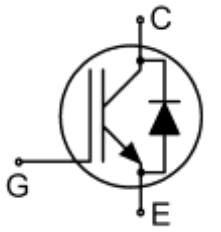
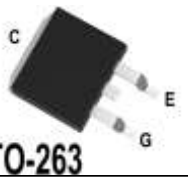
JT030N065WED/FED/SED

主要参数 MAIN CHARACTERISTICS

I_C	30 A
V_{CES}	650V
$V_{CE_{SAT}}$-TYP	1.75V

封装 **Package**





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
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		
JT030N065WED-GE-B	JT030N065WED-GE-BR	N/A	N/A	JT030N065WED	TO-247
JT030N065FED-F-B	JT030N065FED-F-BR	N/A	N/A	JT030N065FED	TO-220MF
JT030N065SED-S-B	JT030N065SED-S-BR	JT030N065SED-S-A	JT030N065SED-S-AR	JT030N065SED	TO-263

绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value			单位 Unit
		JT030N065WED	JT030N065FED	JT030N065SED	
最高集电极－发射极直流电压 Collector-emitter voltage	V_{CES}	650			V
*连续集电极电流 Collector current-continuous T_C=25°C T_C=100°C	I_C	60 30			A
最大脉冲集电极极电流（注 1） Collector current – pulse（note 1）	I_{CM}	120			
二极管正向测试电流 Diode RMS forward current T_C=25°C T_C=100°C	I_F	60 30			
二极管正向脉冲电流 Diode pulse current	I_{FSM}	120			
最高栅极发射极电压 Gate-emitter voltage	V_{GES}	±20			V
最高瞬态栅极发射极电压 Transient gate-emitter voltage(t_p≤ 10us，*D*<0.010)	V_{GES}	±25			V
Turn-off safe area 安全工作区	-	120			A
耗散功率 Power Dissipation	P_D TC=25℃	234	46	230	W
存储温度 Storage temperature range	T_{STG}	-55～+150			℃
结温 Junction temperature range	T_J	-55～+175			℃
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

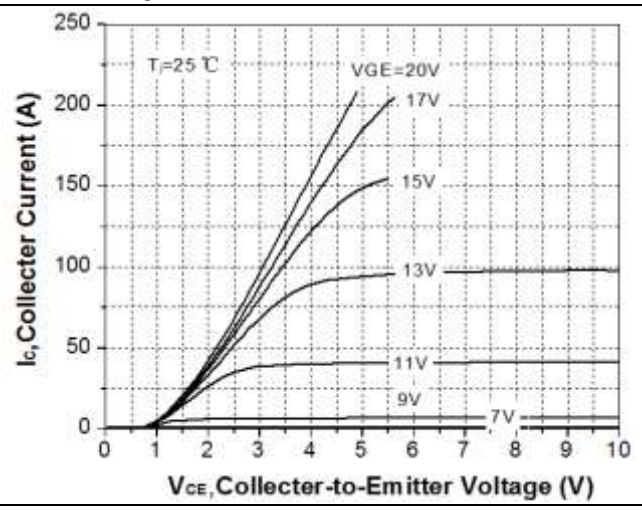
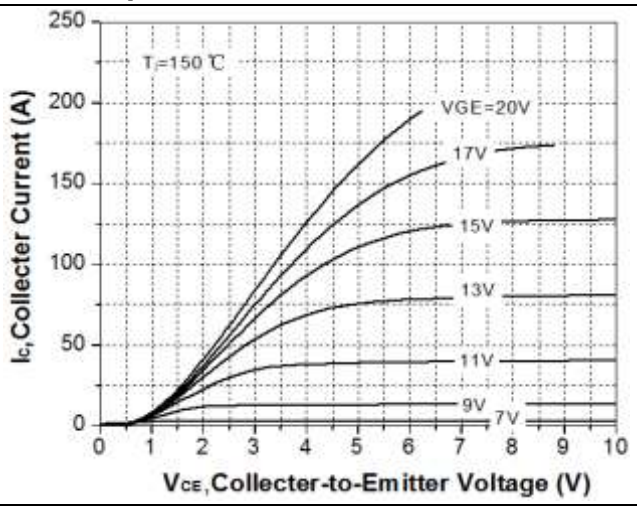
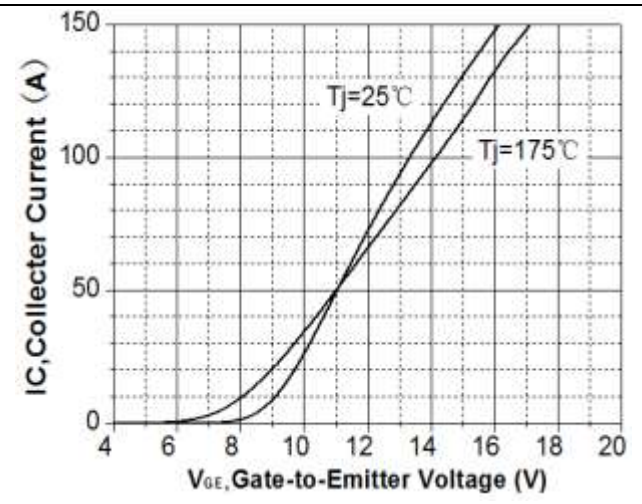
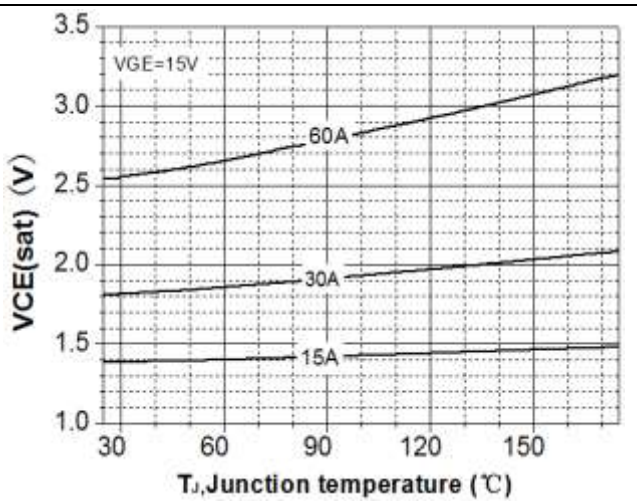
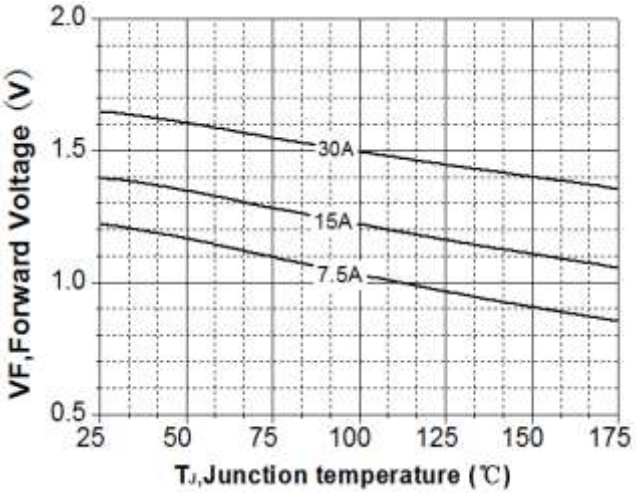
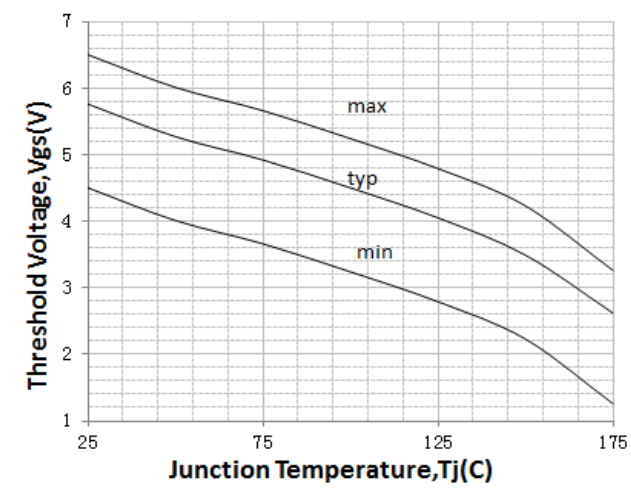
项　　目 Parameter	符　号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单位 Units
关态特性 Off –Characteristics						
集电极－发射极击穿电压 Collector-emitter Voltage	BVCES	IC=250μA, VGE=0V	650	-	-	V
零栅压下集电极漏电流 Zero gate voltage collector current	ICES	VCE=650V,　VGE=0V, TC=25℃	-	-	20	μA
		VCE=650V,　VGE=0V, TC=175℃	-	-	2	mA
正向栅极体漏电流 Gate-body leakage current,forward	IGESF	VCE=0V,　VGE =20V	-	-	200	nA
反向栅极体漏电流 Gate-body leakage current,reverse	IGESR	VCE=0V,　VGE =-20V	-	-	-200	nA
通态特性 On-Characteristics						
阈值电压 Gate threshold voltage	VGE(th)	VCE = VGE , IC=250μA	4.5	-	6.5	V
饱和压降 Collector-emitter saturation voltage	VCESAT	VGE=15V　IC=30A　Tc=25℃	-	1.75	2.1	V
		VGE=15V　IC=30A　Tc=125℃	-	1.95	-	V
		VGE=15V　IC=30A　Tc=175℃	-	2.1	-	V
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	Cies	VCE=25V, VGE=0V, f=1.0MHZ	-	1830	-	pF
输出电容 Output capacitance	Coes		-	160	-	pF
反向传输电容 Reverse transfer capacitance	Cres		-	50.3	-	pF
栅极电荷总量 Total gate charge	Qg	VCC=520V,Ic=30A,RG=7.9Ω,VGE=15V TC=25℃	-	64.5	-	nC
栅极-反射极 Gate to emitter charge	Qge		-	18.1	-	
栅极-集电极 Gate to collector charge	Qgc		-	23.7	-	
栅极电阻-Gate resistance	Rg	f=1 MHz, open collector	-	1.1	-	Ω
短路电流-short current	Isc	V_{GE}=15V,V_{CE}=360V, T_J≤150°C,t≤10μs	-	150	-	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	td(on)	VCC=400V,Ic=30A,RG=7.9Ω VGE=15 V TC=25℃	-	27.0	-	ns
上升时间 Turn-on rise time	tr		-	67.0	-	ns
关断延迟时间 Turn-off delay time	td(off)		-	67.0	-	ns
下降时间 Turn-off fall time	tf		-	44.0	-	ns
开通损耗 Turn-on energy	Eon		-	0.83	-	mJ
关断损耗 Turn-off energy	Eoff		-	0.36	-	mJ
总开关损耗 Total switching energy	Etot		-	1.19	-	mJ
开启延迟时间 Turn-on delay time	td(on)	VCC=400V,Ic=30A,RG=7.9Ω VGE=15 V TC=175℃	-	27.0	-	ns
上升时间 Turn-on rise time	tr		-	68.0	-	ns
关断延迟时间 Turn-off delay time	td(off)		-	90.0	-	ns
下降时间 Turn-off fall time	tf		-	59.0	-	ns
开通损耗 Turn-on energy	Eon			1.09		mJ
关断损耗 Turn-off energy	Eoff			0.58		mJ
总开关损耗 Total switching energy	Etot			1.67		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	VF	VGE=0V,　　IS=15A	-	1.4	2.2	V
反向恢复时间 Diode reverse recovery time	trr	VGE=0V, VR=400V IF=30A dIF/dt=100A/μs TC=25℃	-	155	-	ns
反向恢复电荷 Diode reverse recovery charge	Qrr		-	85.0	-	nC
反向恢复电流 Diode reverse recovery current	IRRM		-	1.14	-	A
反向恢复时间 Diode reverse recovery time	trr	VGE=0V, VR=400V IF=30A dIF/dt=100A/μs TC=175℃	-	307	-	ns
反向恢复电荷 Diode reverse recovery charge	Qrr		-	685	-	nC
反向恢复电流 Diode reverse recovery current	IRRM		-	3.98	-	A

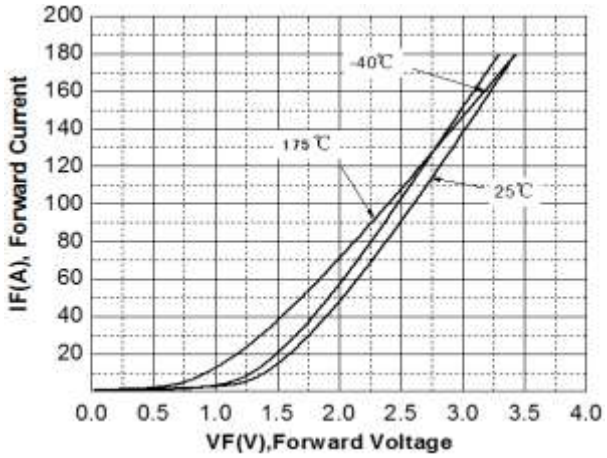
项　　目 **Parameter**	符　号 **Symbol**	最大 **MAX**			单 位 **Unit**
		JT030N065WED	JT030N065FED	JT030N065SED	
结到管壳的热阻 Thermal resistance, junction to case	Rth(j-c)	0.64	3.23	0.65	℃/W
结到环境的热阻 Thermal resistance, junction to ambient	Rth(j-A)	40	43.2	54.1	℃/W

特征曲线 ELECTRICAL CHARACTERISTICS (curves)

Output Characteristics（25℃）	Output Characteristics（175℃）
	
Transfer Characteristics Vce=20 V	**Vcesat vs. Tj** Vge=15V, Ic=15A、30A、60A
	
VF vs. Tj Vge=15V, Ic=7.5A、15A、30A	**VTH vs. Tj** Ic=250uA
	

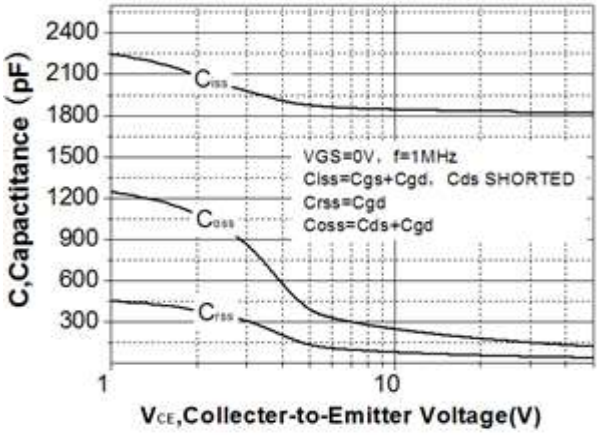
Diode Characteristic

Tj=25℃、175℃



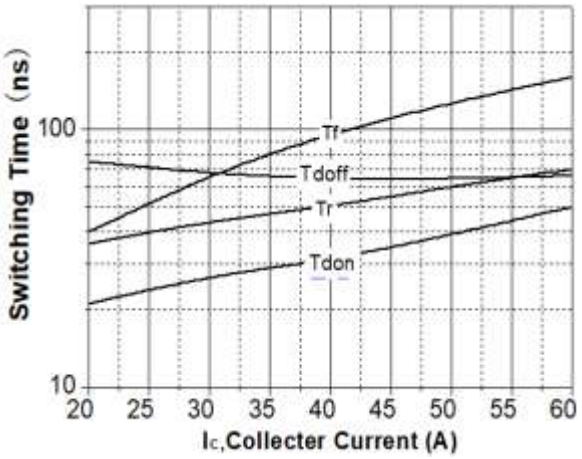
Capacitance Characteristic

Vce=25V,VGE =0V,f=1.0MHZ



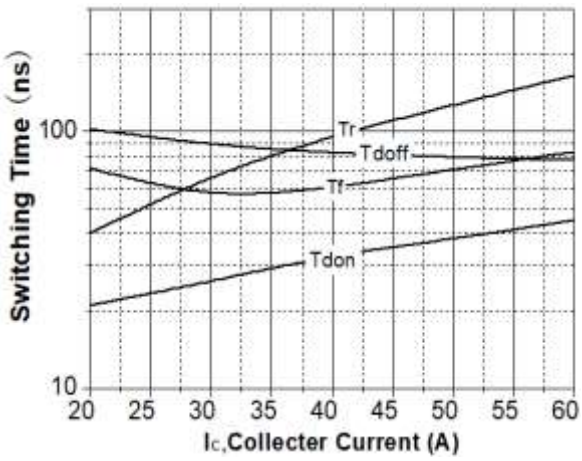
Switching Time vs. IC(25℃)

VCE=400V,VGE=15V, RG=7.9Ω



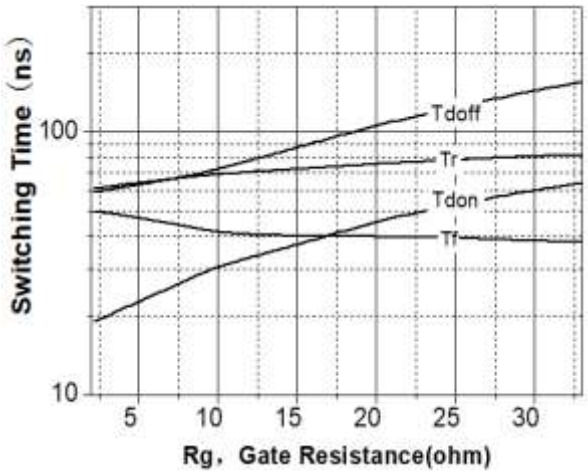
Switching Time vs. IC(175℃)

VCE=400V,VGE=15V, RG=7.9Ω



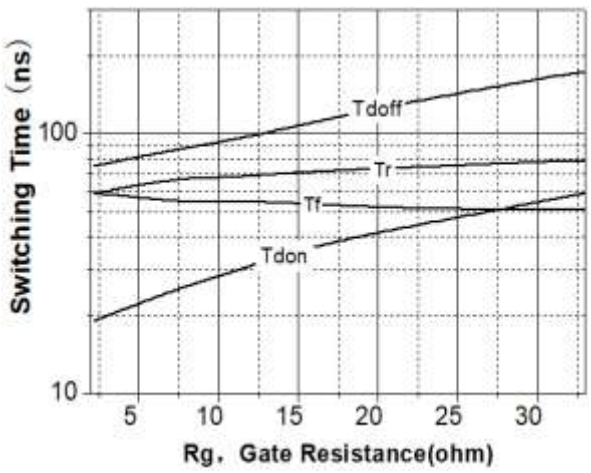
Switching Time vs. Rg(25℃)

VGE=15V,VCE=400V, IC:30A



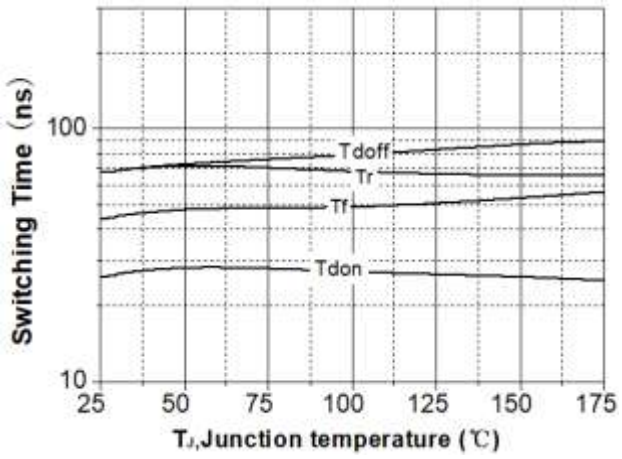
Switching Time vs. Rg(175℃)

VGE=15V,VCE=400V, IC:30A



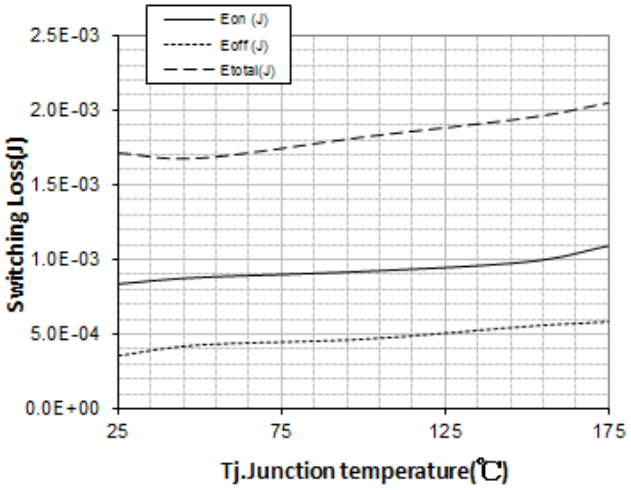
Switching Time vs.Tj

VGE=15V，VCE=400V，IC=30A，Rg=7.9Ω



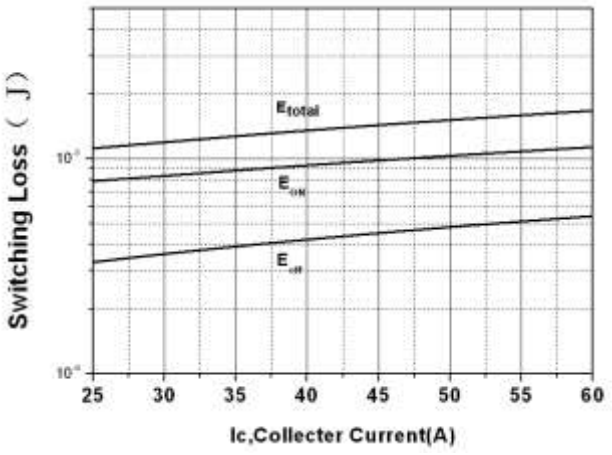
Switching Loss vs. Tj

VGE=15V，VCE=400V，IC=30A ，Rg=7.9Ω



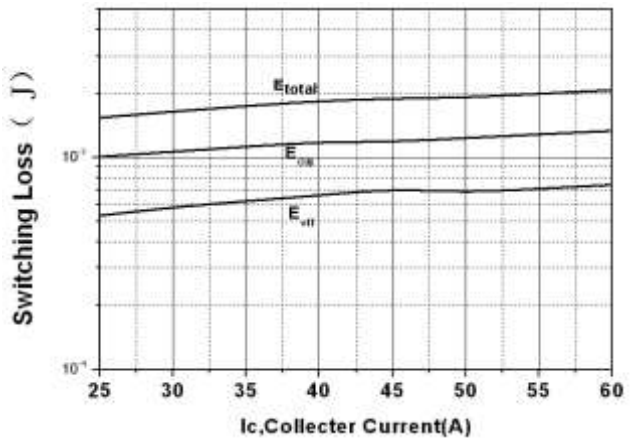
Switching Loss vs. IC(25℃)

VGE=15V,VCE=400V,Rg=7.9Ω



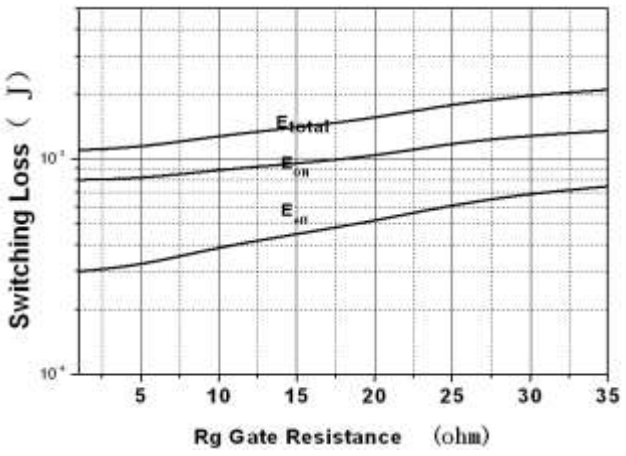
Switching Loss vs. IC(175℃)

VGE=15V,VCE=400V,Rg=7.9Ω



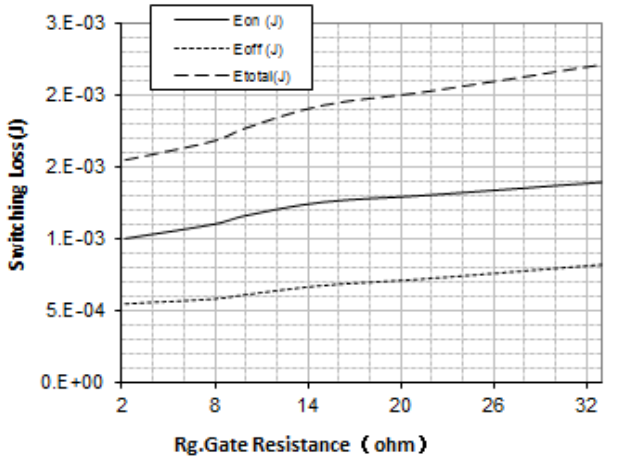
Switching Loss vs. Rg(25℃)

VGE=15V,VCE=400V, IC:30A



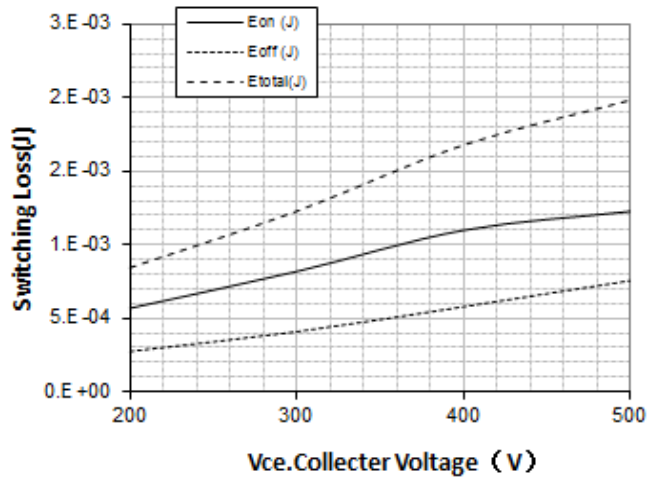
Switching Loss vs. Rg(175℃)

VGE=15V,VCE=400V, IC:30A



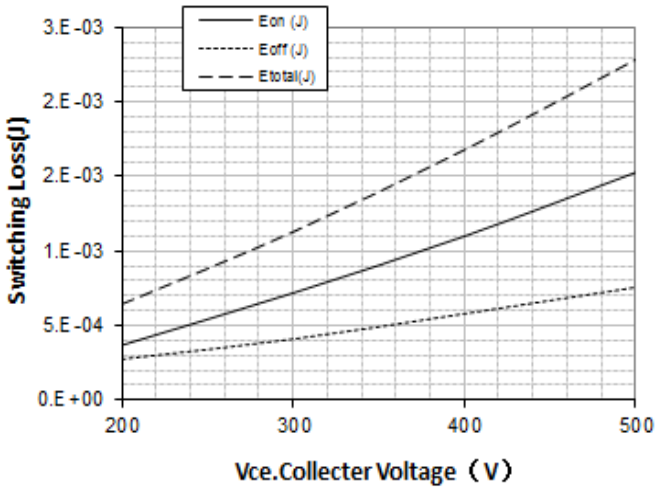
Switching Loss vs. VCE(25℃)

VGE=15V, IC:30A,Rg=7.9Ω

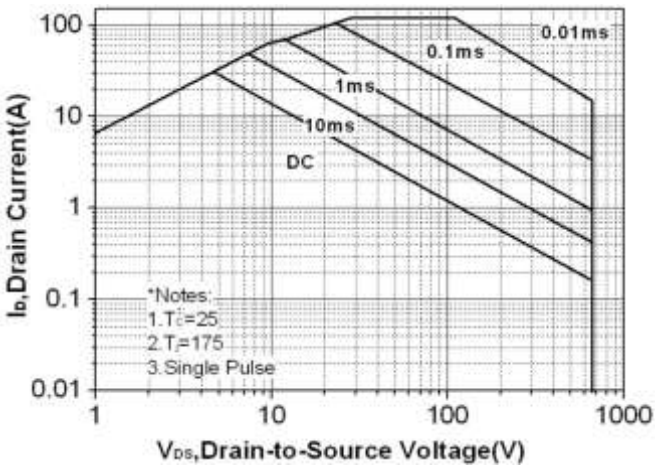


Switching Loss vs. VCE(175℃)

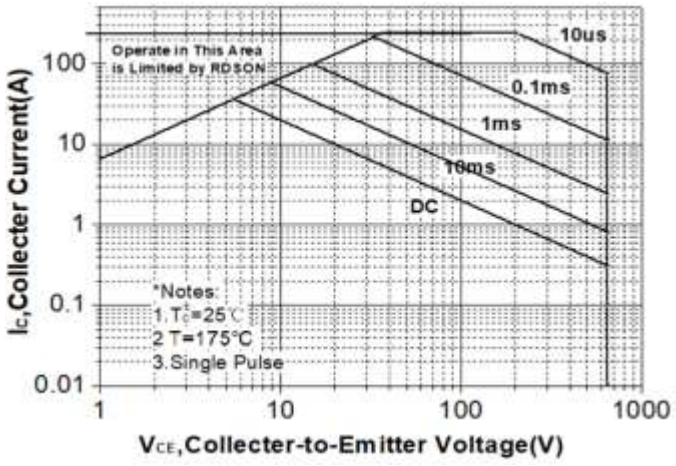
VGE=15V, IC:30A,Rg=7.9Ω



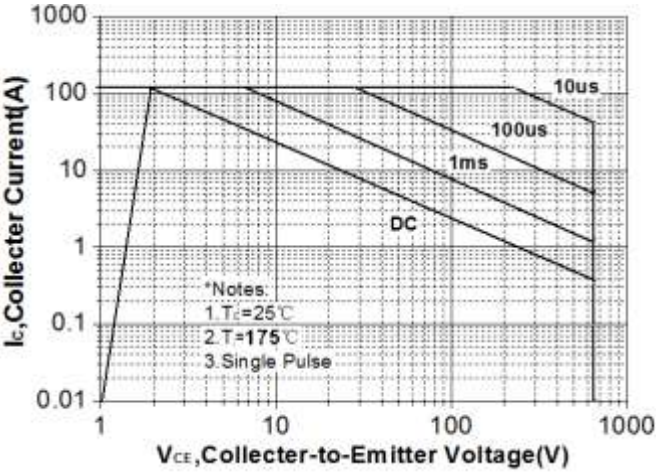
Safe Operating Area For TO-220MF



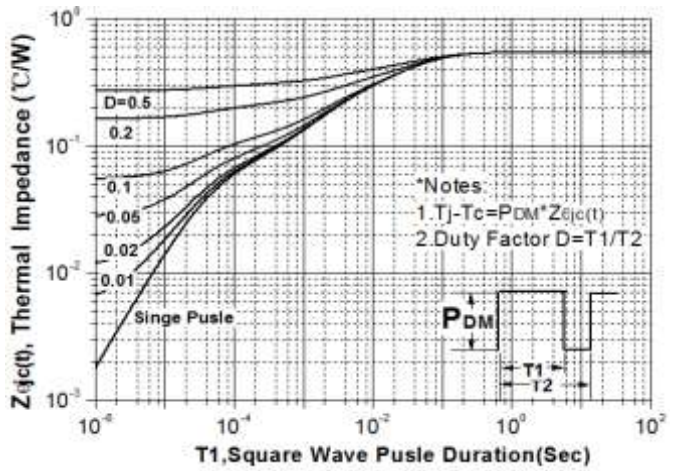
Safe Operating Area For TO-263

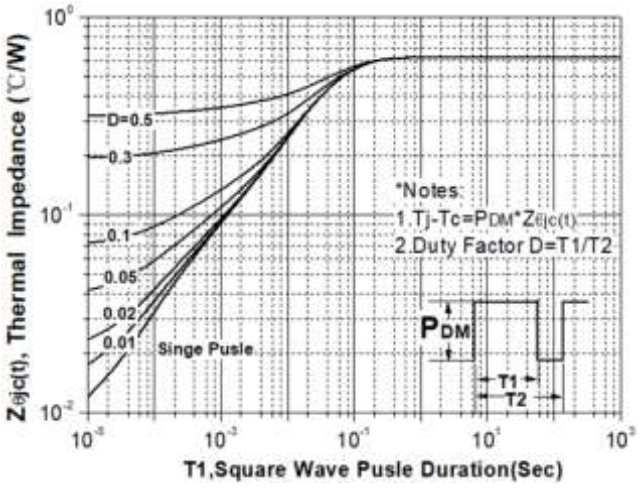
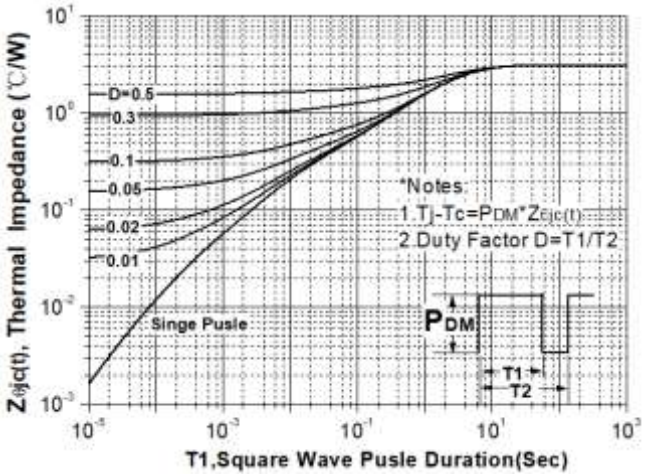
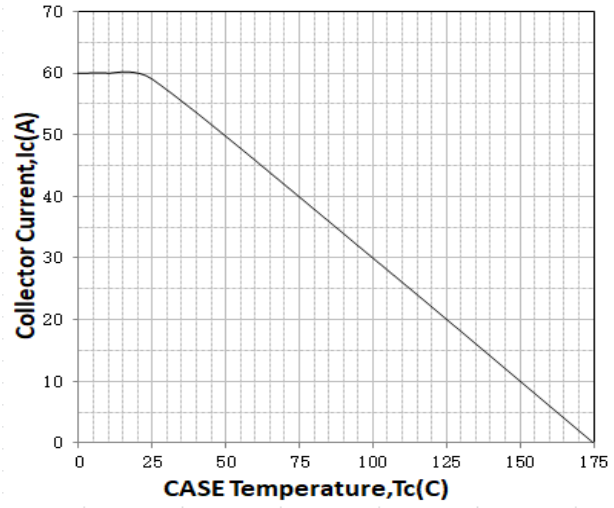


Safe Operating Area For TO-247



Transient Thermal Impedance for TO-247

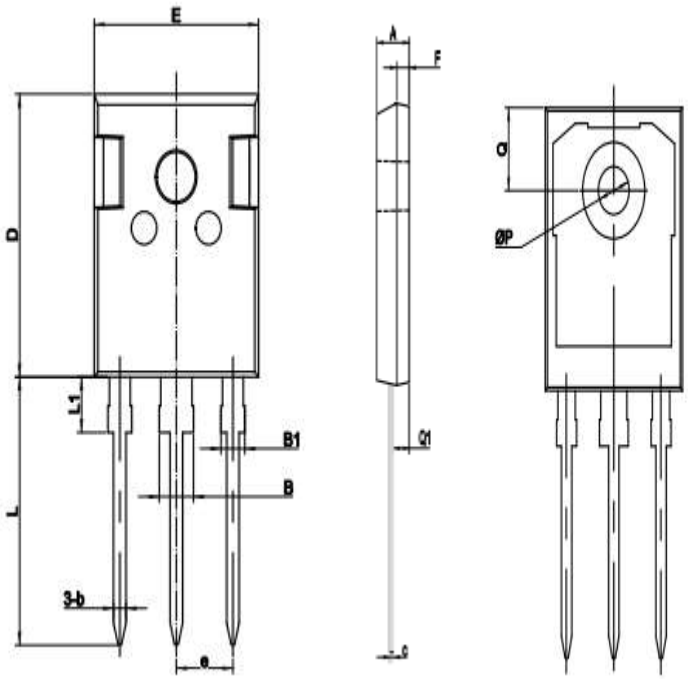


Transient Thermal Impedance for TO-263	Transient Thermal Impedance for TO-220MF
	
Colletcor current vs.case temperature VGE≥15V，Tj≤175℃	
	

外形尺寸 **PACKAGE MECHANICAL DATA**

TO-247

单位 Unit：mm

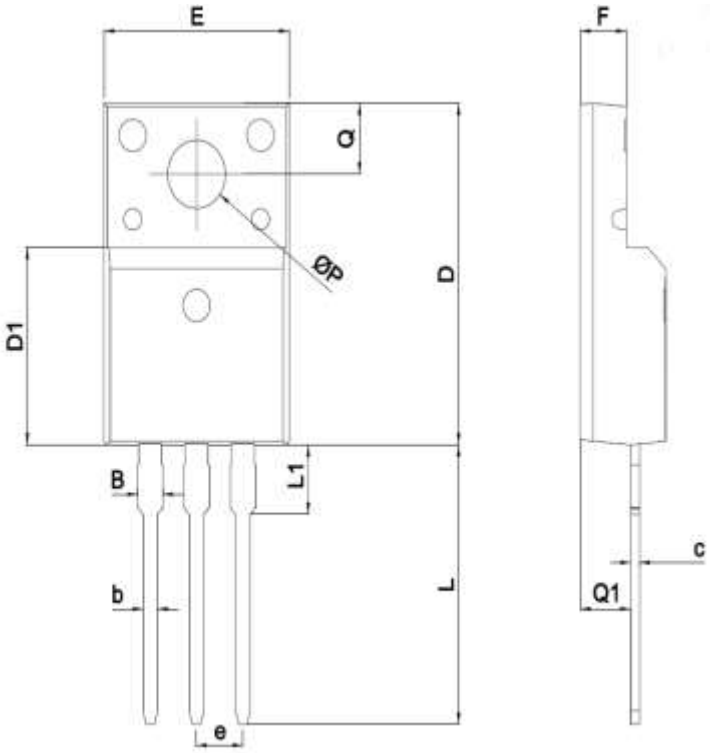


符号 symbol	mm	
	MIN	MAX
A	4.90	5.10
B	2.95	3.35
B1	1.95	2.35
b	1.15	1.35
c	0.50	0.70
D	20.90	21.10
E	15.70	15.90
e	5.34	5.54
F	1.90	2.10
L	19.40	20.40
L1	4.03	4.23
Q	6.00	6.40
Q1	2.30	2.50
P	3.50	3.70

外形尺寸 **PACKAGE MECHANICAL DATA**

TO-220MF

单位 Unit：mm

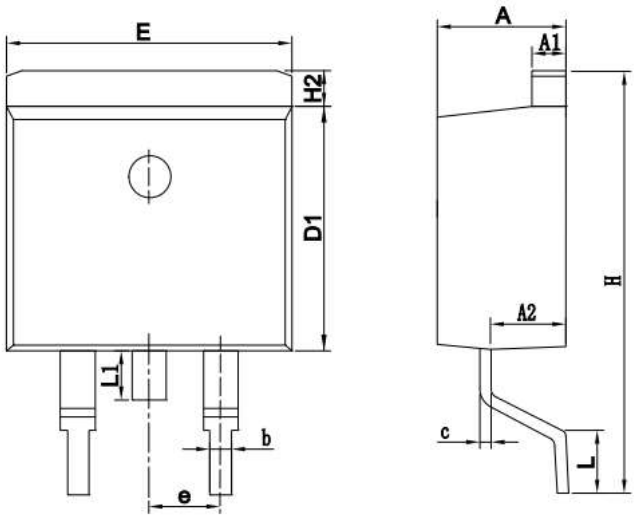


SYMBOL	mm	
	MIN	MAX
A	4.5	4.9
B		1.47
b	0.7	0.9
c	0.45	0.60
D	15.67	16.07
D1	9.04	9.20
e	2.54TYPE	
E	9.96	10.36
F	2.34	2.74
L	12.58	13.38
L1	3.13	3.33
Q	3.2	3.4
Q1	2.56	2.96
ΦP	3.08	3.28

外形尺寸 PACKAGE MECHANICAL DATA

TO-263

单位 Unit:mm



SYMBOL	MIN	MAX
A	4.30	4.80
A1	1.12	1.42
A2	2.54	2.84
b	0.67	1.00
c	0.29	0.52
D1	8.40	9.00
E	9.80	10.46
e	2.54 BSC	
H	14.00	16.00
H2	1.12	1.45
L	1.50	3.10
L1	1.45	1.70

注意事项

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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。

NOTE

1. Jilin Sino-microelectronics co., Ltd sales its product either through direct sales or sales agent , thus, for customers, when ordering , please check with our company.
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.

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