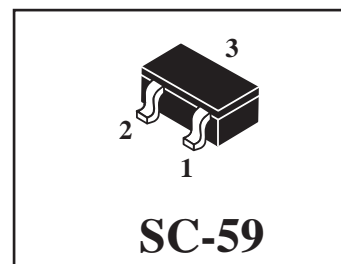
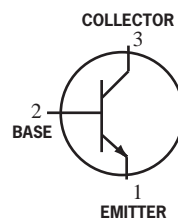


High-Frequency Amplifier Transistor NPN Silicon

 Lead(Pb)-Free



MAXIMUM RATINGS (Ta=25 °C)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	11	Vdc
Collector-Base Voltage	V _{CBO}	20	Vdc
Emitter-Base Voltage	V _{EBO}	3.0	Vdc
Collector Current-Continuous	I _C	50	mAdc

THERMAL CHARACTERISTICS

Characteristics	Symbol	Value	Unit
Total Device Dissipation FR-5 Board ⁽¹⁾ T _A =25 °C	P _D	200	mW
Derate above 25 °C		1.6	mW/°C
Thermal Resistance, Junction Ambient	R _{θJA}	625	°C/W
Junction and Storage, Temperature	T _J , T _{stg}	-55 to +150	°C

Device Marking

2SC3838Q=R25

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Max	Unit
Collector-Emitter Breakdown Voltage(I _C =1 mAdc, I _B =0)	V _{(BR)CEO}	11	-	Vdc
Collector-Base Breakdown Voltage(I _C =10 uAdc, I _E =0)	V _{(BR)CBO}	20	-	Vdc
Emitter-Base Breakdown Voltage(I _E =10 uAdc, I _C =0)	V _{(BR)EBO}	3.0	-	Vdc
Collector Cutoff Current(V _{CB} =10Vdc, I _E =0)	I _{CBO}	-	0.5	uAdc
Emitter Cutoff Current(V _{EB} =2Vdc, I _C =0)	I _{EBO}	-	0.5	uAdc

1. FR-5=1.0×0.75×0.062 in

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ unless otherwise noted) (Continued)

Characteristics	Symbol	Min	TYP	Max	Unit
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ON CHARACTERISTICS

DC Current Gain ($I_C = 5 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$)	hFE	120	-	270	-
Transition Frequency ($I_C = 10 \text{ mAdc}, V_{CB} = 10 \text{ Vdc}, f = 500 \text{ MHz}$)	f_T	1.4	3.2	-	GHz
Output Capacitance ($I_E = 0 \text{ Adc}, V_{CB} = 10 \text{ Vdc}, f = 1 \text{ MHz}$)	Cob	-	0.8	1.5	pF
Collector-Emitter Saturation Voltage ($I_C = 10 \text{ mA}, I_B = 5 \text{ mA}$)	$V_{CE(sat)}$	-	-	0.5	V
Collector-Base Time Constant ($I_C = 10 \text{ mAdc}, V_{CB} = 10 \text{ Vdc}, f = 31.8 \text{ MHz}$)	rbb'Cc	-	4	12	pS
Noise Factor ($I_C = 2 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 500 \text{ MHz}, R_g = 50 \Omega$)	NF	-	3.5	-	dB

SC-59 Outline Dimension

