MLSM MICROELECTRONICS

BFR380/380T/380F/380L3
Low Profile Linear NPN Silicon RF Transistor

Features

• Low Noise and High Gain

• High Power Gain

SOT-323   SOT-523   SOT-723
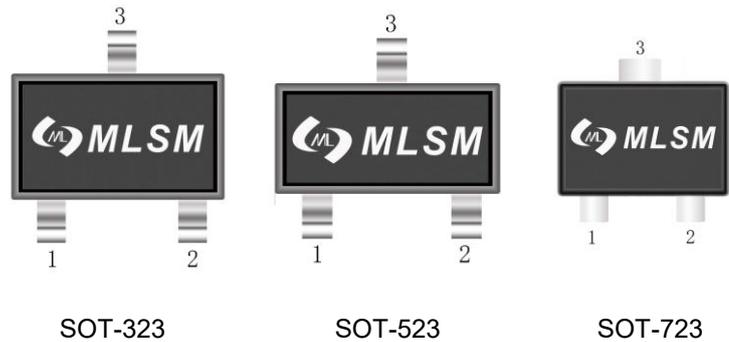
Application

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

RoHS

Pb-Free

Halogen-Free

DFN1006-3L

3 Collector

1 Base
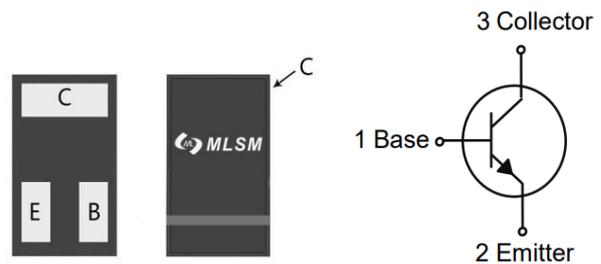
2 Emitter

Schematic diagram

Maximum Ratings(Ta=25℃ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	15	V
V_{CEO}	Collector-Emitter Voltage	6	V
V_{EBO}	Emitter-Base Voltage	2	V
I_C	Collector Current	80	mA
P_C	Collector Power Dissipation	0.38	W
$R_{\Theta JA}$	Thermal Resistance From Junction To Ambient	329	°C/W
T_J, T_{stg}	Operation Junction and Storage Temperature Range	-50~+150	°C

Ordering Information (Example)

Part Number	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
BFR380	SOT-323	FC$_S$	3,000	45,000	180,000	7"reel
BFR380T	SOT-523	FC$_S$	3,000	45,000	180,000	7"reel
BFR380F	SOT-723	FC$_S$	8,000	120,000	480,000	7"reel
BFR380L3	DFN1006-3L	FC	10,000	150,000	600,000	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=100uA, I_E=0	15	--	--	V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	I_C=1mA, I_B=0	6	--	--	V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	I_E=10μA, I_C=0	2	--	--	V
I_{CBO}	Collector cut-off current	V_{CB}=5 V , I_E=0	--	--	100	nA
I_{EBO}	Emitter cut-off current	V_{EB}= 1V , I_C=0	--	--	1	μA
h_{FE}	DC current gain	V_{CE}=3V, I_C= 40mA	60	--	200	
C_{CB}	Collector Base Capacitance	V_{CB}=5V,V_{BE}=0V, f=1MHz，Emitter Grounded	--	0.5		pF
C_{CE}	Collector Emitter Capacitance	V_{CE}=5V,V_{BE}=0V, f=1MHz，Base Grounded	--	0.2		pF
C_{EB}	Emitter Base Capacitance	V_{EB}=0.5V,V_{CB}=0V, f=1MHz，Collector Grounded		1		pF
f_T	Transition frequency	V_{CB}=3V, I_C=40mA, f=900MHz	11	14	--	GHz

Typical Operating Characteristics

f_T（GHz）
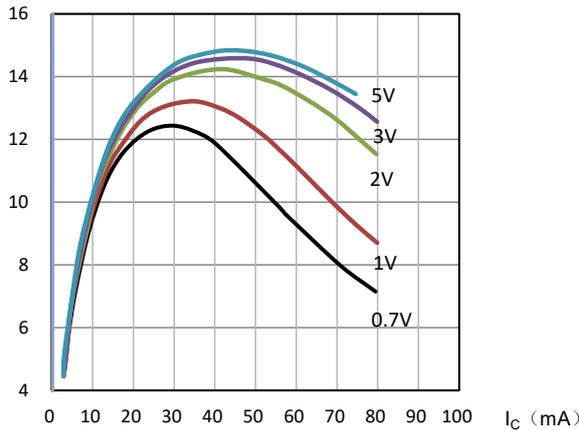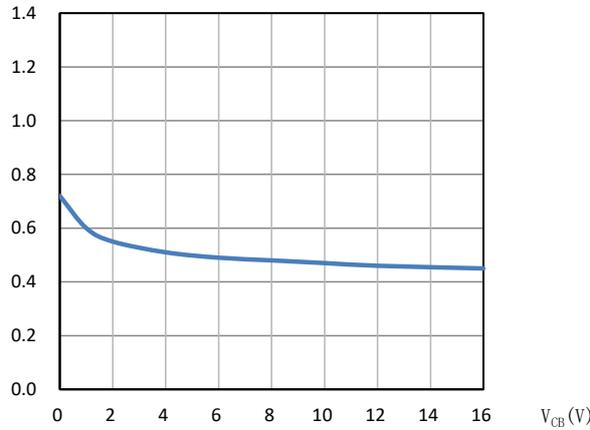

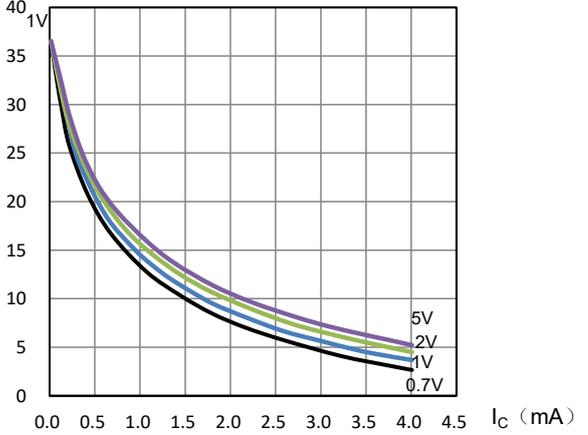Transition frequency $f_T = f(I_C)$, f = 1 GHz,
V_{CE} = parameter

G(db)
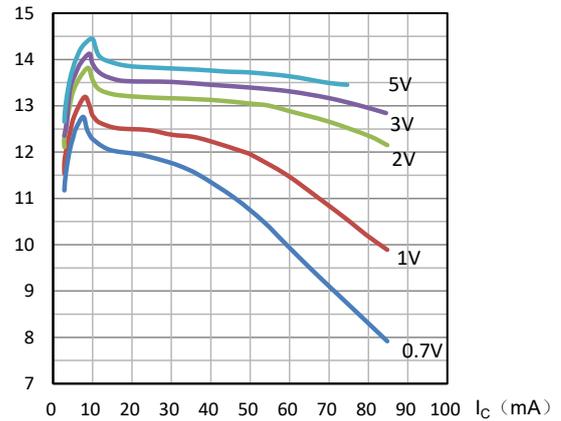
Gain G_{ma}, G_{ms} = f(I_C), f = 1.8 GHz,
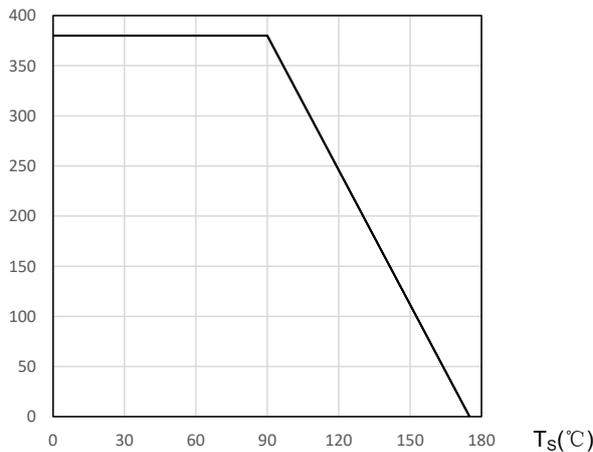V_{CE} = parameter

C_{CB}（pF）

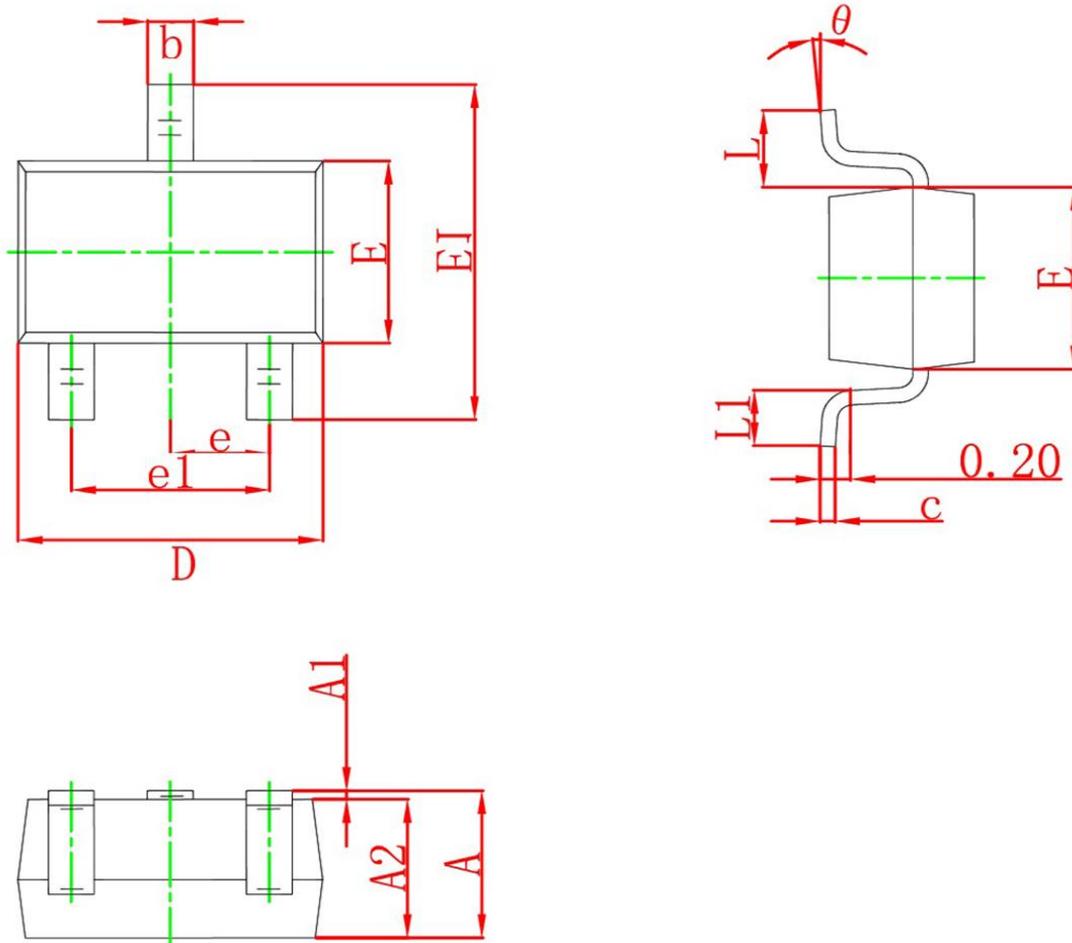Collector base capacitance
$C_{CB} = f(V_{CB})$, f = 1 MHz

G(db)

Gain $IS_{21}I^2 = f(f)$, I_C = 40 mA,
V_{CE} = parameter

P_{tot}(W)

Power derating curve

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SOT-323 Package information

Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650TYP		0.026TYP	
e1	1.200	1.400	0.047	0.055
L	0.525REF		0.021REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

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SOT-523 Package information
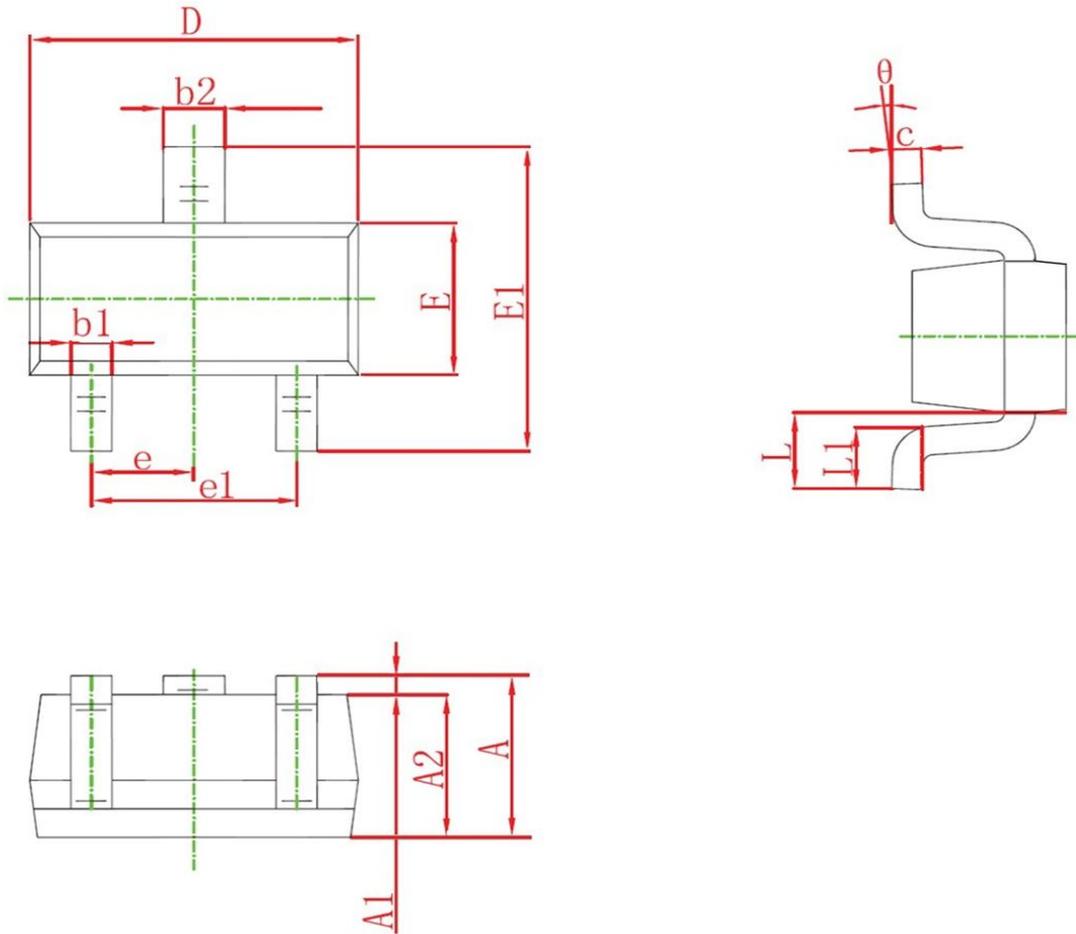
Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500TYP		0.020TYP	
e1	0.900	1.100	0.035	0.043
L	0.400REF		0.016REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

SOT-723 Package information
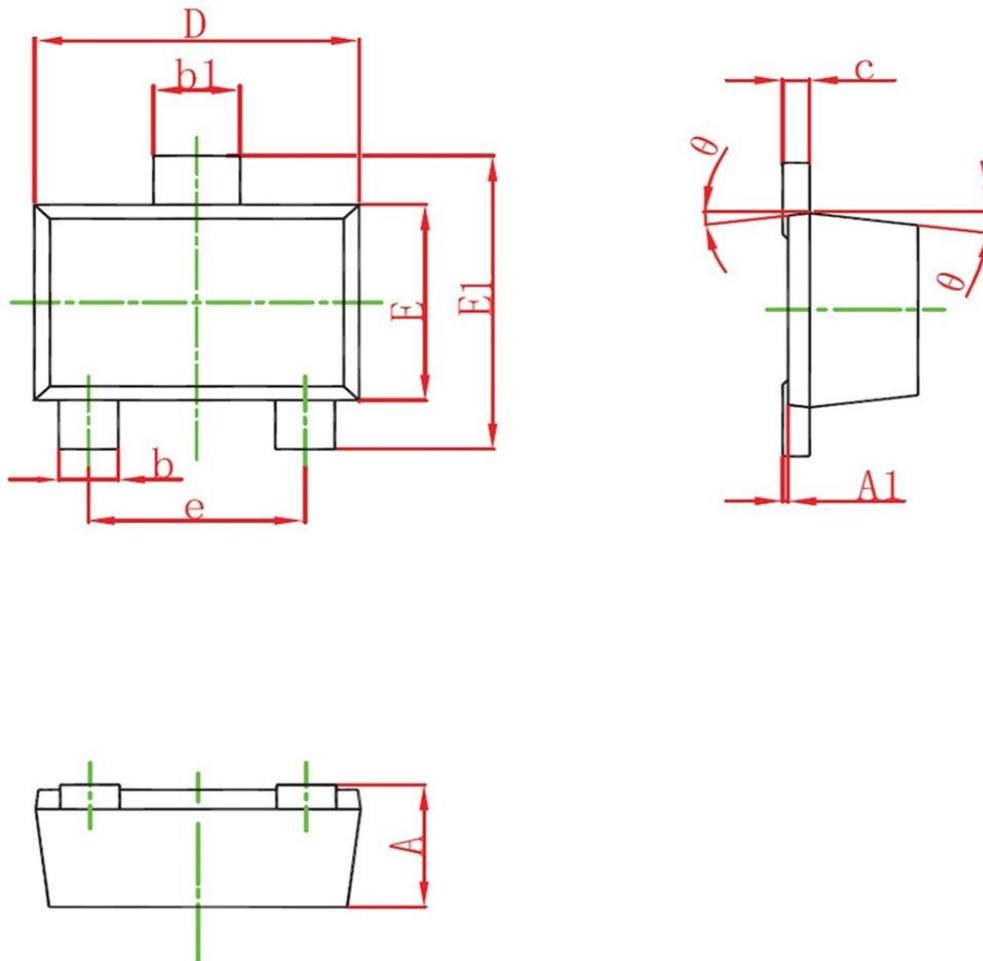
Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.320	0.400	0.012	0.016
A1	0.000	0.050	0.000	0.002
b	0.170	0.270	0.006	0.010
b1	0.270	0.370	0.010	0.014
c	0.080	0.150	0.003	0.006
D	1.150	1.250	0.046	0.050
E	0.750	0.850	0.030	0.034
E1	1.150	1.250	0.046	0.050
e	0.800TYP		0.020TYP	
θ	7°REF		7°REF	

DFN1006-3L Package information
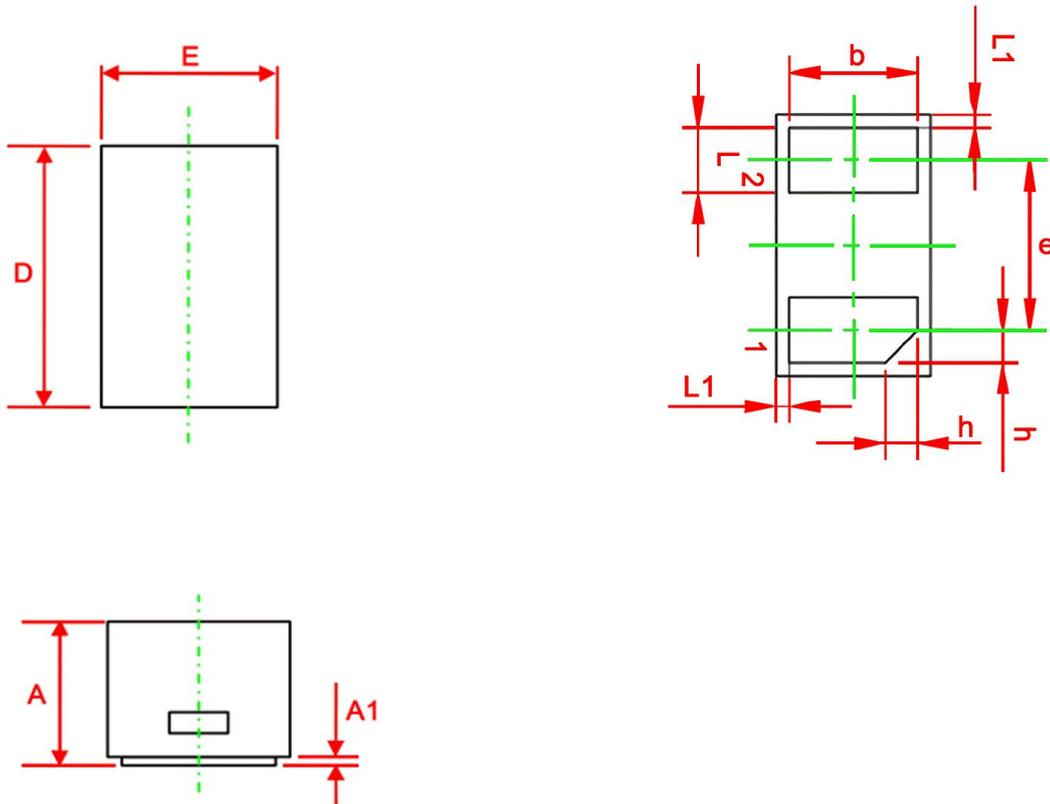
Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.450	0.550	0.017	0.021
A1	0.000	0.030	0.000	0.001
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.021	0.025
b	0.470	0.550	0.018	0.021
e	0.65TYP		0.025TYP	
e2	0.35TYP		0.013TYP	
L1	0.05TYP		0.001TYP	
L	0.220	0.300	0.008	0.012
b1	0.110	0.190	0.004	0.007