



JT020N065SED

主要参数 MAIN CHARACTERISTICS

I _C	20 A
V _{CE} S	650V
V _{cesat} -typ (@V _{ge} =15V)	1. 6V

用途

- 逆变器
- UPS 电源

APPLICATIONS

- General purpose inverters
- UPS

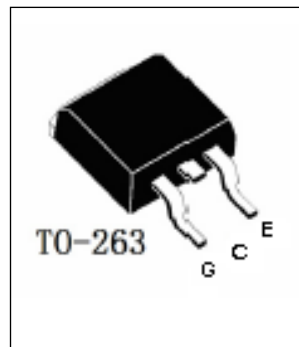
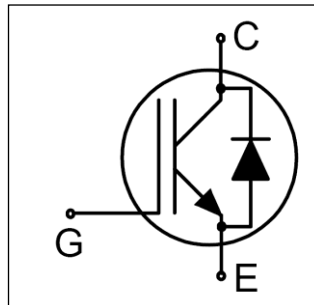
产品特性

- 低栅极电荷
- Trench FS 技术,
- 通态压降, V_{CE}(sat), typ = 1.6V @ I_C =20A and TC = 25°C
- RoHS 产品

FEATURES

- Low gate charge
- Trench FS Technology,
- saturation voltage: V_{CE}(sat), typ = 1.6V @ I_C = 20A and TC = 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 Non halogen-Tube	有卤-编带 Halogen-Reel	无卤-编带 Non halogen-Reel		
JT020N065SED-S-B	JT020N065SED-S-BR	JT020N065SED-S-A	JT020N065SED-S-AR	JT020N065SED	TO-263



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
		JT020N065SED	
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	40 ($T=25^{\circ}\text{C}$)	A
		20 ($T=100^{\circ}\text{C}$)	A
最大脉冲集电极极电流 (注 1) Collector Current – pulse (note 1)	I_{CM}	80	A
最高栅极发射极电压 Gate-Emmitter Voltage	V_{GES}	± 20	V
Turn-off safe area	-	80	A
耗散功率 Power Dissipation	P_D $T_C=25^{\circ}\text{C}$	227	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





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}	$I_C=500\mu A, V_{GE}=0V$	650	-	-	V
击穿电压温度特性 Breakdown Voltage Temperature Coefficient	$\Delta BV_{CES}/\Delta T_J$	$I_C=1mA$, referenced to $25^\circ C$	-	0.5	-	V/ $^\circ C$
零栅压下集电极漏电流 Zero Gate Voltage Collector Current	I_{CES}	$V_{CE}=650V, V_{GE}=0V, T_C=25^\circ C$	-	-	1	μA
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	$V_{GE(th)}$	$V_{CE} = V_{GE}, I_C=250\mu A$	4.5	-	6.5	V
饱和压降 Collector-Emmitter saturation Voltage	V_{CESAT}	$V_{GE}=15V, I_C=20A, T_C=25^\circ C$	-	1.6	2.0	V
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{ies}	$V_{CE}=25V, V_{GE}=0V, f=1.0MHz$	-	1173	-	pF
输出电容 Output capacitance	C_{oes}		-	128	-	pF
反向传输电容 Reverse transfer capacitance	C_{res}		-	28.7	-	pF
栅极电荷总量 Total Gate Charge	Q_g	$V_{CC}=400V, I_C=20A, R_G=10\Omega, V_{GE}=15V, T_C=25^\circ C$	-	43.9	-	nC
栅极-反射极 Gate to emitter charge	Q_{ge}		-	10.0	-	
栅极-集电极 Gate to collector charge	Q_{gc}		-	18.9	-	
栅极电阻-Gate resistance	R_g	$f=1MHz$, open collector	-	1.8	-	Ω
短路电流-short current	I_{sc}	$V_{GE}=15V, V_{CE}=360V, t \leq 10\mu s$	-	116.7	-	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	$t_{d(on)}$	$V_{CC}=400V, I_c=20A, R_G=10\Omega$ $V_{GE}=15V$ $T_C=25^\circ C$	-	16	-	ns
上升时间 Turn-On rise time	t_r		-	56	-	ns
关断延迟时间 Turn-Off delay time	$t_{d(off)}$		-	52	-	ns
下降时间 Turn-Off Fall time	t_f		-	82	-	ns
开通损耗 Turn-On energy	Eon		-	0.79	-	mJ
关断损耗 Turn-off energy	Eoff		-	0.3	-	mJ
总开关损耗 Total switching energy	Etot		-	1.09	-	mJ
开启延迟时间 Turn-On delay time	$t_{d(on)}$	$V_{CC}=400V, I_c=20A,$ $R_G=10\Omega \quad V_{GE}=15V$ $T_C=175^\circ C$	-	14.0	-	ns
上升时间 Turn-On rise time	t_r		-	54.0	-	ns
关断延迟时间 Turn-Off delay time	$t_{d(off)}$		-	76.0	-	ns
下降时间 Turn-Off Fall time	t_f		-	146.0	-	ns
开通损耗 Turn-On energy	Eon		-	0.8	-	mJ
关断损耗 Turn-off energy	Eoff		-	0.49	-	mJ
总开关损耗 Total switching energy	Etot		-	1.3	-	mJ

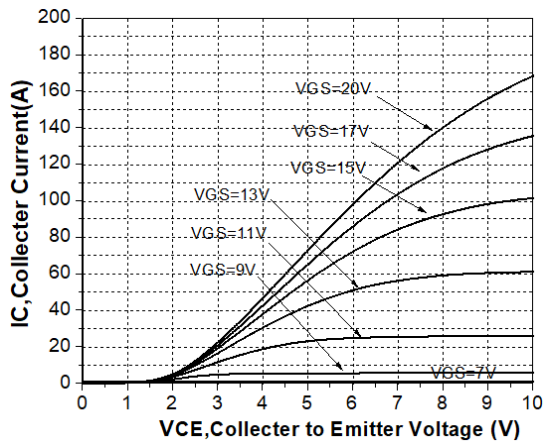
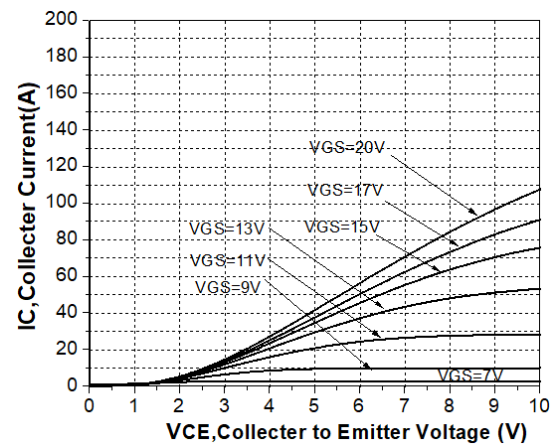
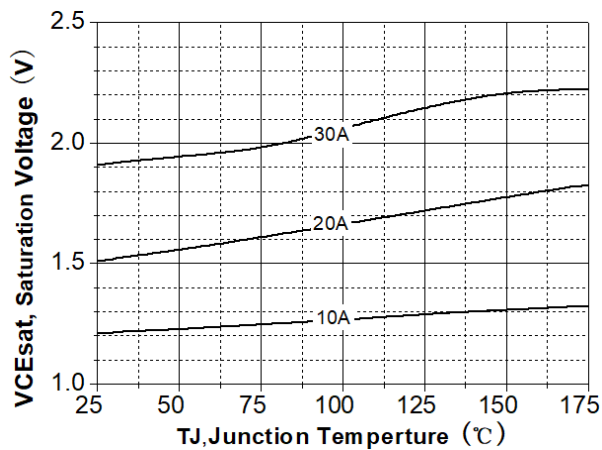
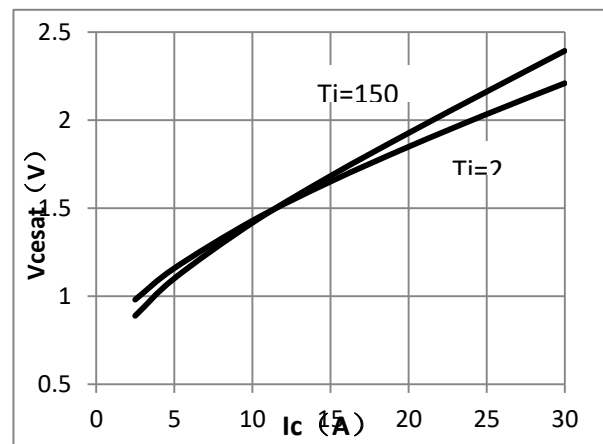
反并联二极管特性及最大额定值 Anti-Parallel Diode Characteristics and Maximum Ratings

正向压降 Drain-Source Diode Forward Voltage	V_F	$V_{GE}=0V, I_S=15A$	1.25	1.4	1.55	V
反向恢复时间 Diode Reverse recovery time	t_{rr}	$T_C=25^\circ C, I_S=20A, V_{GS}=0V,$ $di/dt=100A/\mu s$	-	254	-	ns
反向恢复电荷 Diode Reverse recovery charge	Qrr		-	347	-	nC
反向恢复电流 Diode Reverse recovery Current	I_{RRM}		-	2.7	-	A

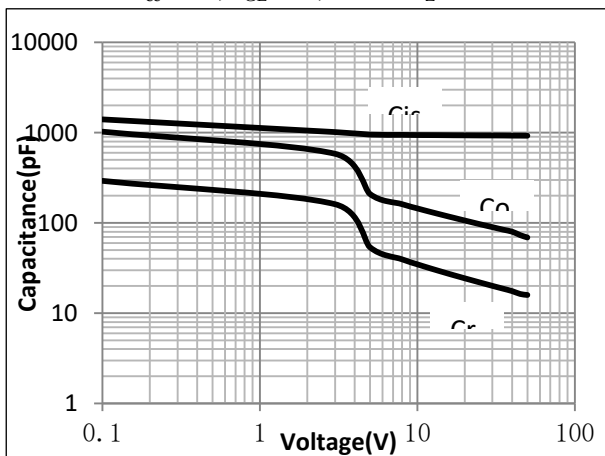
项 目 Parameter	符 号 Symbol	典型 Typ	单 位 Unit
		JT020N065SED	
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.55	$^\circ C/W$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	62.5	$^\circ C/W$



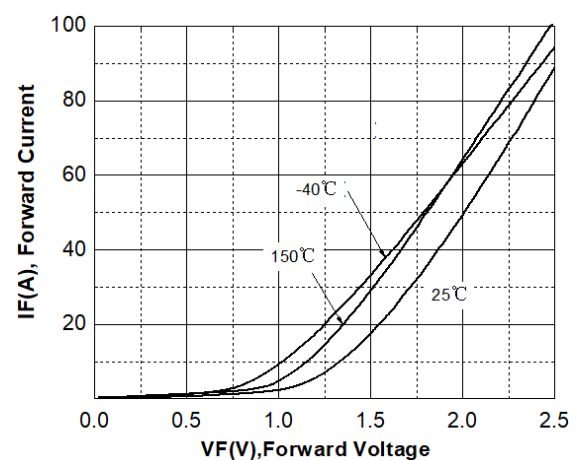
特征曲线 ELECTRICAL CHARACTERISTICS (curves)

Output Characteristics $T_j=25^{\circ}\text{C}$

Output Characteristics $T_j=175^{\circ}\text{C}$

Vcesat vs T_j

Vcesat vs I_c


Capacitance Characteristic

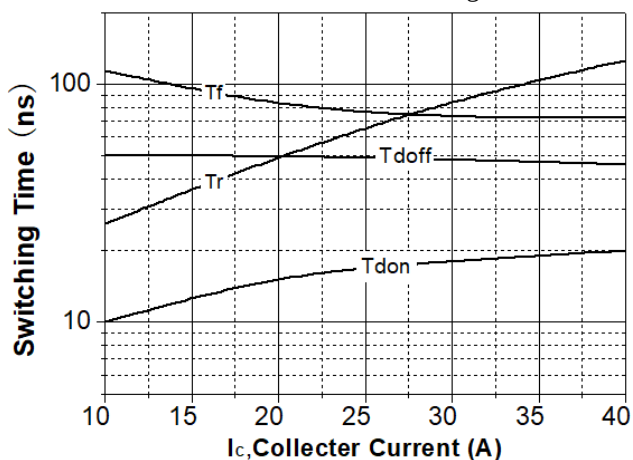
 $V_{ce}=25\text{V}, V_{GE}=0\text{V}, f=1.0\text{MHz}$


Diode Characteristic



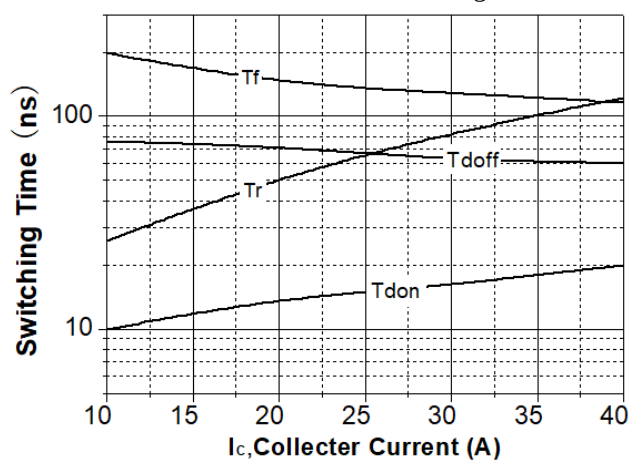
Switching Time vs. IC Tj=25°C

VGE=15V, VCE=400V, Rg=10 Ω



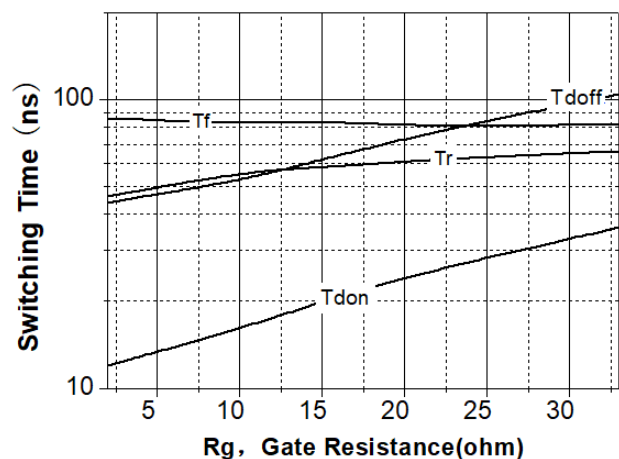
Switching Time vs. IC Tj=175°C

VGE=15V, VCE=400V, Rg=10 Ω



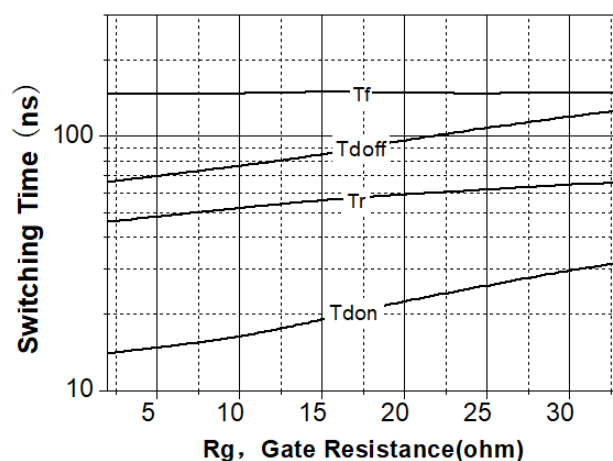
Switching Time vs. Rg Tj=25°C

VGE=15V, VCE=400V, IC=20A

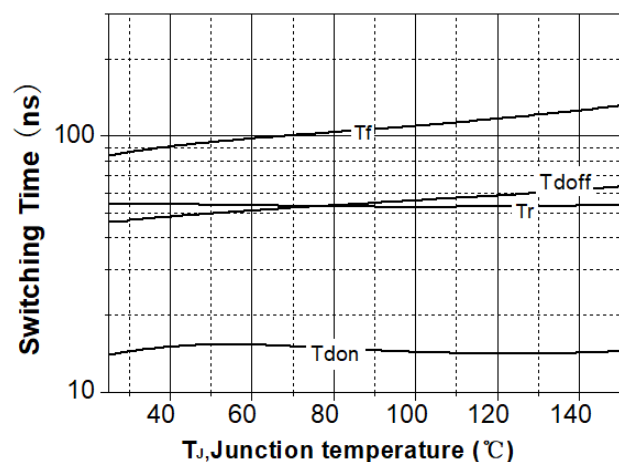


Switching Time vs. Rg Tj=175°C

VGE=15V, VCE=400V, IC=20A

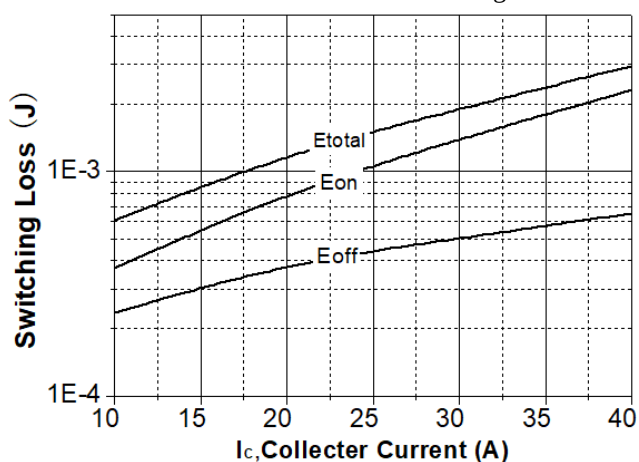


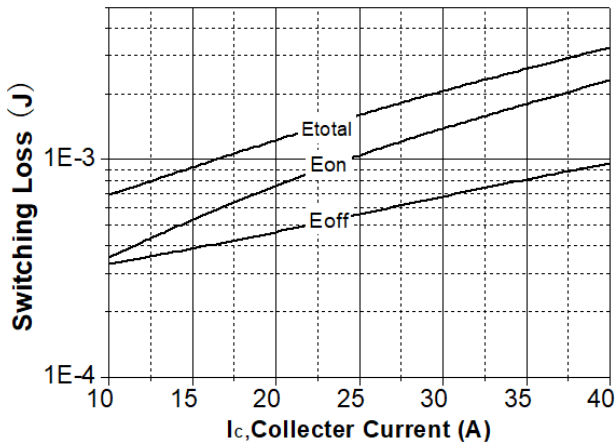
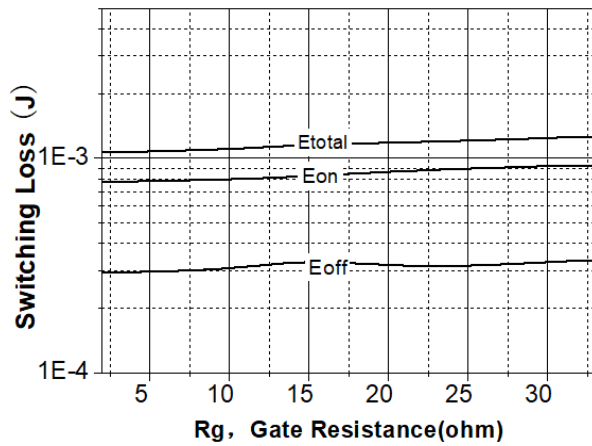
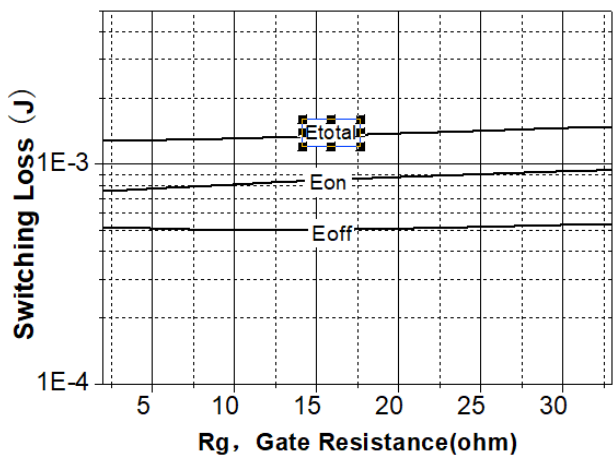
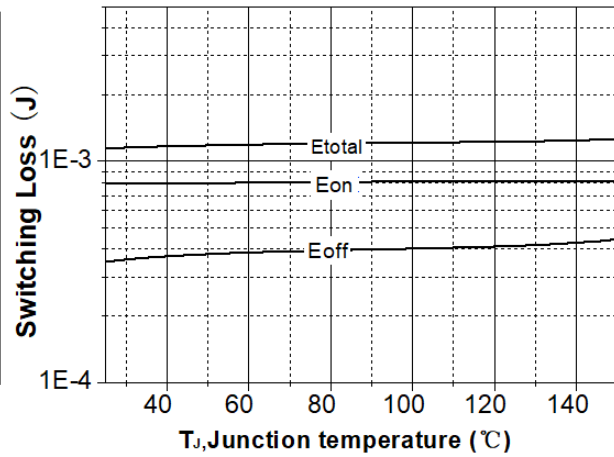
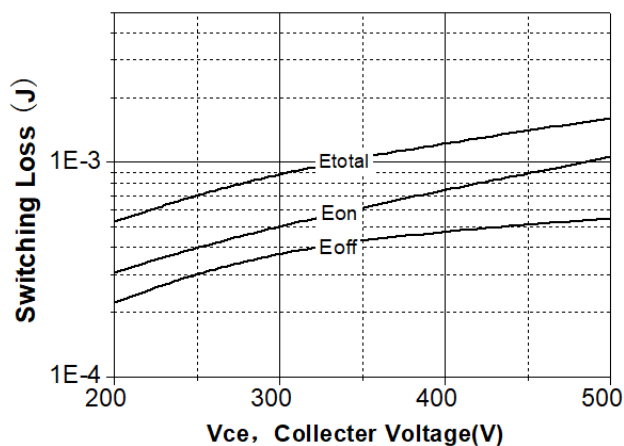
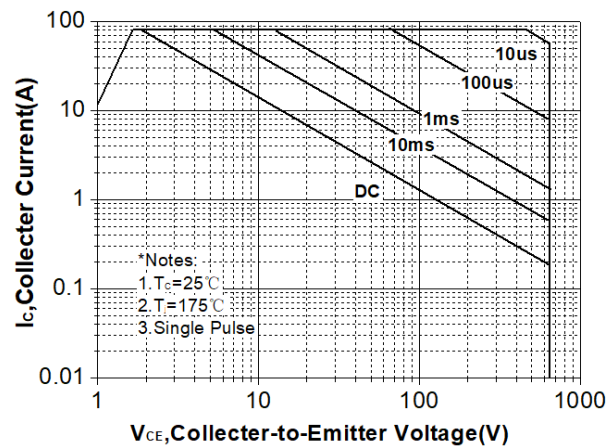
Switching Time vs. Tj



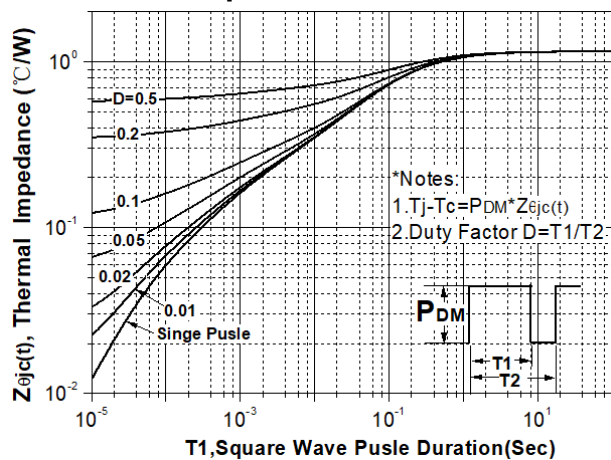
Switching Loss vs. IC Tj=25°C

VGE=15V, VCE=400V, Rg=7.9 Ω



Switching Loss vs. I_C $T_j=175^\circ\text{C}$
 $V_{GE}=15\text{V}$, $V_{CE}=400\text{V}$, $R_g=7.9\ \Omega$

Switching Loss vs. R_g $T_j=25^\circ\text{C}$
 $V_{GE}=15\text{V}$, $V_{CE}=400\text{V}$, $I_C=20\text{A}$

Switching Loss vs. R_g $T_j=175^\circ\text{C}$
 $V_{GE}=15\text{V}$, $V_{CE}=400\text{V}$, $I_C=20\text{A}$

Switching Loss vs. T_j
 $V_{GE}=15\text{V}$, $V_{CE}=400\text{V}$, $I_C=20\text{A}$, $R_g=10\ \Omega$

Switching Loss vs. $V_{ce}(V)$ $T_j=175^\circ\text{C}$
 $V_{GE}=15\text{V}$, $I_C=20\text{A}$, $R_g=10\ \Omega$

Safe Operating Area TO-220MF


Normalized Maximum Transient Thermal Impedance for IGBT

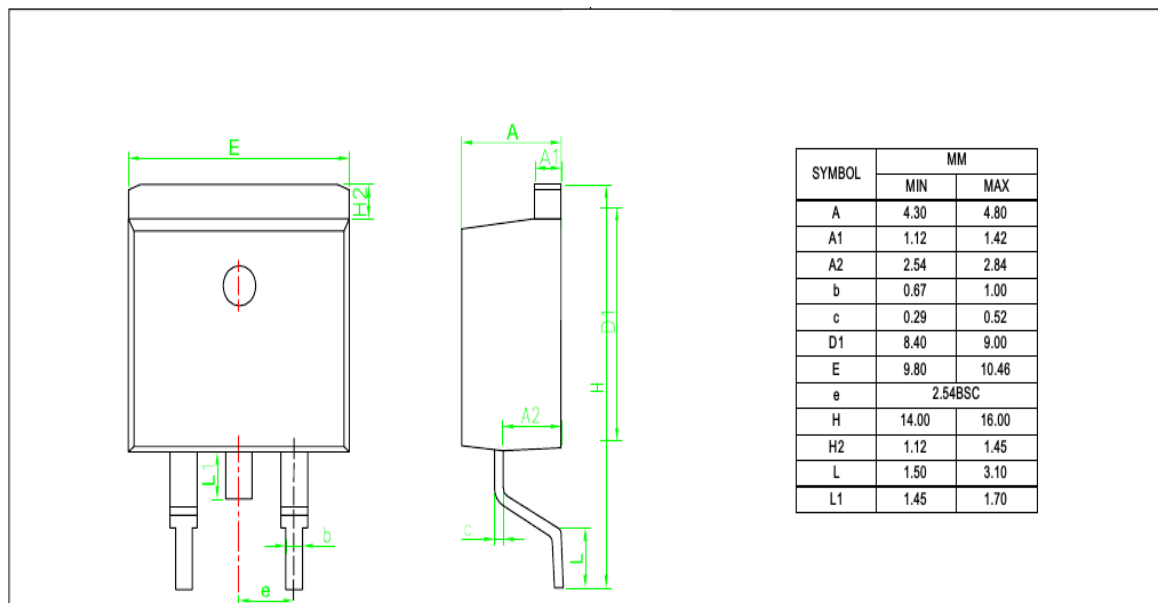




外形尺寸 PACKAGE MECHANICAL DATA

TO-263

单位 Unit: mm



**注意事项**

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