



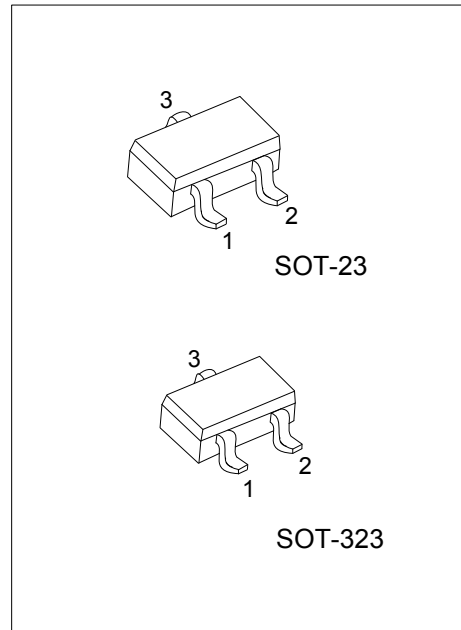
## 2SC3838

## NPN SILICON TRANSISTOR

### HIGH-FREQUENCY AMPLIFIER TRANSISTOR

#### FEATURES

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



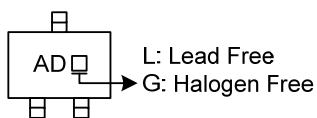
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
2SC3838L-x-AE3-R	2SC3838G-x-AE3-R	SOT-23	B	E	C	Tape Reel
2SC3838L-x-AL3-R	2SC3838G-x-AL3-R	SOT-323	B	E	C	Tape Reel

Note: Pin Assignment: B: Base E: Emitter C: Collector

<p>2SC3838G-x-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Rank (4) Green Package</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23, AL3: SOT-323 (3) x: refer to Classification of <math>h_{FE}</math> (4) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage	$V_{CBO}$	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	$P_D$	0.2	W
Junction Temperature	$T_J$	+150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$BV_{CBO}$	$I_C=10\mu\text{A}$	20			V
Collector-emitter breakdown voltage	$BV_{CEO}$	$I_C=1\text{mA}$	11			V
Emitter-base breakdown voltage	$BV_{EBO}$	$I_E=10\mu\text{A}$	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 transfer ratio	$h_{FE}$	$V_{CE}=10\text{V}$ , $I_C=5\text{mA}$	56		400	
Transition frequency	$f_T$	$V_{CE}=10\text{V}$ , $I_E=10\text{mA}$ , $f=500\text{MHz}$	1.4	3.2		GHz
Output capacitance	$C_{ob}$	$V_{CB}=10\text{V}$ , $I_E=0\text{A}$ , $f=1\text{MHz}$		0.8	1.5	pF
Collector-base time constant	$r_{bb'} \cdot C_c$	$V_{CB}=10\text{V}$ , $I_C=10\text{mA}$ , $f=31.8\text{MHz}$		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

■ CLASSIFICATION of  $h_{FE}$

RANK	A	B	C	D
RANGE	56 ~ 110	100 ~ 170	120 ~ 270	250 ~ 400

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