



## SOT-89 Plastic-Encapsulate Transistors

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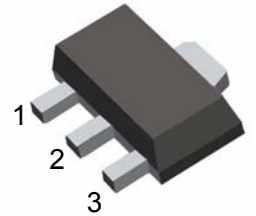
### 2SD965A TRANSISTOR (NPN)

#### FEATURES

- Audio amplifier
- Flash unit of camera
- Switching circuit

#### SOT-89

1. BASE
2. COLLECTOR
3. EMITTER



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

Symbol	Parameter	Value	Units
$V_{CB0}$	Collector-Base Voltage	40	V
$V_{CEO}$	Collector-Emitter Voltage	30	V
$V_{EBO}$	Emitter-Base Voltage	7	V
$I_C$	Collector Current -Continuous	5	A
$P_C$	Collector Power Dissipation	750	mW
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-55-150	$^\circ\text{C}$

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

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=0.1\text{mA}, I_E=0$	40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, I_B=0$	30			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	7			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=10\text{V}, I_E=0$			0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=7\text{V}, I_C=0$			0.1	$\mu\text{A}$
DC current gain	$h_{FE(1)}$	$V_{CE}=2\text{V}, I_C=1\text{mA}$		200		
	$h_{FE(2)}$	$V_{CE}=2\text{V}, I_C=500\text{mA}$	230		800	
	$h_{FE(3)}$	$V_{CE}=2\text{V}, I_C=2\text{A}$	150			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=3\text{A}, I_B=0.1\text{A}$			1	V
Transition frequency	$f_T$	$V_{CE}=6\text{V}, I_C=50\text{mA}$		150		MHz
Out capacitance	$C_{ob}$	$V_{CB}=20\text{V}, I_E=0, f=1\text{MHz}$			50	pF

#### CLASSIFICATION OF $h_{FE(2)}$

Rank	Q	R	S
Range	230-380	340-600	560-800

# Typical Characteristics

# 2SD965A

Fig.1 Static characteristics

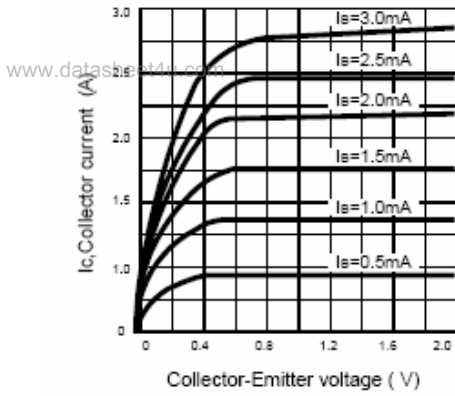


Fig.2 DC current Gain

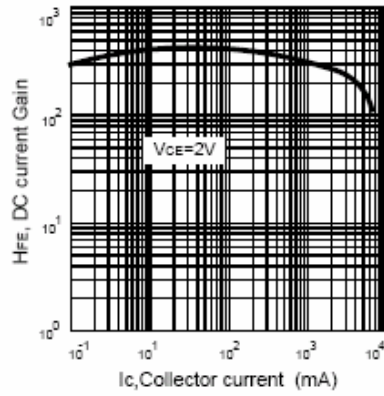


Fig.3 Base-Emitter on Voltage

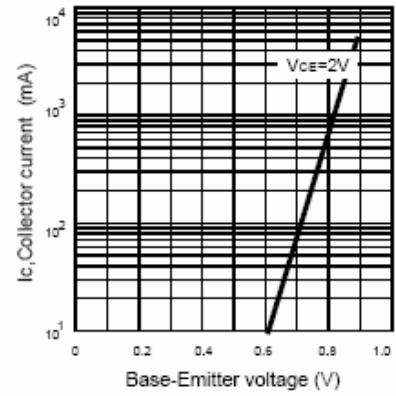


Fig.4 Saturation voltage

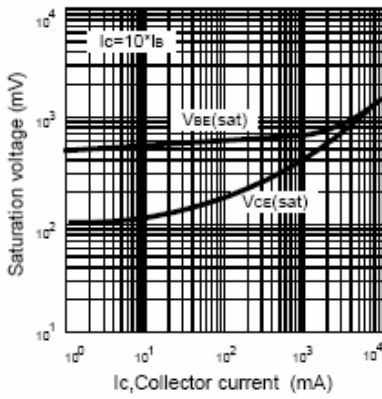


Fig.5 Current gain-bandwidth product

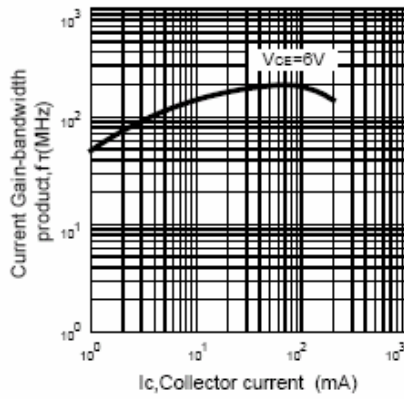


Fig.6 Collector output Capacitance

