

High-Frequency Amplifier Transistor (18V, 50mA, 1.5GHz)

2SC4725 / 2SC4082 / 2SC3837K

●Features

- 1) High transition frequency, typically $f_T=1.5\text{GHz}$.
- 2) Small $C_{c-rbb'}$ and high gain. (Typically 4ps)
- 3) Small NF.

●Packaging specifications and hFE

Type	2SC4725	2SC4082	2SC3837K
Package	EMT3	UMT3	SMT3
hFE	NP	NP	NP
Marking	AC*	1C*	AC*
Code	TL	T106	T146
Basic ordering unit (pieces)	3000	3000	3000

* Denotes hFE

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	30	—	—	V	$I_C=10\mu\text{A}$
Collector-emitter breakdown voltage	BV_{CEO}	18	—	—	V	$I_C=1\text{mA}$
Emitter-base breakdown voltage	BV_{EBO}	3	—	—	V	$I_E=10\mu\text{A}$
Collector cutoff current	I_{CBO}	—	—	0.5	μA	$V_{CE}=10\text{V}$
Emitter cutoff current	I_{EBO}	—	—	0.5	μA	$V_{EE}=2\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	0.5	V	$I_C/I_E=20\text{mA}/4\text{mA}$
DC current transfer ratio	hFE	56	—	180	—	$V_{CE}/I_C=10\text{V}/10\text{mA}$
Transition frequency	f_T	600	1500	—	MHz	$V_{CE}=10\text{V}$, $I_C=10\text{mA}$, $f=200\text{MHz}$
Output capacitance	C_{ob}	—	0.9	1.5	pF	$V_{CE}=10\text{V}$, $I_E=0\text{A}$, $f=1\text{MHz}$
Collector-base time constant	$C_{c-rbb'}$	—	6	13	ps	$V_{CE}=10\text{V}$, $I_C=10\text{mA}$, $f=31.8\text{MHz}$
Noise factor	NF	—	4.5	—	dB	$V_{CE}=12\text{V}$, $I_C=2\text{mA}$, $f=200\text{MHz}$, $R_g=50\Omega$

(94S-227-C101)

High-Frequency Amplifier Transistor (11V, 50mA, 3.2GHz)

2SC4726 / 2SC4083 / 2SC3838K / 2SC4043S

●Features

- 1) High transition frequency, typically $f_T=1.5\text{GHz}$.
- 2) Small $C_{c-rbb'}$ and high gain. (Typically 4ps)
- 3) Small NF.

●Packaging specifications and hFE

Type	2SC4726	2SC4083	2SC3838K	2SC4043S
Package	EMT3	UMT3	SMT3	SPT
hFE	NP	NP	NP	P
Marking	AD	1D	AD	—
Code	TL	T106	T146	TP
Basic ordering unit (pieces)	3000	3000	3000	5000

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	
Collector-base breakdown voltage	BV_{CBO}	20	—	—	V	$I_C=10\mu\text{A}$	
Collector-emitter breakdown voltage	BV_{CEO}	11	—	—	V	$I_C=1\text{mA}$	
Emitter-base breakdown voltage	BV_{EBO}	3	—	—	V	$I_E=10\mu\text{A}$	
Collector cutoff current	I_{CBO}	—	—	0.5	μA	$V_{CE}=10\text{V}$	
Emitter cutoff current	I_{EBO}	—	—	0.5	μA	$V_{EE}=2\text{V}$	
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	0.5	V	$I_C/I_E=10\text{mA}/5\text{mA}$	
DC current transfer ratio	2SC4726, 2SC4083	hFE	56	—	180	—	$V_{CE}/I_C=10\text{V}/5\text{mA}$
	2SC3838K		82	—	180		
	2SC4043S		—	—	—		
Transition frequency	f_T	1.4	3.2	—	GHz	$V_{CE}=10\text{V}$, $I_E=10\text{mA}$, $f=500\text{MHz}$	
Output capacitance	C_{ob}	—	0.8	1.5	pF	$V_{CE}=10\text{V}$, $I_E=0\text{A}$, $f=1\text{MHz}$	
Collector-base time constant	$C_{c-rbb'}$	—	4	12	ps	$V_{CE}=10\text{V}$, $I_C=10\text{mA}$, $f=31.8\text{MHz}$	
Noise factor	NF	—	3.5	—	dB	$V_{CE}=6\text{V}$, $I_C=2\text{mA}$, $f=500\text{MHz}$, $R_g=50\Omega$	

(96-165-C102)

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	30	V
Collector-emitter voltage	V_{CEO}	18	V
Emitter-base voltage	V_{EBO}	3	V
Collector current	I_C	50	mA
Collector power dissipation	2SC4725	0.15	W
	2SC4082, 2SC3837K	0.2	
Junction temperature	T_J	150	°C
Storage temperature	T_{stg}	-55~+150	°C

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	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	2SC4726	0.15	W
	2SC4083, 2SC3838K	0.2	
	2SC4043S	0.3	
Junction temperature	T_J	150	°C
Storage temperature	T_{stg}	-55~+150	°C