

# BRG10N120D

Rev.D Oct.-2015

## 描述 / Descriptions

TO-3P 塑封封装绝缘栅双极晶体管。Insulated-Gate Bipolar Transistor in a TO-3P Plastic Package.

## 特征 / Features

内置快恢复二极管，高可靠性及热稳定性，低关断损耗，低饱和压降。

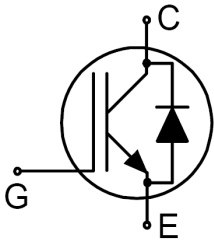
Built in fast recovery diode, High reliability and thermal stability parameters, Low switching loss, Low saturation voltage.

## 用途 / Applications

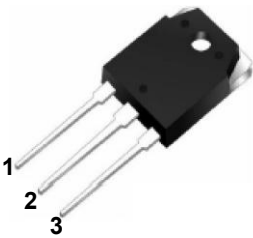
感应加热。

Eddy-current heating.

## 内部等效电路 / Equivalent Circuit



## 引脚排列 / Pinning



PIN1 : Gate

PIN 2 : Collector

PIN 3 : Emitter

## 放大及印章代码 / $h_{FE}$ Classifications & Marking

见印章说明。See Marking Instructions.

**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Collector-emitter voltage	$V_{CES}$	1200	V
Gate-emitter voltage	$V_{GES}$	±20	V
Collector current@ $T_C=25^\circ\text{C}$	$I_C$	20	A
Collector current@ $T_C=100^\circ\text{C}$		10	A
Collector peak current, $T_P$ limited by $T_{JMAX}$	$I_{CM}$	$30^2$	A
Diode forward current	$I_F$	$30^3$	A
Diode forward current@ $T_C=100^\circ\text{C}$		15	A
Diode maximum forward current	$I_{FM}$	$45^2$	A
Power dissipation( $T_C=25^\circ\text{C}$ )	$P_D$	208	W
Power dissipation( $T_C=100^\circ\text{C}$ )		83	W
Operating junction and storage temperature range	$T_J, T_{stg}$	-55~150	°C
IGBT thermal resistance,junction-case	$R_{th(j-c)}$	0.6	°C/W
Diode thermal resistance,junction-case	$R_{th(j-CD)}$	2.0	°C/W
Thermal resistance,junction-ambient	$R_{th(j-a)}$	40	°C/W

**电性能参数 / Electrical Characteristics(Ta=25°C)**

参数 Parameter	符号 Symbol	测试条件 Test Conditions		最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Collector-emitter breakdown voltage	$V_{CES}$	$V_{GE}=0V$	$I_C=0.5\mu A$	1200	-	-	V
Zero gate voltage Collector current	$I_{CES}$	$V_{GE}=0V$	$V_{CE}=1200V$	-	-	0.1	mA
Gate-body leakage current	$I_{GES}$	$V_{GE}=20V$	$V_{CE}=0V$	-	-	100	nA
Gate threshold voltage	$V_{GE(th)}$	$I_C=0.4mA$	$V_{CE}=V_{GE}$	5.2	5.8	6.5	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=10A$	$V_{GE}=15V$	-	2.4	-	V
Input capacitance	$C_{ies}$	$V_{CE}=25V$ $f=1MHz$	$V_{GE}=0V$	-	1681	-	pF
Output capacitance	$C_{oes}$			-	56.8	-	
Reverse transfer capacitance	$C_{res}$			-	27.4	-	

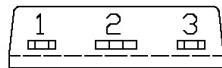
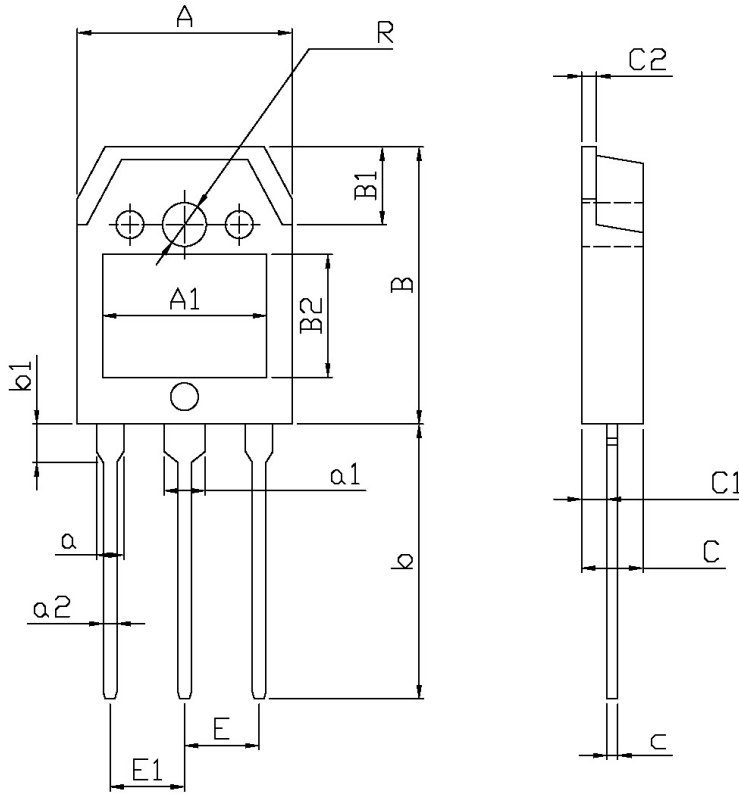
## 电性能参数 / Electrical Characteristics(Ta=25°C)

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Turn-on delay time	$t_{d(ON)}$	$V_{CC}=600V$ $I_C=10A$ $R_G=15\Omega$ $V_{GE}=15V$	-	22	-	ns
Rise time	$t_r$		-	24	-	
Turn-off delay time	$t_{d(OFF)}$		-	107	-	
Fall time	$t_f$		-	77	-	
Turn-On Switching Loss	$E_{on}$	$V_{CE}=20V$ $I_C=10A$	-	0.49	-	mJ
Turn-Off Switching Loss	$E_{off}$		-	0.23	-	
Total Switching Loss	$E_{ts}$		-	0.72	-	
Forward Transconductance	$g_{FS}$	$V_{CE}=20V$ $I_C=10A$	-	4.3	-	S
Total gate charge	$Q_G$	$V_{CC}=900V$ $I_C=10A$ $V_{GE}=15V$	-	63.8	-	nC
Diode forward voltage	$V_F$	$I_F=10A$ $V_{GE}=0V$	-	1.1	-	V

外形尺寸图 / Package Dimensions

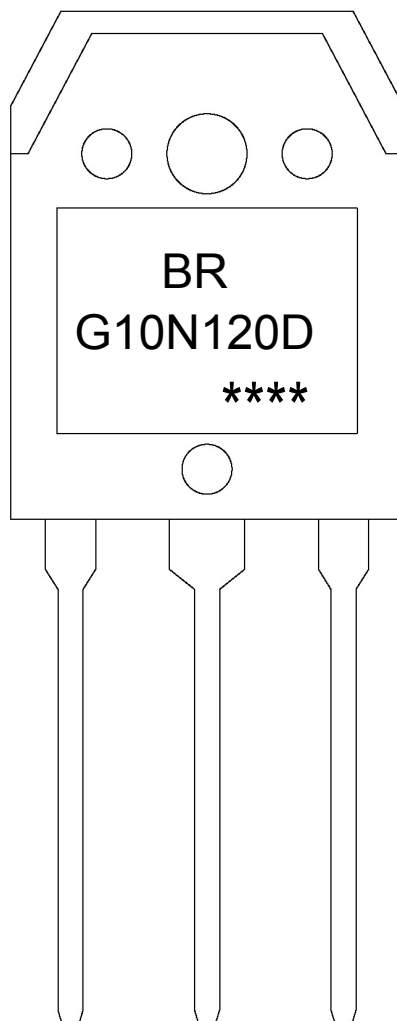
TO-3P

单位: mm



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	15.4	16.0	a2	0.8	1.2
R	3.1	3.5	E	5.45	
B	19.8	20.8	E1	5.45	
B1	5.5	5.9	C	4.3	4.7
B2	9.0		C1	1.2	1.6
A1	12.0		C2	1.4	1.6
b	19.6	20.6	c	0.5	0.7
b1	3.0	3.4			
a	1.8	2.2			
a1	2.8	3.2			

印章说明 / Marking Instructions



说明：

BR: 为公司代码

G10N120D : 为产品型号

\*\*\*\* : 为生产批号代码，随生产批号变化。

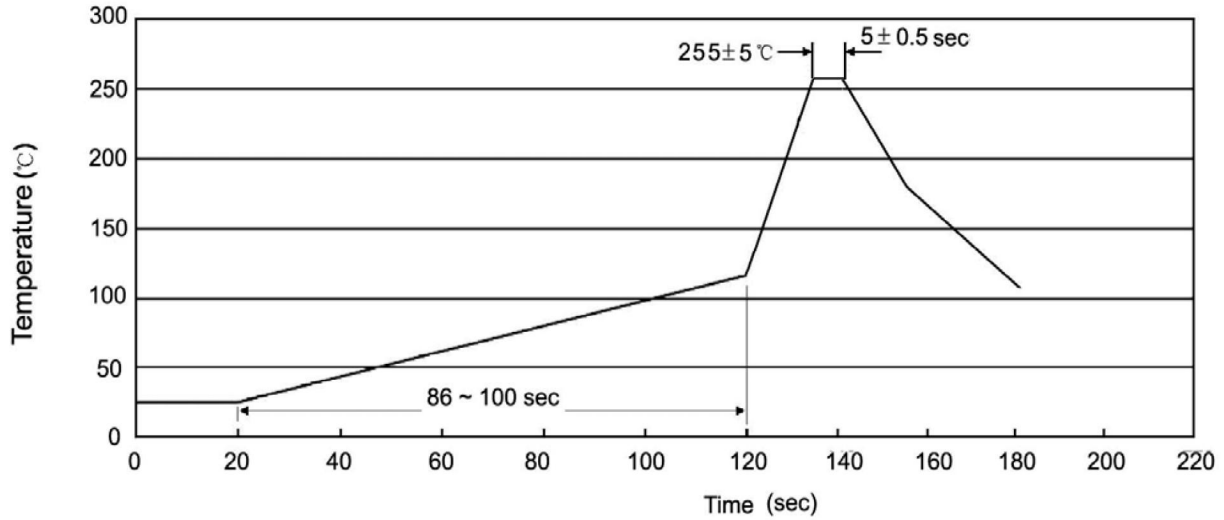
Note:

BR: Company Code.

G10N120D: Product Type.

\*\*\*\*: Lot No. Code, code change with Lot No.

**波峰焊温度曲线图(无铅) / Temperature Profile for Dip Soldering(Pb-Free)**



说明：

1. 预热温度 25~150°C，时间 60~90sec;
2. 峰值温度 255±5°C，时间持续为 5±0.5sec;
3. 焊接制程冷却速度为 2~10°C/sec.

Note:

1. Preheating: 25~150°C, Time: 60~90sec.
2. Peak Temp.: 255±5°C, Duration: 5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

**耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions**

温度：270±5°C      时间：10±1 sec.      Temp.: 270±5°C      Time: 10±1 sec

**包装规格 / Packaging SPEC.**

套管包装 / TUBE

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm <sup>3</sup> )		
	Units/Tube 只/套管	Tubes/Inner Box 套管/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Tube 套管	Inner Box 盒	Outer Box 箱
TO-3P	30	15	450	5	2250	497.5×46×8	555×164×50	575×290×180

**使用说明 / Notices**