

## TO-220F Plastic-Encapsulate Transistors

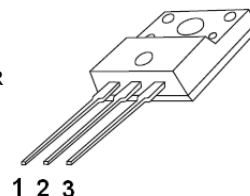
### 2SD2137 TRANSISTOR (NPN)

#### 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

#### TO-220F

1. BASE
2. COLLECTOR
3. EMITTER



#### MAXIMUM RATINGS ( $T_a=25^{\circ}\text{C}$ 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	6	V
$I_C$	Collector Current -Continuous	3	A
$P_C$	Collector Power Dissipation	2	W
$T_J$	Junction Temperature	150	$^{\circ}\text{C}$
$T_{stg}$	Storage Temperature	-55-150	$^{\circ}\text{C}$

#### ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}\text{C}$ unless otherwise specified)

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

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

Rank	Q	P	O
Range	70-150	120-250	160-320