



# JT075N065WED

## 主要参数 MAIN CHARACTERISTICS

$I_c$	75A
$V_{CES}$	650V
$V_{cesat-typ}$	1.7V

### 用途

- 逆变器
- UPS 电源

### 产品特性

- 低栅极电荷
- Trench FS 技术,
- RoHS 产品

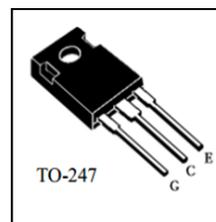
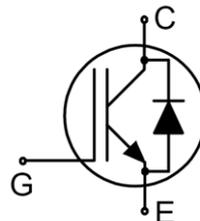
### APPLICATIONS

- General purpose inverters
- UPS

### FEATURES

- Low gate charge
- Trench FS Technology,
- RoHS product

## 封装 Package



## 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		
JT075N065WED-GE-B	JT075N065WED-GE-BR	N/A	N/A	JT075N065WED	TO-247

绝对最大额定值 ABSOLUTE RATINGS ( $T_C=25^\circ\text{C}$ )

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-Emmitter Voltage	$V_{CES}$	650	V
*连续集电极电流 Collector Current-continuous	$I_C$	150( $T_C=25^\circ\text{C}$ )	A
		75( $T_C=100^\circ\text{C}$ )	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( $T_C=25^\circ\text{C}$ )	A
		75 ( $T_C=100^\circ\text{C}$ )	A
二极管正向不重复峰值电流 (浪涌电流) Surge non repetitive forward current $t_p=10\text{ ms}$ sinusoidal	$I_{FSM}$	300	A
最高栅极发射极电压 Gate-Emmitter Voltage	$V_{GES}$	$\pm 20$	V
瞬态栅极发射极电压 Transient Gate-emitter voltage( $t_p \leq 10\mu\text{s}$ , $D < 0.010$ )	$V_{GES}$	$\pm 30$	V
安全工作区 Turn-off safe area	-	300	A
耗散功率 Power Dissipation	$P_D$ $T_C=25^\circ\text{C}$	539	W
最高结温及存储温度 Operating and Storage Temperature Range	$T_J$ , $T_{STG}$	$-55 \sim +150$	$^\circ\text{C}$
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	$T_L$	300	$^\circ\text{C}$

\*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
<b>关态特性 Off –Characteristics</b>						
集电极-发射极击穿电压 Collector-Emmitter Voltage	$BV_{CES}$	$I_C=250\mu A, V_{GE}=0V$	650	-	-	V
零栅压下集电极漏电流 Zero Gate Voltage Collector Current	$I_{CES}$	$V_{CE}=650V, V_{GE}=0V, T_C=25^\circ C$	-	-	0.2	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
<b>通态特性 On-Characteristics</b>						
阈值电压 Gate Threshold Voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}, I_C=250\mu A$	4.5	-	6.5	V
饱和压降 Collector-Emmitter saturation Voltage	$V_{CESAT}$	$V_{GE}=15V, I_C=75A, T_C=25^\circ C$	-	1.7	2.4	V
<b>动态特性 Dynamic Characteristics</b>						
输入电容 Input capacitance	$C_{ies}$	$V_{CE}=25V, V_{GE}=0V, f=1.0MHz$	-	5012	-	pF
输出电容 Output capacitance	$C_{oes}$		-	430	-	pF
反向传输电容 Reverse transfer capacitance	$C_{res}$		-	99.6	-	pF
栅极电荷总量 Total Gate Charge	$Q_g$	$V_{CC}=520V, I_C=75A, R_G=7.9\Omega, V_{GE}=15V, T_C=25^\circ C$	-	170	-	nC
栅极-反射极 Gate to emitter charge	$Q_{ge}$		-	43	-	
栅极-集电极 Gate to collector charge	$Q_{gc}$		-	78	-	
栅极电阻-Gate resistance	$R_g$	$f=1 MHz, \text{open collector}$	-	3	-	$\Omega$
短路电流-short current	$I_{sc}$	$V_{GE}=15V, V_{CE}=300V, t_{sc} \leq 10\mu s$	-	300	-	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	$t_d(\text{on})$	$V_{CC}=400V, I_c=75A, R_G=7.9\Omega$ $V_{GE}=15V$ $T_C=25^\circ C$	-	87	-	ns
上升时间 Turn-On rise time	$t_r$		-	156	-	ns
关断延迟时间 Turn-Off delay time	$t_d(\text{off})$		-	168	-	ns
下降时间 Turn-Off Fall time	$t_f$		-	86	-	ns
开通损耗 Turn-On energy	Eon		-	3.4	-	mJ
关断损耗 Turn-off energy	Eoff		-	1.8	-	mJ
总开关损耗 Total switching energy	Etot		-	5.2	-	mJ
开启延迟时间 Turn-On delay time	$t_d(\text{on})$	$V_{CC}=400V, I_c=75A, R_G=7.9\Omega$ $V_{GE}=15V$ $T_C=150^\circ C$	-	85	-	ns
上升时间 Turn-On rise time	$t_r$		-	154	-	ns
关断延迟时间 Turn-Off delay time	$t_d(\text{off})$		-	190	-	ns
下降时间 Turn-Off Fall time	$t_f$		-	99	-	ns
开通损耗 Turn-On energy	Eon		-	4.2	-	mJ
关断损耗 Turn-off energy	Eoff		-	2.2	-	mJ
总开关损耗 Total switching energy	Etot		-	6.4	-	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	$V_F$	$V_{GE}=0V, I_S=75A$	-	2.2	2.9	V
反向恢复时间 Diode Reverse recovery time	$t_{rr}$	$V_{GE}=0V, V_R=200V I_F=75A$ $di_F/dt=200A/\mu s$ $T_C=25^\circ C$	-	24.5	-	ns
反向恢复电荷 Diode Reverse recovery charge	Qrr		-	20.6	-	nC
反向恢复电流 Diode Reverse recovery Current	$I_{RRM}$		-	1.64	-	A
反向恢复时间 Diode Reverse recovery time	$t_{rr}$		$V_{GE}=0V, V_R=200V I_F=75A$ $di_F/dt=200A/\mu s$ $T_C=150^\circ C$	-	195	-
反向恢复电荷 Diode Reverse recovery charge	Qrr	-		731	-	nC
反向恢复电流 Diode Reverse recovery Current	$I_{RRM}$	-		8.3	-	A

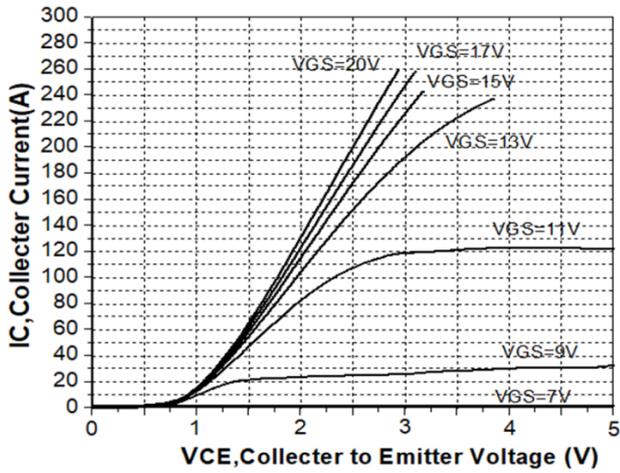
项 目 Parameter	符 号 Symbol	MAX	单 位 Unit
结到管壳的热阻 Junction to Case IGBT	$R_{th(j-c)}$	0.232	$^\circ C/W$
结到管壳的热阻 Junction to Case diode	$R_{th(j-c)}$	0.38	$^\circ C/W$
结到环境的热阻 Junction to Ambient	$R_{th(j-A)}$	40	$^\circ C/W$



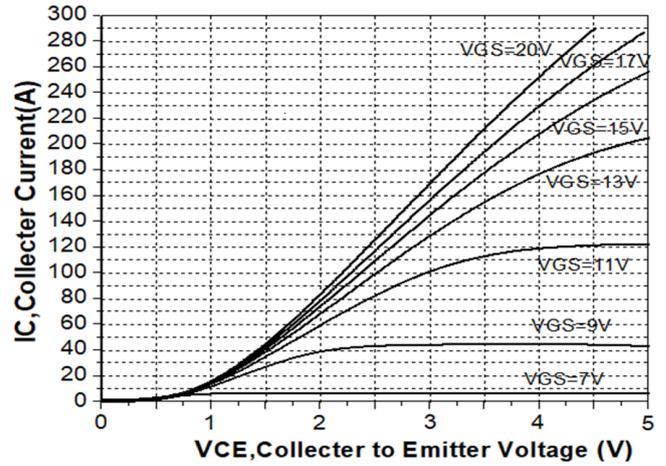


## 特征曲线 ELECTRICAL CHARACTERISTICS (curves)

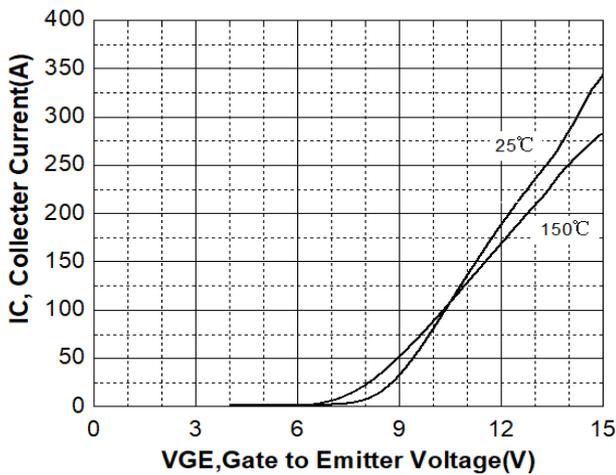
Output Characteristics (25°C)



Output Characteristics (150°C)

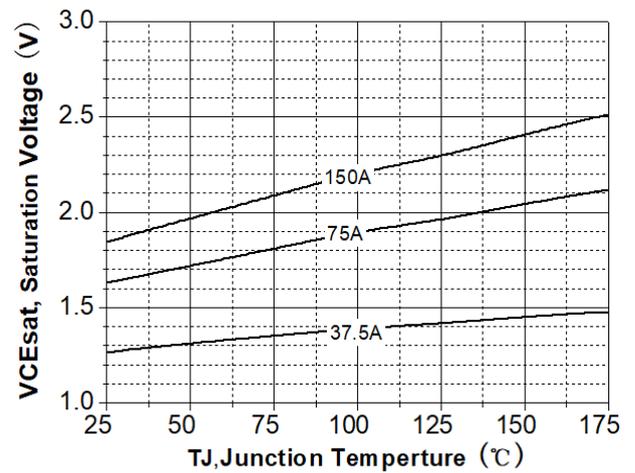


Transfer Characteristics



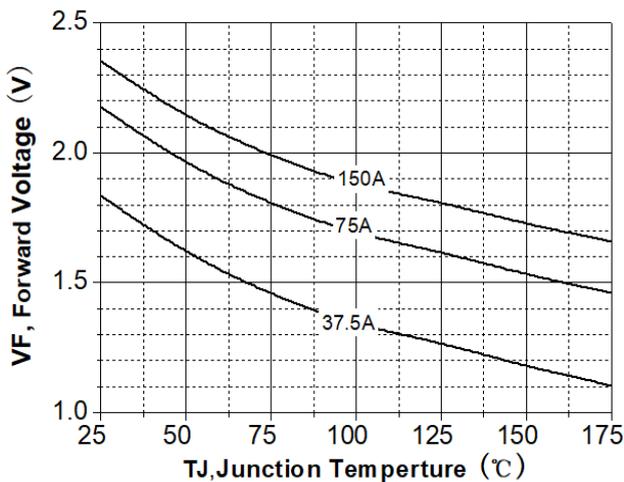
Vcesat vs. Tj

Vge=15V, Ic=37.5A, 75A, 150A



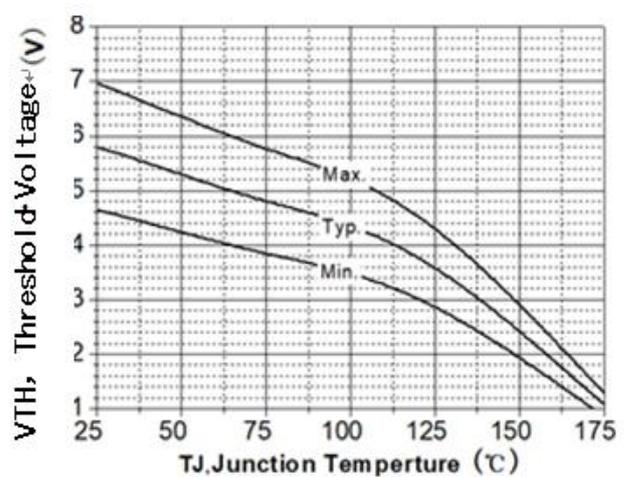
VF vs. Tj

Vge=15V, Ic=37.5A, 75A, 150A



VTH vs. Tj

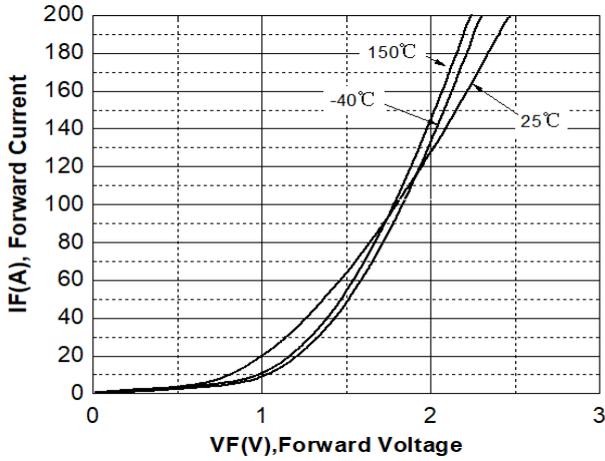
Ic=250uA





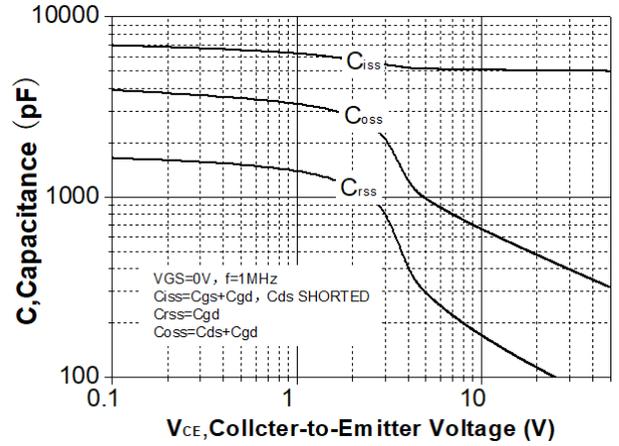
### Diode Characteristic

T<sub>j</sub>=25°C、150°C、-40°C



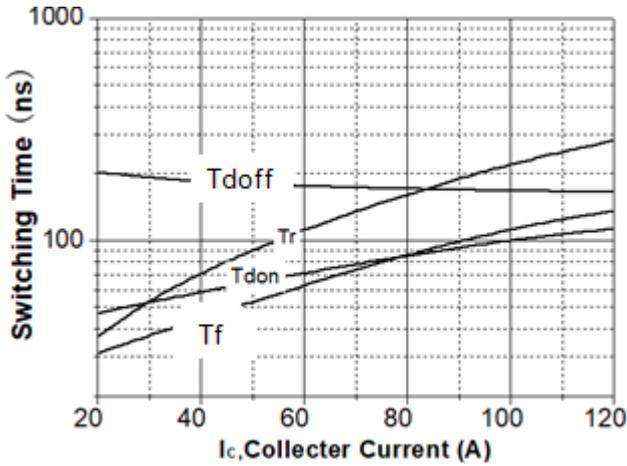
### Capacitance Characteristic

V<sub>ge</sub> = 0V, f = 1.0MHz



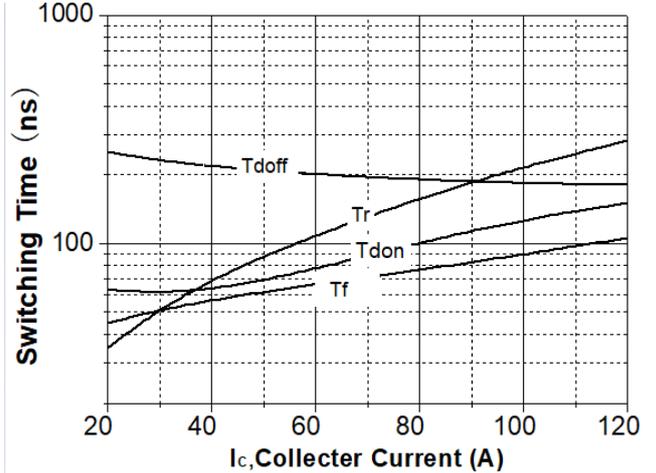
### Switching Time vs. IC(25°C)

V<sub>ce</sub>=400V, V<sub>ge</sub>=15V, R<sub>g</sub>=7.9Ω



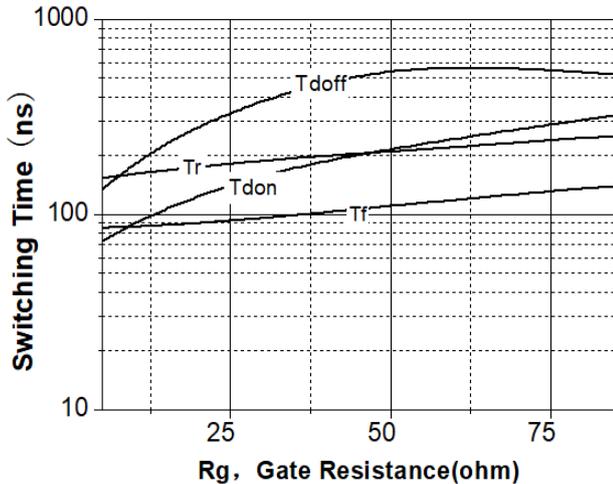
### Switching Time vs. IC(150°C)

V<sub>ce</sub>=400V, V<sub>ge</sub>=15V, R<sub>g</sub>=7.9Ω



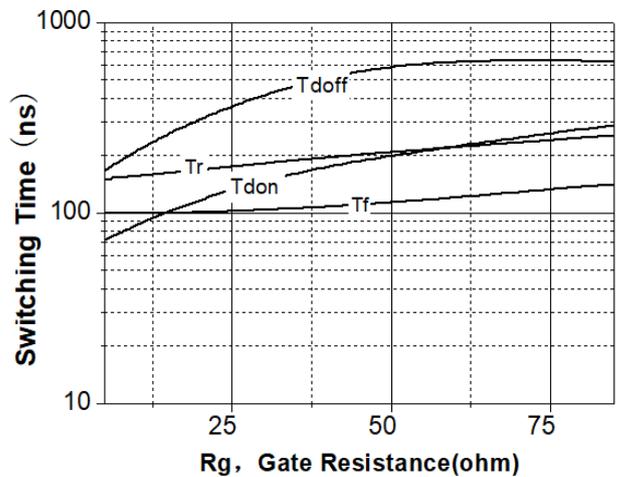
### Switching Time vs. Rg(25°C)

V<sub>ge</sub>=15V, V<sub>ce</sub>=400V, I<sub>c</sub>=75A



### Switching Time vs. Rg(150°C)

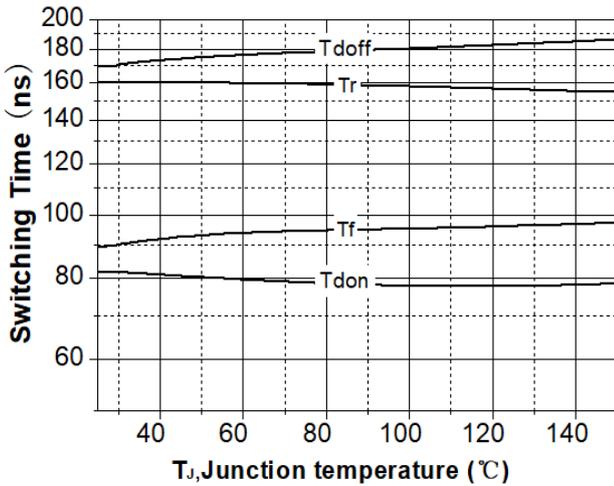
V<sub>ge</sub>=15V, V<sub>ce</sub>=400V, I<sub>c</sub>=75A





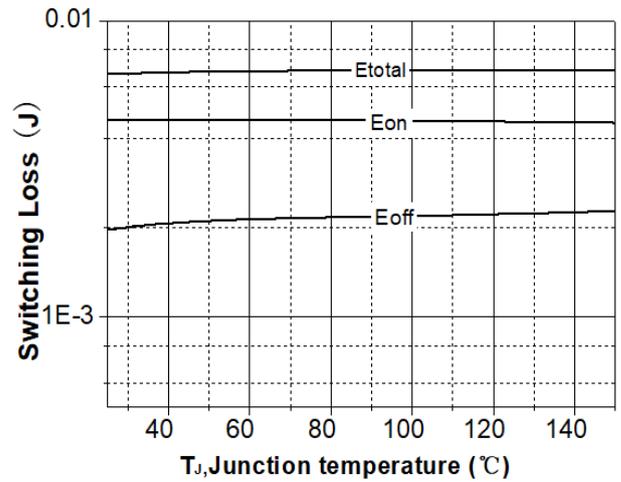
### Switching Time vs. Tj

Vge=15V, Vce=400V, Ic=75A, Rg=7.9Ω



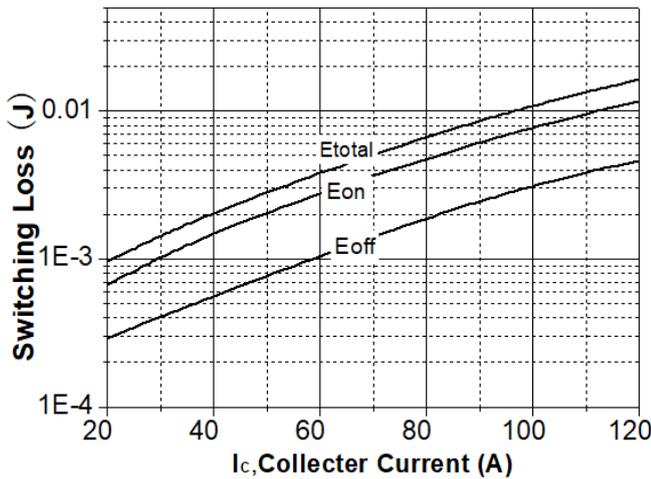
### Switching Loss vs. Tj

Vge=15V, Vce=400V, Ic=75A, Rg=7.9Ω



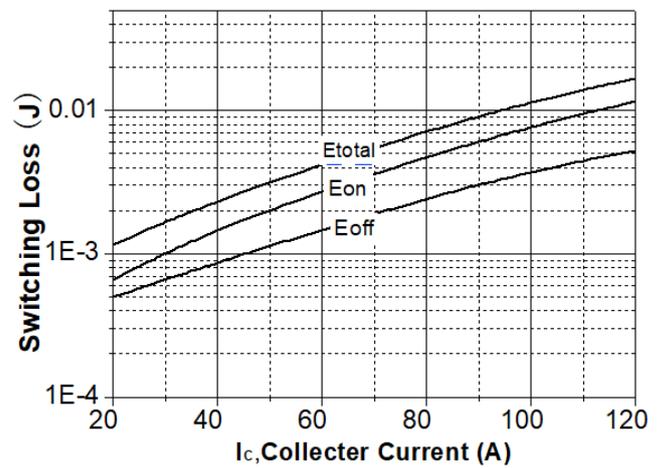
### Switching Loss vs. IC(25°C)

Vge=15V, Vce=400V, Rg=7.9Ω



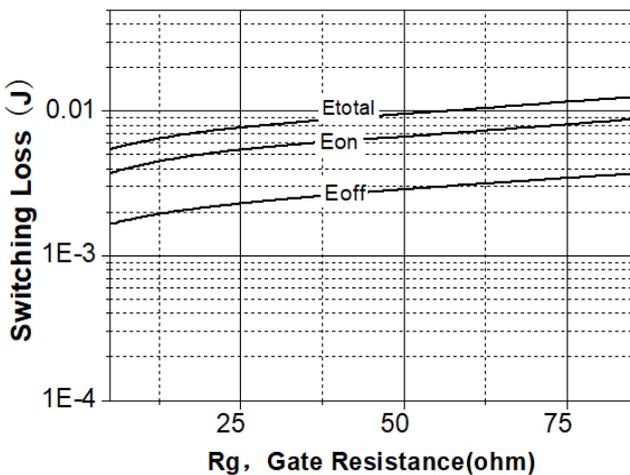
### Switching Loss vs. IC(150°C)

Vge=15V, Vce=400V, Rg=7.9Ω



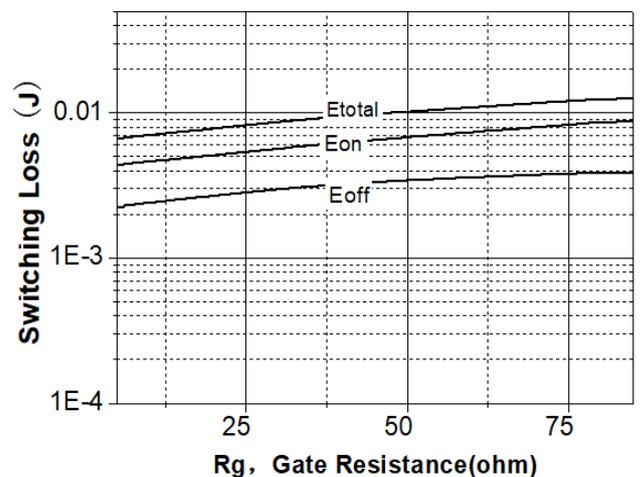
### Switching Loss vs. Rg(25°C)

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



### Switching Loss vs. Rg(150°C)

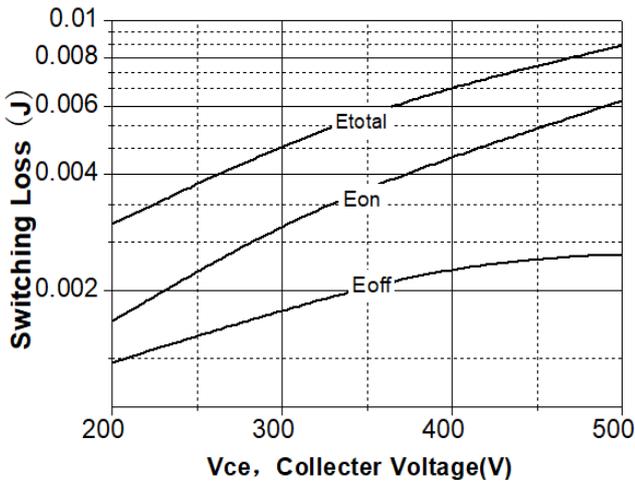
Vge=15V, Vce=400V, Ic=75A





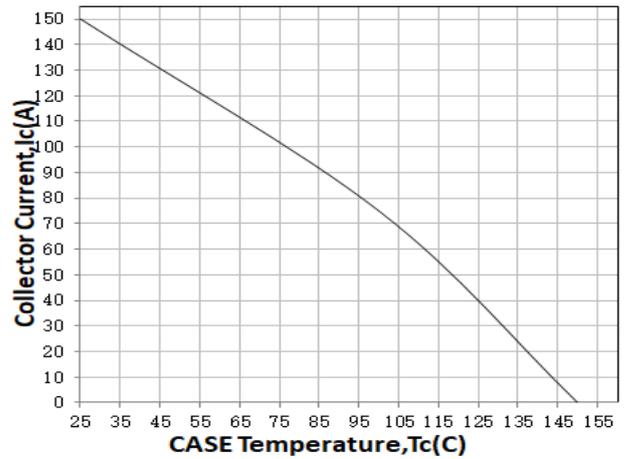
**Switching Loss vs. VCE(150°C)**

Vge=15V, Ic=75A, Rg=7.9Ω



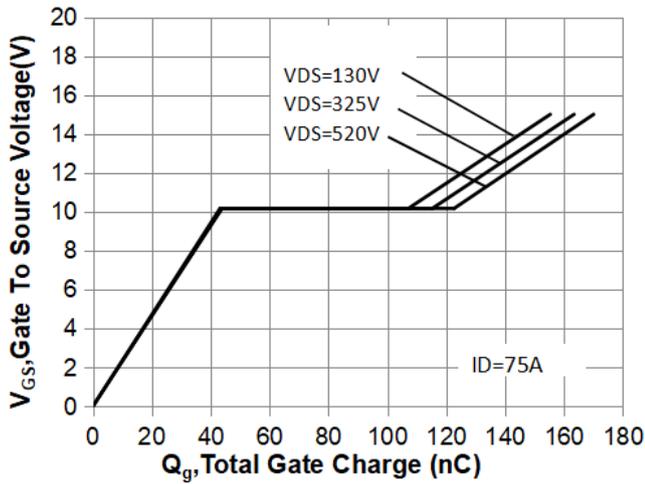
**Collector current vs. case temperature**

Vge≥15V, Tj≤150°C



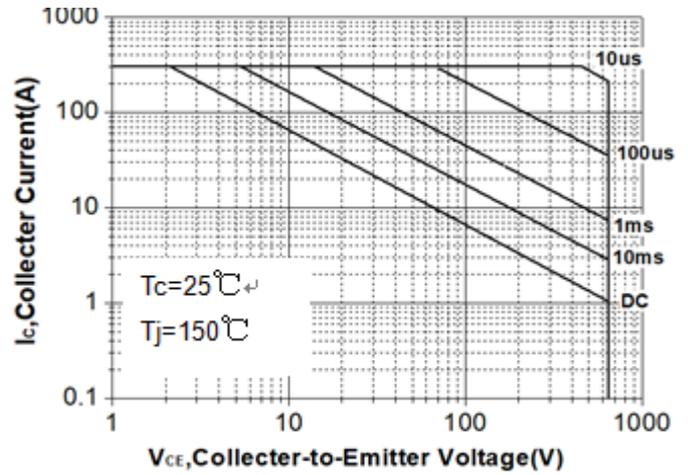
**Gate Charge Characteristics**

Vge=15V, Ic=75A



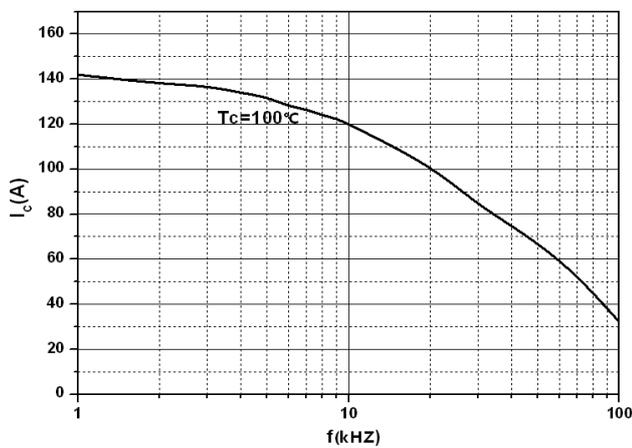
**Safe Operating Area For TO-247**

Tc=25 °C, Vge=15V, Tj≤150°C

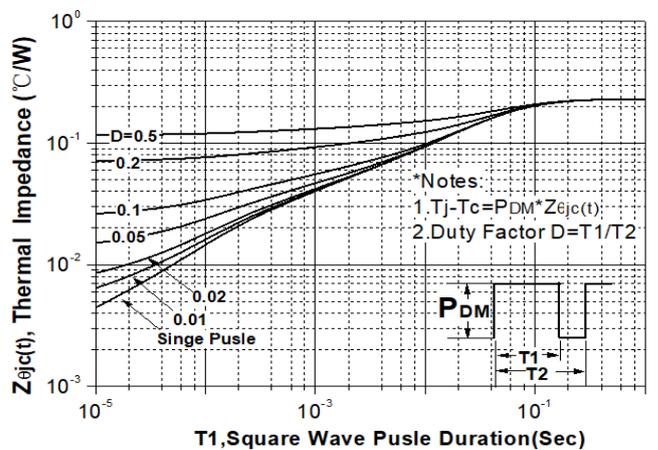


**Ic vs. f**

Vcc=400V Rg=4.7Ω Vge=15V duty cycle=0.5



**Transient Thermal Impedance for IGBT**

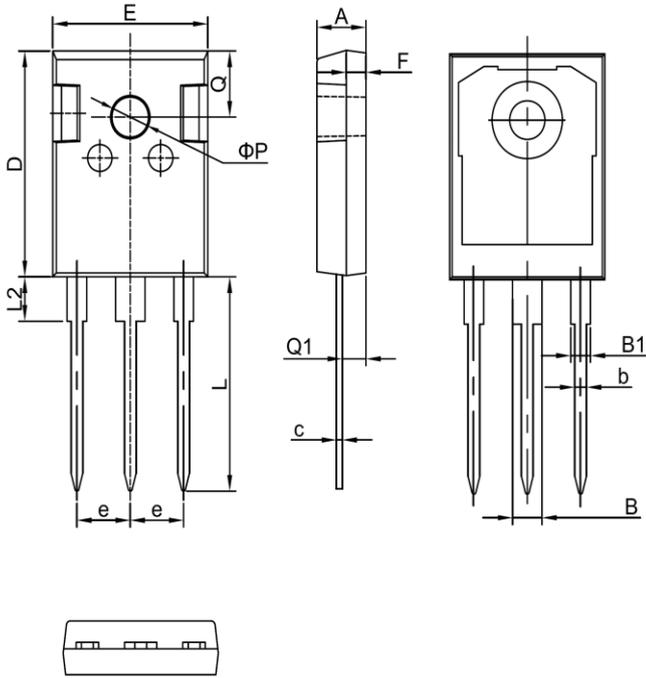




## 外形尺寸 PACKAGE MECHANICAL DATA

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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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。

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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](http://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](http://www.hwdz.com.cn)