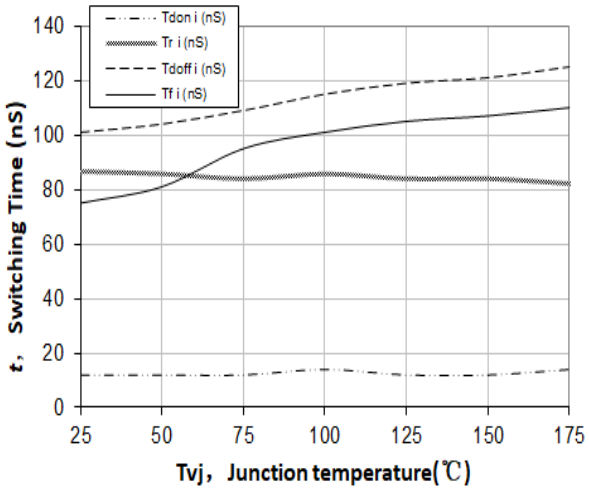
Gate Charge Characteristics

V_{GE}=15V, I_C=75A



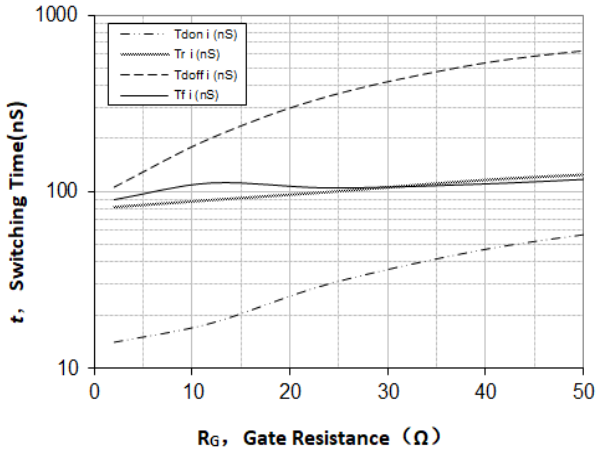
Switching Time vs.Tvj

V_{GE}=15V，V_{CE}=400V，I_C=75A，R_G=5Ω



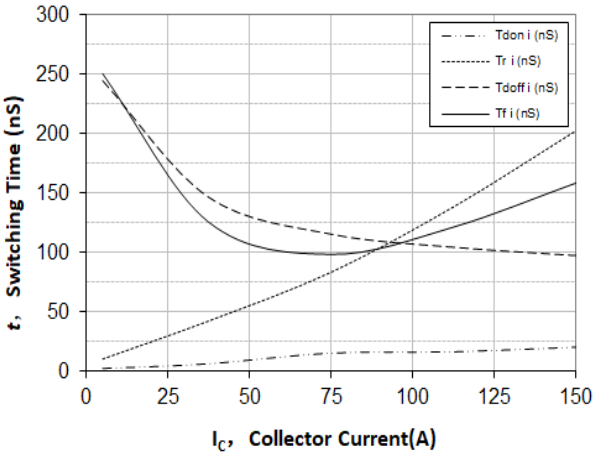
Switching Time vs. R_G(175℃)

V_{GE}=15V,V_{CE}=400V, I_C=75A



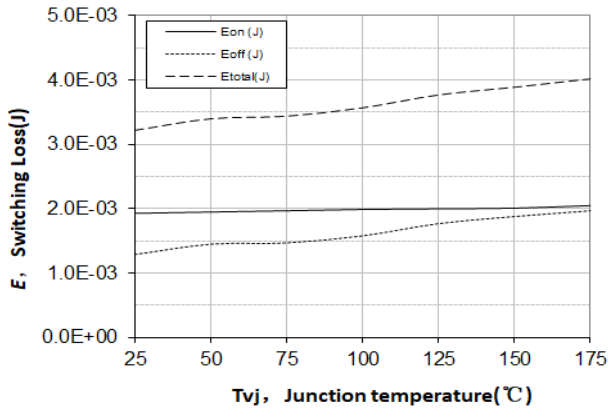
Switching Time vs. I_C(175℃)

V_{CE}=400V,V_{GE}=15V, R_G=5Ω



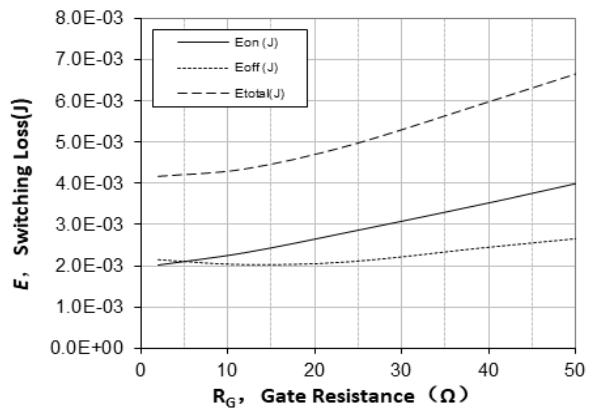
Switching Loss vs. Tvj

V_{GE}=15V，V_{CE}=400V，I_C=75A，R_G=5Ω



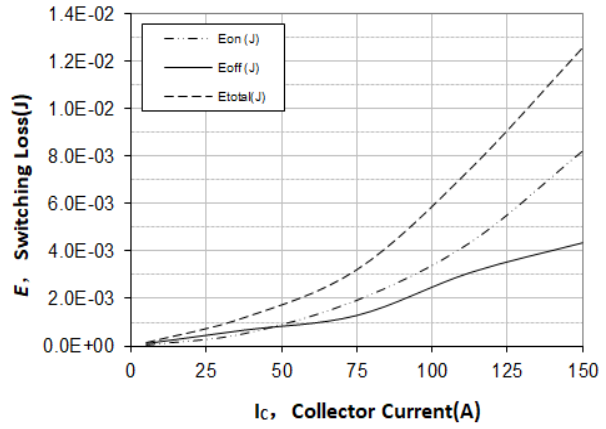
Switching Loss vs. R_G(175℃)

V_{GE}=15V,V_{CE}=400V, I_C=75A



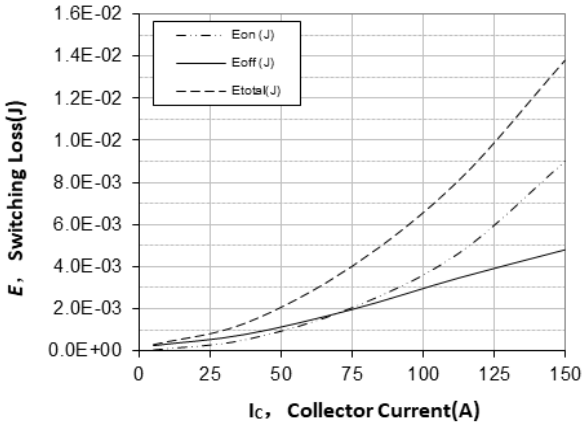
Switching Loss vs. Ic(25℃)

V_{CE}=400V,V_{GE}=15V, R_G=5Ω



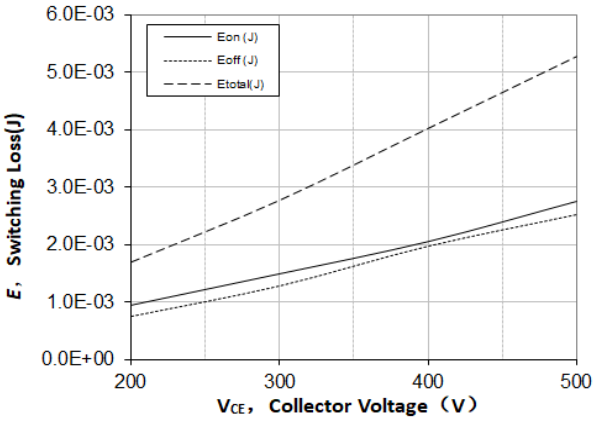
Switching Loss vs. Ic(175℃)

V_{CE}=400V,V_{GE}=15V, R_G=5Ω

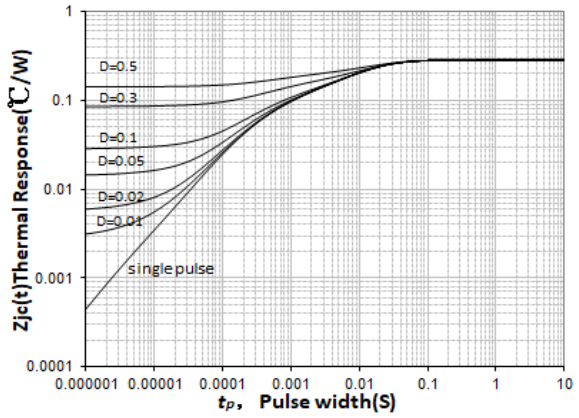


Switching Loss vs. VCE(175℃)

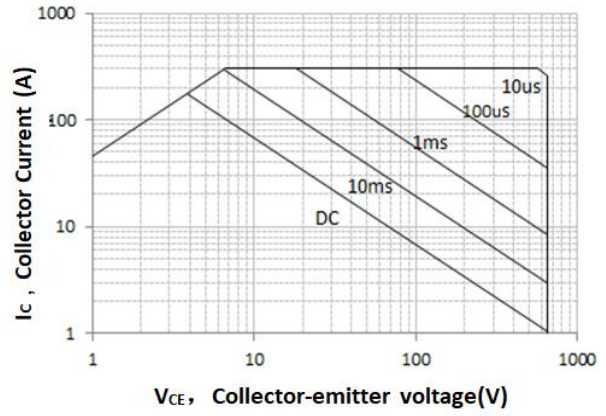
V_{GE}=15V，I_C=75A，R_G=5Ω



Transient Thermal Impedance IGBT $R_{th(j-c)}$



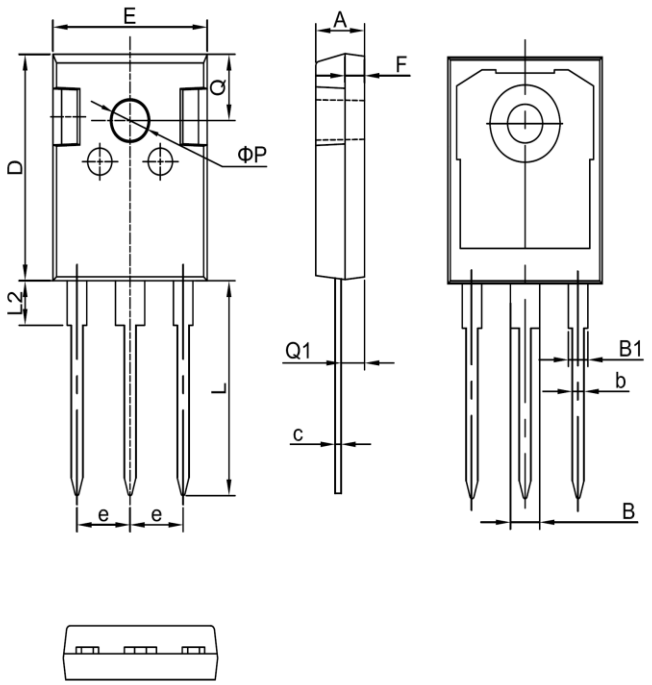
Safe Operating Area For TO-247



外形尺寸 **PACKAGE MECHANICAL DATA**

TO-247

单位 Unit：mm



符号 symbol	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
L2	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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