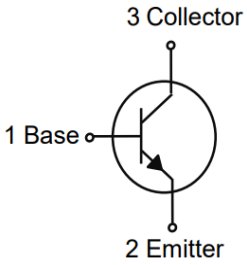
BFU590Q

NPN Wideband Silicon RF Transistor

Features

- Low Noise and High Gain
- High Power Gain

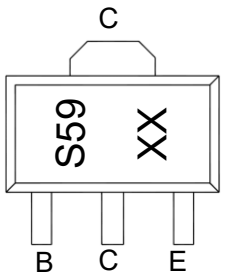
SOT-89-3L top view



Schematic diagram

Application

- low noise amplifier at VHF, UHF and CATV band applications



S59= Device code

XX= Code

Marking and pin assignment

Pb-Free RoHS Halogen-Free

Maximum Ratings(Ta=25℃ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	24	V
V_{CEO}	Collector-Emitter Voltage	12	V
V_{EBO}	Emitter-Base Voltage	2	V
I_C	Collector Current	300	mA
P_C	Collector Power Dissipation	2	W
$R_{\Theta JA}$	Thermal Resistance From Junction To Ambient	62.5	°C/W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-50~+150	°C

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
BFU590Q	SOT-89-3L	S59	1,000	10,000	40,000	7"reel

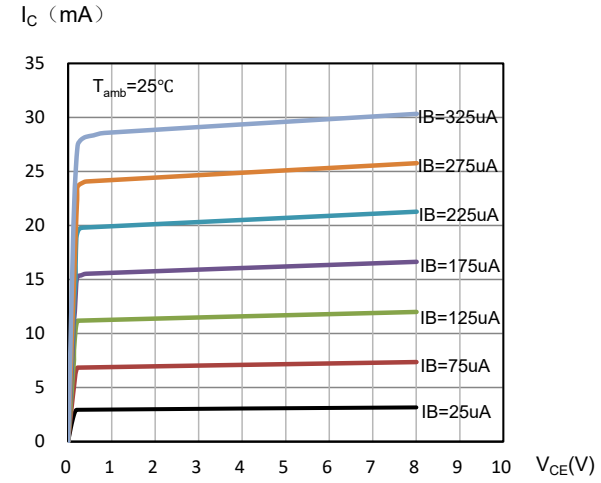
Electrical Characteristics (TJ=25℃ unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
$V_{(BR)CBO}$	Collector-base breakdown voltage	I_C=100nA, I_E=0	24	--	--	V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	I_C=150nA, I_B=0	12	--	--	V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	I_E=100μA, I_C=0	2	--	--	V
I_{CBO}	Collector cut-off current	V_{CB}=10 V , I_E=0	--	--	1	μA
I_{EBO}	Emitter cut-off current	V_{EB}= 1V , I_C=0	--	--	1	μA
h_{FE}	DC current gain	V_{CE}=8V, I_C= 80mA	60	--	250	
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_C=50 mA, I_B= 5mA	--	--	0.3	V
$V_{BE(sat)}$	Base-emitter saturation voltage	I_C=50 mA, I_B= 5mA	--	--	1.15	V
C_e	Emitter Capacitance	V_{EB}=0.5V,I_C=0mA, f=1MHz	--	3.3		pF
C_{re}	Feedback Capacitance	V_{CE}=8V, I_C=0mA, f=1MHz	--	1.3		pF
C_c	Collector Capacitance	V_{CB}=8V, I_E=0mA, f=1MHz		1.8		pF
f_T	Transition frequency	V_{CB}=8V, I_C=50mA, f=900MHz	--	8.5	--	GHz

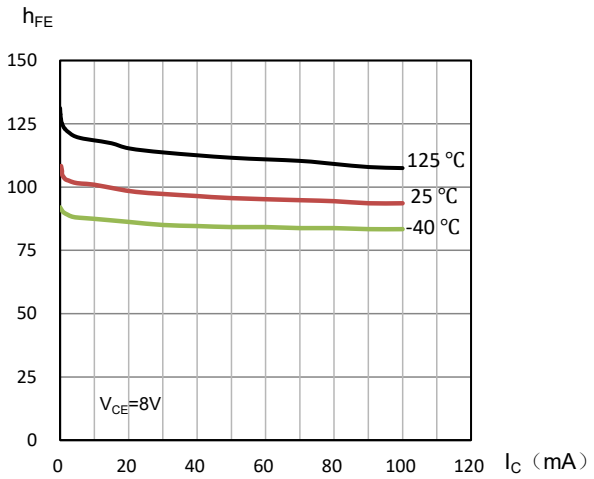
Chassification of h_{FE}

Rank	L	H
Range	60~130	120~250

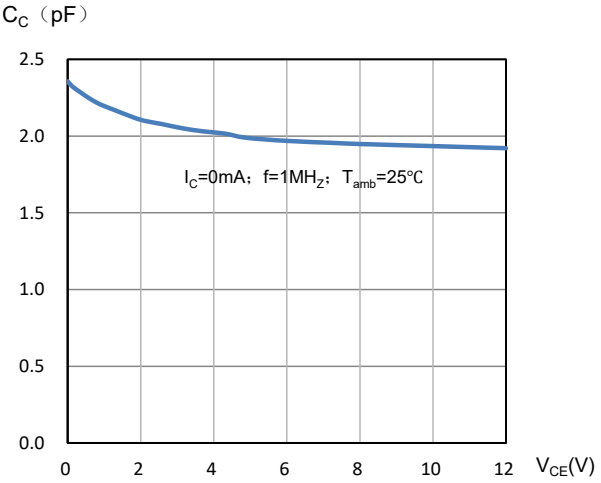
Typical Operating Characteristics



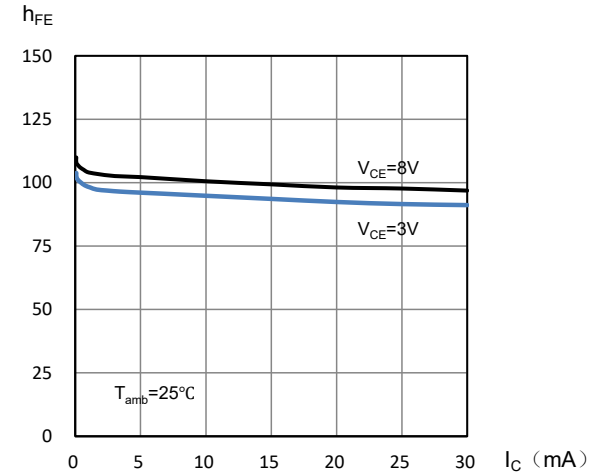
Collector current as a function of collector-emitter voltage; typical values



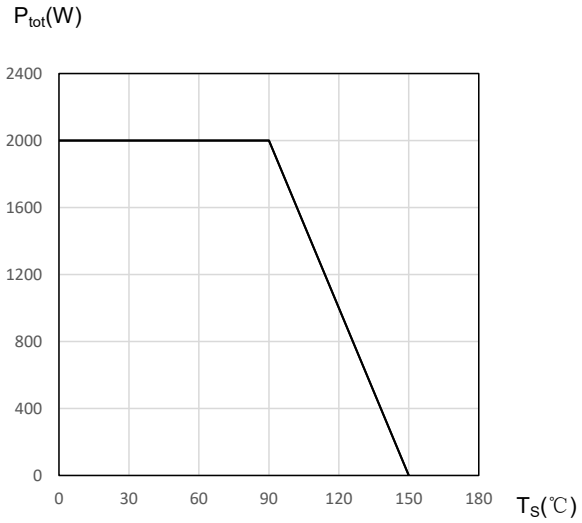
DC current gain as a function of collector current; typical values



Collector capacitance as a function of collector-base voltage; typical values

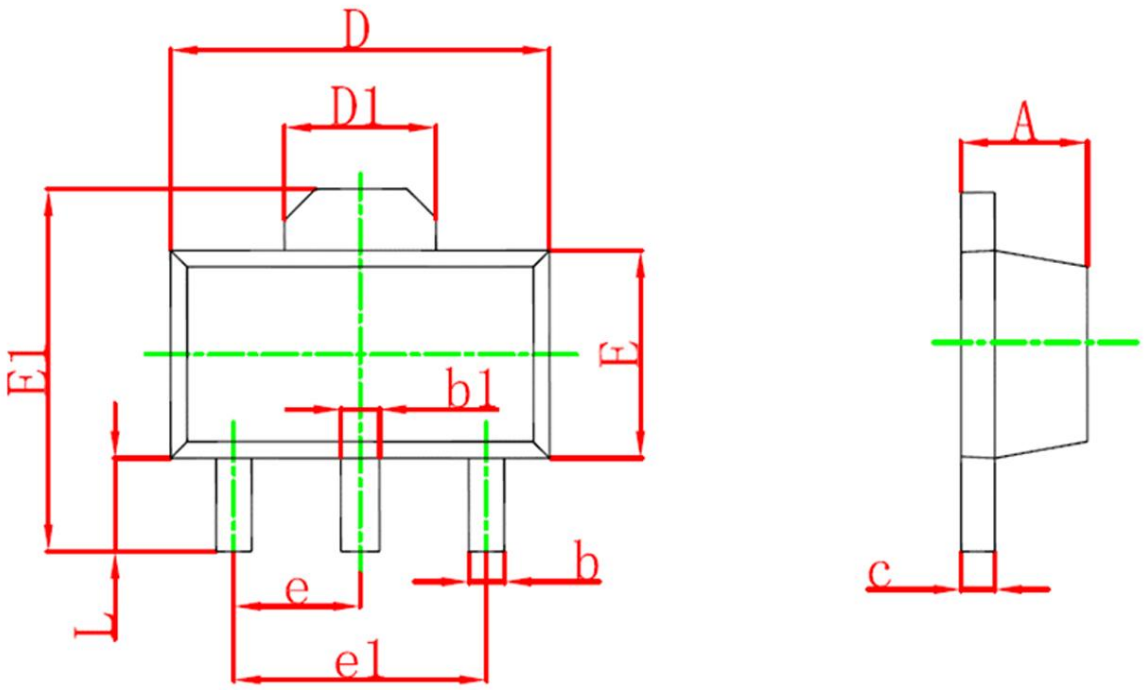


DC current gain as a function of collector current; typical values



Power derating curve

SOT-89-3L Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions in Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060 TYP	
e1	3.000 TYP		0.118 TYP	
L	0.900	1.200	0.035	0.047