/ Descriptions

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

/ Features

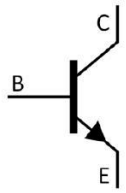
,

High voltage, small collector output capacitance.

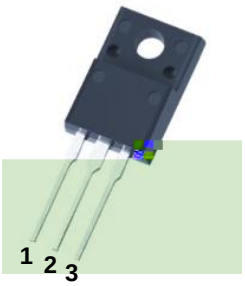
/ Applications

Color TV chroma output application.

/ Equivalent Circuit



/ Pinning



PIN1 Base PIN 2 Collector PIN 3 Emitter

/ h_{FE} Classifications & Marking

See Marking Instructions.

/ Absolute Maximum Ratings(Ta=25)

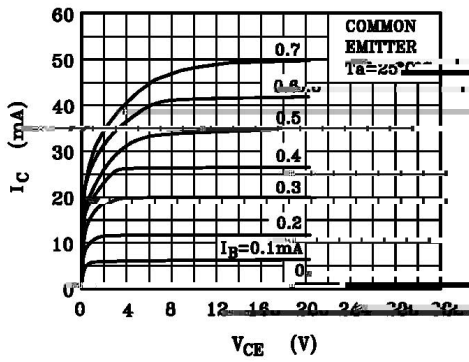
Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	300	V
Collector to Emitter Voltage	V_{CE0}	300	V
Emitter to Base Voltage	V_{EBO}	5	V
Collector Current - Continuous	I_C	100	mA
Base Current	I_B	20	mA
Collector Power Dissipation	P_C(Tc=25)	2	W
Junction Temperature	T_j	150	
Storage Temperature Range	T_{stg}	-55 150	

/ Electrical Characteristics(Ta=25)

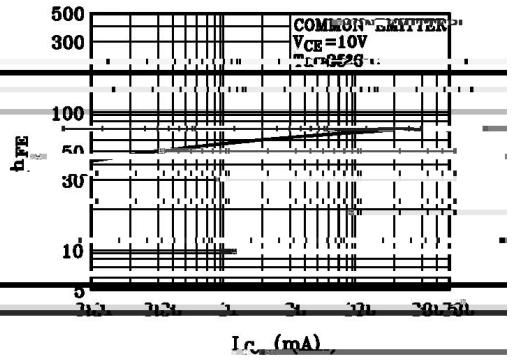
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Cut-Off Current	I_{CBO}	V_{CB}=240V I_E=0			1	μA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=5V I_C=0			1	μA
DC Current Gain	$h_{FE(1)}$	V_{CE}=10V I_C=0.5mA	20			
	$h_{FE(2)}$	V_{CE}=10V I_C=20mA	30		200	
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=10mA I_B=1mA			1	V
Transition Frequency	f_T	V_{CE}=20V I_C=20mA	75	95		MHz
Collector output capacitance	C_{ob}	V_{CB}=20V I_E=0 f=1MHz		4		pF

/ Electrical Characteristic Curve

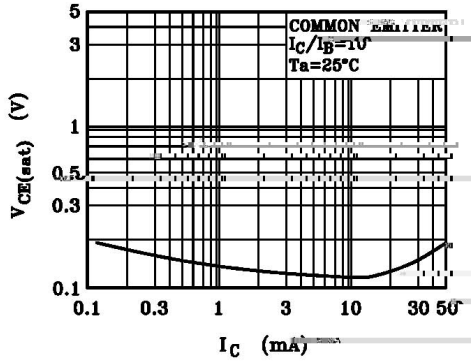
I_C – V_{CE}



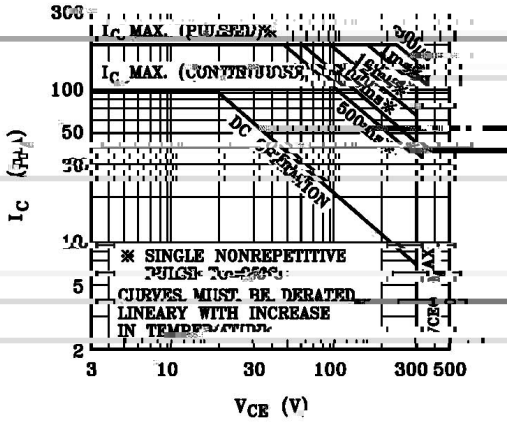
h_{FE} – I_C



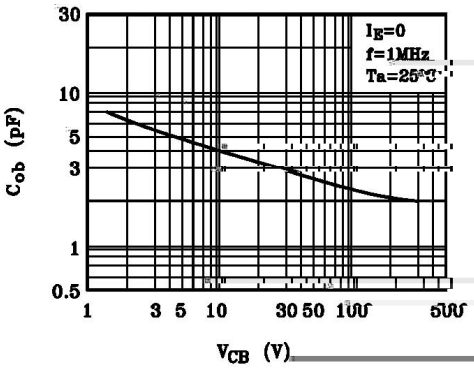
$V_{CE(sat)}$ – I_C



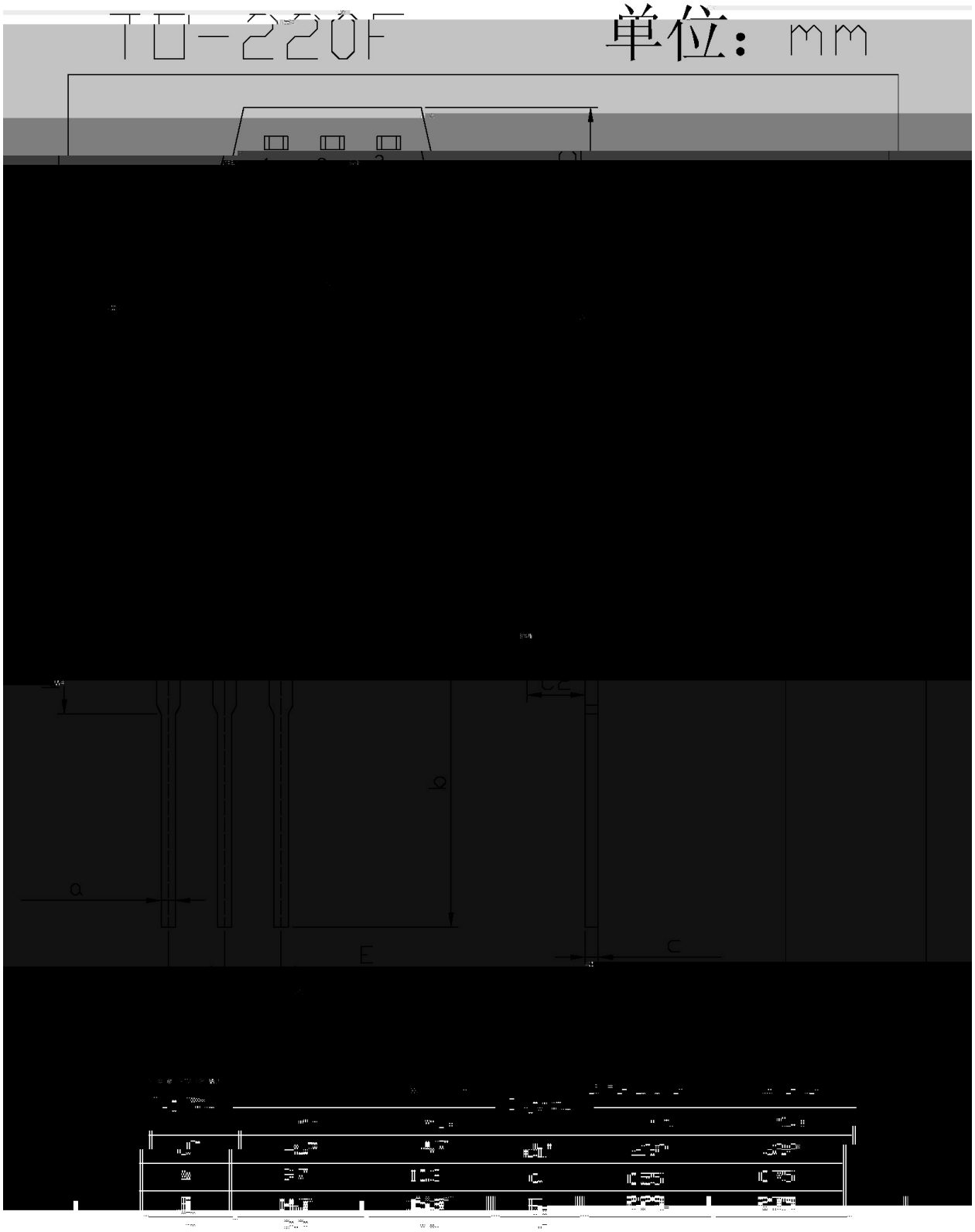
SAFE OPERATING AREA



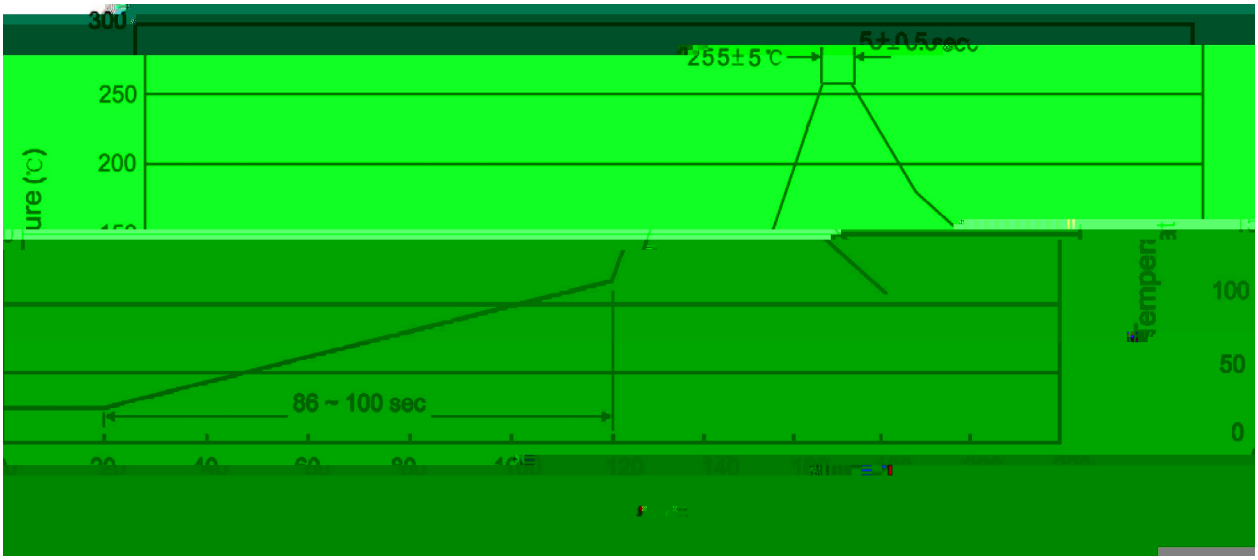
C_{ob} – V_{CB}



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

/ Notices