BRKTD1624Q

Rev.A Apr.-2023

描述 / Descriptions

SOT-89 塑封封装 NPN 半导体三极管。Silicon NPN transistor in a SOT-89 Plastic Package.

特征 / Features

选用 MBIT 工艺规程，集电极-发射集饱和压降低,开关速度快，小电流电容和宽阔的安全工作区，可与互补 BRKTB1124Q，符合 AEC-Q101 标准高可靠性要求，无卤产品。

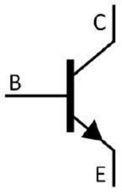
Adoption of MBIT processes, low collector-to-emitter saturation voltage, fast Switching Speed, Large current capacity and wide ASO, Complementary to BRKTB1124Q, Qualified to AEC-Q101 Standards for High Reliability, HF Product.

用途 / Applications

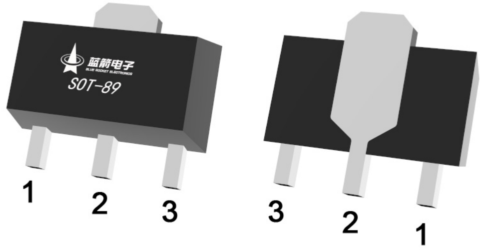
用于电压调整器，转播驱动器，灯管驱动器，电力设备，满足汽车应用的严格要求。

Voltage regulators ,relay drivers lamp drivers, electrical equipment, Meet the stringent requirements of automotive 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	A	B	C
h_{FE} Range	100～200	140～280	200～400
Marking	YQA ⁑	YQB ⁑	YQC ⁑

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}	60	V
Collector to Emitter Voltage	V_{CEO}	50	V
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
Collector Power Dissipation	P_C	500	mW
Collector Power Dissipation*	$*P_C$	1.0	W
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	-55～150	℃

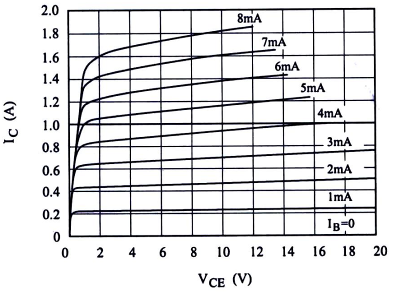
*:Package mounted on ceramic substrate(250mm^2×0.8t)

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

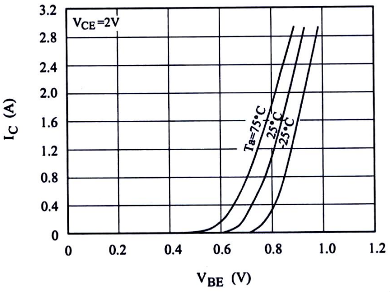
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Collector to Base Breakdown Voltage	V_{CBO}	I_C=10μA I_E=0	60			V
Collector to Emitter Breakdown Voltage	V_{CEO}	I_C=1.0mA I_B=0	50			V
Emitter to Base Breakdown Voltage	V_{EBO}	I_E=10μA I_C=0	6.0			V
Collector Cut-Off Current	I_{CBO}	V_{CB}=40V I_E=0			1.0	μA
Emitter Base Cut-Off Current	I_{EBO}	V_{EB}=4.0V I_C=0			1.0	μA
DC Current Gain	$h_{FE(1)}$	V_{CE}=2.0V I_C=100mA	100		400	
	$h_{FE(2)}$	V_{CE}=2.0V I_C=3.0A	35			
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=2.0A I_B=100mA		0.19	0.5	V
Base to Emitter Voltage	V_{BE}	I_C=2.0A I_B=100mA		0.94	1.2	V
Transition Frequency	f_T	V_{CE}=10V I_C=50mA		150		MHz
Collector Output Capacitance	C_{ob}	V_{CB}=10V I_E=0 f=1MHz		25		pF
Turn-On Time	t_{on}	$101_{B1}=-101_{B2}=I_C=1.0A$		70		nS
Storage Time	t_{stg}			650		nS
Fall Time	t_f			35		nS

电参数曲线图 / Electrical Characteristic Curve

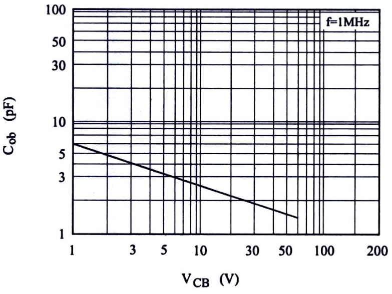
I_C - V_{CE}



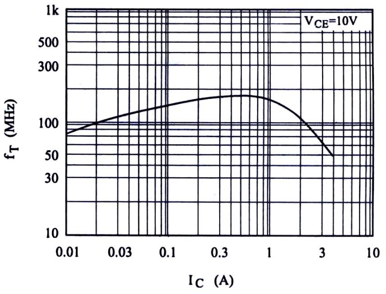
I_C - V_{BE}



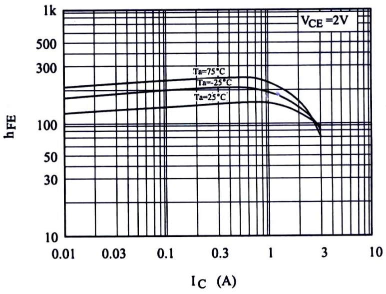
C_{ob} - V_{CB}



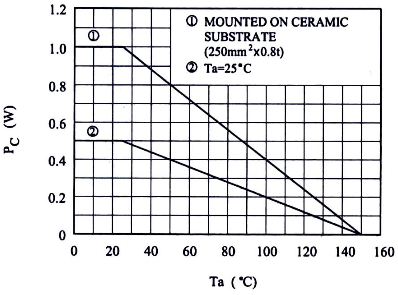
f_T - I_C



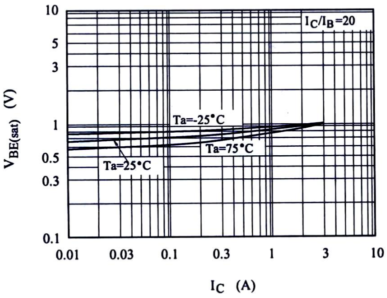
h_{FE} - I_C



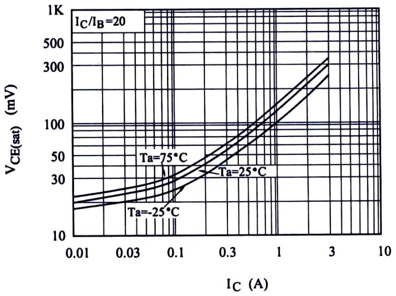
P_C - Ta



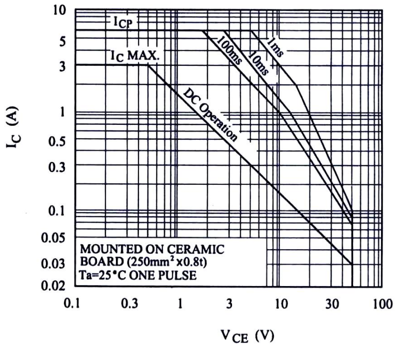
$V_{BE(sat)}$ - I_C



$V_{CE(sat)}$ - I_C

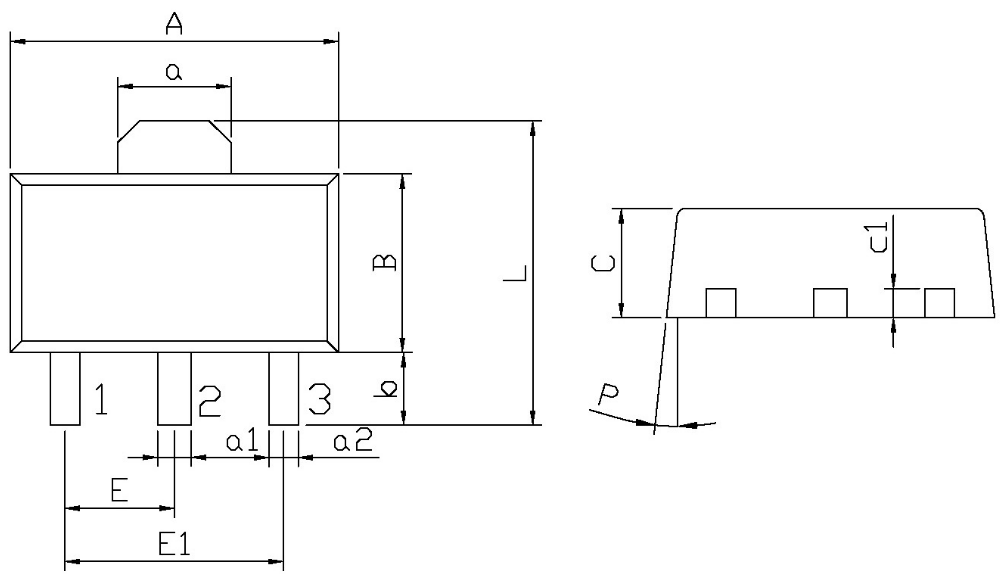


SAFE OPERATING AREA



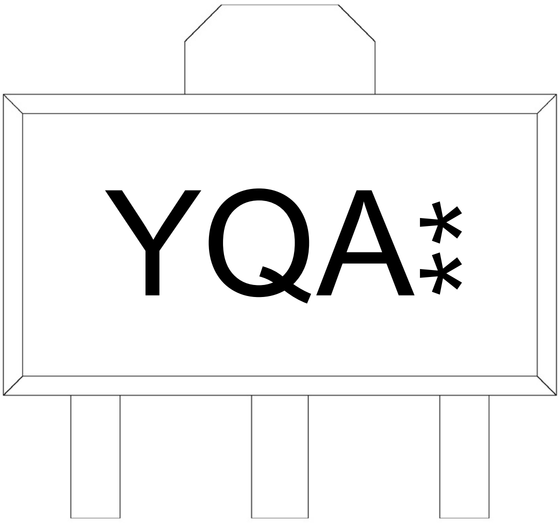
外形尺寸图 / Package Dimensions

SOT-89 单位：mm



Symbol	Dimensions In Millmeters		Symbol	Dimensions In Millmeters	
	Min	Max		Min	Max
A	4.4	4.7	a1	0.36	0.56
B	2.35	2.65	a2	0.30	0.50
L	3.878	4.478	C	1.40	1.70
a	1.45	1.65	c1	0.35	0.50
E	1.40	1.60	P	6°	
E1	2.80	3.20			
b	0.80	1.20			

印章说明 / Marking Instructions



说明：

Y：　为型号代码

Q：　为汽车无卤产品标识

A：　为 h_{FE} 分档代码

**：　为生产批号代码，随生产批号变化

Note:

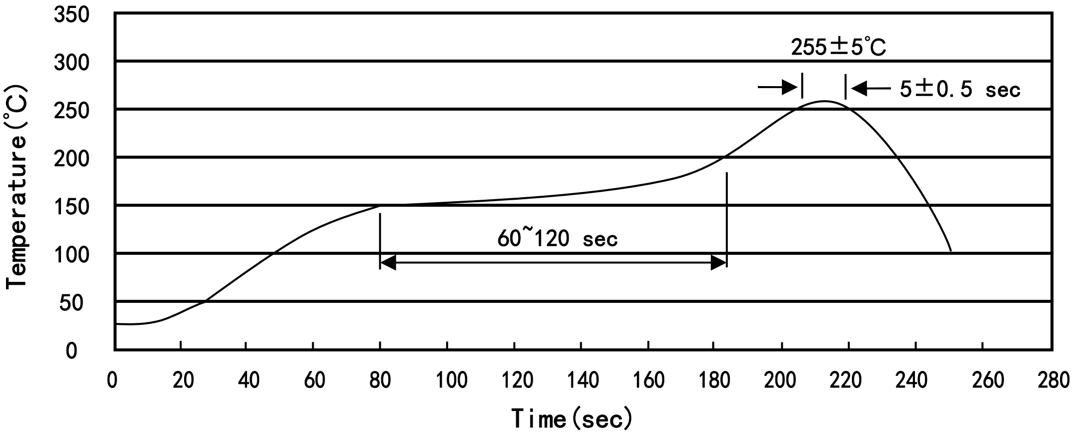
Y:　Product Type.

Q:　Automobile halogen-free product Code

A :　h_{FE} Classifications Symbol

**:　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：	Note:
1、预热温度 150～200℃，时间 60～120sec;	1.Preheating:150~200℃, Time:60~120sec.
2、峰值温度 255±5℃，时间持续为 5±0.5sec;	2.Peak Temp.:255±5℃, Duration:5±0.5sec.
3、焊接制程冷却速度为 2～10℃/sec.	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
SOT-89	1,000	7	7,000	6	42,000	7″ ×12	180×120×180	390×385×205

使用说明 / Notices