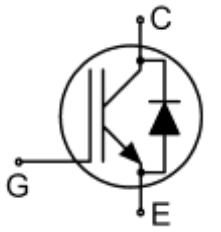
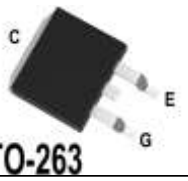
JT030N065WED/FED/SED

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

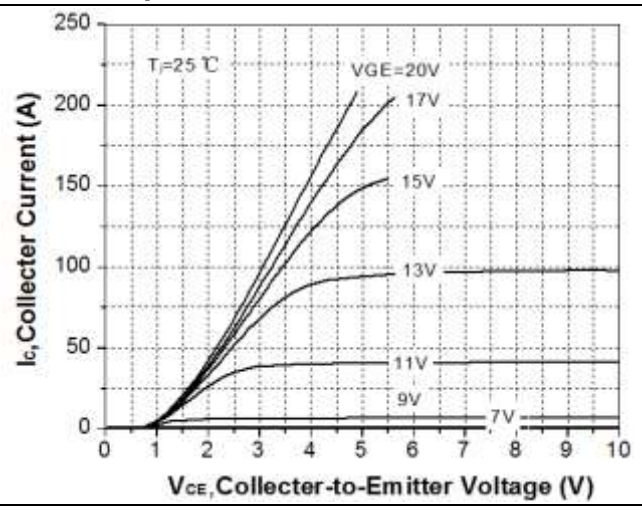
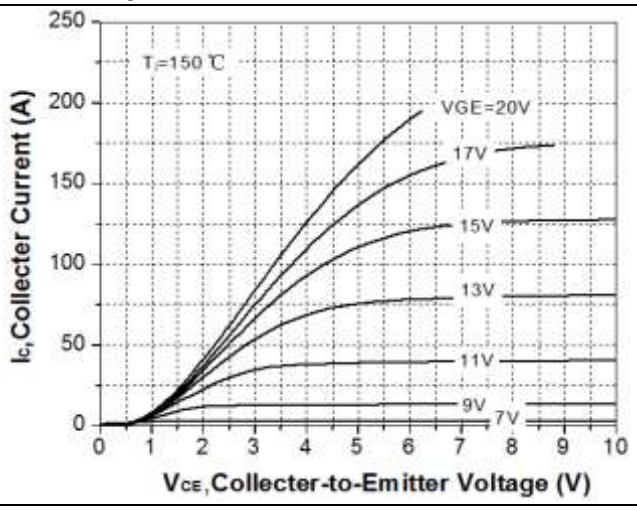
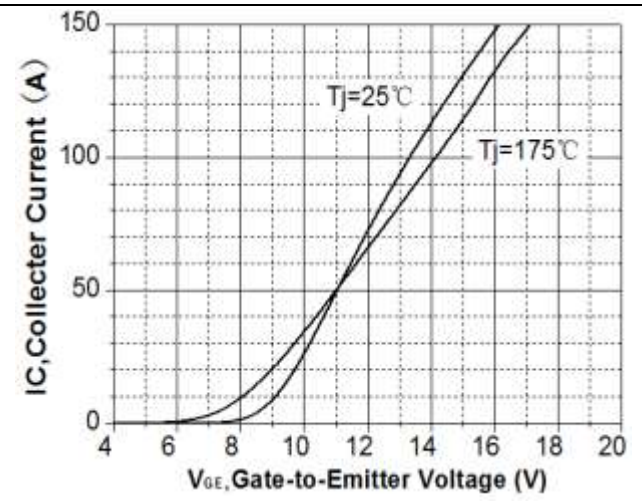
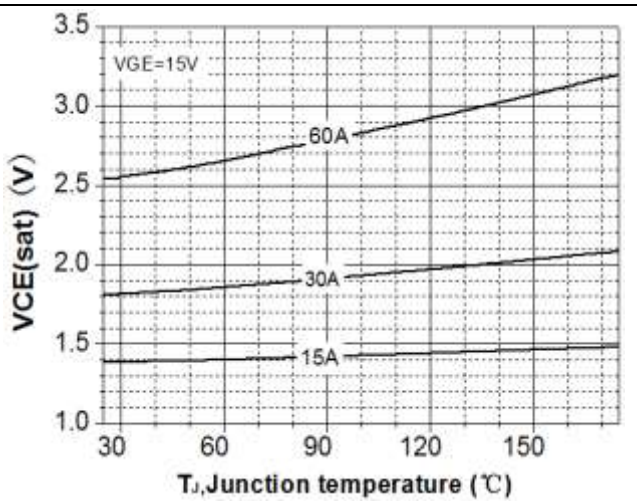
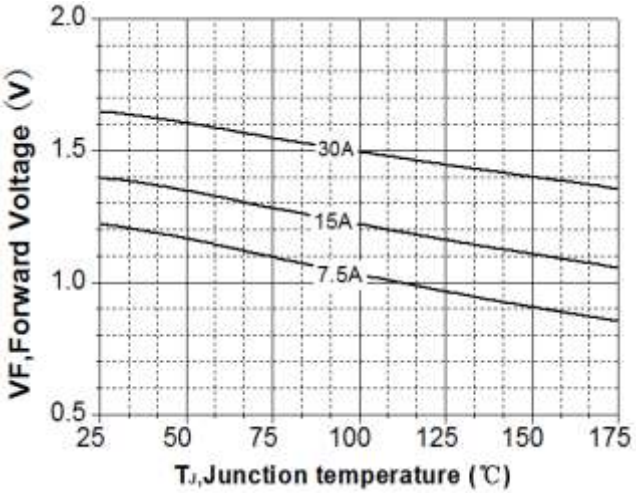
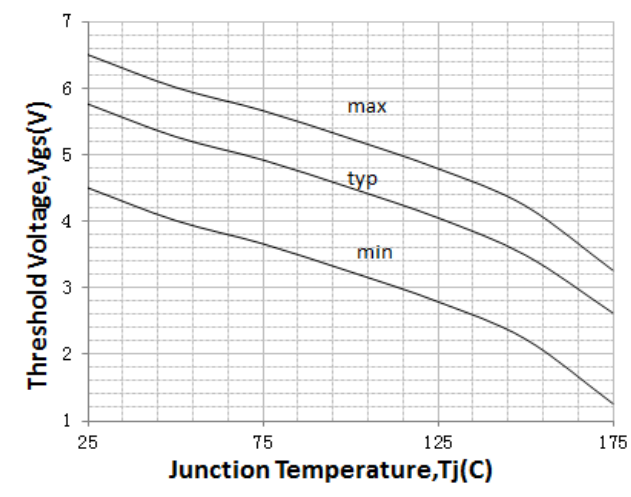
项　　目 Parameter	符　号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单位 Units
关态特性 Off –Characteristics						
集电极－发射极击穿电压 Collector-emitter Voltage	BVCES	IC=250μA, VGE=0V	650	-	-	V
零栅压下集电极漏电流 Zero gate voltage collector current	ICES	VCE=650V,　VGE=0V, TC=25℃	-	-	20	μA
		VCE=650V,　VGE=0V, TC=175℃	-	-	2	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

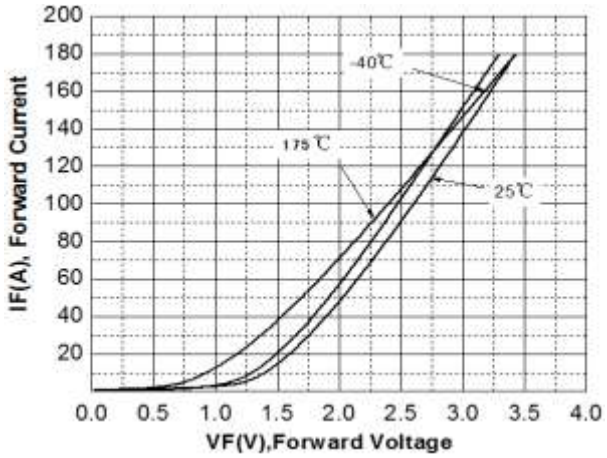
项　　目 **Parameter**	符　号 **Symbol**	最大 **MAX**			单 位 **Unit**
		JT030N065WED	JT030N065FED	JT030N065SED	
结到管壳的热阻 Thermal resistance, junction to case	Rth(j-c)	0.64	3.23	0.65	℃/W
结到环境的热阻 Thermal resistance, junction to ambient	Rth(j-A)	40	43.2	54.1	℃/W

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
	

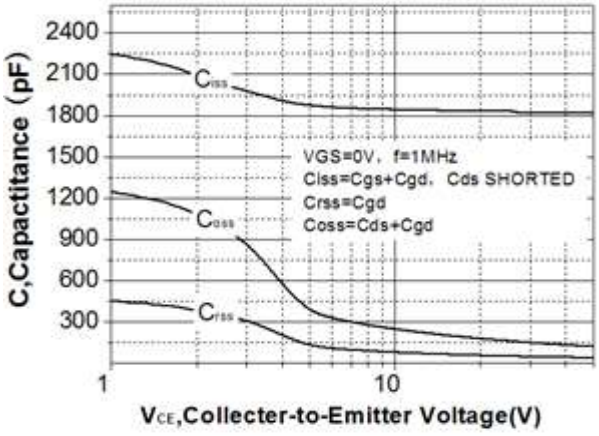
Diode Characteristic

Tj=25℃、175℃



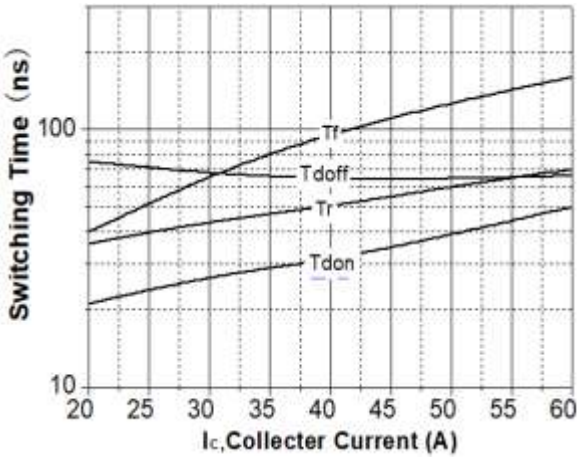
Capacitance Characteristic

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



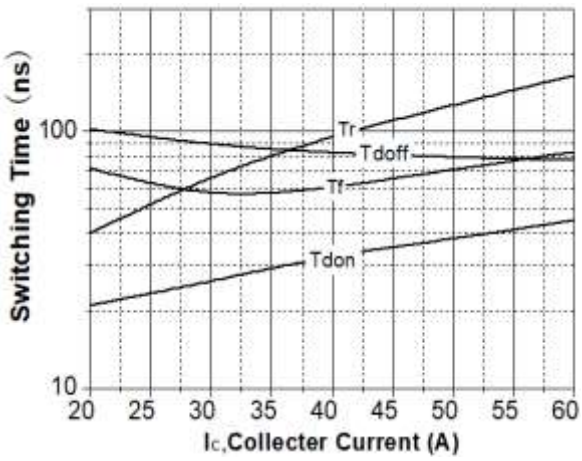
Switching Time vs. IC(25℃)

VCE=400V,VGE=15V, RG=7.9Ω



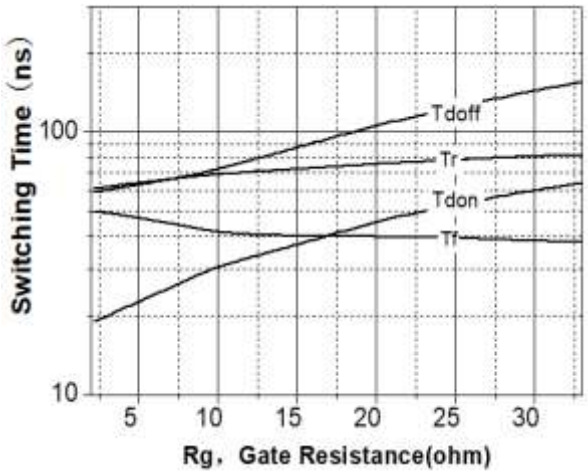
Switching Time vs. IC(175℃)

VCE=400V,VGE=15V, RG=7.9Ω



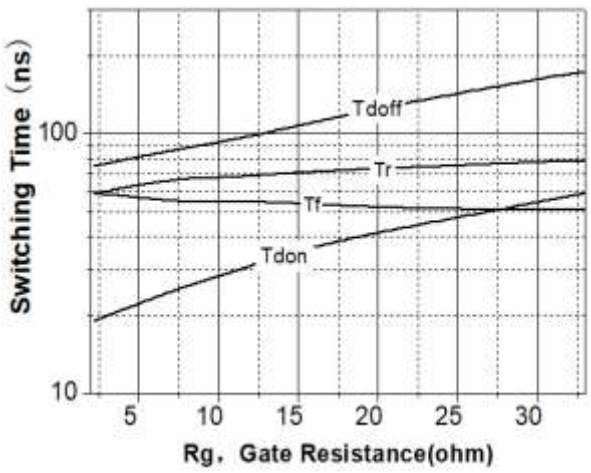
Switching Time vs. Rg(25℃)

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



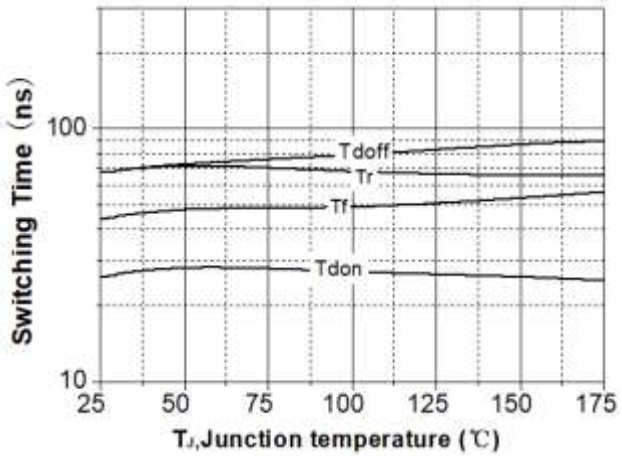
Switching Time vs. Rg(175℃)

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



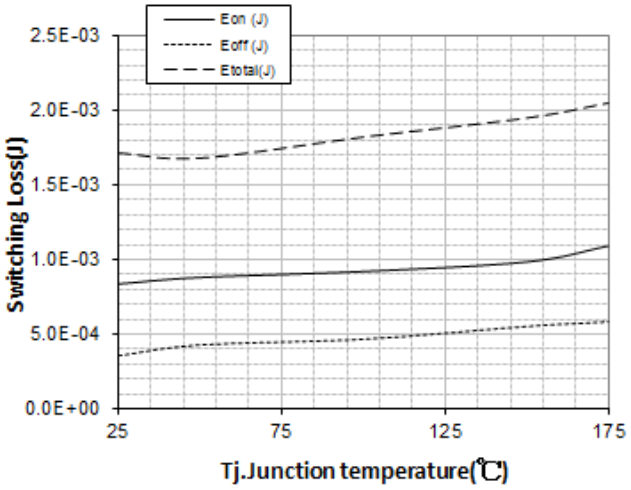
Switching Time vs.Tj

VGE=15V，VCE=400V，IC=30A，Rg=7.9Ω



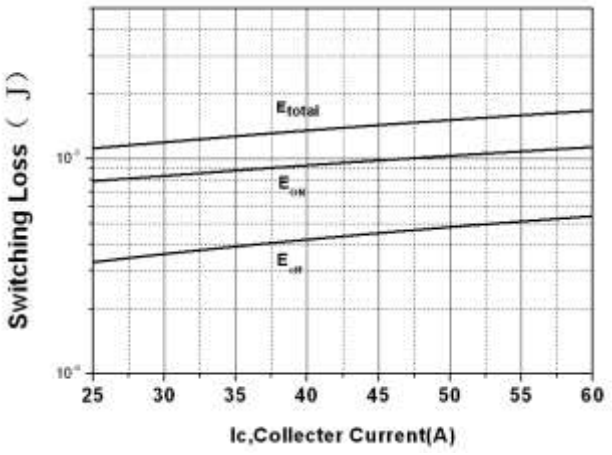
Switching Loss vs. Tj

VGE=15V，VCE=400V，IC=30A ，Rg=7.9Ω



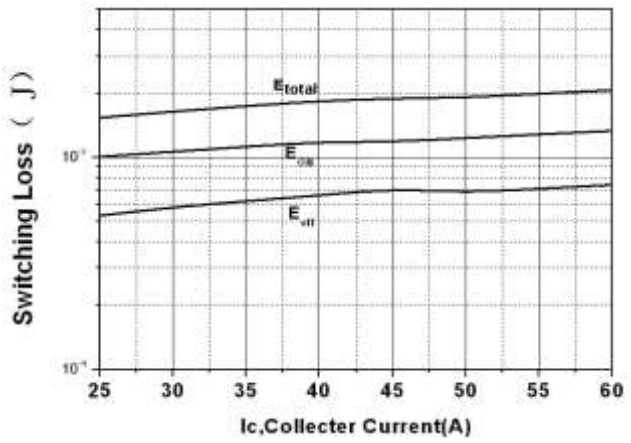
Switching Loss vs. IC(25℃)

VGE=15V,VCE=400V,Rg=7.9Ω



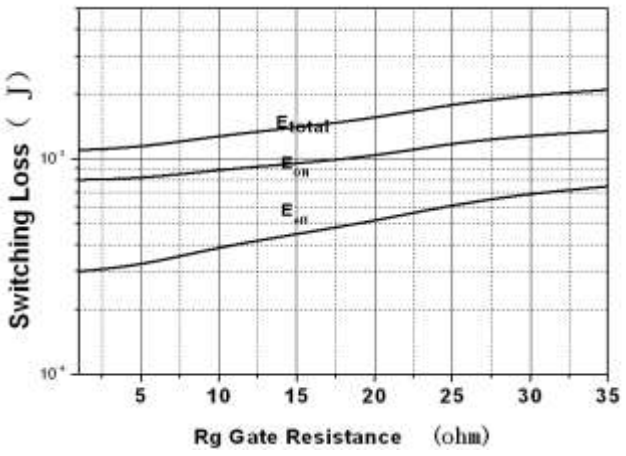
Switching Loss vs. IC(175℃)

VGE=15V,VCE=400V,Rg=7.9Ω



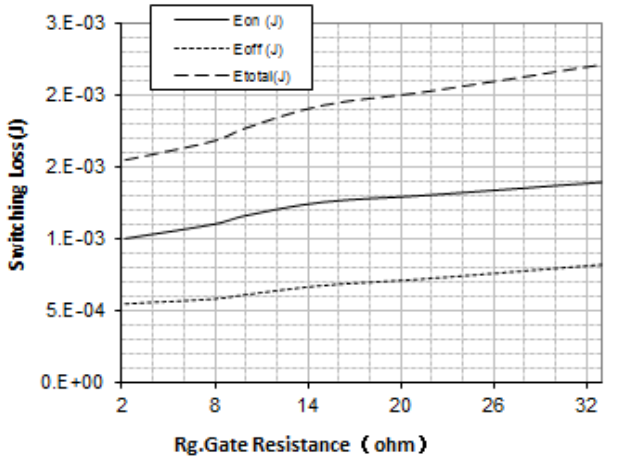
Switching Loss vs. Rg(25℃)

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



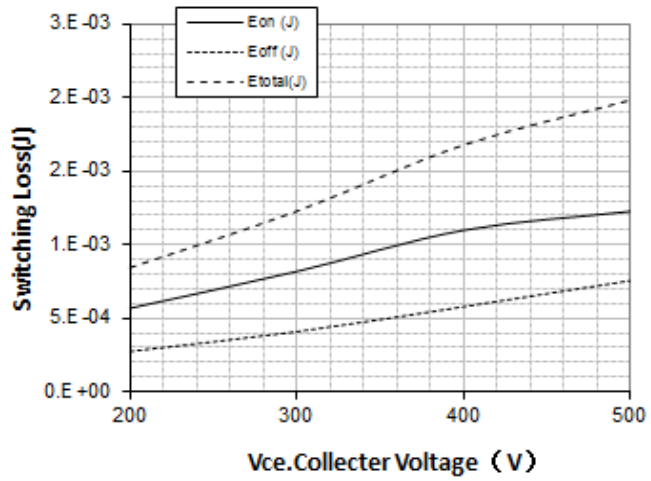
Switching Loss vs. Rg(175℃)

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



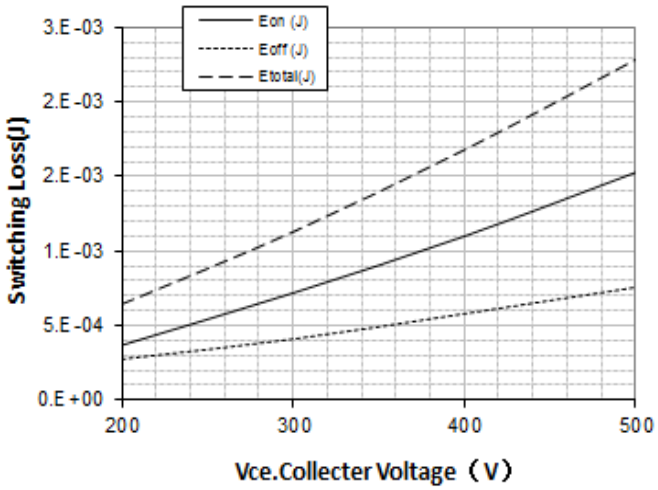
Switching Loss vs. VCE(25℃)

VGE=15V, IC:30A,Rg=7.9Ω

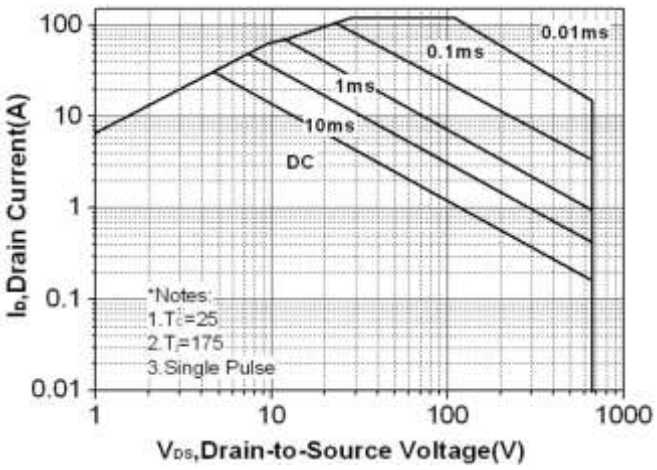


Switching Loss vs. VCE(175℃)

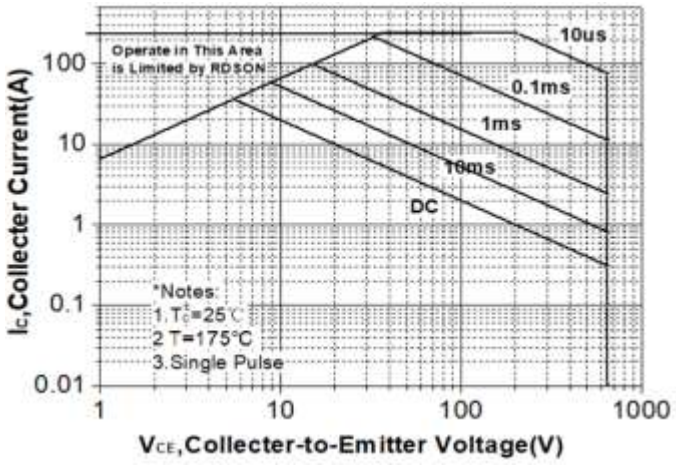
VGE=15V, IC:30A,Rg=7.9Ω



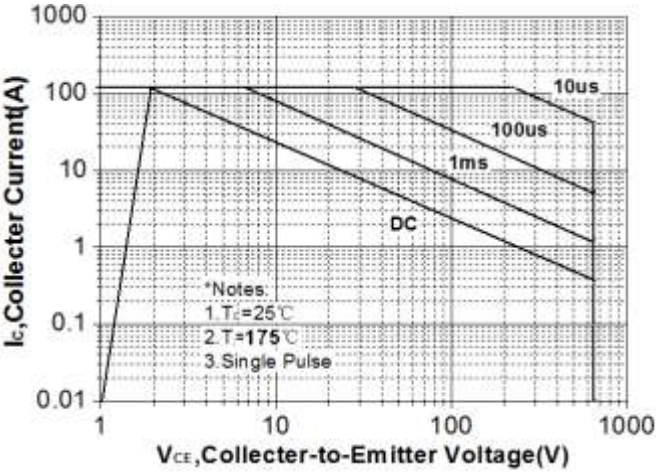
Safe Operating Area For TO-220MF



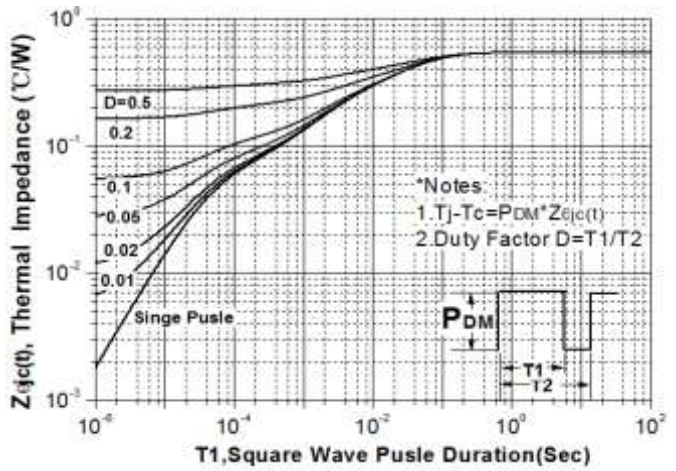
Safe Operating Area For TO-263

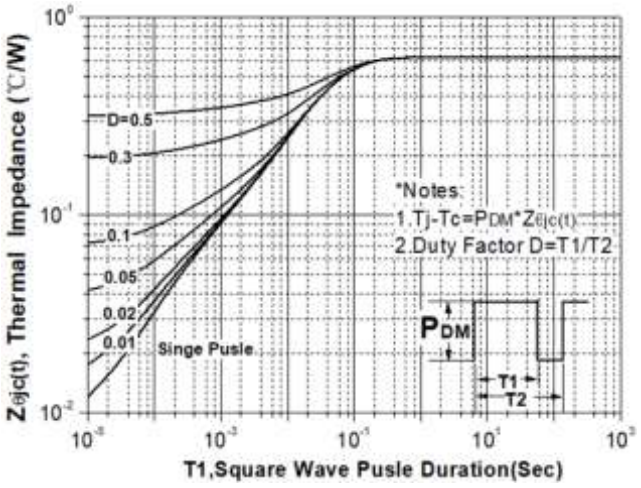
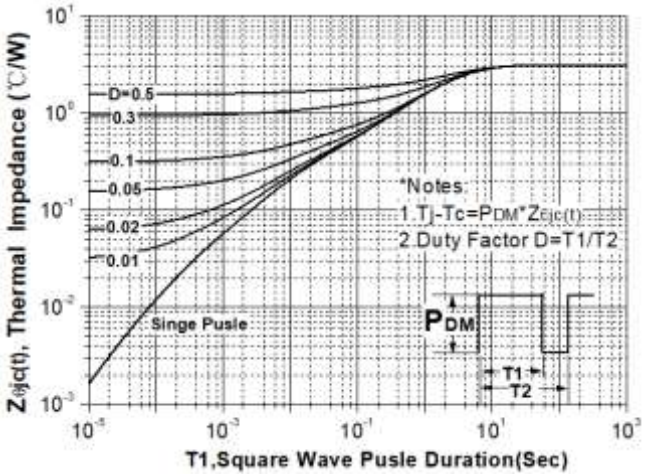
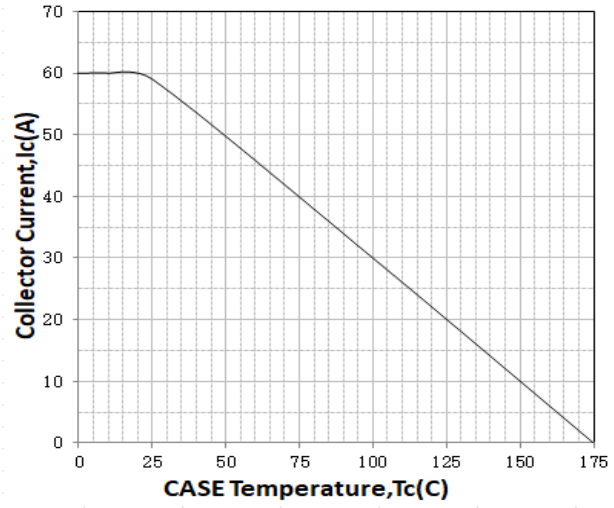


Safe Operating Area For TO-247



Transient Thermal Impedance for TO-247

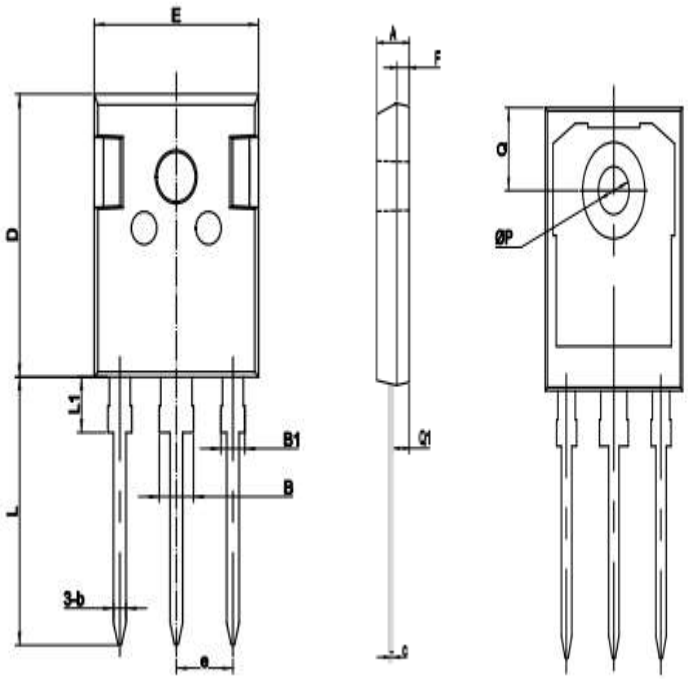


Transient Thermal Impedance for TO-263	Transient Thermal Impedance for TO-220MF
	
Colletcor current vs.case temperature VGE≥15V，Tj≤175℃	
	

外形尺寸 **PACKAGE MECHANICAL DATA**

TO-247

单位 Unit：mm

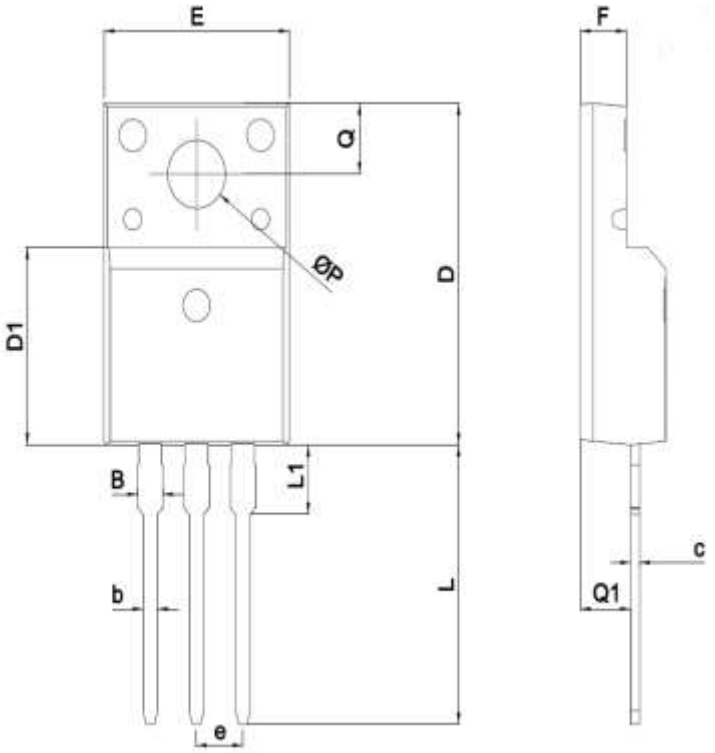


符号 symbol	mm	
	MIN	MAX
A	4.90	5.10
B	2.95	3.35
B1	1.95	2.35
b	1.15	1.35
c	0.50	0.70
D	20.90	21.10
E	15.70	15.90
e	5.34	5.54
F	1.90	2.10
L	19.40	20.40
L1	4.03	4.23
Q	6.00	6.40
Q1	2.30	2.50
P	3.50	3.70

外形尺寸 **PACKAGE MECHANICAL DATA**

TO-220MF

单位 Unit：mm

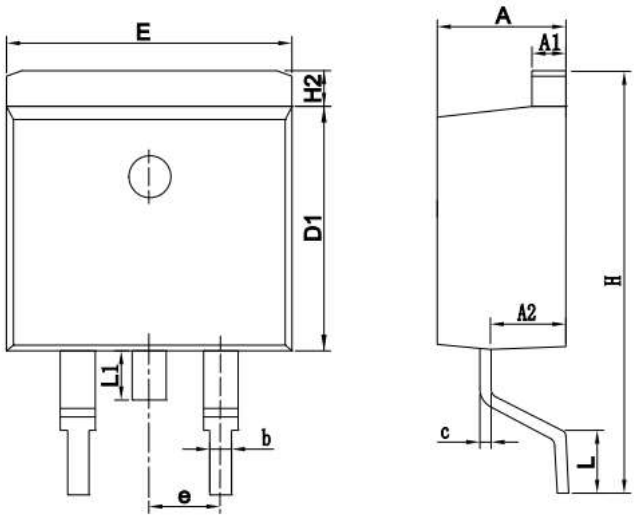


SYMBOL	mm	
	MIN	MAX
A	4.5	4.9
B		1.47
b	0.7	0.9
c	0.45	0.60
D	15.67	16.07
D1	9.04	9.20
e	2.54TYPE	
E	9.96	10.36
F	2.34	2.74
L	12.58	13.38
L1	3.13	3.33
Q	3.2	3.4
Q1	2.56	2.96
ΦP	3.08	3.28

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