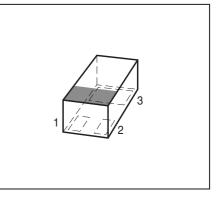


BFR193L3

NPN Bipolar RF Transistor

- For low noise, high-gain amplifiers up to 2 GHz
- For linear broadband amplifiers
- $f_{\rm T}$ = 8 GHz, $NF_{\rm min}$ = 1 dB at 900 MHz
- Pb-free (RoHS compliant) package
- Qualification report according to AEC-Q101 available





ESD (Electrostatic discharge) sensitive device, observe handling precaution!

Туре	Marking		Pin	Configu	Package		
BFR193L3	RC	1 = B	2 = E 3 = C		3 = C	TSLP-3-1	
Maximum Ratings at $T_A = 25$	5 °C, unless	otherwis	se sp	pecified			
Parameter			Syr	nbol	Value		Unit
Collector-emitter voltage			VCE	EO	12		V
Collector-emitter voltage			VCE	ES	20		
Collector-base voltage			VCE	30	20		
Emitter-base voltage			VEE	30	2		7
Collector current			I _C		80		mA
Base current			I _B		10		
Total power dissipation ¹⁾			Ptot	t	580		mW
$T_{\rm S} \le 89^{\circ}{\rm C}$							
unction temperature			T _J 1		150	150	
Storage temperature			T _{Ste}	a	-55 15	0	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point ²⁾	R _{thJS}	105	K/W

 $^{1}T_{S}$ is measured on the collector lead at the soldering point to the pcb

²For calculation of R_{thJA} please refer to Application Note AN077 (Thermal Resistance Calculation)



Parameter	Symbol	Values			Unit
		min.	typ.	max.]
DC Characteristics				•	
Collector-emitter breakdown voltage	V _{(BR)CEO}	12	-	-	V
<i>I</i> _C = 1 mA, <i>I</i> _B = 0					
Collector-emitter cutoff current	I _{CES}	-	-	100	μA
$V_{\rm CE}$ = 20 V, $V_{\rm BE}$ = 0					
Collector-base cutoff current	I _{CBO}	-	-	100	nA
$V_{\rm CB}$ = 10 V, $I_{\rm E}$ = 0					
Emitter-base cutoff current	I _{EBO}	-	-	1	μA
<i>V</i> _{EB} = 1 V, <i>I</i> _C = 0					
DC current gain	h _{FE}	70	100	140	-
$I_{\rm C}$ = 30 mA, $V_{\rm CE}$ = 8 V, pulse measured					

Electrical Characteristics at $T_A = 25^{\circ}$ C, unless otherwise specified



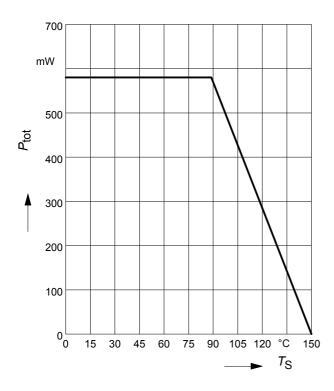
Parameter	Symbol	Values			Unit	
		min.	typ.	max.		
AC Characteristics (verified by random sampling)						
Transition frequency	f _T	6	8	-	GHz	
$I_{\rm C}$ = 50 mA, $V_{\rm CE}$ = 8 V, f = 500 MHz						
Collector-base capacitance	C _{cb}	-	0.63	0.9	pF	
$V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}, V_{BE} = 0$,						
emitter grounded						
Collector emitter capacitance	C _{ce}	-	0.22	-		
$V_{CE} = 10 \text{ V}, f = 1 \text{ MHz}, V_{BE} = 0$,						
base grounded						
Emitter-base capacitance	C _{eb}	-	2.25	-		
$V_{\rm EB}$ = 0.5 V, <i>f</i> = 1 MHz, $V_{\rm CB}$ = 0 ,						
collector grounded						
Minimum noise figure	NF _{min}				dB	
$I_{\rm C}$ = 10 mA, $V_{\rm CE}$ = 8 V, $Z_{\rm S}$ = $Z_{\rm Sopt}$,						
<i>f</i> = 900 MHz		-	1	-		
$I_{\rm C}$ = 10 mA, $V_{\rm CE}$ = 8 V, $Z_{\rm S}$ = $Z_{\rm Sopt}$,						
<i>f</i> = 1.8 GHz		-	1.6	-		
Power gain, maximum available ¹⁾	G _{ma}					
$I_{\rm C}$ = 30 mA, $V_{\rm CE}$ = 8 V, $Z_{\rm S}$ = $Z_{\rm Sopt}$,						
$Z_{\rm L} = Z_{\rm Lopt}$, $f = 900 \rm MHz$		-	19	-		
$I_{\rm C}$ = 30 mA, $V_{\rm CE}$ = 8 V, $Z_{\rm S}$ = $Z_{\rm Sopt}$,						
$Z_{\rm L} = Z_{\rm Lopt}$, $f = 1.8 \rm GHz$		-	12.5	-		
Transducer gain	S _{21e} ²				dB	
$I_{\rm C}$ = 30 mA, $V_{\rm CE}$ = 8 V, $Z_{\rm S}$ = $Z_{\rm L}$ = 50 Ω ,						
<i>f</i> = 900 MHz		-	14.5	-		
$I_{\rm C}$ = 30 mA, $V_{\rm CE}$ = 8 V, $Z_{\rm S}$ = $Z_{\rm L}$ = 50 Ω ,						
<i>f</i> = 1.8 GHz		-	9	-		

Electrical Characteristics at $T_A = 25^{\circ}$ C, unless otherwise specified

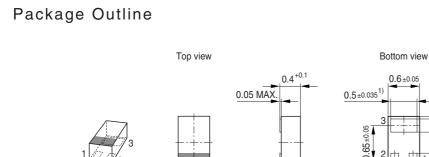
 ${}^{1}G_{\mathsf{ma}} = |S_{21} / S_{12}| \; (\mathsf{k}\text{-}(\mathsf{k}^{2}\text{-}1)^{1/2})$

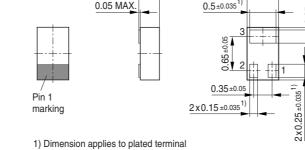


Total power dissipation $P_{tot} = f(T_S)$



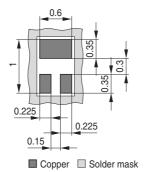


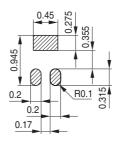




Foot Print

For board assembly information please refer to Infineon website "Packages"

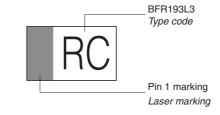




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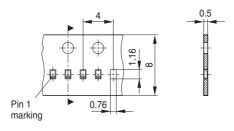
Stencil apertures

Marking Layout (Example)



Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel





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