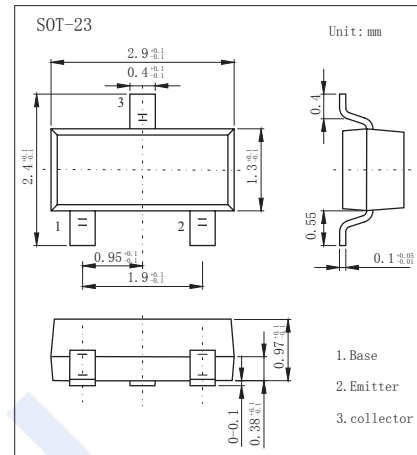


NPN Transistors

2SC3838

■ Features

- High transition frequency.
- Small $r_{bb'}$ · C_c and high gain.
- Small NF.



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

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CB0}	20	V
Collector - Emitter Voltage	V_{CE0}	11	
Emitter - Base Voltage	V_{EB0}	3	
Collector Current - Continuous	I_C	50	mA
Collector Power Dissipation	P_C	200	mW
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}	$I_C = 100 \mu\text{A}$, $I_E = 0$	20			V
Collector-emitter breakdown voltage	V_{CE0}	$I_C = 1 \text{ mA}$, $I_B = 0$	11			
Emitter - base breakdown voltage	V_{EB0}	$I_E = 100 \mu\text{A}$, $I_C = 0$	3			
Collector-base cut-off current	I_{CBO}	$V_{CB} = 20 \text{ V}$, $I_E = 0$			0.5	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 3 \text{ V}$, $I_C = 0$			0.5	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 10 \text{ mA}$, $I_B = 5 \text{ mA}$			0.5	V
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = 10 \text{ mA}$, $I_B = 5 \text{ mA}$			1.2	
DC current gain	h_{FE}	$V_{CE} = 10 \text{ V}$, $I_C = 5 \text{ mA}$	82		240	
Collector-base time constant	$r_{bb'}$ · C_c	$V_{CB} = 10 \text{ V}$, $I_C = 10 \text{ mA}$, $f = 31.8 \text{ MHz}$		4	12	PS
Noise figure	NF	$V_{CE} = 6 \text{ V}$, $I_C = 2 \text{ mA}$, $f = 500 \text{ MHz}$, $R_g = 50 \Omega$		3.5		dB
Collector output capacitance	C_{ob}	$V_{CB} = 10 \text{ V}$, $I_E = 0$, $f = 1 \text{ MHz}$			1.5	pF
Transition frequency	f_T	$V_{CE} = 10 \text{ V}$, $I_C = 10 \text{ mA}$, $f = 500 \text{ MHz}$	1.4	3.2		GHz

■ Classification of h_{FE}

Type	2SC3838-P	2SC3838-Q	2SC3838-Y
Range	82-180	100-200	120-240
Marking	ADP	ADQ	ADY