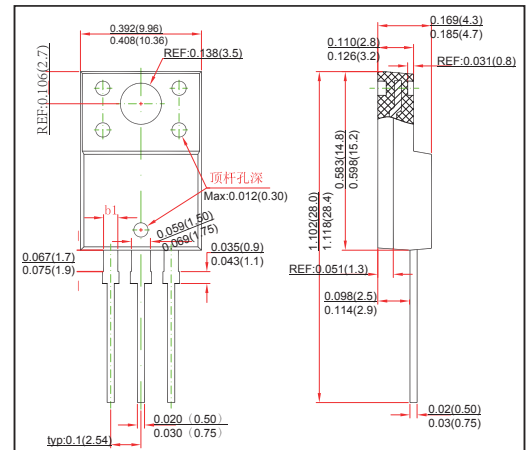


**TO-220F Plastic-Encapsulate Transistors**
**FEATURES**

- High Forward Current Transfer Ratio  $h_{FE}$  which
- Has Satisfactory Linearity
- Low Collector to Emitter Saturation Voltage  $V_{CE(sat)}$
- Allowing Supply with the Radial Taping
- TRANSISTOR (NPN)

**MECHANICAL DATA**

- Case style: TO-220F molded plastic
- Mounting position: any


**MAXIMUM RATINGS AND CHARACTERISTICS**

@ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	60	V
Collector-Emitter Voltage	$V_{CEO}$	60	V
Emitter-Base Voltage	$V_{EBO}$	6	V
Collector Current -Continuous	$I_C$	3	A
Collector Power Dissipation	$P_C$	2	W
Junction Temperature	$T_J$	150	°C
Storage Temperature	$T_{stg}$	-55 ~ +150	°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=0.1mA, I_E=0$	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=30mA, I_B=0$	60			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=0.1mA, I_C=0$	6			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=60V, I_E=0$			100	$\mu A$
Collector cut-off current	$I_{CEO}$	$V_{CE}=30V, I_B=0$			100	$\mu A$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=6V, I_C=0$			100	$\mu A$
DC current gain	$h_{FE(1)}$	$V_{CE}=4V, I_C=1A$	70		320	
	$h_{FE(2)}$	$V_{CE}=4V, I_C=3A$	10			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=3A, I_B=375mA$			1.2	V
Base-emitter voltage	$V_{BE}$	$V_{CE}=4V, I_C=3A$			1.8	V
Transition frequency	$f_T$	$V_{CE}=5V, I_C=0.2A, f=10MHz$		30		MHz
Switch time	Turn-on time	$t_{on}$		0.3		$\mu s$
	Storage time	$t_{stg}$	$V_{CC}=50V, I_C=1A, I_{B1}=-I_{B2}=0.1A$		2.5	$\mu s$
	Fall time	$t_f$			0.2	$\mu s$