



JT100K120F2MA1E

主要参数 MAIN CHARACTERISTICS

I_c	100 A
V_{CES}	1200 V
V_{cesat_typ} ($V_{ge}=15V$)	1.9V

用途

- UPS 电源
- 电焊机

APPLICATIONS

- UPS System
- Welding

产品特性

- FS 技术
- 低通态压降, $V_{CE(sat)}$,
typ = 1.9V, $I_c = 100A$ and
 $T_c = 25^\circ C$
- V_{CEsat} 正温度系数
- 低开关损耗

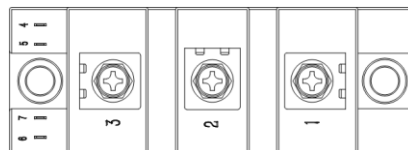
FEATURES

- FS Technology
- Low saturation voltage:
 $V_{CE(sat)}$, typ = 1.9V, $I_c =$
100A and $T_c = 25^\circ C$
- V_{CEsat} with positive
Temperature Coefficient
- Low Switching Losses

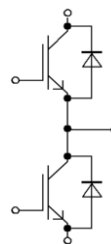
封装 Package



外形示意图



引脚示意图



电路示意图

订货信息 ORDER MESSAGE

订货型号 Order codes	印记 Marking	封装 Package	包装 Packaging	器件重量 Device Weight
JT100K120F2MA1E	JT100K120F2MA1E	两单元模块	盒装	163g(typ)



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}	1200	V
连续集电极极电流 Collector Current-continuous	I_C $T=25^\circ\text{C}$	200	A
	$T=100^\circ\text{C}$	100	A
最大脉冲集电极极电流 (注1) Collector Current – pulse (note 1)	I_{CM}	200	A
最高栅极发射极电压 Gate-Emmitter Voltage	V_{GES}	± 20	V
耗散功率 Power Dissipation	P_D $T_C=25^\circ\text{C}$	517	W
结温范围 Junction Temperature	T_{vjmax}	175	$^\circ\text{C}$
	$T_{vj op}$	-40~+150	

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-Emmitter Voltage	BV_{CES}	$I_C=1mA, V_{GE}=0V$	1200	-	-	V
零栅压下集电极漏电流 Zero Gate Voltage Collector Current	I_{CES}	$V_{CE}=1200V, V_{GE}=0V,$ $T_C=25^{\circ}C$	-	-	1	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
通态特性 On-Characteristics						
阈值电压 Gate-Emmitter Threshold Voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}, I_C=0.25mA$	5.2	-	6.5	V
饱和压降 Collector-Emmitter saturation Voltage	V_{CESAT}	$V_{GE}=15V, I_C=100A$ $T_C=25^{\circ}C$ $T_C=125^{\circ}C$ $T_C=150^{\circ}C$	- - -	1.9 2.15 2.25	2.5 - -	V
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{ies}	$V_{CE}=25V,$ $V_{GE}=0V,$ $f=1.0MHz$	-	10.5		nF
输出电容 Output capacitance	C_{oes}		-	0.7		nF
反向传输电容 Reverse transfer capacitance	C_{res}		-	0.16		nF





电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching Characteristics							
开启延迟时间 Turn-On delay time	$t_{d(on)}$	$V_{CE}=600V,$ $I_C=100A,$ $R_G=13\Omega$ Inductive Load	$T_C=25^\circ C$	-	110	-	ns
上升时间 Turn-On rise time	t_r		$T_C=25^\circ C$	-	70	-	ns
关断延迟时间 Turn-Off delay time	$t_{d(off)}$		$T_C=25^\circ C$	-	220	-	ns
下降时间 Turn-Off Fall time	t_f		$T_C=25^\circ C$	-	110	-	ns
开启损耗 Turn-on energy	E_{on}		$T_C=25^\circ C$	-	6	-	mJ
关断损耗 Turn-off energy	E_{off}		$T_C=25^\circ C$	-	3.9	-	mJ
总的开关损耗 Total switching energy	E_{total}		$T_C=25^\circ C$	-	9.9	-	mJ
栅极电荷总量 Total Gate Charge	Q_g	$V_{GE}=-15V \dots +15V$	-	0.45	-	μC	
内部栅极电阻 Internal gate resistance	R_{Gint}			1.8		Ω	
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 (芯片) Diode Forward Voltage	V_F	$V_{GE}=0V, I_F=100A$	-	2.2	2.6	V	
峰值反向恢复电流 Peak Reverse recovery current	I_{RM}	$V_{GE}=-15V, V_R=600V$ $I_F=100A$ $di_F/dt=900A/\mu s T_C=25^\circ C$		53		A	
反向恢复时间 Diode Reverse recovery time	t_{rr}		-	230	-	ns	
反向恢复电荷 Reverse recovery charge	Q_{rr}		-	5.3	-	μC	
反向恢复能量 Reverse recovery energy	E_{rec}			2.1		mJ	





热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最小 Min	典型 typ	最大 Max	单 位 Unit	
结到管壳的热阻 Thermal Resistance, Junction to Case	Per/IGBT	$R_{th(j-c)}$	-	-	0.29	°C/W
管壳到散热底座的热阻 Thermal Resistance, Case to heatsink	Per/IGBT	$R_{th(c-h)}$	-	0.08	-	°C/W
结到管壳的热阻 Thermal Resistance, Junction to Case	Per/FRED	$R_{th(j-c)}$	-	-	0.49	°C/W
管壳到散热底座的热阻 Thermal Resistance, Case to heatsink	Per/FRED	$R_{th(c-h)}$	-	0.15	-	°C/W





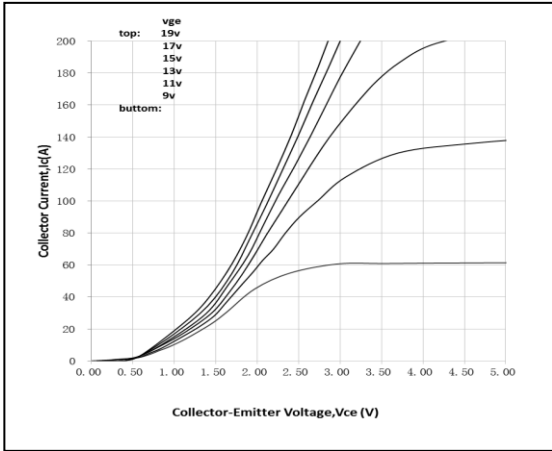
模块特性/Module Characteristics

项目 Item	符号 Sym bol	测试条件 Conditions	数值 Values			单位 Unit
			最小 Min	典型 typ	最大 Max	
绝缘测试电压 Isolation test voltage	V_{ISOL}	RMS, f = 50 Hz, t = 3S		4		KV
模块基板材料 Material of module baseplate				Cu		
内部绝缘 Internal isolation		基本绝缘(class 1, IEC 61140) Basic insulation (class1, IEC 61140)		Al2O3		
安装扭矩 Mounting torque	M	螺丝M6 ScrewM6	3	-	6	Nm
端子联接扭距 Terminal Connection torque	M	螺丝M5 ScrewM5	3	-	6	Nm
爬电距离 Creepage distance		端子-散热片terminal to heatsink	-	17	-	mm
		端子-端子Terminal to terminal	-	20	-	
电气间隙 Clearance		端子-散热片terminal to heatsink	-	17	-	mm
		端子-端子Terminal to terminal	-	10	-	
相对电痕指数 Comperative tracking index	CT1		200			
外壳-散热器热阻 Thermal resistance case to heatsink	R_{thCH}	每个模块 per module λ Paste=1W/(m·K)/ λ grease =1W/(m·K)		0.05		K/W
杂散电感,模块 Stray inductance module	L_{sCE}			30		nH
模块引线电阻,端子-芯片 Module lead resistance terminals chip	$R_{CC'+EE'}$			0.65		m Ω
储存温度 Storage temperature	T_{stg}		-40		125	$^{\circ}C$
重量 Weight		-	-	163	-	g

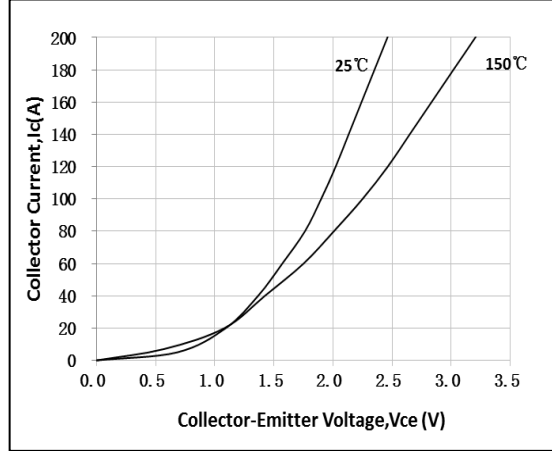


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

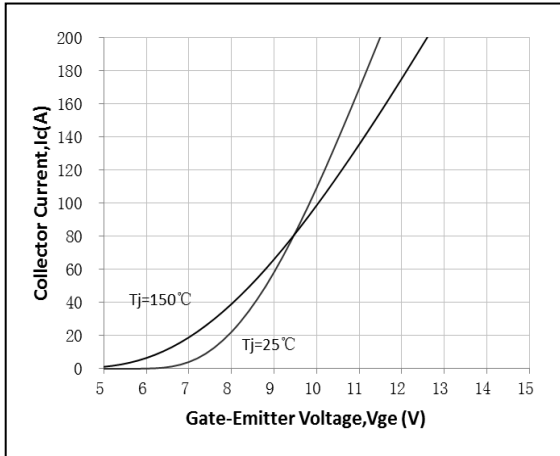
Typical Output Characteristics ($V_{ge}=15V, T_c=150^\circ C$)



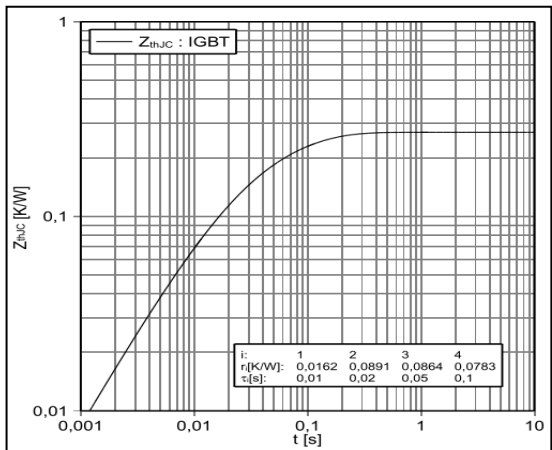
Typical Output Characteristics ($V_{ge}=15V$)



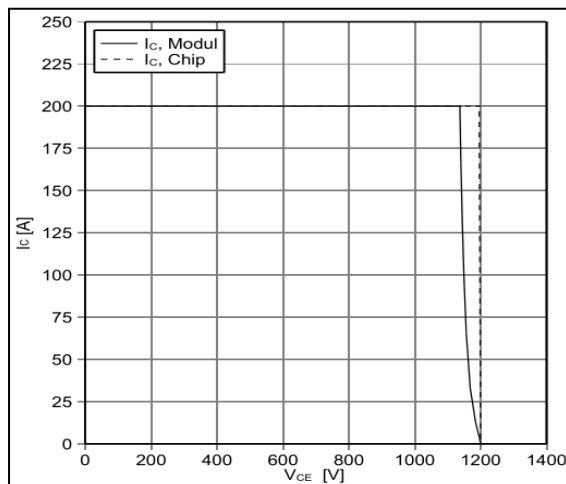
Typical transfer Characteristics ($V_{ce}=20V$)



Transient Thermal Impedance (IGBT)

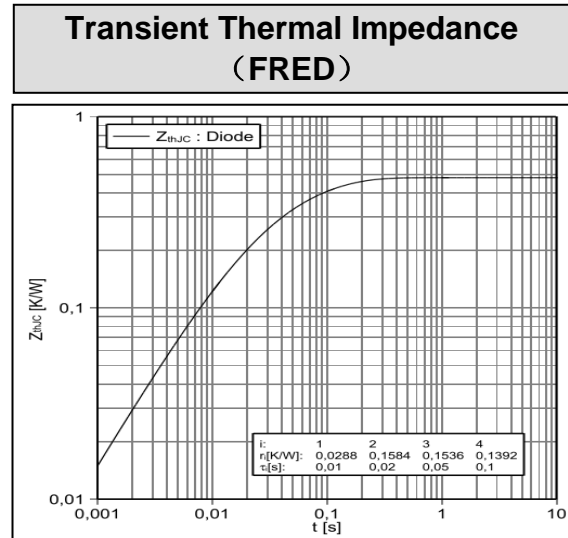
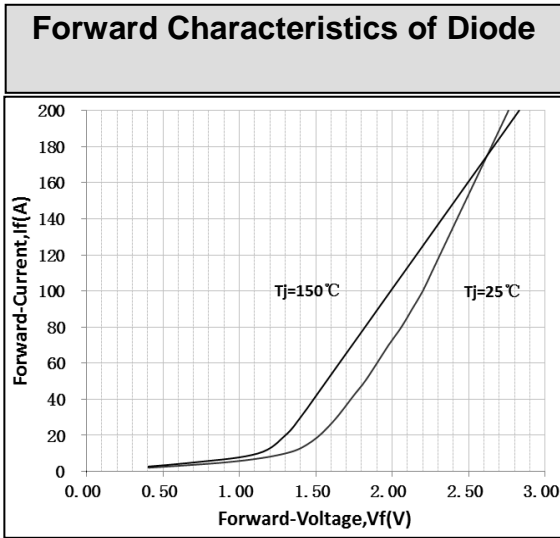


RBSOA of IGBT





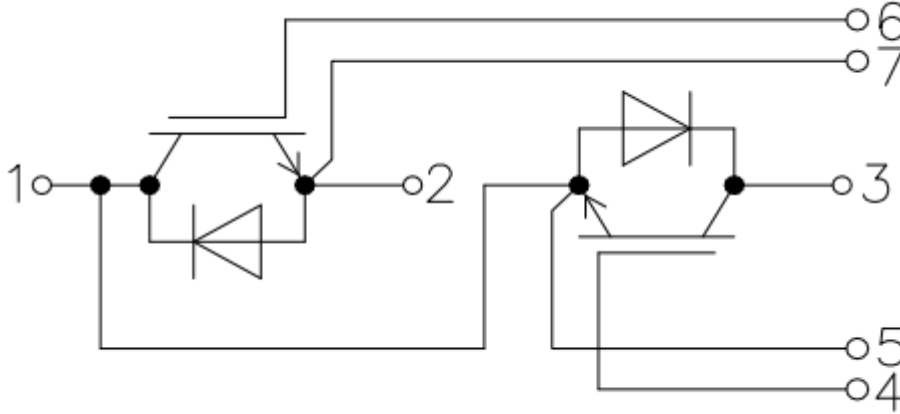
特征曲线 ELECTRICAL CHARACTERISTICS (curves)





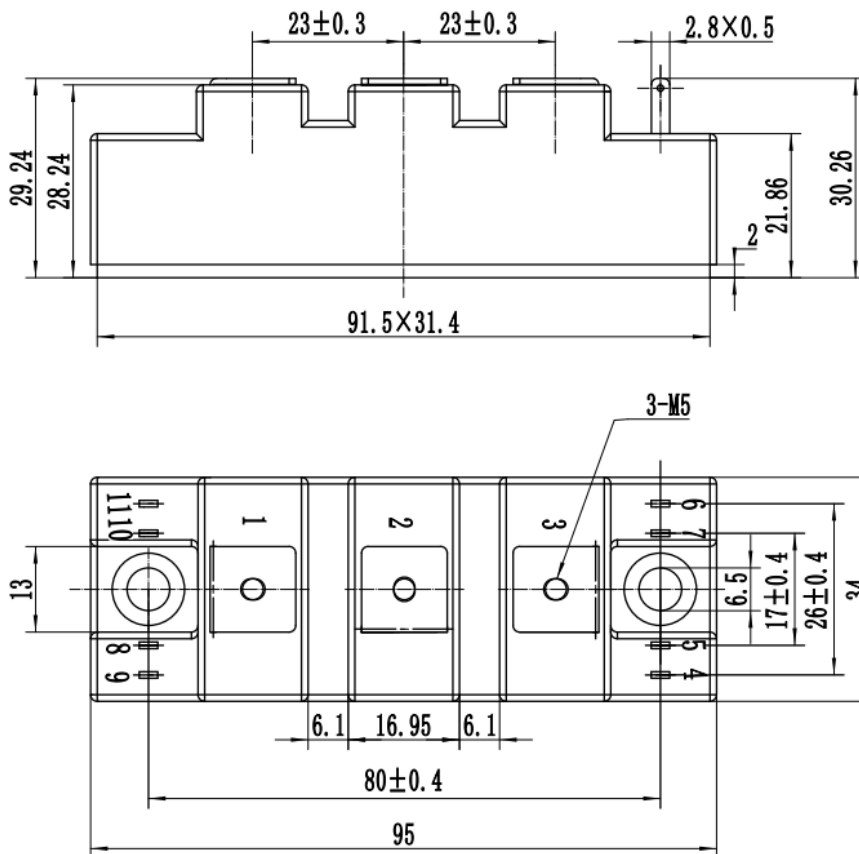
外形尺寸 PACKAGE MECHANICAL DATA

Circuit diagram



Package outlines

单位 Unit: mm





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