

/ Descriptions

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

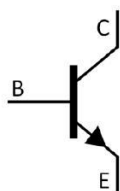
/ Features

High h_{FE} , low saturation voltage.

/ Applications

Switching application, interface circuit and driver circuit application.

/ Equivalent Circuit



/ Pinning



PIN1 Base PIN 2 Collector PIN 3 Emitter

/ h_{FE} Classifications & Marking

See Marking Instructions.

/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	100	V
Collector to Emitter Voltage	V_{CEO}	80	V
Emitter to Base Voltage	V_{EBO}	7.0	V
Collector Current - Continuous	I_C	3.0	A
Collector Current - Continuous(Pulse)	I_{CP}	5.0	A
Base Current	I_B	1.0	A
Collector Power Dissipation	$P_C(T_c=25)$	2.0	W
Junction Temperature	T_j	150	
Storage Temperature Range	T_{stg}	-55 150	

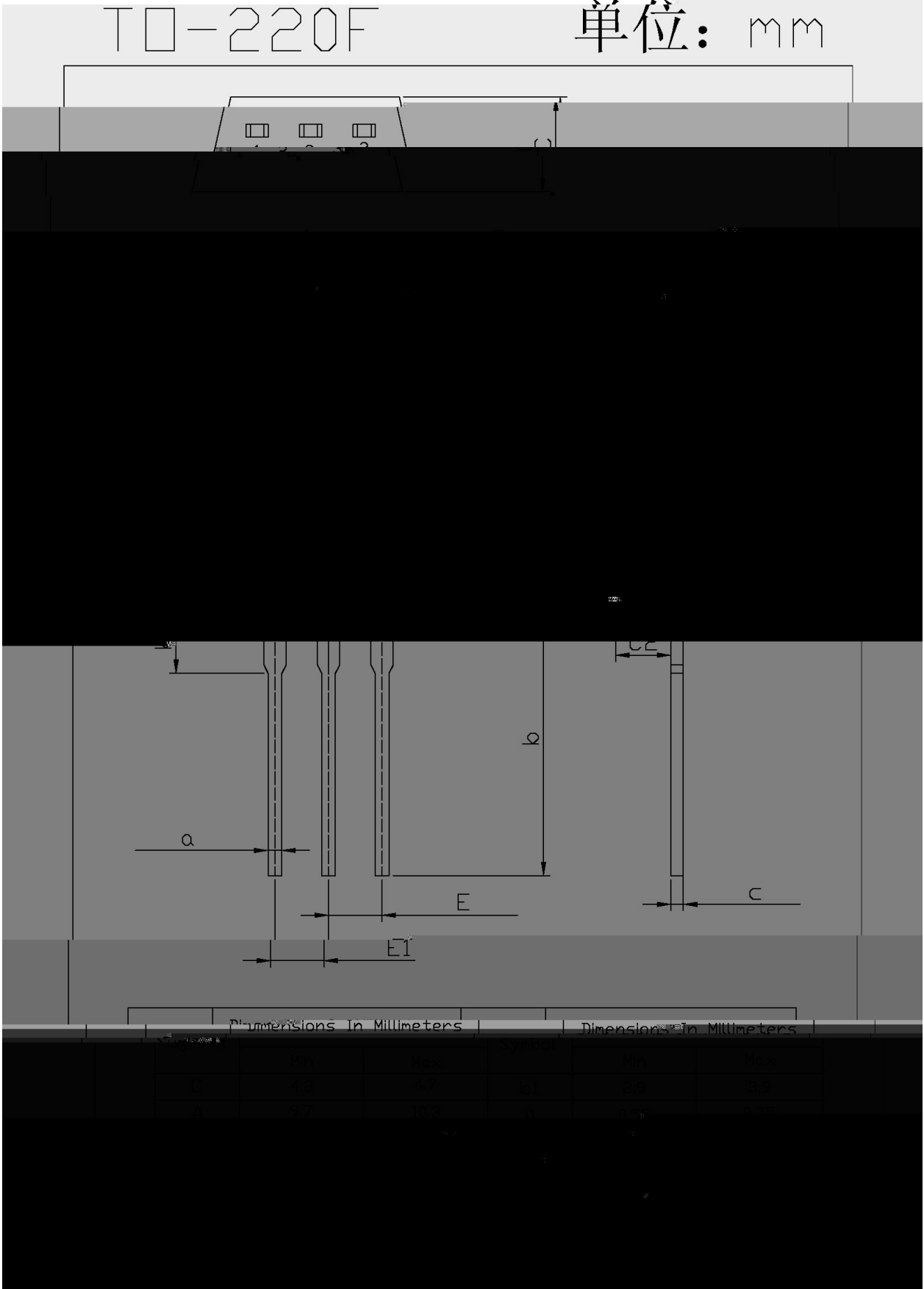
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	V_{CEO}	$I_C=50mA$ $I_B=0$	80			V
Collector Cut-Off Current	I_{CBO}	$V_{CB}=80V$ $I_E=0$			10	A
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=7.0V$ $I_C=0$			10	A
DC Current Gain	$h_{FE(1)}$	$V_{CE}=1.0V$ $I_C=0.5A$	500		1500	
	$h_{FE(2)}$	$V_{CE}=1.0V$ $I_C=1.0A$	150			
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=1.0A$ $I_B=0.01A$			0.35	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=1.0A$ $I_B=0.01A$			1.2	V
Collector to Emitter Forward Voltage	V_{ECF}	$I_E=3.0A$ $I_B=0$			2.5	V
Transition Frequency	f_T	$V_{CE}=5.0V$ $I_C=1.0A$		140		MHz
Collector output capacitance	C_{ob}	$V_{CE}=10V$ $I_E=0$ $f=1.0MHz$		30		pF
Turn-On Time	t_{on}	$I_{B1}=-I_{B2}=10mA$		0.5		s
Storage Time	t_{stg}			5.0		
Fall Time	t_f			0.7		

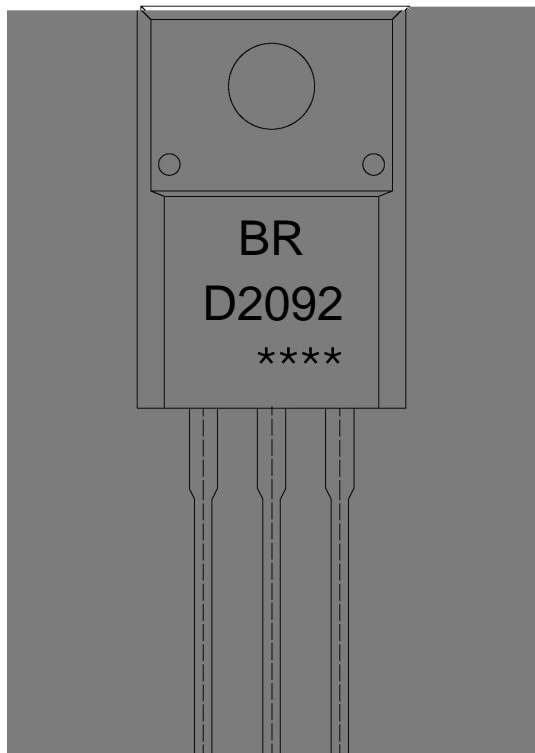
/ Package Dimensions

TO-220F

单位: mm



/ Marking Instructions



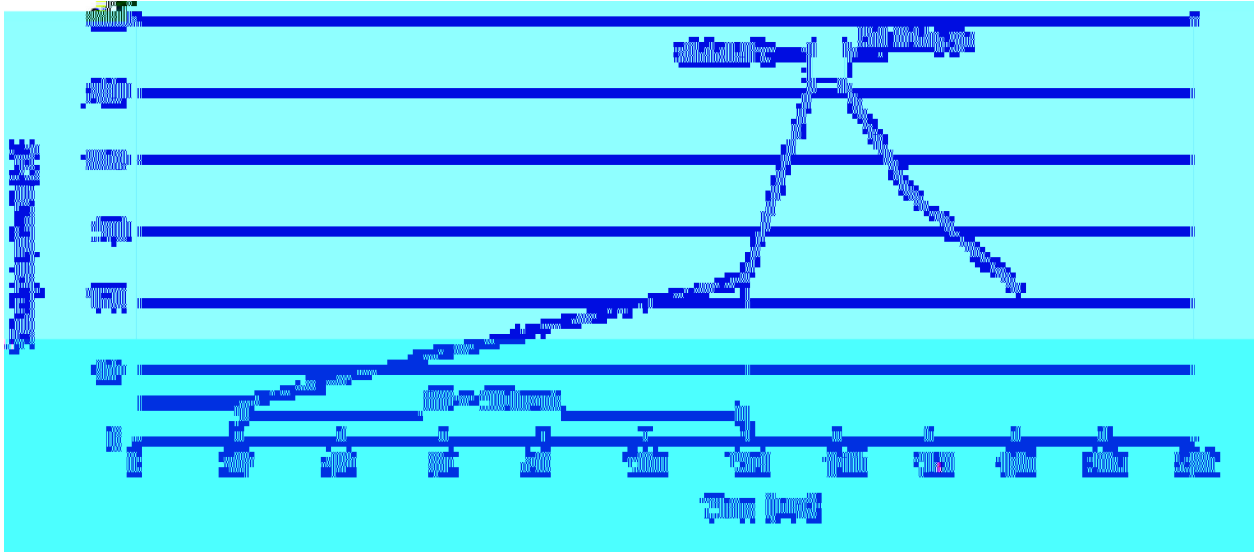
Note:

BR: Company Code.

D2092: Product Type.

****: 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: mm3)		
	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-220F	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

/ TU