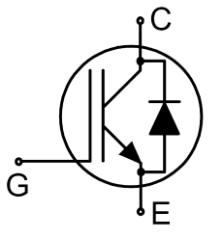
JT040K065WED/AED

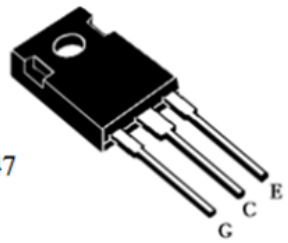
主要参数 MAIN CHARACTERISTICS

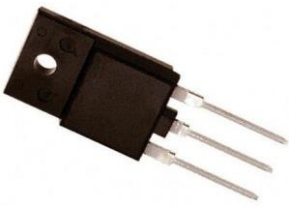
I_C	40 A
V_{CE}	650V
$V_{cesat-typ}(V_{ge}=15V)$	1.7V

封装 **Package**



TO-247





TO-3PH

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

订货信息 ORDER MESSAGE

订 货 型 号 Order codes	印 记 Marking	封 装 Package
无卤-条管 Halogen-Free-Tube		
JT040K065WED-GE-BR	JT040K065WED	TO-247
JT040K065AED-GA-BR	JT040K065AED	TO-3PH

绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value		单位 Unit
		JT040K065WED	JT040K065AED	
最高集电极－发射极直流电压 Collector-Emitter Voltage	V_{CE}	650	650	V
*连续集电极电流 Collector Current-continuous	I_C	80(T_C=25°C)	80(T_C=25°C)	A
		40(T_C=100°C)	40(T_C=100°C)	A
最大脉冲集电极极电流（注 1） Collector Current – pulse （note 1）	I_{CM}	160	160	A
二极管正向测试电流 Diode RMS forward current	I_F	80(T_C=25°C)	80(T_C=25°C)	A
		40(T_C=100°C)	40(T_C=100°C)	A
二极管正向脉冲电流 Diode pulse current	I_{FSM}	160	160	A
最高栅极发射极电压 Gate-Emitter Voltage	V_{GE}	±20	±20	V
Turn-off safe area	-	160	160	A
耗散功率 Power Dissipation	P_D T_C=25℃	340	108	W
存储温度 Storage Temperature Range	T_{STG}	-55～+150	-55～+150	℃
结温 Junction Temperature Range	T_{VJ}	-40～+175	-40～+175	℃
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T_L	300	300	℃
绝缘耐压 Isolation Voltage	V_{ISO}	-	1500	V

*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
击穿电压温度特性 Breakdown voltage temperature coefficient	$\Delta BV_{CES}/\Delta T_J$	I_C=0.5mA, referenced to 25℃	-	0.6	-	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℃	-	-	40	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-emitter saturation voltage	V_{CESAT}	V_{GE}=15V,　I_C=40A Tc=25℃ Tc=175℃	 - -	 1.7 2.2	 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	-	2392	-	pF
输出电容 Output capacitance	C_{oes}		-	193	-	pF
反向传输电容 Reverse transfer capacitance	C_{res}		-	64.5	-	pF
栅极电荷总量 Total gate charge	Qg	V_{CC}=480V,I_c=40A,R_G=10Ω,V_{GE}=15 V T_C=25℃	-	79.2	-	nC
栅极-发射极 Gate to emitter charge	Qge		-	24.6	-	
栅极-集电极 Gate to collector charge	Qgc		-	34.1	-	
栅极电阻-Gate resistance	Rg	f=1 MHz, open collector	-	1.3	-	Ω
短路电流-Short current	Isc	V_{GE}=15V V_{CE}≤400V t≤10μs	-	190	-	A

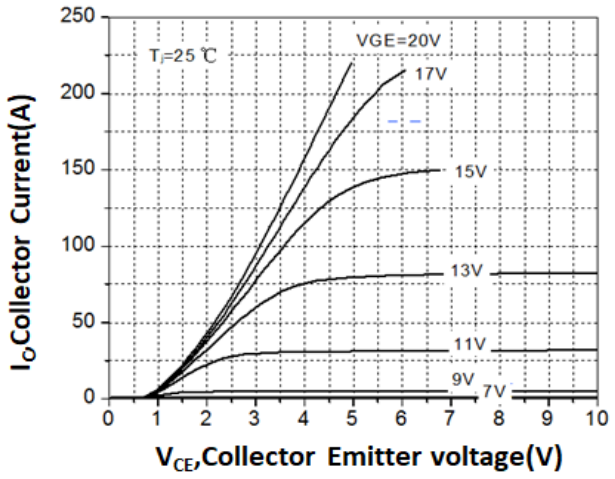
电特性 ELECTRICAL CHARACTERISTICS

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	t_d(on)	V_{CC}=400V,I_c=40A,R_G=10.5Ω V_{GE}=15 V T_C=25℃	-	24		ns
上升时间 Turn-on rise time	t_r		-	84	-	ns
关断延迟时间 Turn-off delay time	t_d(off)		-	70	-	ns
下降时间 Turn-off Fall time	t_f		-	78	-	ns
开通损耗 Turn-on energy	Eon		-	1.11	-	mJ
关断损耗 Turn-off energy	Eoff		-	1.11	-	mJ
总开关损耗 Total switching energy	Etot		-	2.22	-	mJ
开启延迟时间 Turn-on delay time	t_d(on)	V_{CC}=400V,I_c=40A,R_G=10.5Ω V_{GE}=15 V T_C=175℃	-	30	-	ns
上升时间 Turn-on rise time	t_r		-	78	-	ns
关断延迟时间 Turn-off delay time	t_d(off)		-	96	-	ns
下降时间 Turn-off fall time	t_f		-	160	-	ns
开通损耗 Turn-on energy	Eon		-	1.13	-	mJ
关断损耗 Turn-off energy	Eoff		-	1.25	-	mJ
总开关损耗 Total switching energy	Etot		-	2.38	-	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 forwardVoltage	V_F	V_{GE}=0V, I_F=20A , T_C=25℃	-	1.5	2.5	V
		V_{GE}=0V, I_F=20A , 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℃	-	36	-	ns
反向恢复电荷 Diode reverse recovery charge	Q_{rr}		-	0.3	-	uC
反向恢复电流 Diode reverse recovery Current	I_{rrm}		-	10	-	A
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=175℃	-	116	-	ns
反向恢复电荷 Diode reverse recovery charge	Q_{rr}		-	1.1	-	uC
反向恢复电流 Diode reverse recovery Current	I_{rrm}		-	15.8	-	A

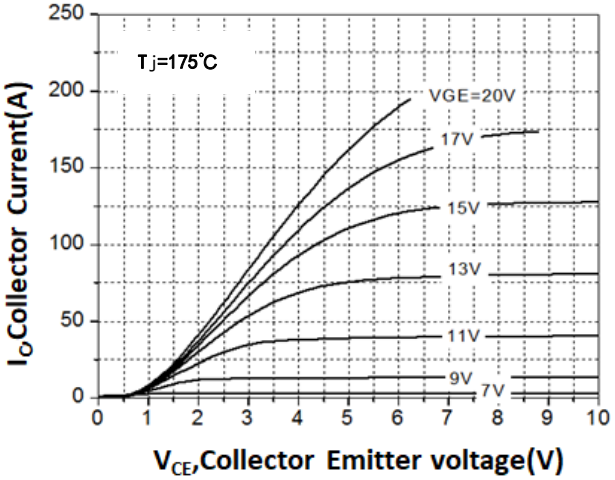
项 目 Parameter	符 号 Symbol	MAX JT040K065WED	MAX JT040K065AED	单 位 Unit
结到管壳的热阻 Thermal resistance, Junction to case IGBT	$R_{th(j-c)}$	0.44	1.38	℃/W
结到管壳的热阻 Thermal resistance, Junction to case diode	$R_{th(j-c)}$	0.81	2.08	℃/W
结到环境的热阻 Thermal resistance, Junction to ambient	$R_{th(j-A)}$	40	40	℃/W

特征曲线 ELECTRICAL CHARACTERISTICS (curves)

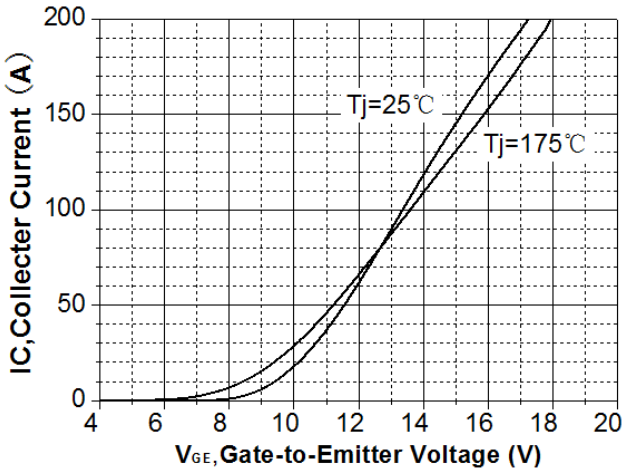
Output Characteristics（25℃）



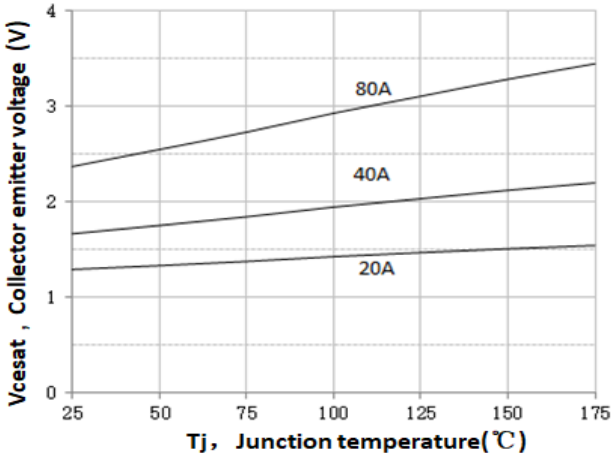
Output Characteristics（175℃）



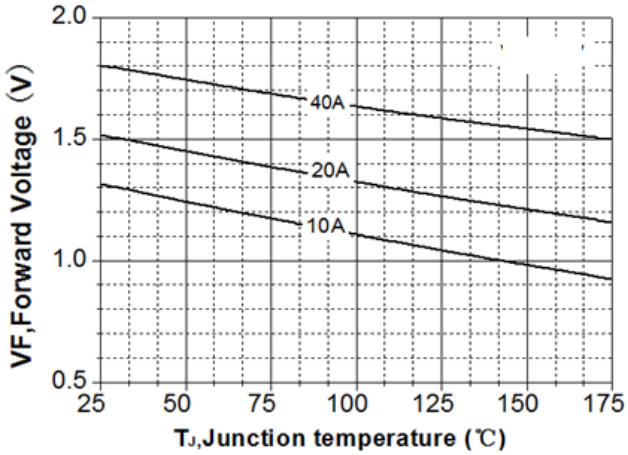
Transfer Characteristics



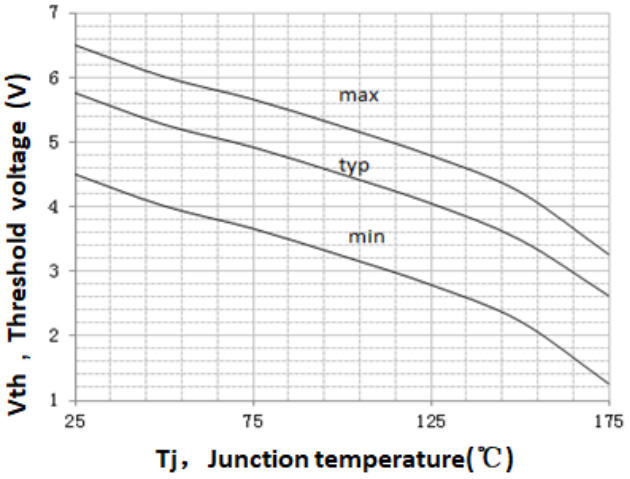
Vcesat vs. Tj



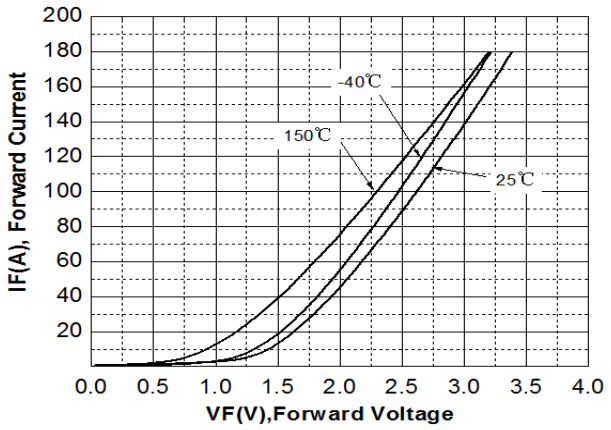
VF vs. Tj



VTH vs. Tj

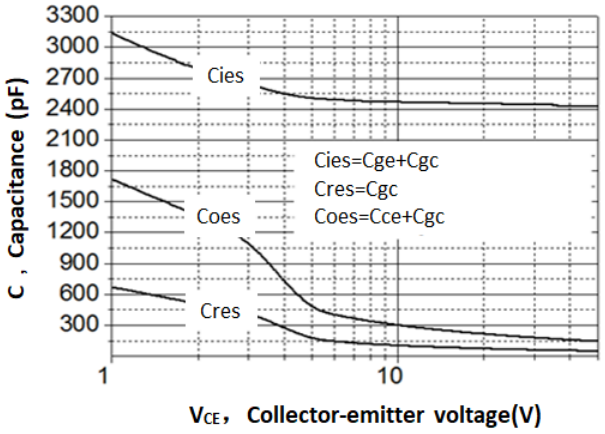


Diode Characteristic



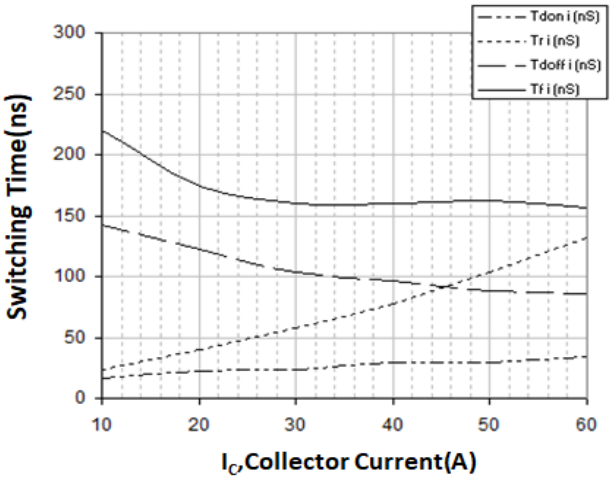
Capacitance Characteristic

VGE =0V，f=1.0MHZ



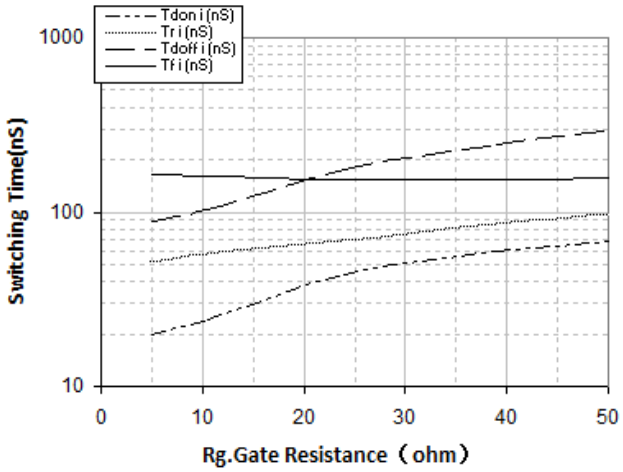
Switching Time vs. IC(175℃)

VGE=15V，VCE=400V，RG=10.5Ω



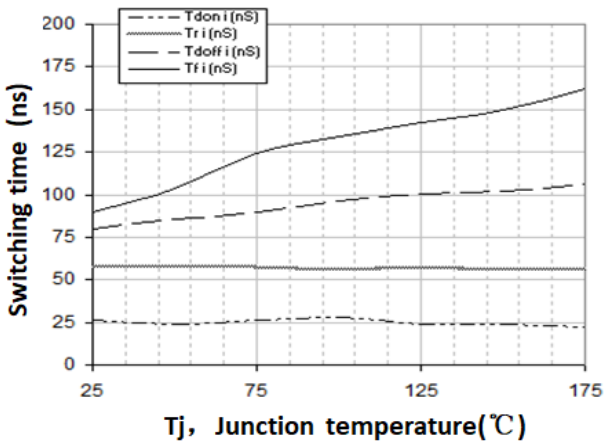
Switching Time vs. Rg(175℃)

VGE=15V，VCE=400V，IC=40A



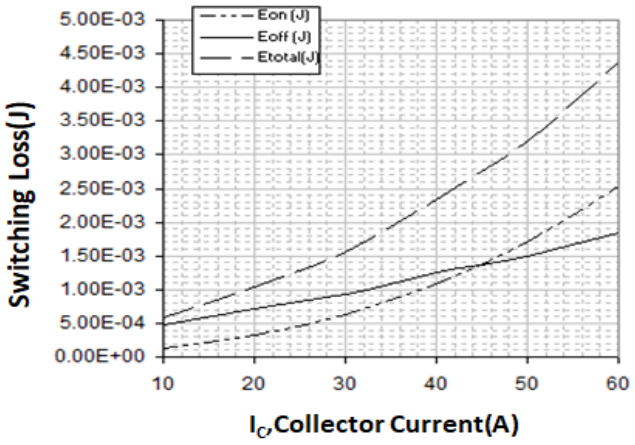
Switching Time vs.Tj

VGE=15V，VCE=400V，IC=40A，Rg=10.5Ω



Switching Loss vs. IC(175℃)

VGE=15V，VCE=400V，Rg=10.5Ω



Switching Loss vs. Rg(175℃)

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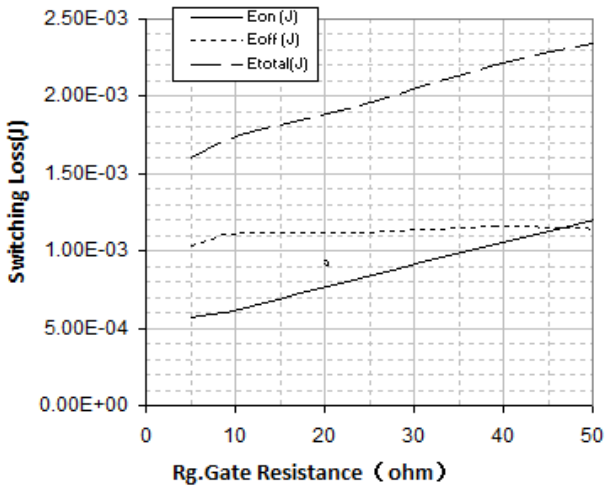
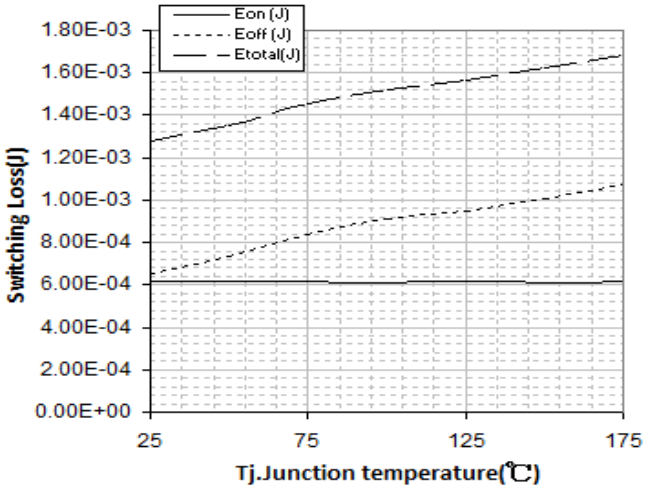
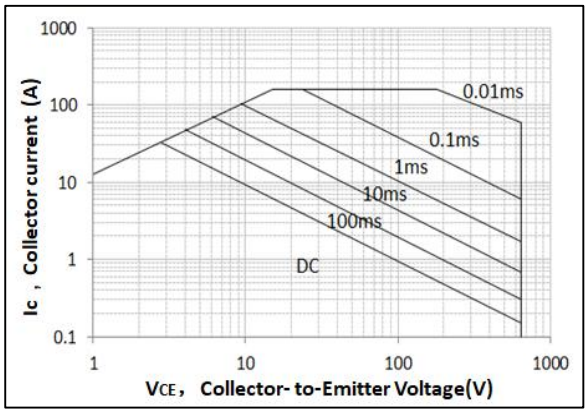


Switching Loss vs. Tj

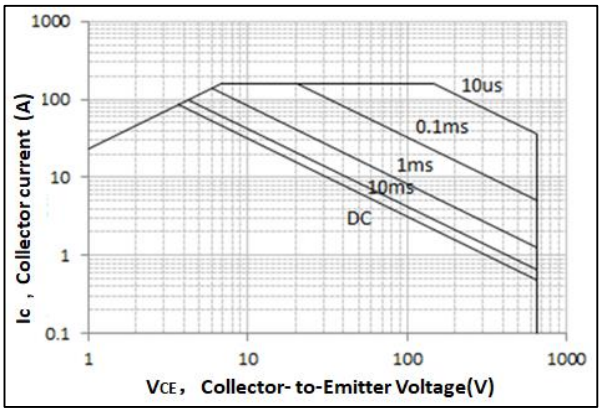
VGE=15V，VCE=400V，IC=40A，Rg=10.5Ω



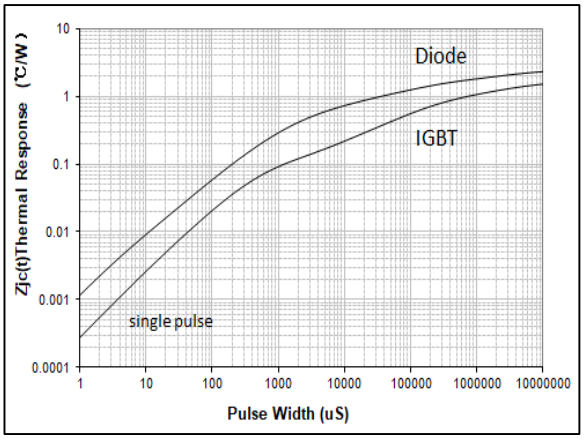
Forward Bias SOA(TO-3PH)



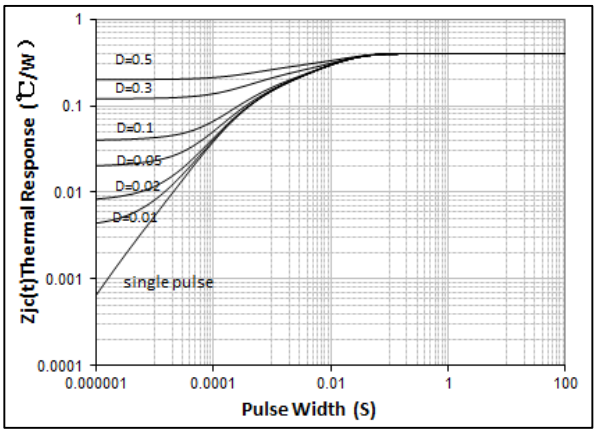
Forward Bias SOA(TO-247)

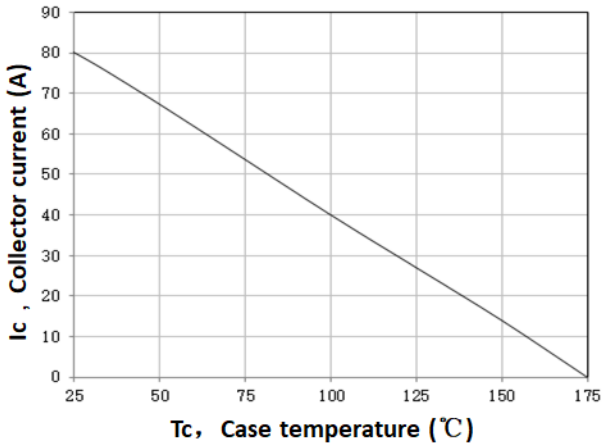
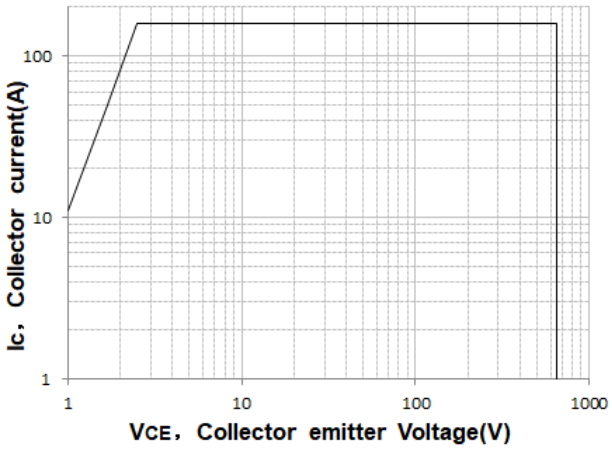


Transient Thermal Impedance (TO-3PH)



Transient Thermal Impedance for IGBT (TO-247)

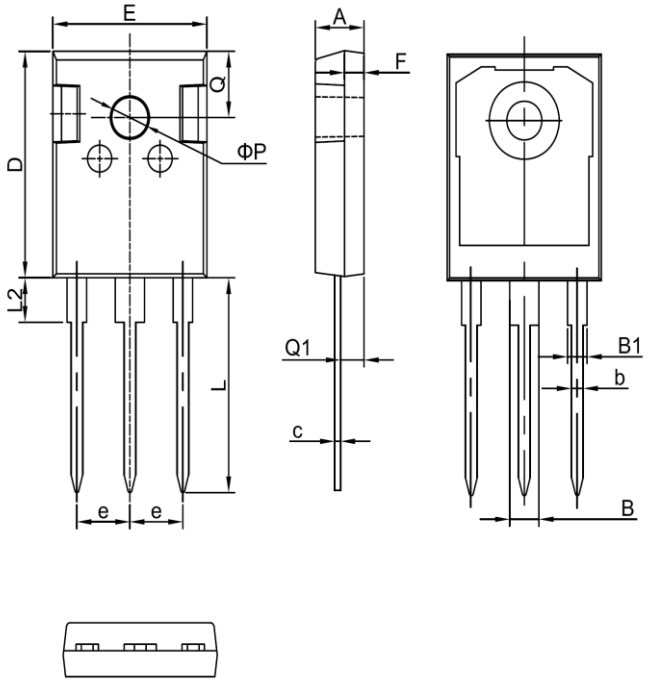


Ic vs.Tc	Reverse Bias Safe Operating Area Tc=25℃VGE=±15V，Rg=10Ω
	

外形尺寸 PACKAGE MECHANICAL DATA

TO-247

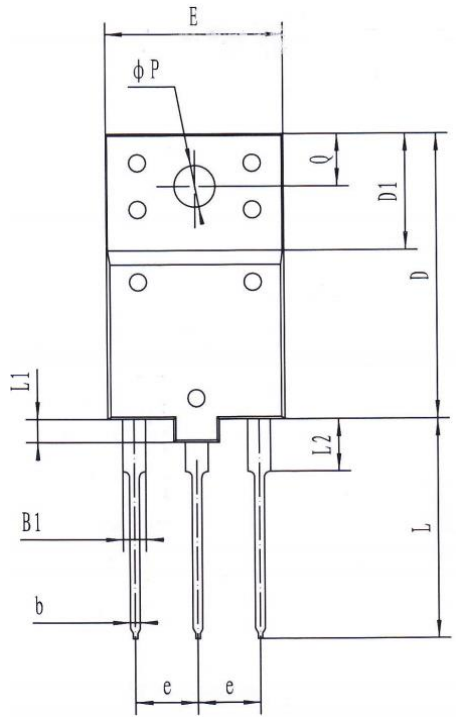
单位 **Unit ： mm**

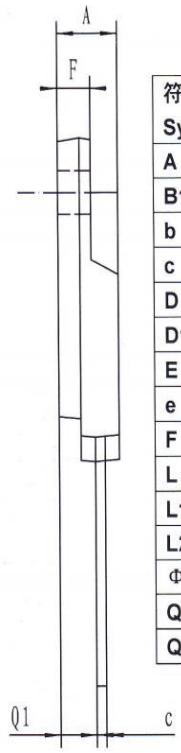


符号 symbol	MIN	MAX
A	4.90	5.10
B	2.95	3.35
B1	1.95	2.35
b	1.15	1.35
c	0.50	0.70
D	20.90	21.10
E	15.70	15.90
e	5.34	5.54
F	1.90	2.10
L	19.40	20.40
L2	4.03	4.23
Q	6.00	6.40
Q1	2.30	2.50
P	3.50	3.70

外形尺寸 **PACKAGE MECHANICAL DATA**

TO-3PH





符 号 Symbol	Min	Max
A	5.2	5.8
B1	1.8	2.2
b	0.75	1.05
c	0.8	1.1
D	24.0	25.0
D1	9.8	10.2
E	15.0	16.0
e	5.45（typ）	
F	2.7	3.3
L	18.5	19.5
L1	1.8	2.2
L2	4.3	4.7
ΦP	3.4	3.8
Q	4.3	4.7
Q1	3.1	3.5

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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