/ Descriptions

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

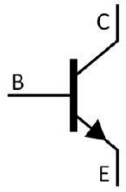
/ Features

Low collector saturation voltage, high power dissipation.

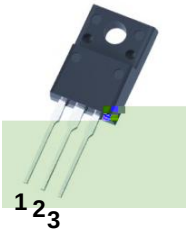
/ Applications

Power amplifier applications.

/ Equivalent Circuit



/ Pinning



PIN1 Base PIN 2 Collector PIN 3 Emitter

/ h_{FE} Classifications & Marking

See Marking Instructions.

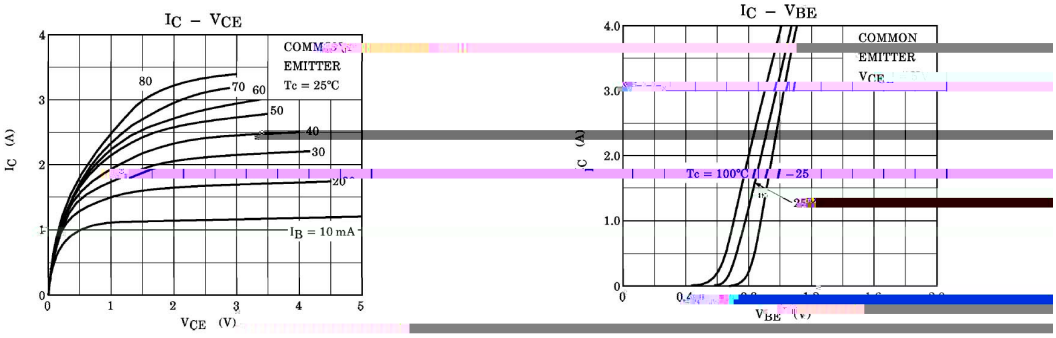
/ Absolute Maximum Ratings(Ta=25)

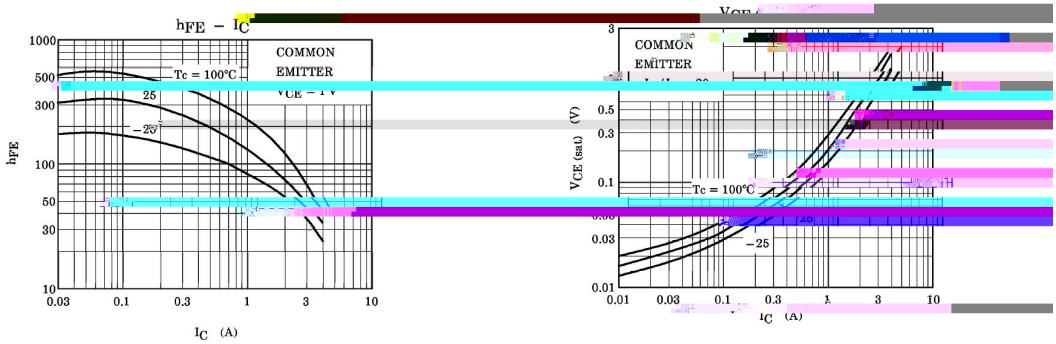
Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	60	V
Emitter to Base Voltage	V_{EBO}	7.0	V
Collector Current - Continuous	I_C	4.0	A
Base Current	I_B	1.0	A
Collector Power Dissipation	P_C	2.0	W
Collector Power Dissipation	P_C(Tc=25)	25	W
Junction Temperature	T_j	150	
Storage Temperature Range	T_{stg}	-55 150	

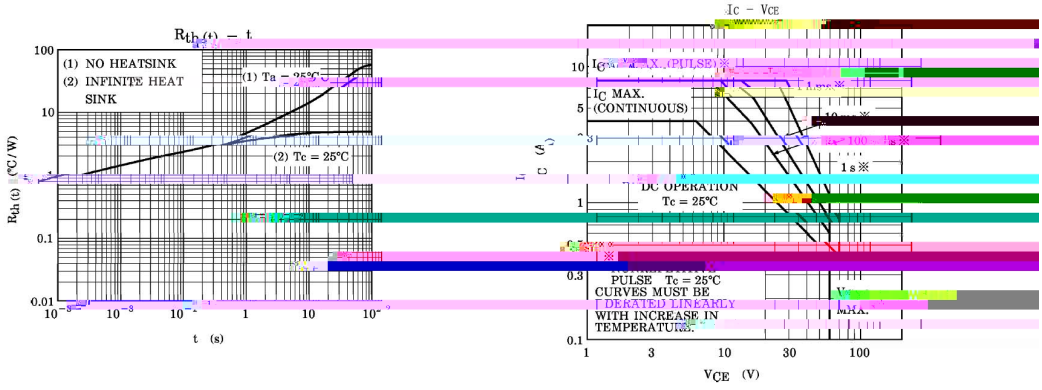
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Emitter Breakdown Voltage	V_{CEO}	I_C=10mA I_B=0	60			V
Collector Cut-Off Current	I_{CBO}	V_{CB}=60V I_E=0			100	μA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=7.0V I_C=0			100	μA
DC Current Gain	$h_{FE(1)}$	V_{CE}=5.0V I_C=500mA	100		320	
	$h_{FE(2)}$	V_{CE}=5.0V I_C=3A	20			
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=2.5A I_B=0.25A		0.5	1.0	V
Base to Emitter Voltage	V_{BE}	V_{CE}=5.0V I_C=500mA		0.75	1.0	V
Transition Frequency	f_T	V_{CE}=5.0V I_C=500mA		3.0		MHz
Collector output capacitance	C_{ob}	V_{CB}=10V I_E=0 f=1.0MHz		35		pF

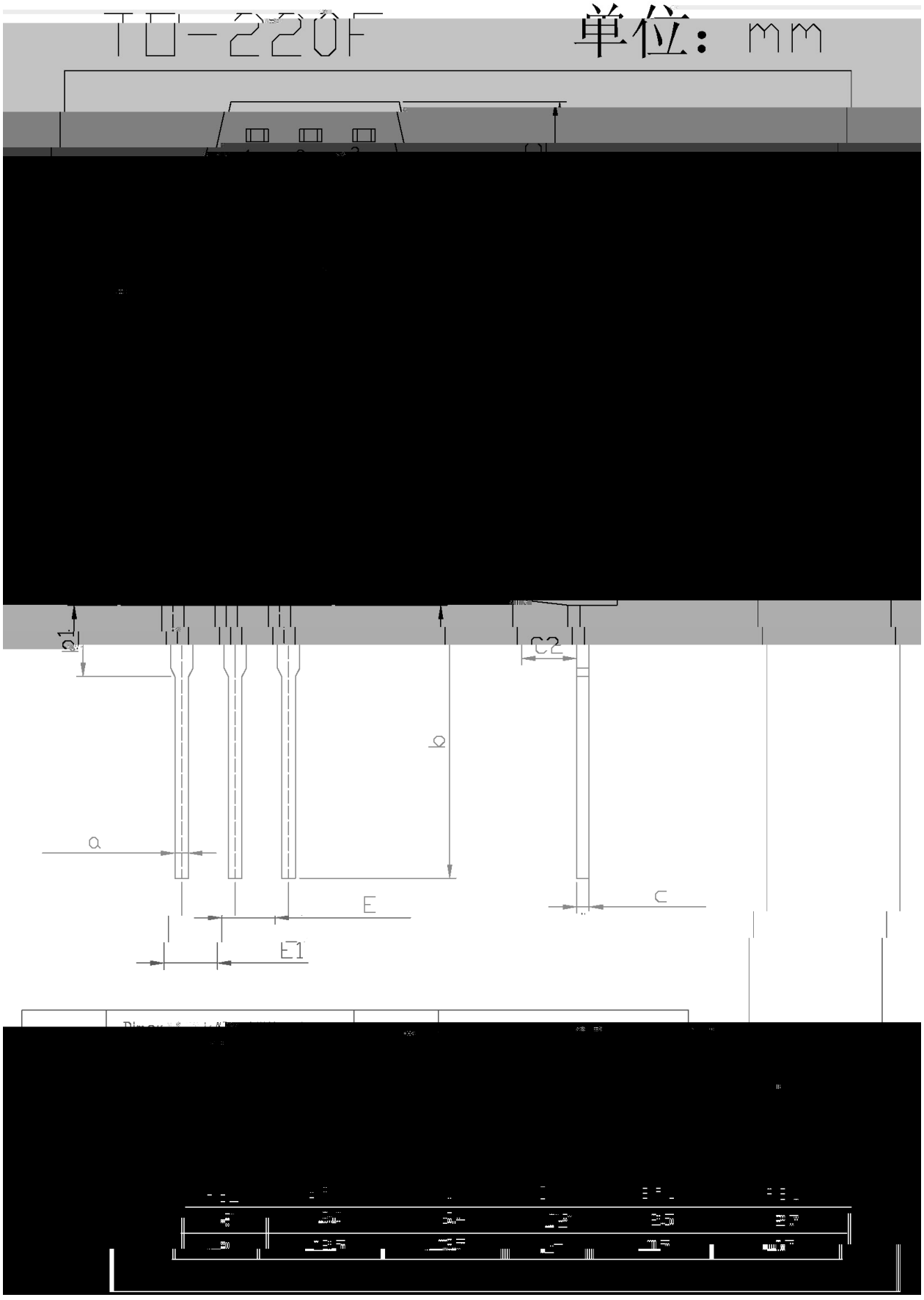
/ Electrical Characteristic Curve



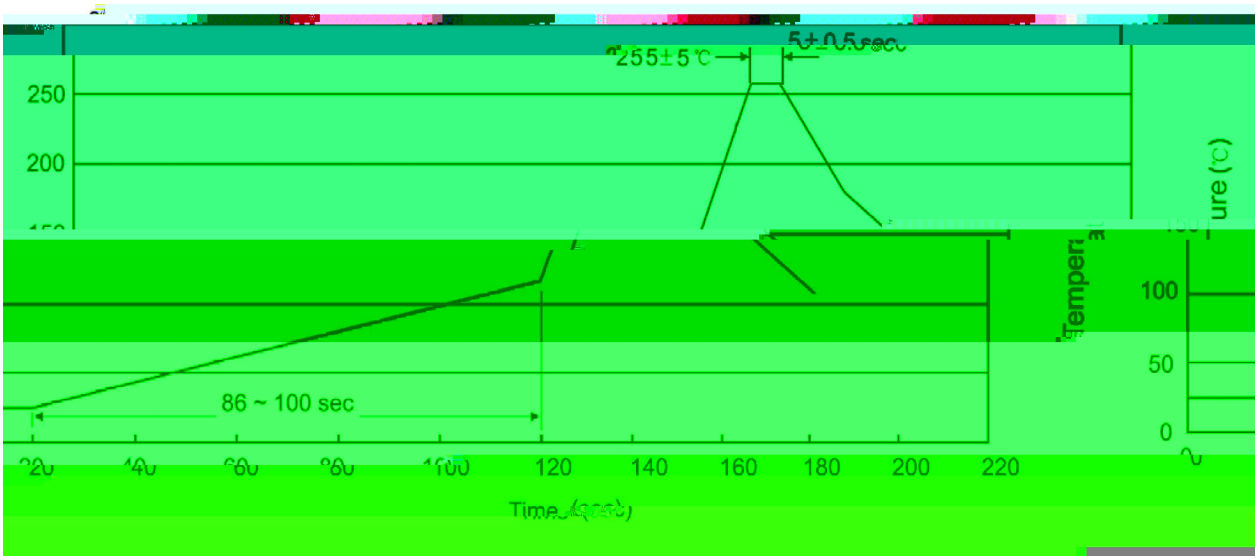




/ Package Dimensions



( ) / 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	Units					Dimension		(unit mm³)
	Units/Bag /	Bags/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Bag	Inner Box	Outer Box
TO-220/F	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

/ TUBE

Package Type	Units					Dimension		(unit mm³)
	Units/Tube /	Tubes/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Tube	Inner Box	Outer Box
TO-220/F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

/ Notices