描述 / Descriptions

TO-252 塑封封装 NPN 半导体三极管。Silicon NPN transistor in a TO-252 Plastic Package.

特征 / Features

直流电流增益高，E 与 C 间内置阻尼二极管电性能与 TIP112 等同，无卤产品。

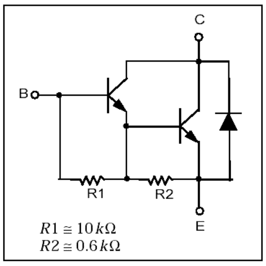
High DC current gain, built-in a damper diode at E-C,electrically similar to popular TIP112, HF Product.

用途 / Applications

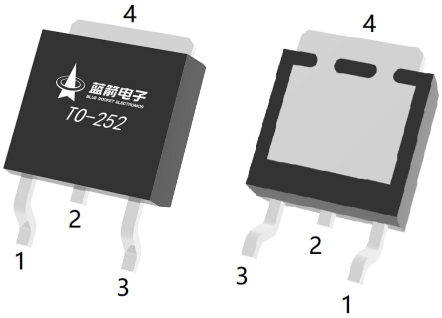
用于中功率放大或开关电路。

Medium power switching applications.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN1：Base PIN 2,4：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℃)

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Collector to Base Voltage	V_{CBO}	100	V
Collector to Emitter Voltage	V_{CEO}	100	V
Emitter to Base Voltage	V_{EBO}	5.0	V
Collector Current - Continuous	I_C	2.0	A
Collector Current – Continuous(Pulse)	$I_{C(Pulse)}$	4.0	A
Base Current - Continuous	I_B	50	mA
Collector Power Dissipation	P_C	1.75	W
Collector Power Dissipation	$P_C(T_C=25℃)$	20	W
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	-55～150	℃

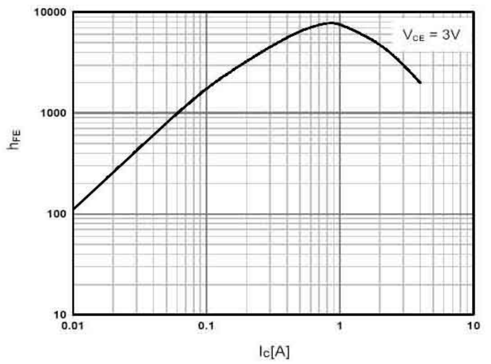
Pulse Test:PW≤300μs,Duty Cycle≤2%

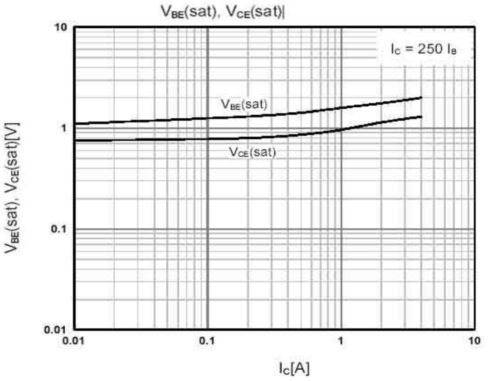
电性能参数 / Electrical Characteristics(Ta=25℃)

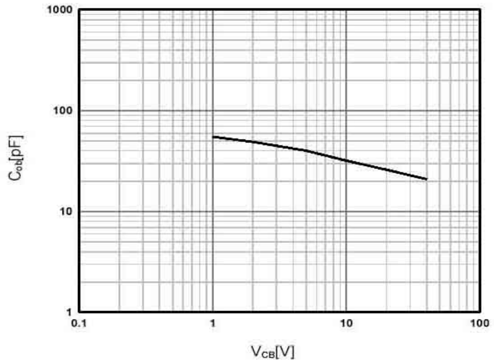
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Collector to Emitter Breakdown Voltage*	V_{CEO}*	I_C=10mA I_B=0	100			V
Collector Cut-Off Current	I_{CEO}	V_{CE}=50V I_B=0			0.02	mA
Collector Cut-Off Current	I_{CBO}	V_{CB}=100V I_E=0			0.02	mA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=5.0V I_C=0			2.0	mA
DC Current Gain	$h_{FE(1)}$*	V_{CE}=3.0V I_C=2.0A	1000		12K	
	$h_{FE(2)}$*	V_{CE}=3.0V I_C=0.5A	500			
	$h_{FE(3)}$*	V_{CE}=3.0V I_C=4.0A	200			
Collector-Emitter Saturation Voltage	$V_{CE(sat)1}$*	I_C=2.0A I_B=8.0mA			2.0	V
	$V_{CE(sat)2}$*	I_C=4.0A I_B=40mA			3.0	V
Base-Emitter Saturation Voltage*	$V_{BE(sat)}$*	I_C=4.0A I_B=40mA			4.0	V
Base-Emitter-On Voltage*	$V_{BE(on)}$*	V_{CE}=3.0V I_C=2.0A			2.8	V
Current Gain Bandwidth Product	f_T	V_{CE}=10V I_C=0.75A	25			MHz
Output Capacitance	C_{ob}	V_{CB}=10V I_E=0 f=0.1MHz			100	pF

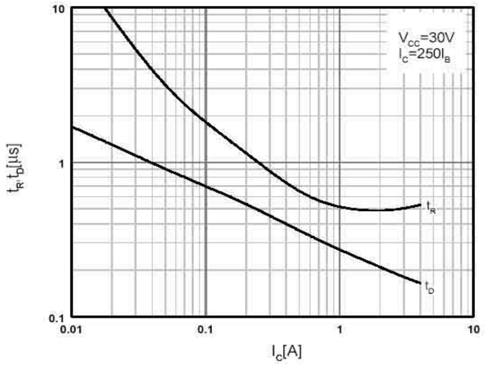
*Pulse Test:Pulse Width≤380us,Duty Cycle≤2%. *脉冲测试：脉宽≤380us,占空比≤2%。

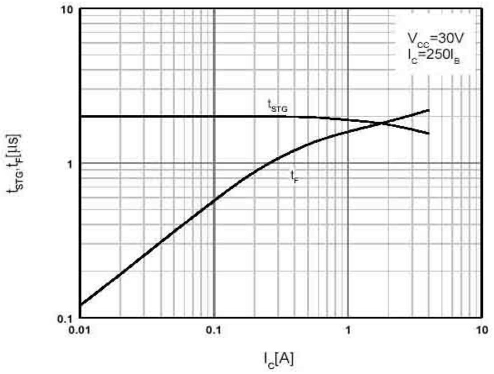
电参数曲线图 / Electrical Characteristic Curve

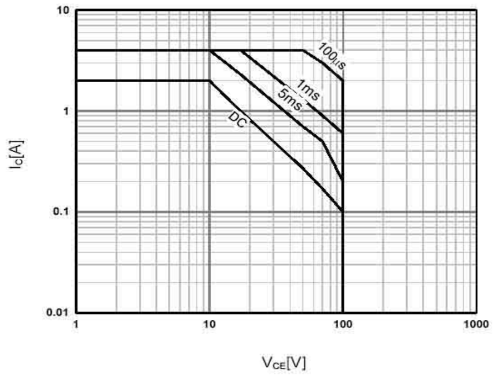


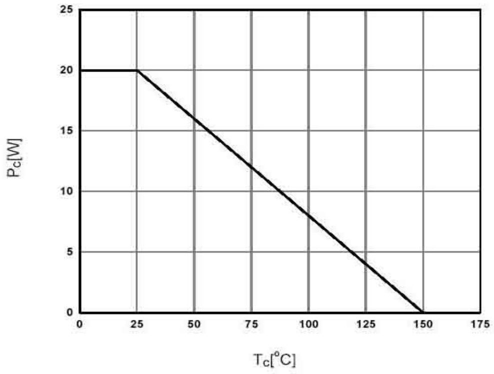




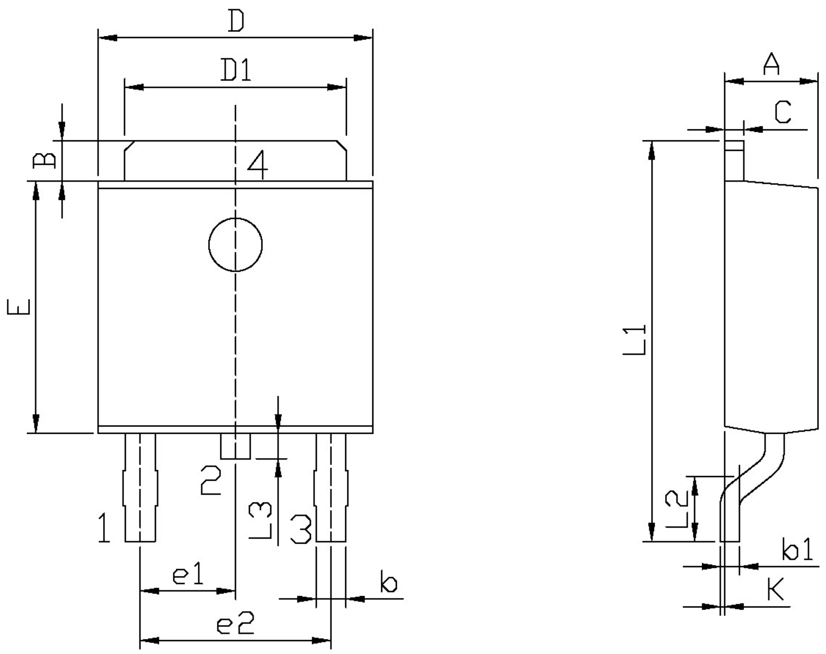








外形尺寸图 / Package Dimensions

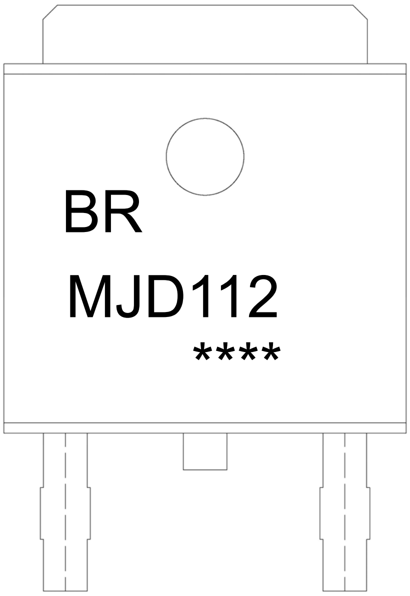


单位：mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.50	0.90	e2	4.43	4.73
b1	0.45	0.55	L1	9.45	9.95
C	0.45	0.55	L2	1.25	1.75
D	6.45	6.75	L3	0.60	0.90
D1	5.10	5.50	K	0.00	0.10

TO-252

印章说明 / Marking Instructions



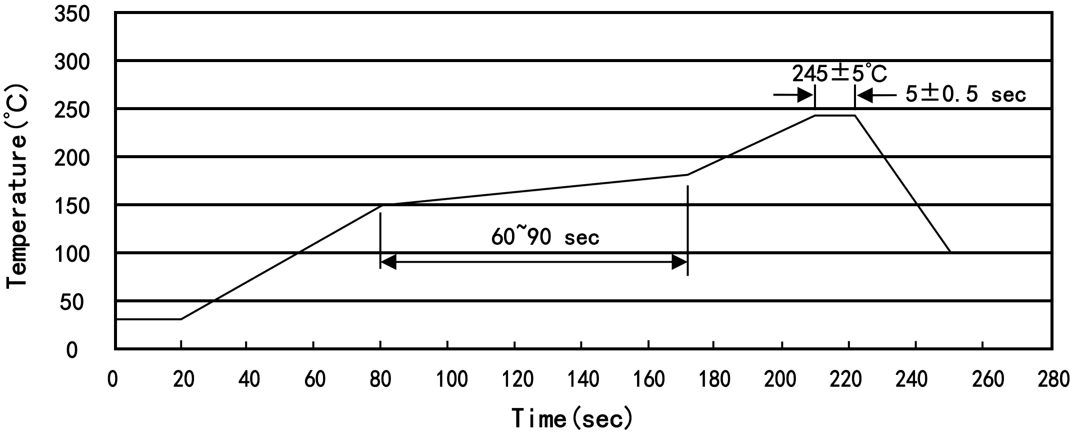
说明：

BR：	为公司代码
MJD112：	为产品型号
****：	为生产批号代码，随生产批号变化

Note:

BR:	Company Code
MJD112:	Product Type
****:	Lot No. Code, code change with Lot No

回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)



说明：

1、预热温度 150～180℃，时间 60～90sec;

2、峰值温度 245±5℃，时间持续为 5±0.5sec;

3、焊接制程冷却速度为 2～10℃/sec.

Note:

1.Preheating:150~180℃, Time:60~90sec.

2.Peak Temp.:245±5℃, Duration:5±0.5sec.

3. Cooling Speed: 2~10℃/sec.

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

温度：260±5℃　　时间：10±1 sec.　　Temp.:260±5℃　　Time:10±1 sec

包装规格 / Packaging SPEC.

卷盘包装 / REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit：mm^3)		
	Units/Reel 只/卷盘	Reels/Inner Box 卷盘/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Reel	Inner Box 盒	Outer Box 箱
TO-252	2,500	2	5,000	6	30,000	13″ ×16	360×360×50	380×335×366

套管包装 / TUBE

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit：mm^3)		
	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-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

使用说明 / Notices