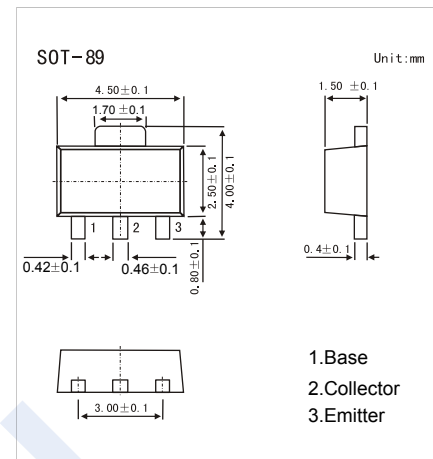


NPN Transistors

2SD965A-HF

■ Features

- Audio amplifier
- Flash unit of camera
- Switching circuit
- Pb-Free Package May be Available. The G-Suffix Denotes a Pb-Free Lead Finish

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CB0}	40	V
Collector - Emitter Voltage	V_{CE0}	30	
Emitter - Base Voltage	V_{EB0}	7	
Collector Current - Continuous	I_C	5	A
Collector Power Dissipation	P_C	750	mW
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	167	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to 150	

■ Electrical Characteristics $T_a = 25^\circ\text{C}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V_{CB0}	$I_C = 100 \mu\text{A}$, $I_E = 0$	40			V
Collector- emitter breakdown voltage	V_{CE0}	$I_C = 1 \text{ mA}$, $I_B = 0$	30			
Emitter - base breakdown voltage	V_{EB0}	$I_E = 100 \mu\text{A}$, $I_C = 0$	7			
Collector-base cut-off current	I_{CB0}	$V_{CB} = 10 \text{ V}$, $I_E = 0$			100	nA
Emitter cut-off current	I_{EB0}	$V_{EB} = 7 \text{ V}$, $I_C = 0$			100	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 3 \text{ A}$, $I_B = 100 \text{ mA}$			1	V
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = 3 \text{ A}$, $I_B = 100 \text{ mA}$			1.2	
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		950	
	$h_{FE(3)}$	$V_{CE} = 2 \text{ V}$, $I_C = 2 \text{ A}$	150			
Collector output capacitance	C_{ob}	$V_{CB} = 20 \text{ V}$, $I_E = 0$, $f = 1 \text{ MHz}$			50	pF
Transition frequency	f_T	$V_{CE} = 6 \text{ V}$, $I_C = 50 \text{ mA}$		150		MHz

■ Classification of $h_{FE(2)}$

Type	2SD965A-Q-HF	2SD965A-R-HF	2SD965A-S-HF	2SD965A-T-HF
Range	230-380	340-600	560-800	560-950
Marking	965AQ _F	965AR _F	965AS _F	965AT _F