

**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

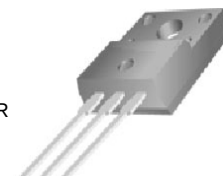
MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Units
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	$^{\circ}\text{C}$

TO-220F

1. BASE
2. COLLECTOR
3. EMITTER

1 2 3

**ELECTRICAL CHARACTERISTICS** ($T_{amb}=25^{\circ}\text{C}$ 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	μA
Collector cut-off current		I_{CEO}	$V_{CE}=30\text{V}$, $I_B=0$			100	μA
Emitter cut-off current		I_{EBO}	$V_{EB}=6\text{V}$, $I_C=0$			100	μA
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}	$V_{CC}=50\text{V}$, $I_C=1\text{A}$, $I_{B1}=-I_{B2}=0.1\text{A}$		0.3		μs
	Storage time	t_{stg}			2.5		μs
	Fall time	t_f			0.2		μs

CLASSIFICATION OF $h_{FE(1)}$

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

Typical Characteristics

2SD2137

