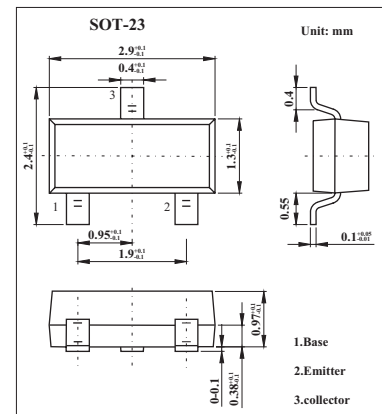


## High-Frequency Amplifier Transistor

### 2SC3838K

#### ■ Features

- High transition frequency. (Typ.  $f_T = 1.5\text{GHz}$ )
- Small  $r_{bb'}$ ,  $C_c$  and high gain. (Typ. 4ps)



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

Parameter	Symbol	Rating	Unit
Collector-base voltage	$V_{CB0}$	20	V
Collector-emitter voltage	$V_{CEO}$	11	V
Emitter-base voltage	$V_{EBO}$	3	V
Collector current	$I_C$	50	mA
Collector power dissipation	$P_C$	0.2	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Collector-base voltage	$V_{CB0}$	$I_C = 10\ \mu\text{A}$	20			V
Collector-emitter voltage	$V_{CEO}$	$I_C = 1\text{mA}$	11			V
Emitter-base voltage	$V_{EBO}$	$I_E = 10\ \mu\text{A}$	3			V
Collector cutoff current	$I_{CBO}$	$V_{CB} = 10\text{V}$			0.5	$\mu\text{A}$
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 2\text{V}$			0.5	$\mu\text{A}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 10\text{mA}, I_B = 5\text{mA}$			0.5	V
DC current gain	$h_{FE}$	$V_{CE} = 10\text{V}, I_C = 5\text{mA}$	56		180	
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 factor	NF	$V_{CE} = 6\text{V}, I_C = 2\text{mA}, f = 500\text{MHz}, R_g = 50\Omega$		3.5		dB
Output capacitance	$C_{ob}$	$V_{CE} = 10\text{V}, I_E = 0\text{A}, f = 1\text{MHz}$		0.8	1.5	pF
Transition frequency	$f_T$	$V_{CE} = 10\text{V}, I_E = 10\text{mA}, f = 500\text{MHz}$	1.4	3.2		GHz

#### ■ $h_{FE}$ Classification

Marking	ADN	ADP
Rank	N	P
$h_{FE}$	56 to 120	82 to 180