

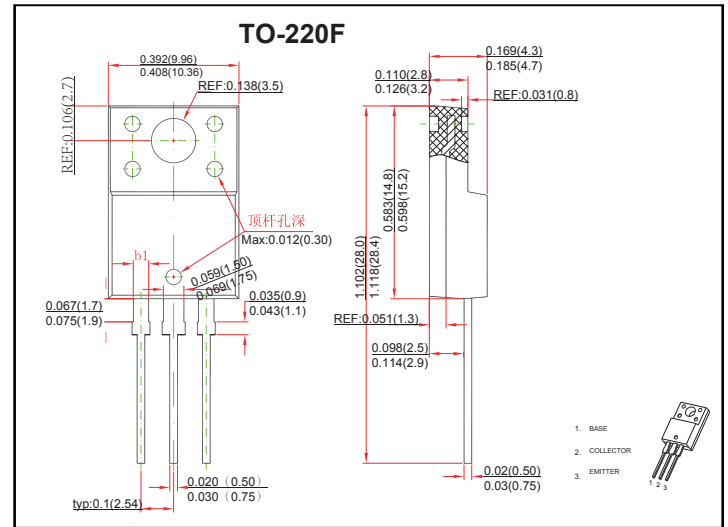
## TO-220F Plastic-Encapsulate Transistors

### FEATURES

- Low  $V_{CE(sat)}$ :  $V_{CE(sat)} = -1.0V(\text{Max.})(I_C/I_B = -2A/-0.2A)$
- Complementary to KTD2058
- TRANSISTOR (PNP)

### MECHANICAL DATA

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



### MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	-60	V
$V_{CEO}$	Collector-Emitter Voltage	-60	V
$V_{EBO}$	Emitter-Base Voltage	-7	V
$I_C$	Collector Current -Continuous	-3	A
$P_C$	Collector power dissipation	2	W
$T_J$	Junction temperature	150	°C
$T_{stg}$	Storage Temperature	-55~+150	°C

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -1\text{mA}, I_E = 0$	-60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -50\text{mA}, I_B = 0$	-60			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -1\text{mA}, I_C = 0$	-7			V
Collector cut-off current	$I_{CBO}$	$V_{CB} = -60\text{V}, I_E = 0$			-100	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -7\text{V}, I_C = 0$			-100	$\mu\text{A}$
DC current gain	$h_{FE(1)}$	$V_{CE} = -5\text{V}, I_C = -0.5\text{A}$	60		200	
	$h_{FE(2)}$	$V_{CE} = -5\text{V}, I_C = -3\text{A}$	20			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -2\text{A}, I_B = -0.2\text{A}$			-1	V
Base-emitter voltage	$V_{BE}$	$V_{CE} = -5\text{V}, I_C = -0.5\text{A}$			-1	V
Transition frequency	$f_T$	$V_{CE} = -5\text{V}, I_C = -0.5\text{A}$		9		MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$		150		pF
Fall time	$t_f$	$I_C = -2\text{A}, I_{B1} = -I_{B2} = -0.2\text{A}$		0.4		$\mu\text{s}$
Storage time	$t_s$	$V_{CC} = -30\text{V}$		1.7		$\mu\text{s}$

#### CLASSIFICATION of $h_{FE(1)}$

Rank	O	Y
Range	60-120	100-200