



JT020N135WED

主要参数 MAIN CHARACTERISTICS

I _c	20 A
V _{CEs}	1350V
V _{CEsAT-TYP (V_{GE}=15V)}	1.7V

用途

- IH 感应加热
- 逆变式微波炉
- 软交换应用

产品特性

- 低栅极电荷
- Trench FS 技术,
- 通态压降:
V_{CE(sat)}, typ = 1.7V
I_c = 20A and T_c = 25°C
- RoHS 产品

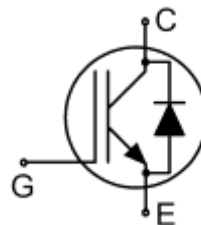
APPLICATIONS

- Induction heating(IH)
- Inverterized microwave ovens
- Soft switching applications

FEATURES

- Low gate charge
- Trench FS Technology,
- Saturation voltage:
V_{CE(sat)}, typ = 1.7V
I_c = 20A and T_c = 25°C
- 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		
JT020N135WED-GE-B	JT020N135WED-GE-BR	N/A	N/A	JT020N135WED	TO-247

绝对最大额定值 ABSOLUTE RATINGS (T_C=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-Emmitter Voltage	V _{CES}	1350	V
*连续集电极电流 Collector Current-continuous	I _C T=25℃	40	A
	I _C T=100℃	20	A
最大脉冲集电极极电流 Collector Current – pulse (note 1)	I _{CM}	60	A
非重复峰值集电极电流 Non repetitive peak collector current1)	I _{CSM}	200	A
二极管正向电流 Diode forward current	I _F T=25℃	40	A
	I _F T=100℃	20	A
二极管正向脉冲电流 Diode pulse current	I _{FSM}	60	A
最高栅极发射极电压 Gate-Emmitter Voltage	V _{GES}	±25	V
安全工作区 Turn-off safe operating area	-	60	A
耗散功率 Power Dissipation	P _D T _C =25℃	510	W
	P _D T _C =100℃	255	W
结温 Operating junction temperature	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	℃





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-Emmitter Voltage	BV_{CES}	$I_C=250\mu A, V_{GE}=0V$	1350	-	-	V
零栅压下集电极漏电流 Zero Gate Voltage Collector Current	I_{CES}	$V_{CE}=1350V, V_{GE}=0V, T_C=25^\circ C$	-	-	100	μA
		$V_{CE}=1350V, V_{GE}=0V, T_C=175^\circ C$	-	-	2.5	mA
正向栅极体漏电流 Gate-body leakage current, forward	I_{GESF}	$V_{CE}=0V, V_{GE}=20V$	-	-	100	nA
反向栅极体漏电流 Gate-body leakage current, reverse	I_{GESR}	$V_{CE}=0V, V_{GE}=-20V$	-	-	-100	nA
通态特性 On-Characteristics						
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}	$V_{GE}=15V, I_C=20A, T_C=25^\circ C$	-	1.7	2.1	V
		$V_{GE}=15V, I_C=20A, T_C=125^\circ C$	-	1.9	-	V
		$V_{GE}=15V, I_C=20A, T_C=175^\circ C$	-	2.0	-	V
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{ies}	$V_{CE}=25V, V_{GE}=0V, f=1.0MHz$	-	3060	-	pF
输出电容 Output capacitance	C_{oes}		-	90	-	pF
反向传输电容 Reverse transfer capacitance	C_{res}		-	33	-	pF
栅极电荷总量 Total Gate Charge	Q_g	$V_{CC}=880V, I_C=20A, V_{GE}=15V, T_C=25^\circ C$	-	130	-	nC
栅极-反射极 Gate to emitter charge	Q_{ge}		-	30	-	
栅极-集电极 Gate to collector charge	Q_{gc}		-	55	-	



**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	$t_{d(on)}$	$V_{CC}=600V, I_c=20A, R_G=10\Omega$ $V_{GE}=15V, T_C=25^\circ C$	-	30	-	ns
上升时间 Turn-On rise time	t_r		-	46	-	ns
关断延迟时间 Turn-Off delay time	$t_{d(off)}$		-	144	-	ns
下降时间 Turn-Off Fall time	t_f		-	164	-	ns
开通损耗 Turn-On energy	Eon		-	0.61	-	mJ
关断损耗 Turn-off energy	Eoff		-	1.1	-	mJ
总开关损耗 Total switching energy	Etot		-	1.71	-	mJ
开启延迟时间 Turn-On delay time	$t_{d(on)}$	$V_{CC}=600V, I_c=20A, R_G=10\Omega$ $V_{GE}=15V, T_C=175^\circ C$	-	26	-	ns
上升时间 Turn-On rise time	t_r		-	42	-	ns
关断延迟时间 Turn-Off delay time	$t_{d(off)}$		-	188	-	ns
下降时间 Turn-Off Fall time	t_f		-	374	-	ns
开通损耗 Turn-On energy	Eon		-	0.91	-	mJ
关断损耗 Turn-off energy	Eoff		-	1.77	-	mJ
总开关损耗 Total switching energy	Etot		-	2.68	-	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	$V_{GE}=0V, I_F=20A, T_C=25^\circ C$	-	1.6	2.0	V
反向恢复时间 Diode Reverse recovery time	t_{rr}	$V_{GE}=0V, V_R=600V, I_F=20A$ $di_F/dt=200A/\mu s$	-	230	-	ns
反向恢复电荷 Diode Reverse recovery charge	Qrr	$T_C=25^\circ C$	-	5560	-	nC

热特性 THERMAL CHARACTERISTIC

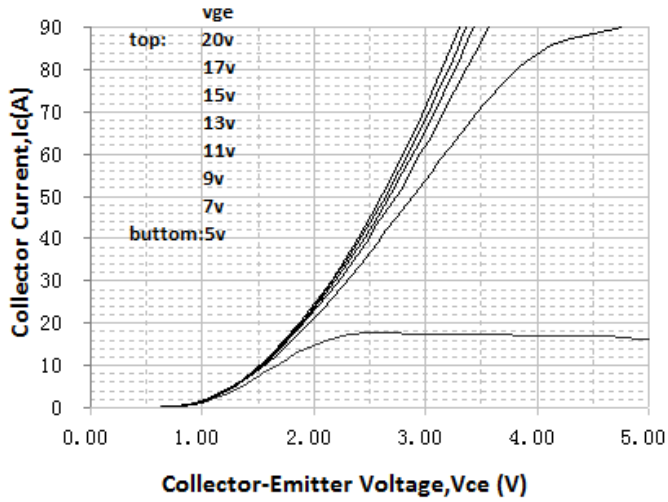
项 目 Parameter	符 号 Symbol	典型 Typ		单 位 Unit
		IGBT	Diode	
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.294	1.128	$^\circ C/W$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	34.58	36.05	$^\circ C/W$



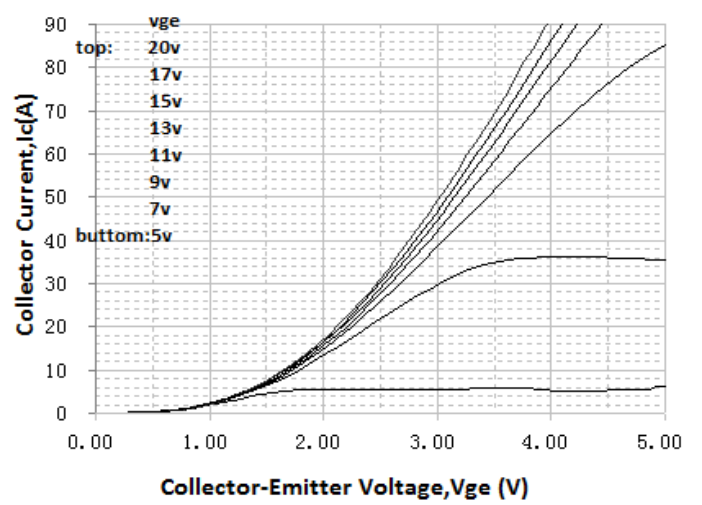


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

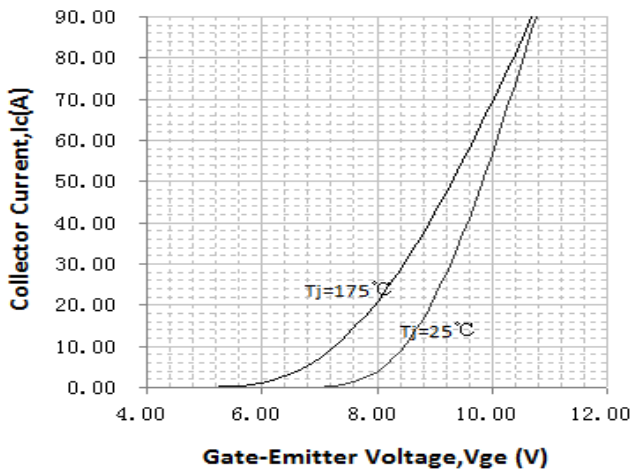
Output Characteristics (25°C)



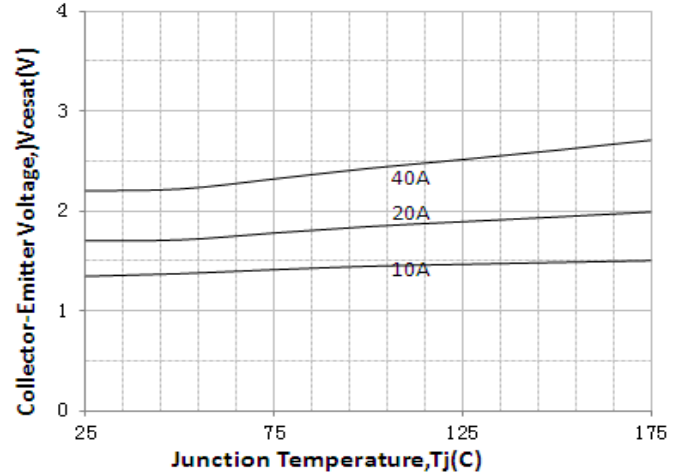
Output Characteristics (175°C)



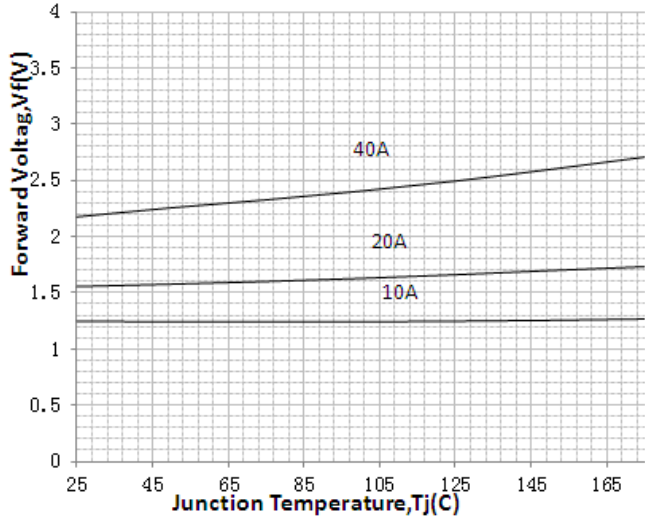
Transfer Characteristics



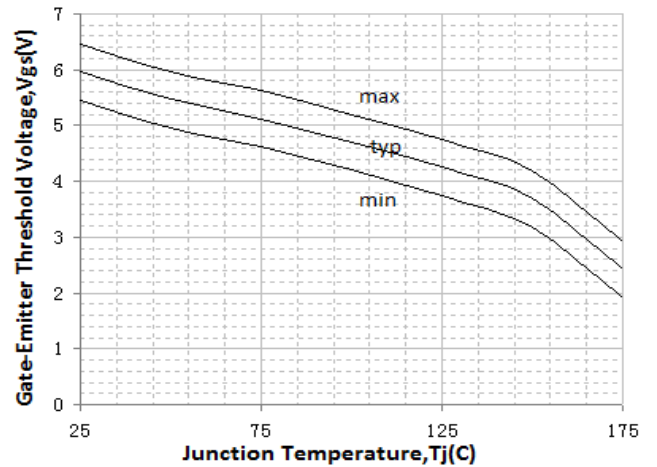
Vcesat vs. Tj

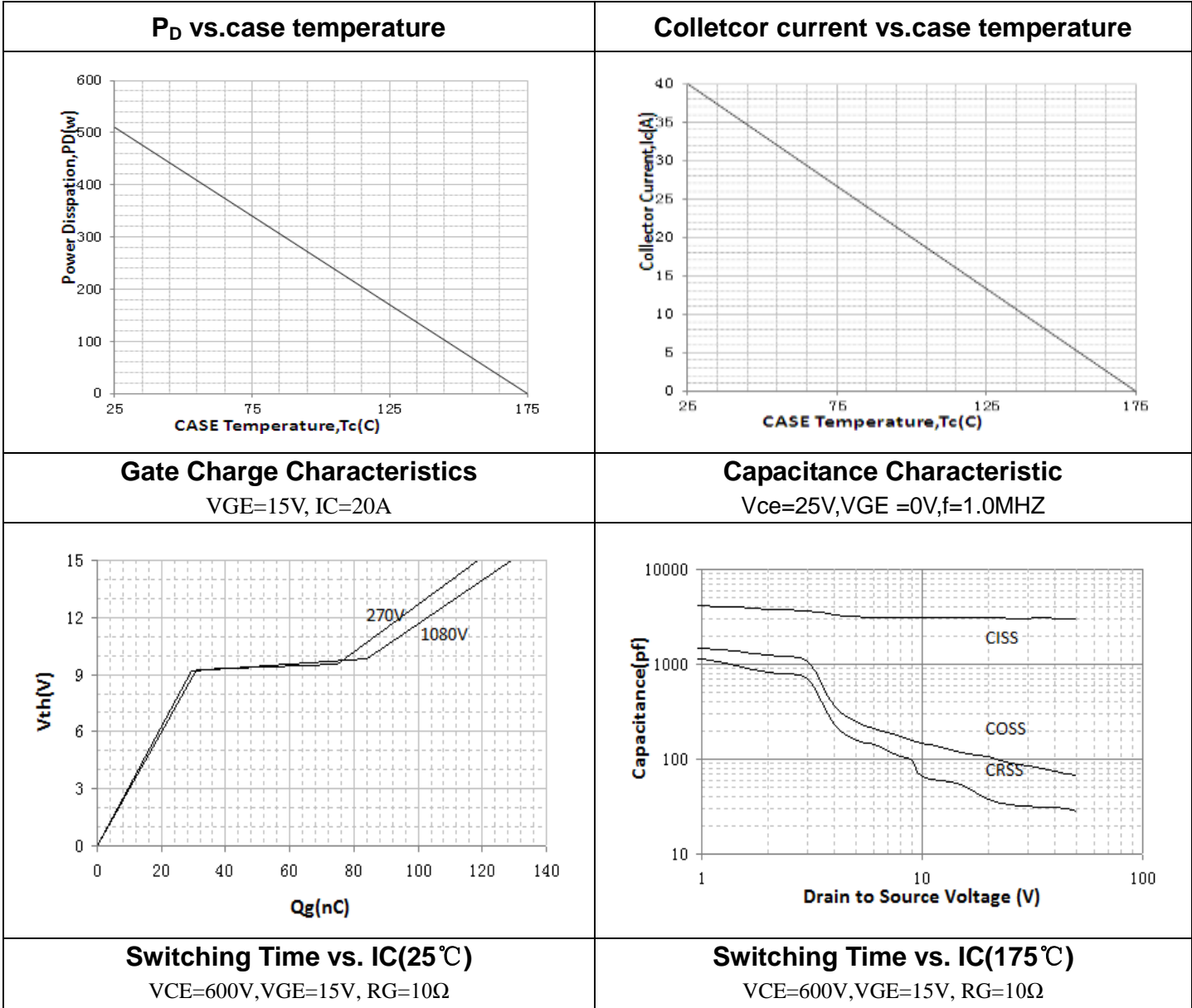


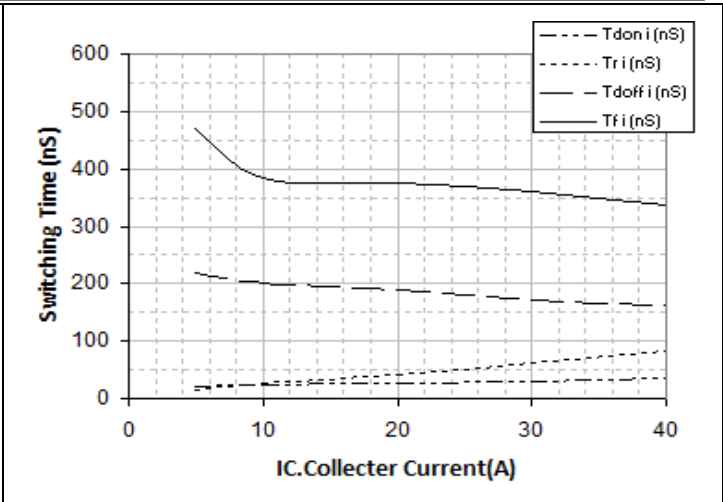
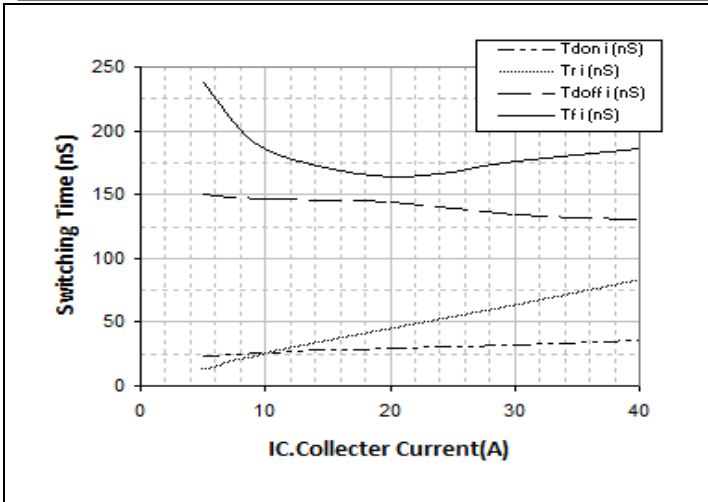
VF vs. Tj



VTH vs. Tj





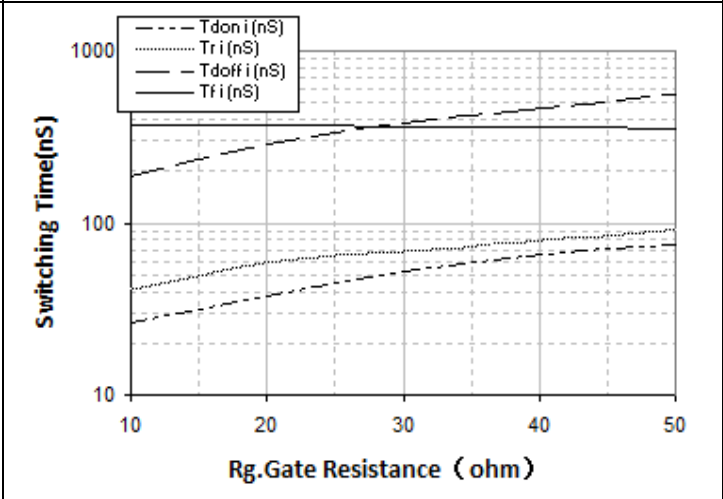
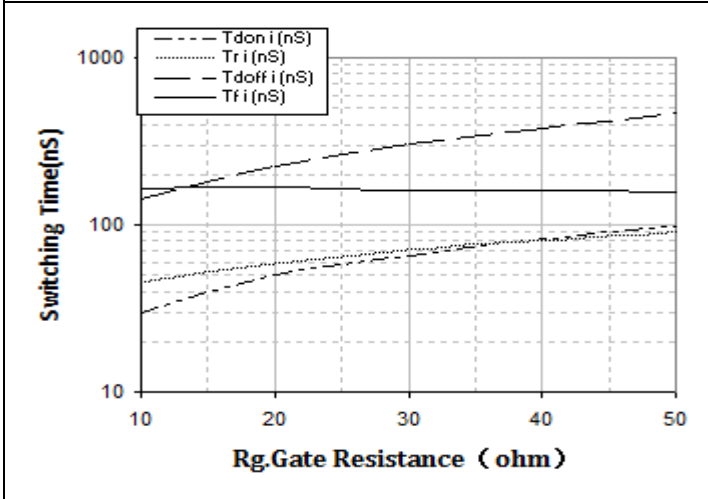


Switching Time vs. Rg(25°C)

VGE=15V, VCE=600V, IC=20A

Switching Time vs. Rg(175°C)

VGE=15V, VCE=600V, IC=20A

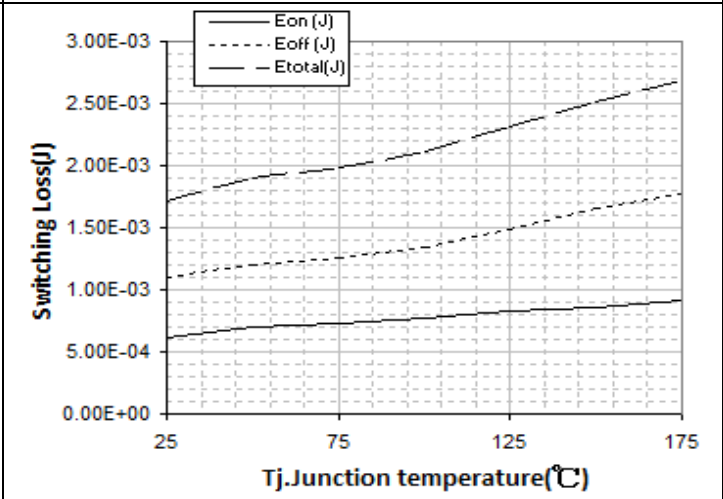
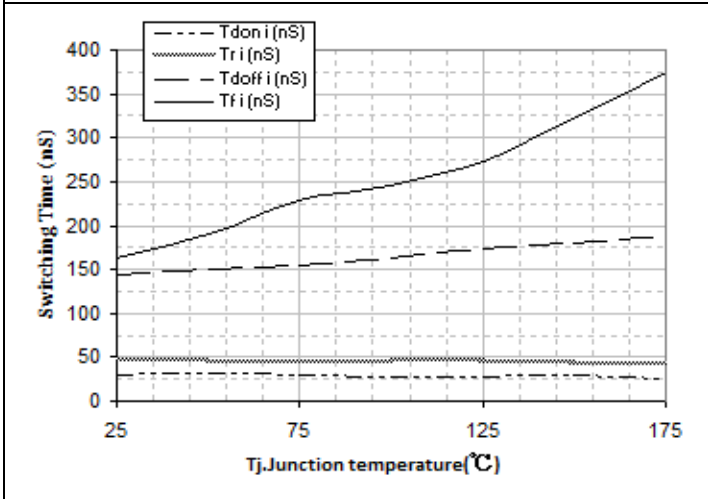


Switching Time vs. Tj

VGE=15V, VCE=600V, IC=20A, Rg=10Ω

Switching Loss vs. Tj

VGE=15V, VCE=600V, IC=20A, Rg=10Ω

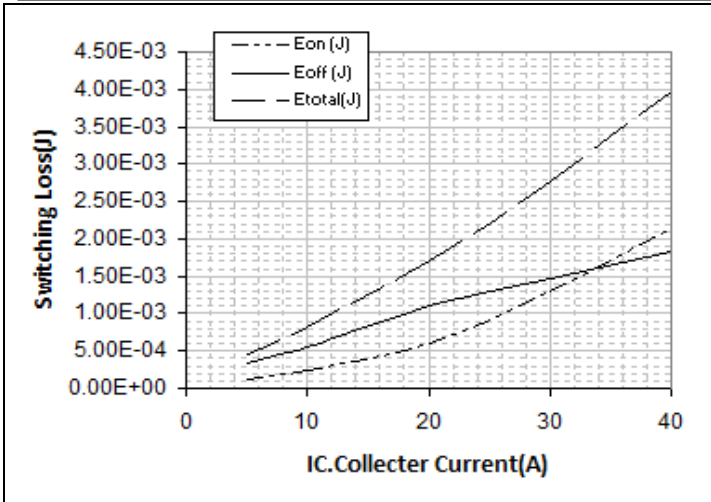


Switching Loss vs. IC(25°C)

VGE=15V, VCE=600V, Rg=10Ω

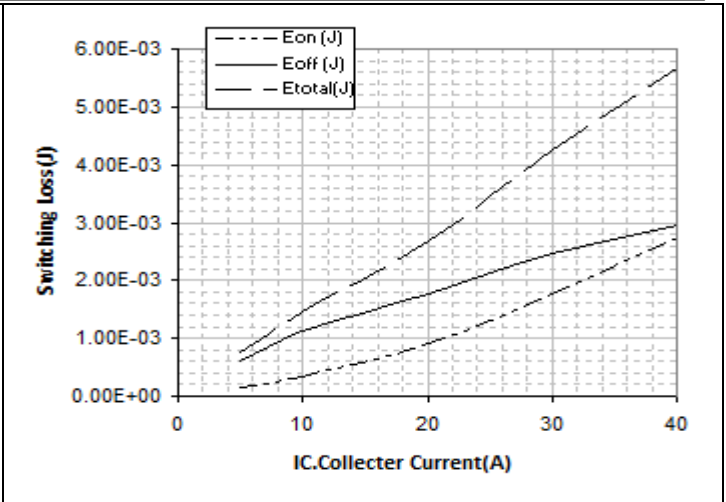
Switching Loss vs. IC(175°C)

VGE=15V, VCE=600V, Rg=10Ω



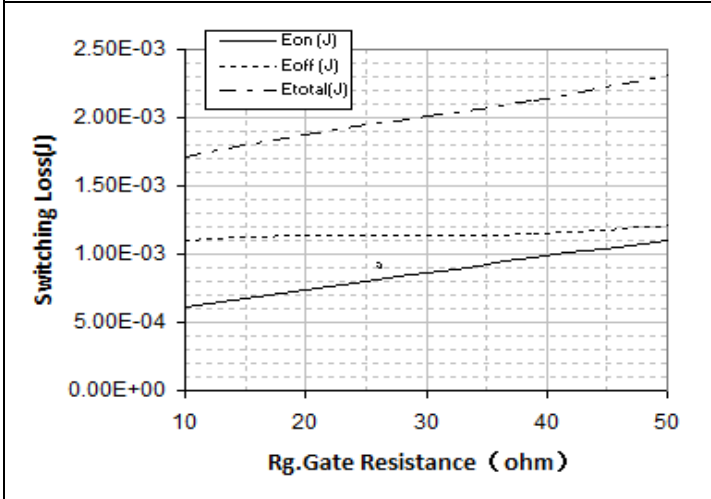
Switching Loss vs. Rg(25°C)

VGE=15V, VCE=600V, IC=20A



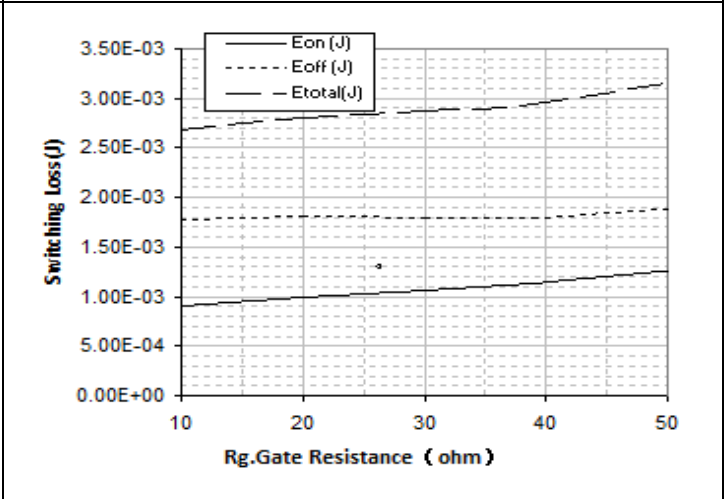
Switching Loss vs. Rg(175°C)

VGE=15V, VCE=600V, IC=20A



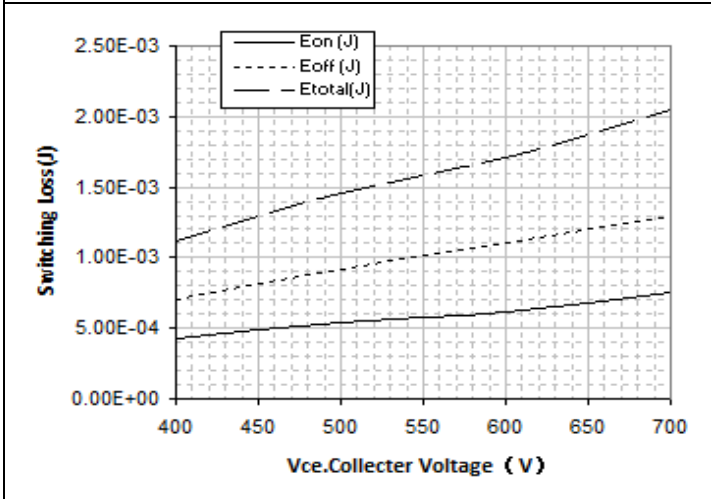
Switching Loss vs. Vce(25°C)

VGE=15V, IC=20A, Rg=10Ω

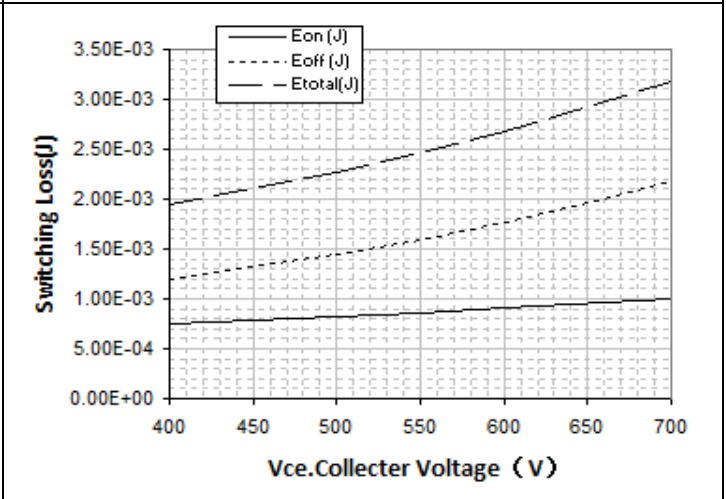


Switching Loss vs. Vce(175°C)

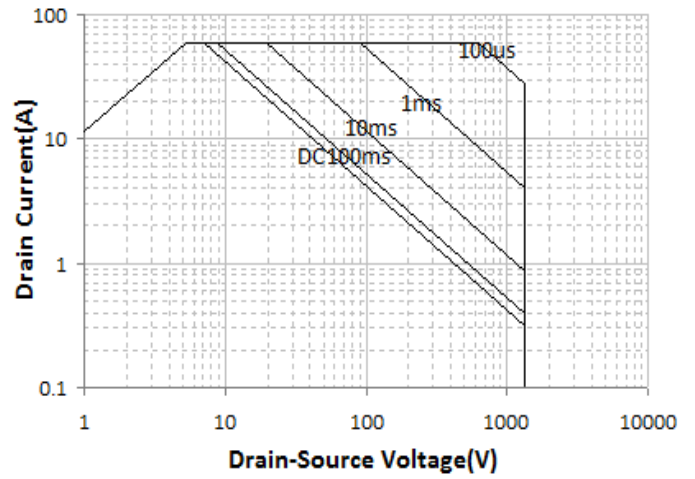
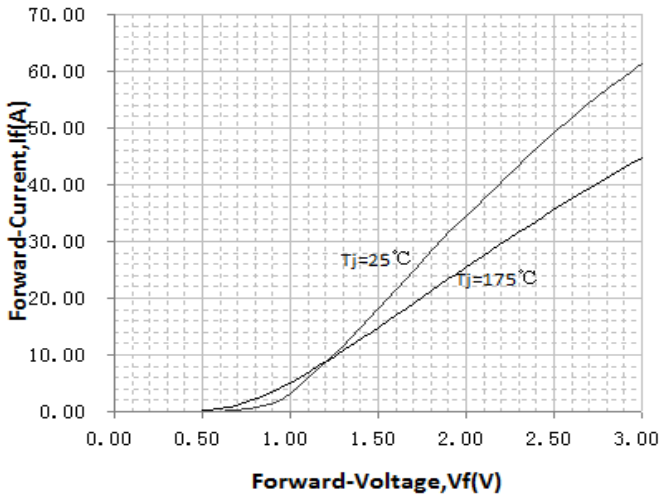
VGE=15V, IC=20A, Rg=10Ω



Diode Characteristic

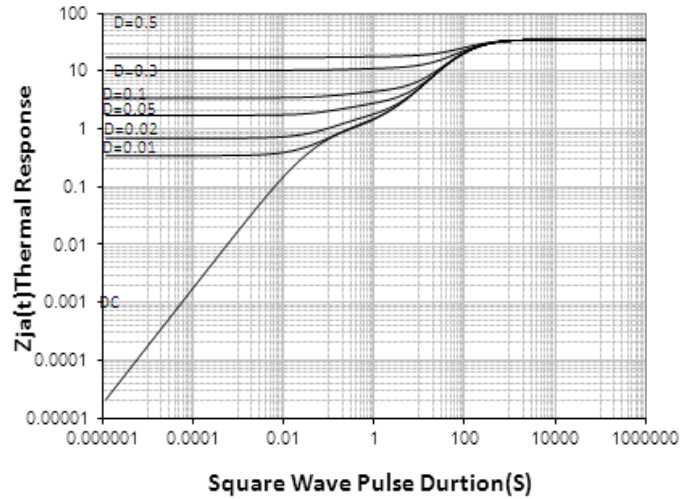
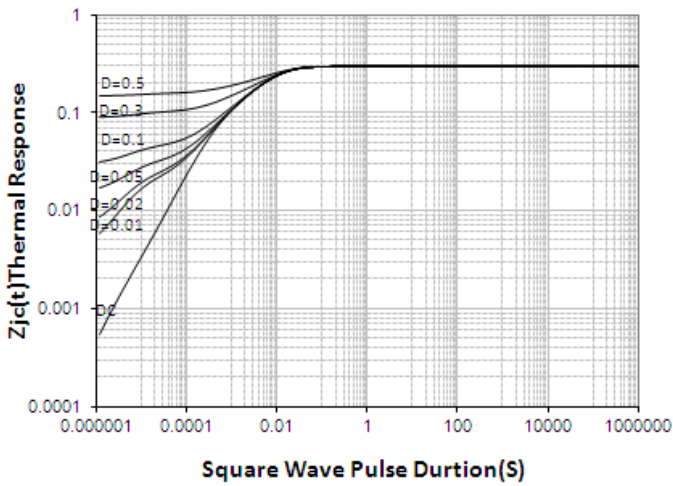


Forward Bias SOA



Normalized Maximum Transient Thermal Impedance for IGBT(RJC)

Normalized Maximum Transient Thermal Impedance for IGBT(RJA)

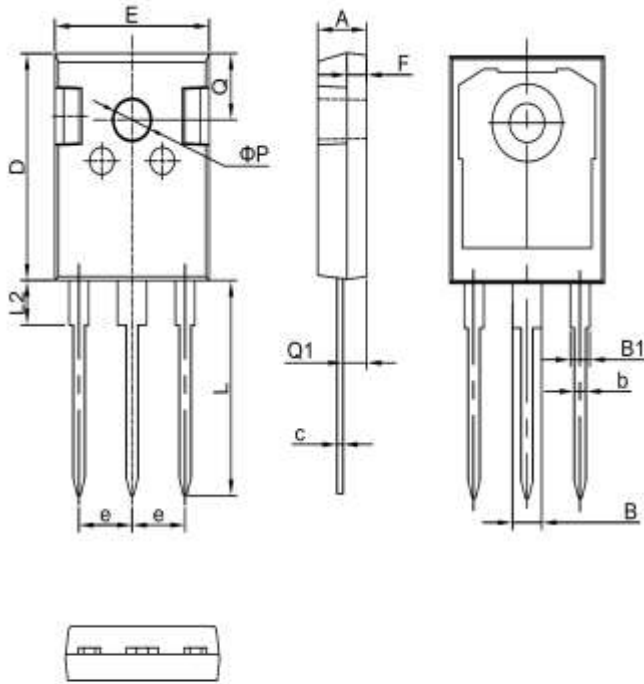




外形尺寸 PACKAGE MECHANICAL DATA

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. Please do not exceed the absolute maximum ratings of the device when circuit designing.
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