

/ Descriptions

TO-220F PNP Silicon PNP transistor in a TO-220F Plastic Package.

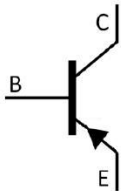
/ Features

Low saturation voltage, excellent dependence of h_{FE} on current, fast switching time.

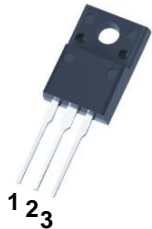
/ Applications

Lamp drivers, power amplifiers, high-speed switching.

/ Equivalent Circuit



/ Pinning



PIN1 Base PIN 2 Collector PIN 3 Emitter

/ h_{FE} Classifications & Marking

h_{FE} Classifications Symbol	Q	R	S
h_{FE} Range	70 140	100 200	140 280

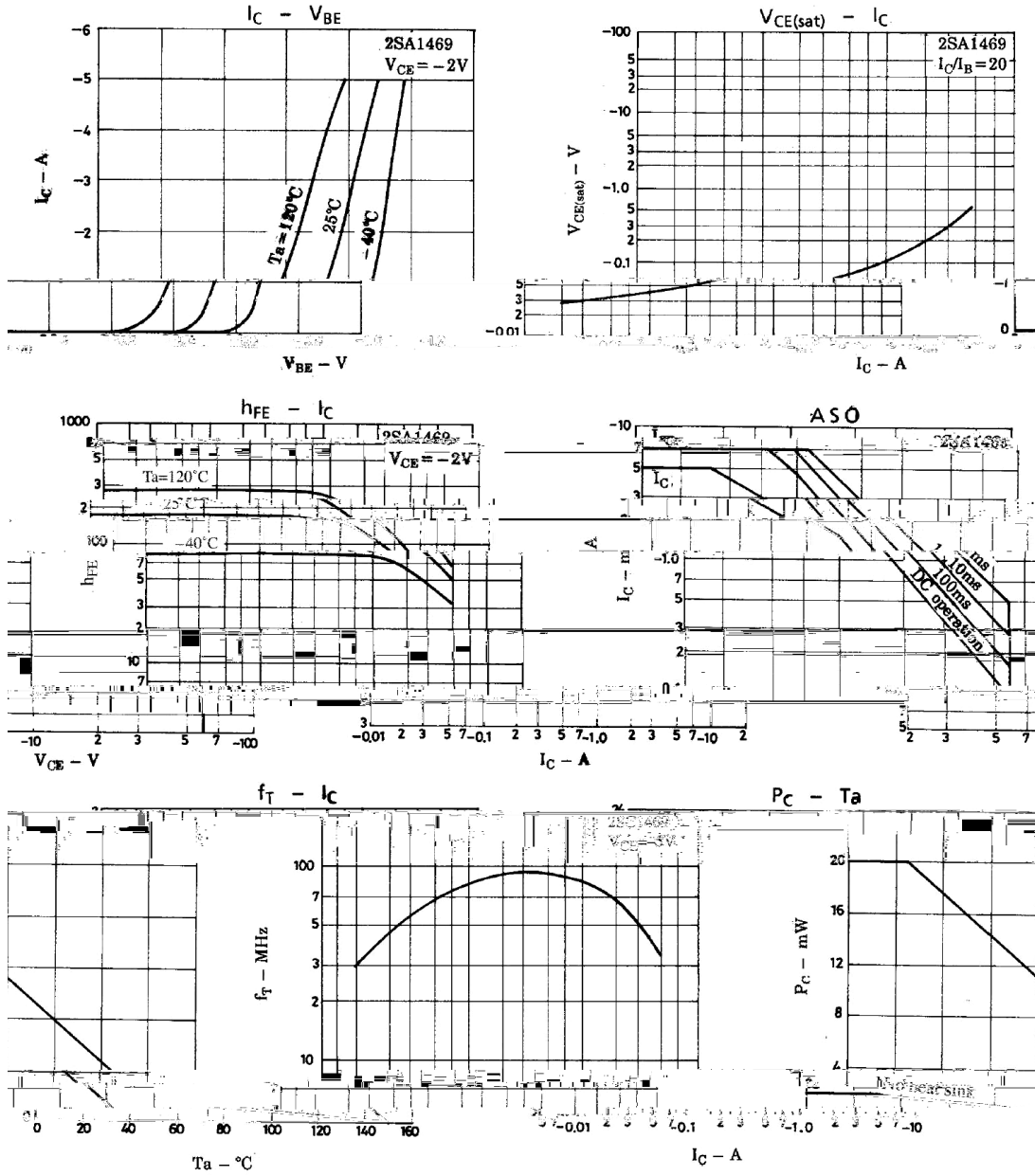
/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	-80	V
Collector to Emitter Voltage	V_{CEO}	-60	V
Emitter to Base Voltage	V_{EBO}	-5.0	V
Collector Current - Continuous	I_C	-5.0	A
Collector Current – Continuous(Pulse)	I_{CP}	-7.0	A
Collector Power Dissipation	P_C	2.0	W
Collector Power Dissipation	$P_C(T_c=25)$	20	W
Junction Temperature	T_j	150	
Storage Temperature Range	T_{stg}	-55 150	

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Base Breakdown Voltage	V_{CBO}	$I_C=-1.0mA$ $I_E=0$	-80			V
Collector to Base Breakdown Voltage	V_{CEO}	$I_C=-1.0mA$ $I_B=0$	-60			V
Emitter to Base Breakdown Voltage	V_{EBO}	$I_E=-1.0mA$ $I_C=0$	-5.0			V
Collector Cut-Off Current	I_{CBO}	$V_{CB}=-40V$ $I_E=0$			-0.1	mA
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=-4.0V$ $I_C=0$			-0.1	mA
DC Current Gain	h_{FE}	$V_{CE}=-2.0V$ $I_C=-1.0A$	70		280	
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-2.5A$ $I_B=-0.125A$			-0.4	V
Transition Frequency	f_T	$V_{CE}=-5.0V$ $I_C=-1.0A$		100		MHz
Turn-On Time	t_{on}	$20I_{B1}=-20I_{B2}=I_C=2A$		0.1		μs
Storage Time	t_{stg}			0.5		
Fall Time	t_f			0.1		

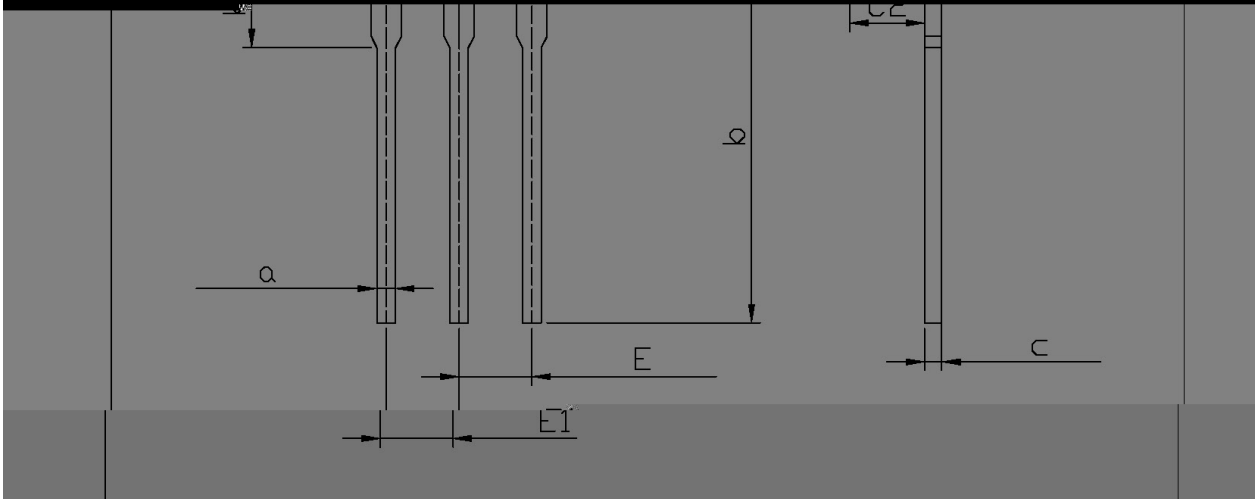
/ Electrical Characteristic Curve



/ Package Dimensions

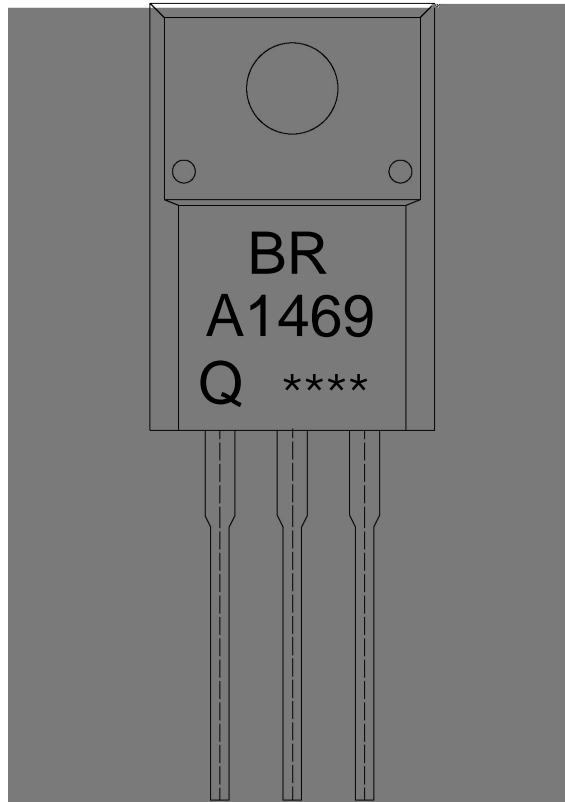
TO-220F

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	0.5	0.75

/ Marking Instructions



BR

A1469

Q: h_{FE}

Note:

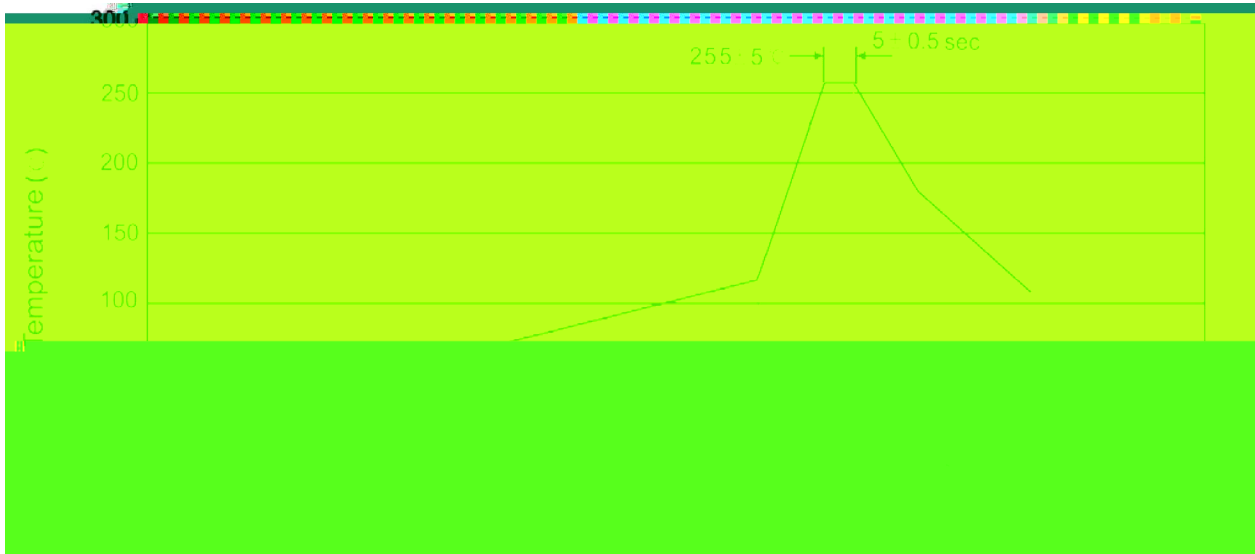
BR: Company Code.

A1469: Product Type.

Q: h_{FE} Classifications Symbol

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

() / **Temperature Profile for Dip Soldering(Pb-Free)**



Note:

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

/ **Resistance to Soldering Heat Test Conditions**

270±5 10±1 sec. Temp.:270±5 Time:10±1 sec

/ **Packaging SPEC.**

/ **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

/ **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

/ **Notices**