描述 / Descriptions

TO-220F 塑封封装 NPN 半导体三极管。Silicon NPN transistor in a TO-220F Plastic Package.

特征 / Features

h_{FE} 高、线性好。

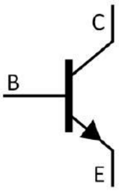
High h_{FE}, good linearity of h_{FE}.

用途 / Applications

用于高 h_{FE} 的功率放大。

Power amplifier with high forward current transfer ratio applications.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning

PIN1：Base　　PIN 2：Collector　　PIN 3：Emitter

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

h_{FE} Classifications Symbol	Q	P	O
h_{FE} Range	500～1000	800～1500	1200～2500

极限参数 / Absolute Maximum Ratings(Ta=25℃)

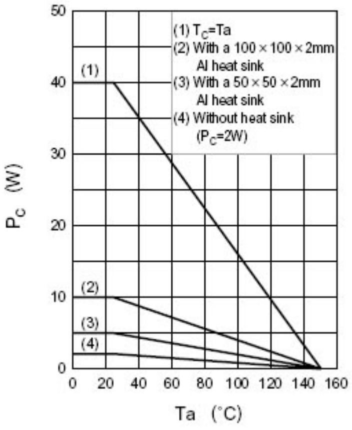
参数 Parameter	符号 Symbol		数值 Rating	单位 Unit
Collector to Base Voltage	V_{CBO}	2SD1273	80	V
		2SD1273A	100	
Collector to Emitter Voltage	V_{CEO}	2SD1273	60	V
		2SD1273A	80	
Emitter to Base Voltage	V_{EBO}		6.0	V
Collector Current - Continuous	I_C		3.0	A
Collector Current – Continuous(Pulse)	I_{CP}		6.0	A
Base Current	I_B		1.0	A
Collector Power Dissipation	P_C		2.0	W
Collector Power Dissipation	$P_C(T_C=25℃)$		40	W
Junction Temperature	T_j		150	℃
Storage Temperature Range	T_{stg}		-55～150	℃

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

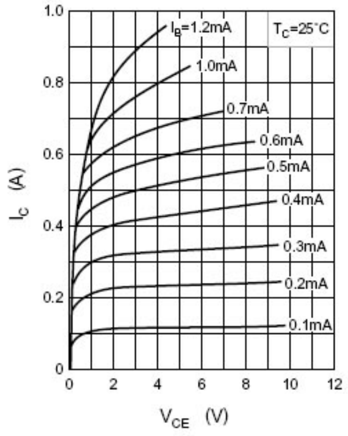
参数 Parameter	符号 Symbol		测试条件 Test Conditions		最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Collector to Emitter Breakdown Voltage	V_{CEO}	2SD1273	I_C=25mA	I_B=0	60			V
		2SD1273A			80			
Collector Cut-Off Current	I_{CBO}	2SD1273	V_{CB}=80V	I_E=0			100	μA
Collector Cut-Off Current		2SD1273A	V_{CB}=100V	I_E=0			100	μA
Collector Cut-Off Current	I_{CEO}		V_{CE}=40V	I_B=0			100	μA
Emitter Cut-Off Current	I_{EBO}		V_{EB}=6.0V	I_C=0			100	μA
DC Current Gain	h_{FE}		V_{CE}=4.0V	I_C=0.5A	500		2500	
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$		I_C=2.0A	I_B=50mA			1.0	V
Transition Frequency	f_T		V_{CE}=12V f=10MHz	I_C=0.2A		50		MHz

电参数曲线图 / Electrical Characteristic Curve

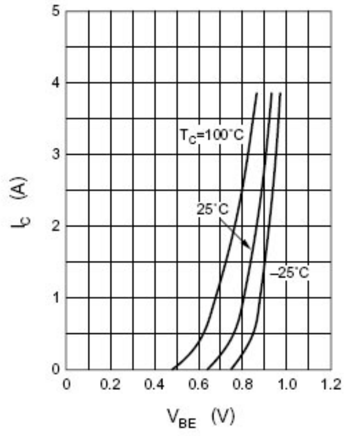
P_C — Ta



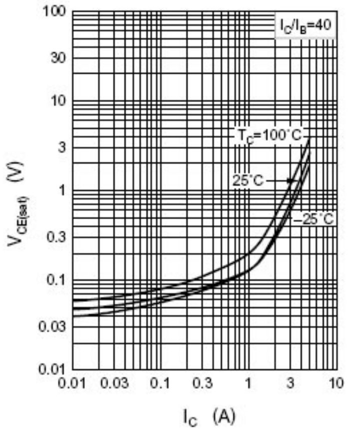
I_C — V_{CE}



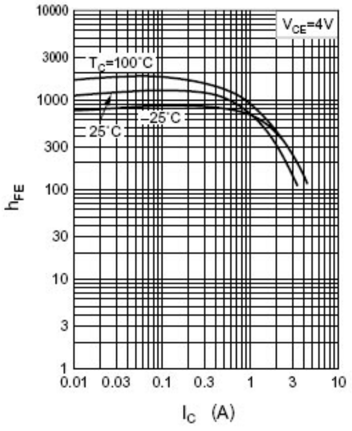
I_C — V_{BE}



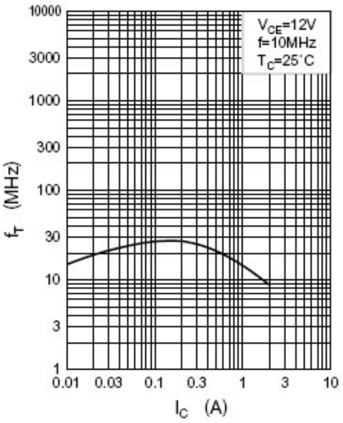
$V_{CE(sat)}$ — I_C



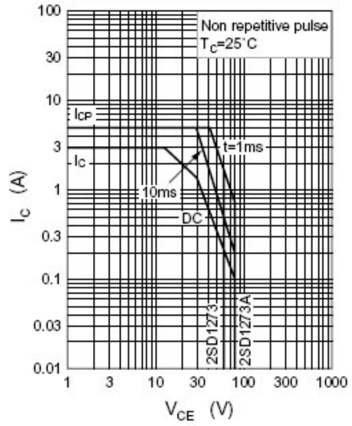
h_{FE} — I_C



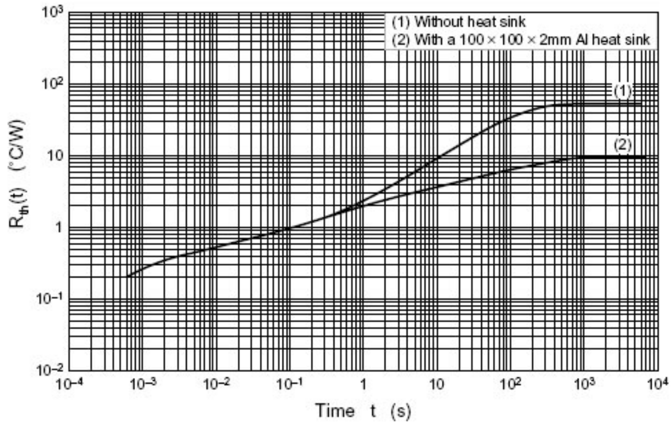
f_T — I_C



Area of safe operation (ASO)

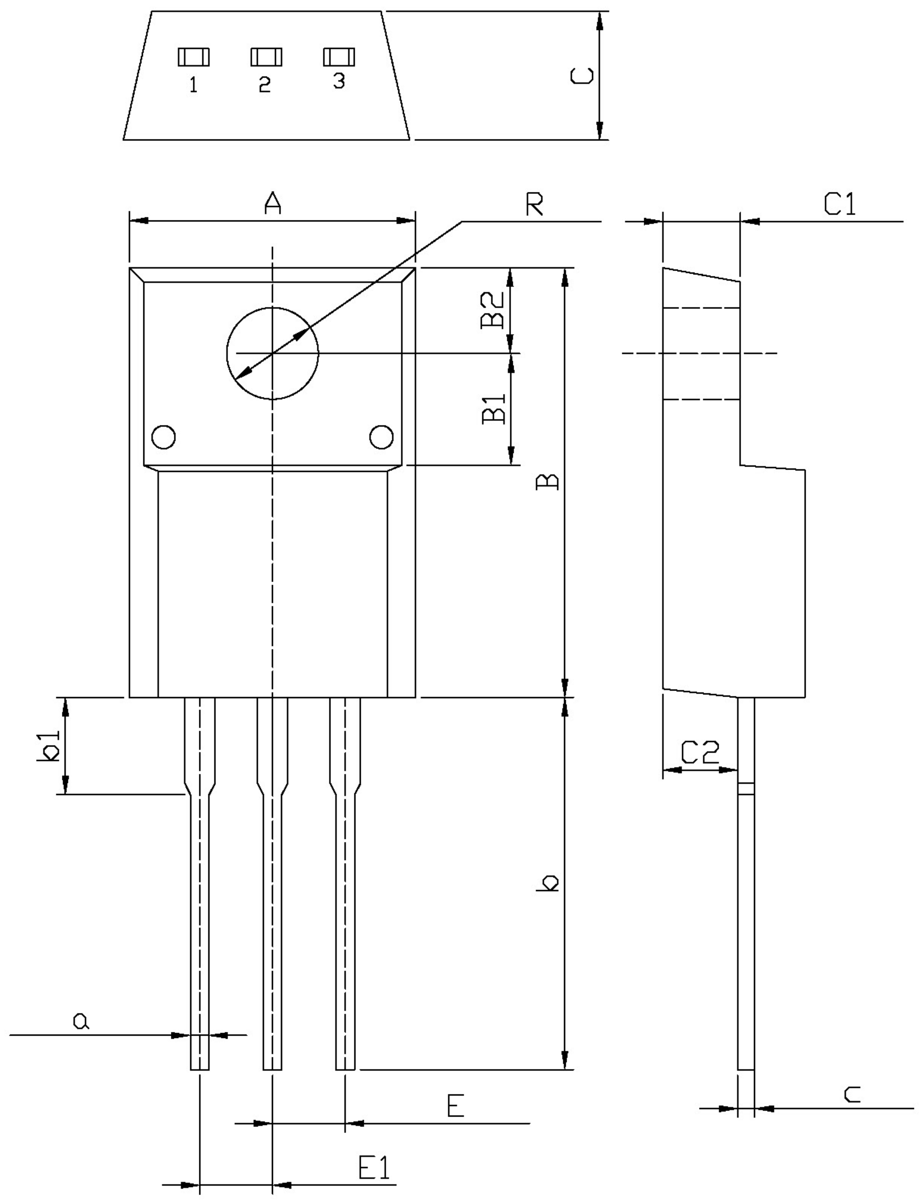


$R_{th(t)}$ — t



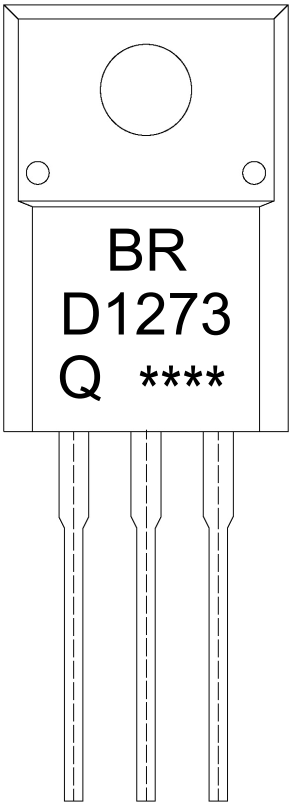
外形尺寸图 / Package Dimensions

TO-220F 单位：mm



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
C	4.3	4.7	b1	2.9	3.9
A	9.7	10.3	a	0.55	0.75
B	14.7	15.3	E	2.29	2.79
B1	3.8	4.0	E1	2.29	2.79
B2	2.9	3.1	C1	2.5	2.9
R	3.0	3.4	C2	2.5	2.7
b	12.5	13.5	c	0.5	0.7

印章说明 / Marking Instructions



说明：

BR： 为公司代码

D1273： 为型号代码

Q: 为 h_{FE} 分档代码

****： 为生产批号代码，随生产批号变化。

Note:

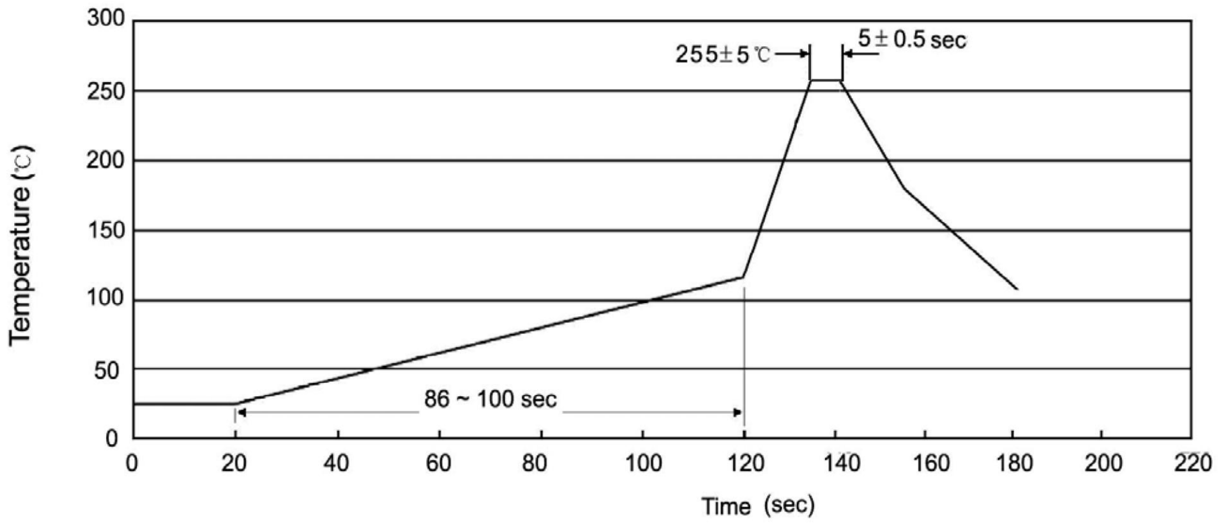
BR: Company Code.

D1273: Product Type.

Q: h_{FE} Classifications Symbol

****: 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℃，时间 60 ~ 90sec;

2、峰值温度 255±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:25~150℃, Time:60~90sec.

2.Peak Temp.:255±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：270±5℃ 时间：10±1 sec.

Temp.:270±5℃ Time:10±1 sec

包装规格 / Packaging SPEC.

散件包装 / BULK

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm^3)		
	Units/Bag 只/袋	Bags/Inner Box 袋/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Bag 袋	Inner Box 盒	Outer Box 箱
TO-220/F	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

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-220/F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

使用说明 / Notices