



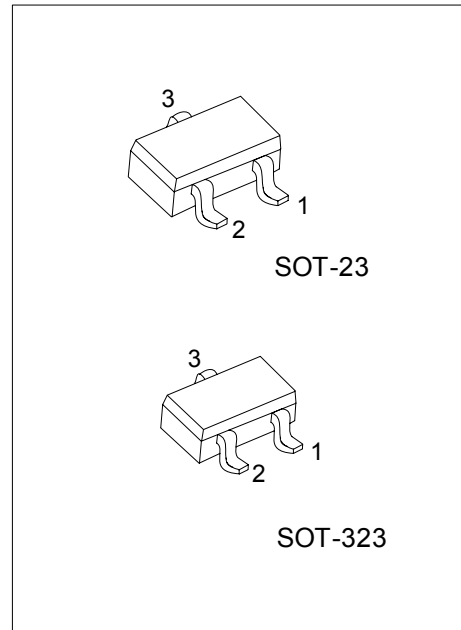
## 2SC3838

## NPN SILICON TRANSISTOR

### HIGH-FREQUENCY AMPLIFIER TRANSISTOR

#### FEATURES

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



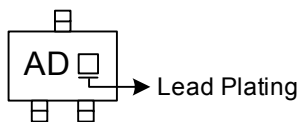
\*Pb-free plating product number: 2SC3838L

#### ORDERING INFORMATION

Order Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
2SC3838-x-AE3-R	2SC3838L-x-AE3-R	SOT-23	E	B	C	Tape Reel
2SC3838-x-AL3-R	2SC3838L-x-AL3-R	SOT-323	E	B	C	Tape Reel

<p>2SC3838L-x-AE3-R</p>	<p>(1) R: Tape Reel</p> <p>(2) AE3: SOT-23, AL3: SOT-323</p> <p>(3) x: refer to Classification of <math>h_{FE}</math></p> <p>(4) L: Lead Free Plating, Blank: Pb/Sn</p>
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#### MARKING



■ ABSOLUTE MAXIMUM RATINGS (Ta = 25 °C)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage	V <sub>CBO</sub>	20	V
Collector-Emitter Voltage	V <sub>CEO</sub>	11	V
Emitter-Base Voltage	V <sub>EBO</sub>	3	V
Collector current	I <sub>C</sub>	50	mA
Collector power dissipation	P <sub>D</sub>	0.2	W
Junction Temperature	T <sub>J</sub>	+150	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	°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 (Ta= 25 °C, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	BV <sub>CBO</sub>	I <sub>C</sub> =10μA	20			V
Collector-emitter breakdown voltage	BV <sub>CEO</sub>	I <sub>C</sub> =1mA	11			V
Emitter-base breakdown voltage	BV <sub>EBO</sub>	I <sub>E</sub> =10μA	3			V
Collector cutoff current	I <sub>CBO</sub>	V <sub>CB</sub> =10V			0.5	μA
Emitter cutoff current	I <sub>EBO</sub>	V <sub>EB</sub> =2V			0.5	μA
Collector-emitter saturation voltage	V <sub>CE(SAT)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> = 5mA			0.5	V
DC current transfer ratio	h <sub>FE</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =5mA	56		400	
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =10V, I <sub>E</sub> =10mA, f=500MHz	1.4	3.2		GHz
Output capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, I <sub>E</sub> =0A, f=1MHz		0.8	1.5	pF
Collector-base time constant	r <sub>bb'</sub> ·C <sub>c</sub>	V <sub>CB</sub> =10V, I <sub>C</sub> =10mA, f=31.8MHz		4	12	ps
Noise factor	NF	V <sub>CE</sub> =6V, I <sub>C</sub> =2mA, f=500MHz, R <sub>g</sub> =50Ω		3.5		dB

■ CLASSIFICATION of h<sub>FE</sub>

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

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