



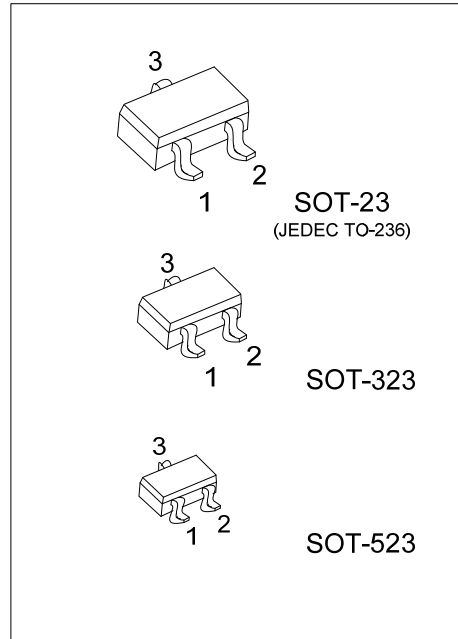
2SC3838

NPN SILICON TRANSISTOR

HIGH-FREQUENCY AMPLIFIER TRANSISTOR

FEATURES

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



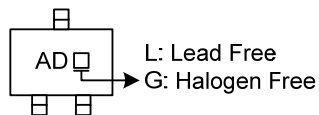
ORDERING INFORMATION

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
2SC3838L-x-AN3-R	2SC3838G-x-AN3-R	SOT-523	B	E	C	Tape Reel

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

2SC3838G-x-AE3-R (1) Packing Type (2) Package Type (3) Rank (4) Green Package	(1) R: Tape Reel (2) AE3: SOT-23, AL3: SOT-323, AN3: SOT-523 (3) x: refer to Classification of h_{FE} (4) G: Halogen Free and Lead Free, L: Lead Free
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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	SOT-23	P_D	0.2	W
	SOT-323			
	SOT-523		0.15	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	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 2\text{V}$			0.5	μA
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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