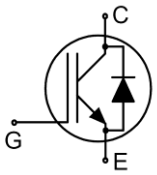
TT075N065EQ

主要参数 MAIN CHARACTERISTICS

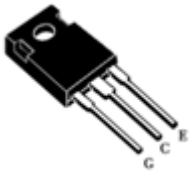
I_C	75A
V_{CES}	650V
$V_{cesat-typ}$	1.6V

封装 **Package**

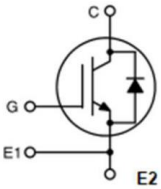
TO-247



TO-247

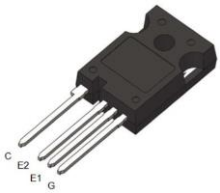


TO-247-4L



E1: Kelvin Emitter
E2: Power Emitter

TO-247-4L



用途

- 工业逆变器
- UPS
- DC-DC 变换器
- 马达驱动
- 光伏

APPLICATIONS

- Industrial Inverter
- UPS
- DC-DC Converters
- Motordrives
- Solarconverters

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

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		
TT075N065EQ-GE-B	TT075N065EQ-GE-BR	N/A	N/A	TT075N065EQ	TO-247
TT075N065EQ-GH-B	TT075N065EQ-GH-BR	N/A	N/A	TT075N065EQ	TO-247-4L

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-Emmiter Voltage	V_{ces}	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-Emmiter Voltage	V_{GES}	±20	V
瞬态栅极发射极电压 Transient Gate-emitter voltage(t_p≤10us，D＜0.010)	V_{GES}	±30	V
安全工作区 Turn-off safe area	-	300	A
耗散功率 Power Dissipation	P_D T_C=25℃	625	W
工作结温 Operating Junction Temperature Range	T_{VJ}	-40～+175	℃
存储温度 Storage Temperature	T_{STG}	-55～+150	℃
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T_L	300	℃

*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-Emmiter 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, T_C=25℃	-	-	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=250μA	4.5	-	6.5	V
饱和压降 Collector-Emmiter saturation Voltage	V_{CESAT}	V_{GE}=15V I_C=75A Tc=25℃	-	1.6	2.4	V
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{ies}	V_{CE}=25V, V_{GE}=0V, f=1.0MHz	-	3936	-	pF
输出电容 Output capacitance	C_{oes}		-	377	-	pF
反向传输电容 Reverse transfer capacitance	C_{res}		-	82	-	pF
栅极电荷总量 Total Gate Charge	Qg	V_{CC}=400V,I_c=75A,R_G=10Ω,V_{GE}=15V T_C=25℃	-	172	-	nC
栅极-反射极 Gate to emitter charge	Qge		-	47	-	
栅极-集电极 Gate to collector charge	Qgc		-	86	-	

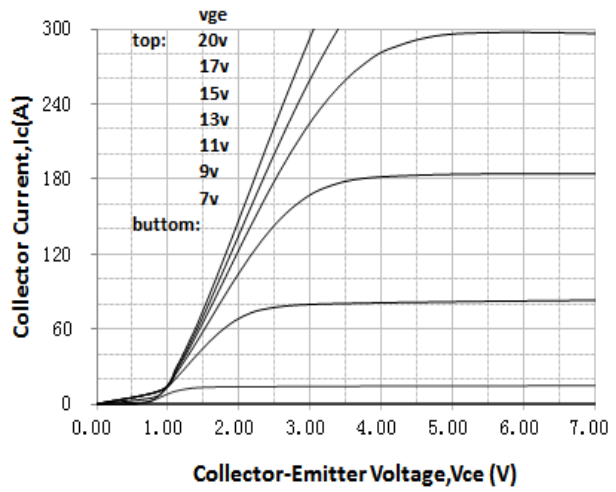
电特性 ELECTRICAL CHARACTERISTICS

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=10Ω V_{GE}=15 V T_C=25℃	-	48	-	ns
上升时间 Turn-On rise time	t_r		-	144	-	ns
关断延迟时间 Turn-Off delay time	t_d(off)		-	164	-	ns
下降时间 Turn-Off Fall time	t_f		-	88	-	ns
开通损耗 Turn-On energy	Eon		-	3.31	-	mJ
关断损耗 Turn-off energy	Eoff		-	1.54	-	mJ
总开关损耗 Total switching energy	Etot		-	4.85	-	mJ
开启延迟时间 Turn-On delay time	t_d(on)	V_{CC}=400V,I_c=75A,R_G=10Ω V_{GE}=15 V T_C=175℃	-	48	-	ns
上升时间 Turn-On rise time	t_r		-	148	-	ns
关断延迟时间 Turn-Off delay time	t_d(off)		-	192	-	ns
下降时间 Turn-Off Fall time	t_f		-	120	-	ns
开通损耗 Turn-On energy	Eon		-	3.62	-	mJ
关断损耗 Turn-off energy	Eoff		-	2.24	-	mJ
总开关损耗 Total switching energy	Etot		-	5.86	-	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	I_F=75A	-	2.0	2.5	V
反向恢复时间 Diode Reverse recovery time	t_{rr}	V_{GE}=0V, V_R=400V I_F=75A dI_F/dt=200A/μs T_C=25℃	-	49	-	ns
反向恢复电荷 Diode Reverse recovery charge	Qrr		-	121	-	nC
反向恢复电流 Diode Reverse recovery Current	I_{RRM}		-	4.3	-	A

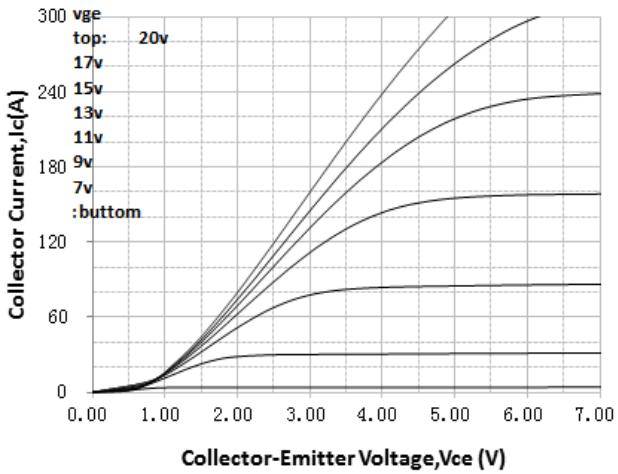
项　　目 Parameter	符　号 Symbol	MAX	单 位 Unit
结到管壳的热阻 Junction to Case IGBT	$R_{th(j-c)}$	0.24	℃/W
结到管壳的热阻 Junction to Case diode	$R_{th(j-c)}$	0.38	℃/W
结到环境的热阻 Junction to Ambient	$R_{th(j-A)}$	40	℃/W

特征曲线 ELECTRICAL CHARACTERISTICS (curves)

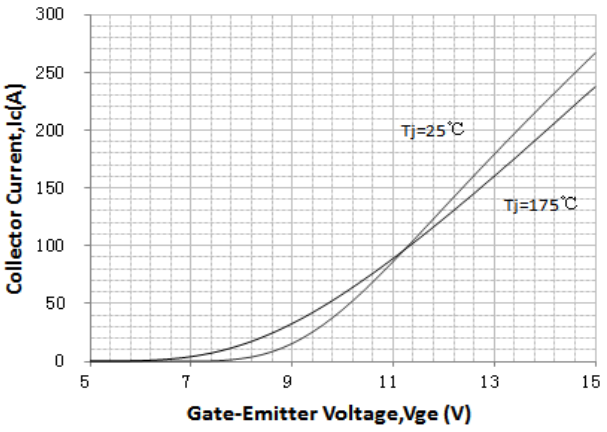
Output Characteristics（25℃）



Output Characteristics（175℃）

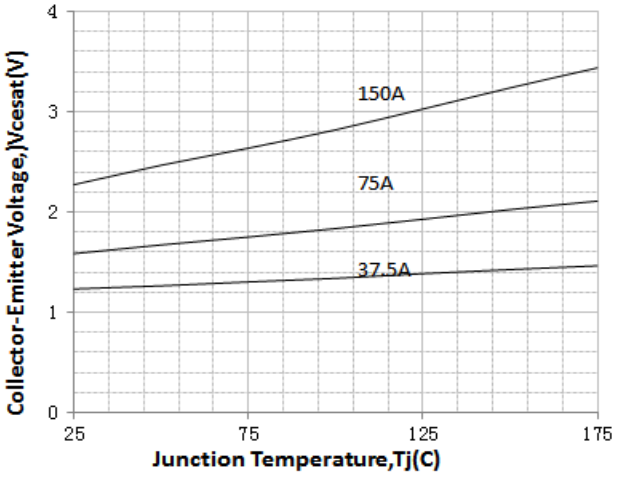


Transfer Characteristics



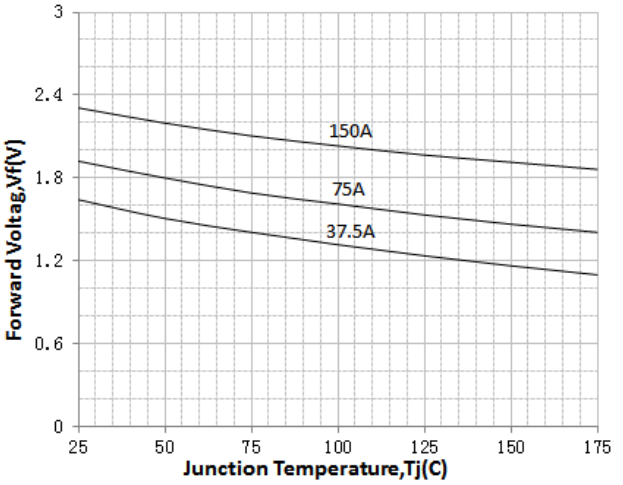
Vcesat vs. Tj

Vge=15V, Ic=37.5A、75A、150A



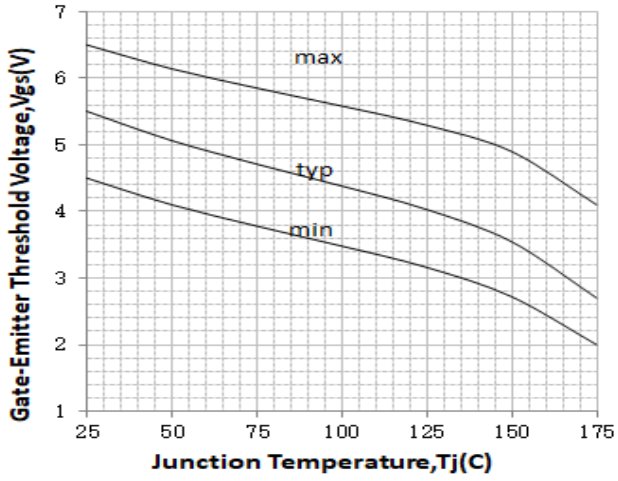
VF vs. Tj

Vge=15V, Ic=37.5A、75A、150A



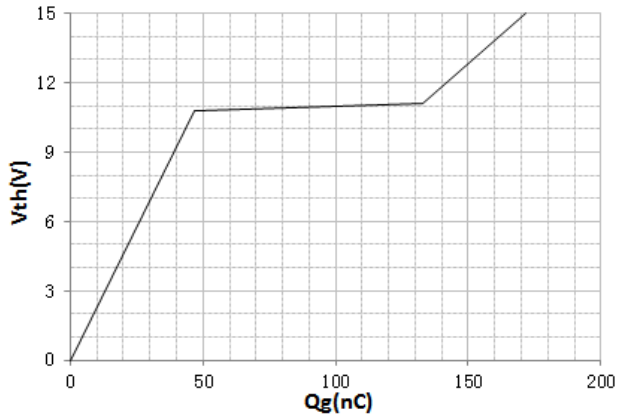
VTH vs. Tj

Ic=250uA



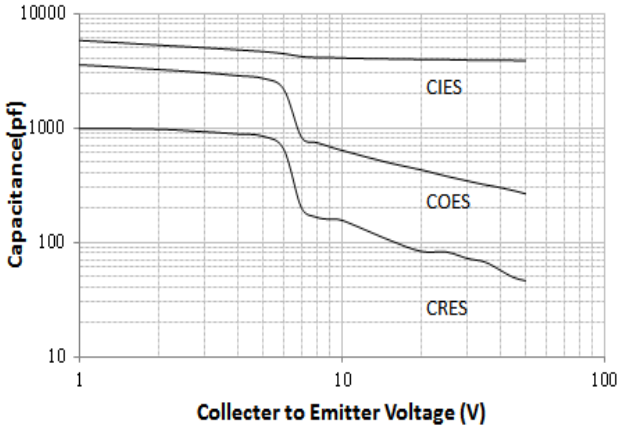
Gate Charge Characteristics

Vge=15V, Ic=75A,VCE=400V



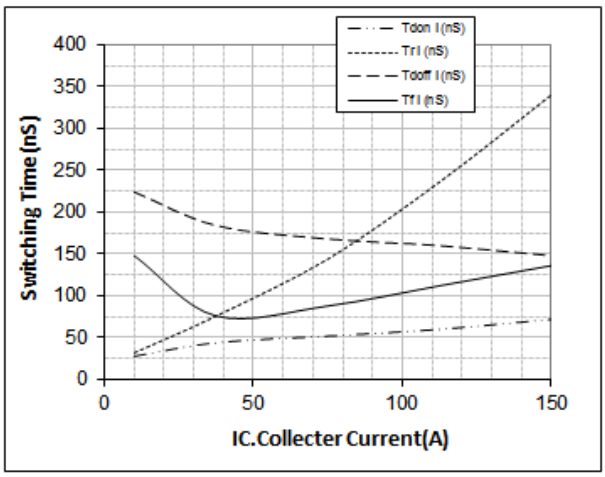
Capacitance Characteristic

Vge =0V,f=1.0MHZ



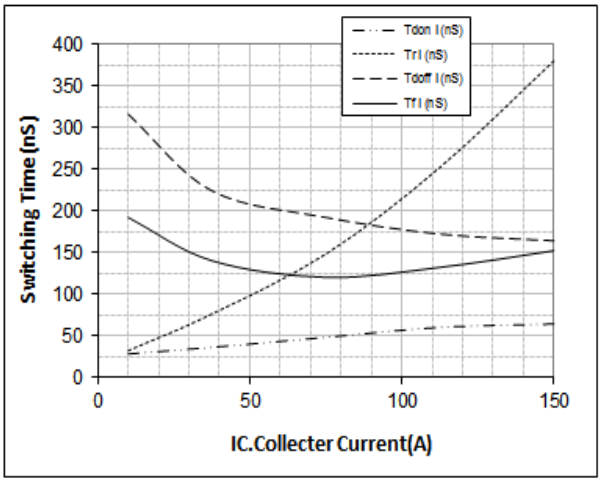
Switching Time vs. IC(25℃)

Vce=400V,Vge=15V, Rg=10Ω



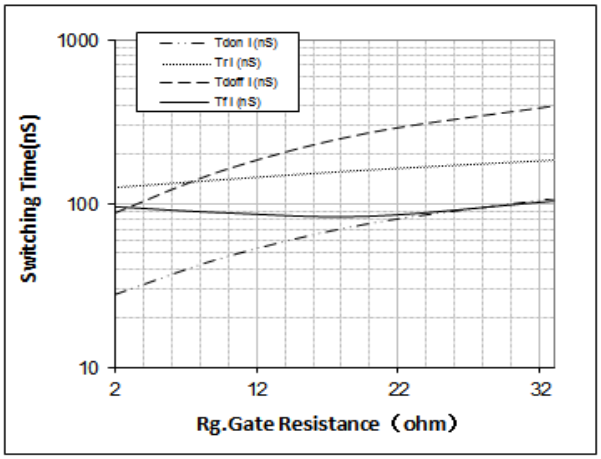
Switching Time vs. IC(175℃)

Vce=400V,Vge=15V, Rg=10Ω



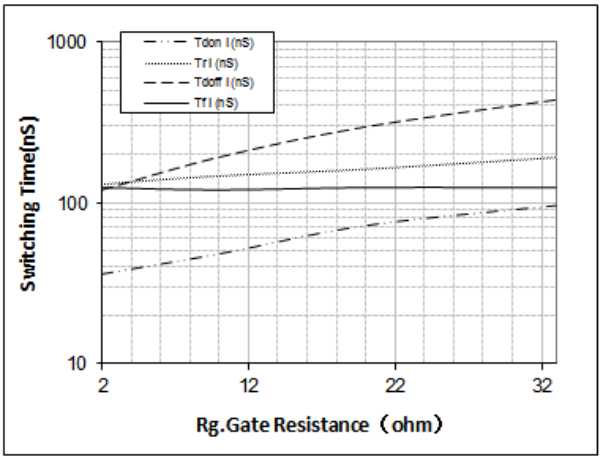
Switching Time vs. Rg(25℃)

Vge=15V,Vce=400V, Ic=75A



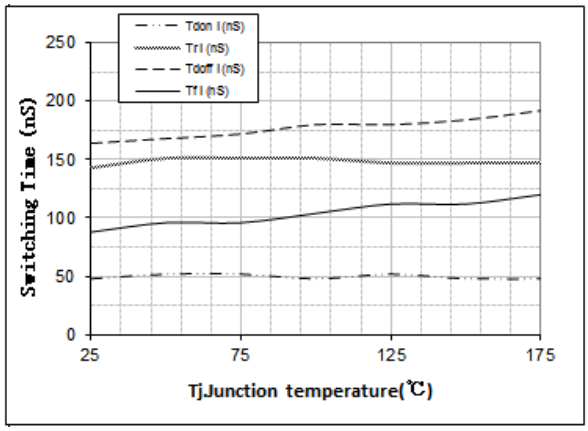
Switching Time vs. Rg(175℃)

Vge=15V,Vce=400V, Ic=75A



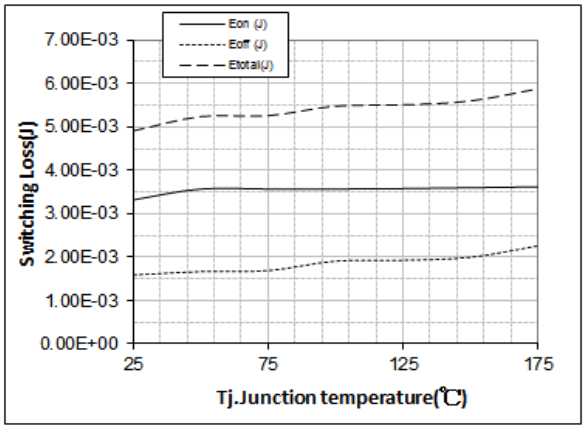
Switching Time vs.Tj

Vge=15V，Vce=400V，Ic=75A，Rg=10Ω



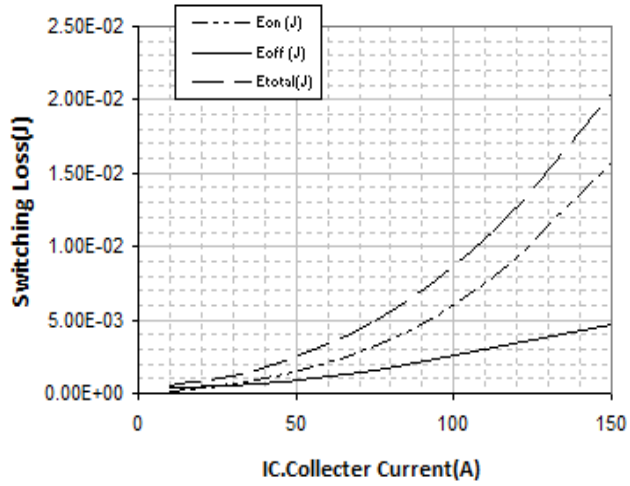
Switching Loss vs. Tj

Vge=15V，Vce=400V，Ic=75A，Rg=10Ω



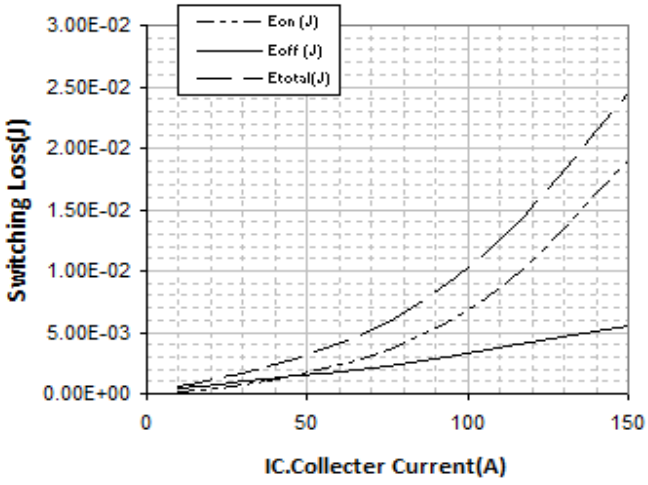
Switching Loss vs. IC(25℃)

Vge=15V,Vce=400V,Rg=10Ω



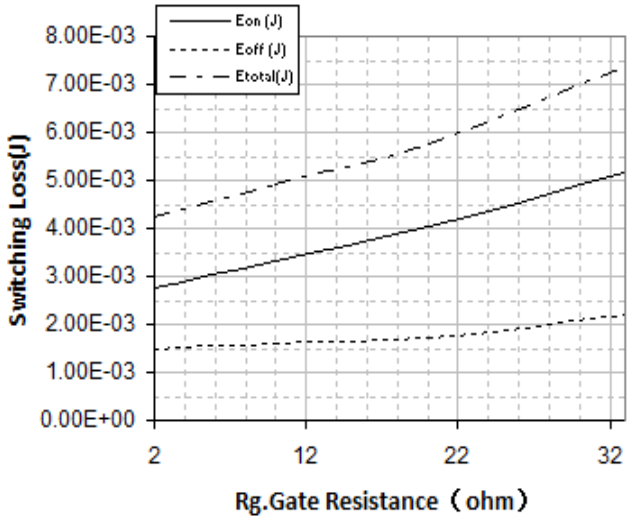
Switching Loss vs. IC(175℃)

Vge=15V,Vce=400V,Rg=10Ω



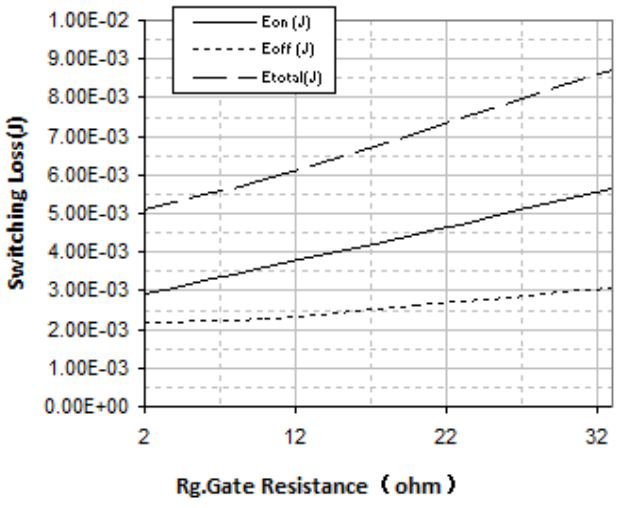
Switching Loss vs. Rg(25℃)

Vge=15V,Vce=400V, Ic=75A



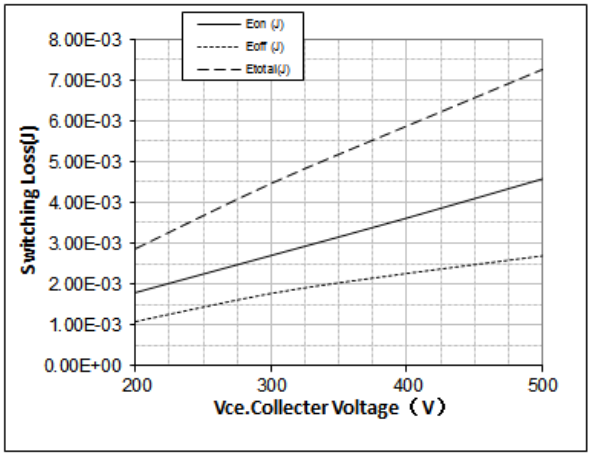
Switching Loss vs. Rg(175℃)

Vge=15V,Vce=400V, Ic=75A



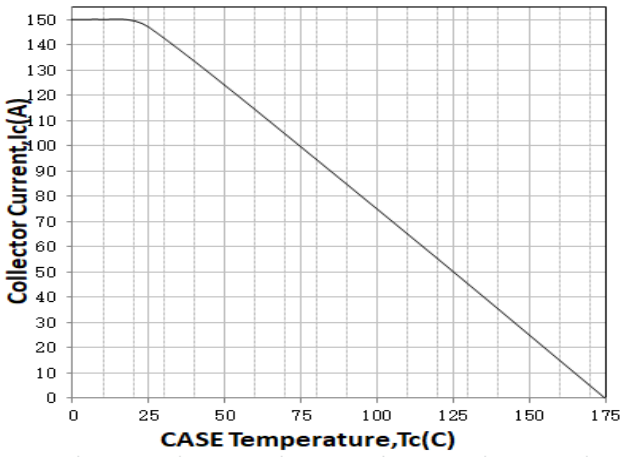
Switching Loss vs. VCE(175℃)

Vge=15V, Ic=75A,Rg=10Ω

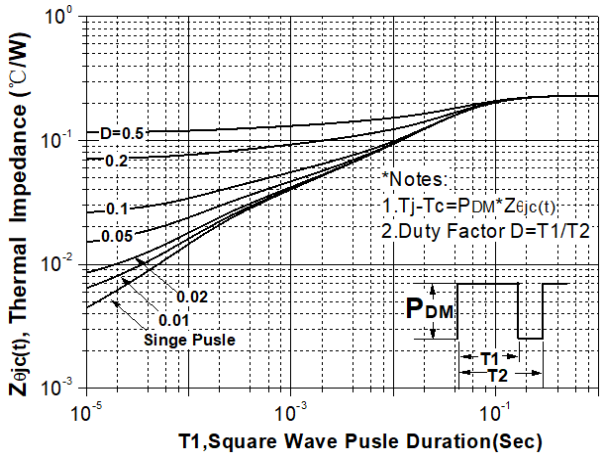


Colletcor current vs.case temperature

Vge≥15V，Tj≤175℃

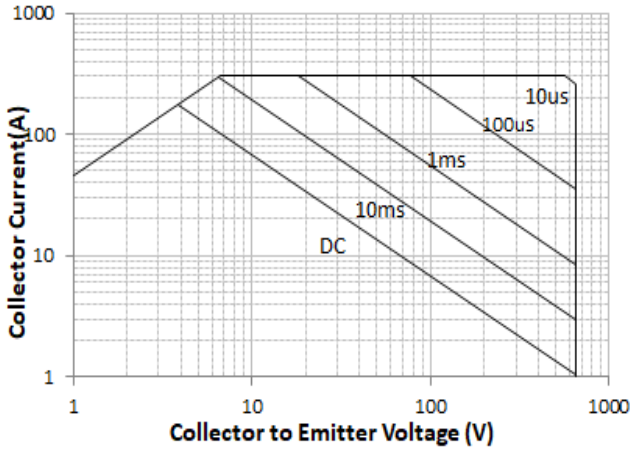


Transient Thermal Impedance for IGBT



Safe Operating Area For TO-247

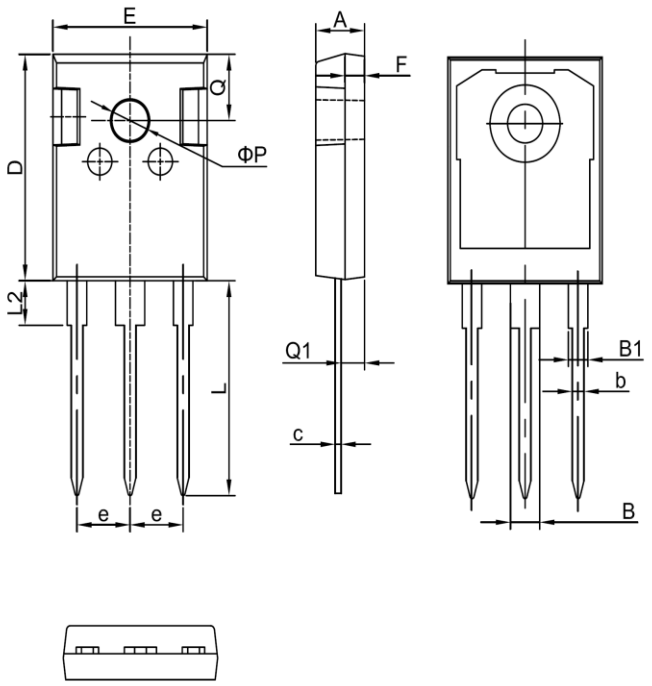
Tc=25 ℃, Vge=15V，Tj≤175℃



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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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.
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