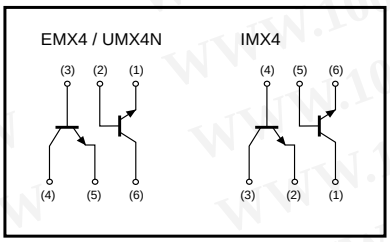
High transition frequency (dual transistors)

EMX4 / UMX4N / IMX4

●Features

1) Two 2SC3837K chips in a EMT or UMT or SMT package.
2) High transition frequency. (f_T=1.5GHz)
3) Low output capacitance. (Cob=0.9pF)

●Equivalent circuits

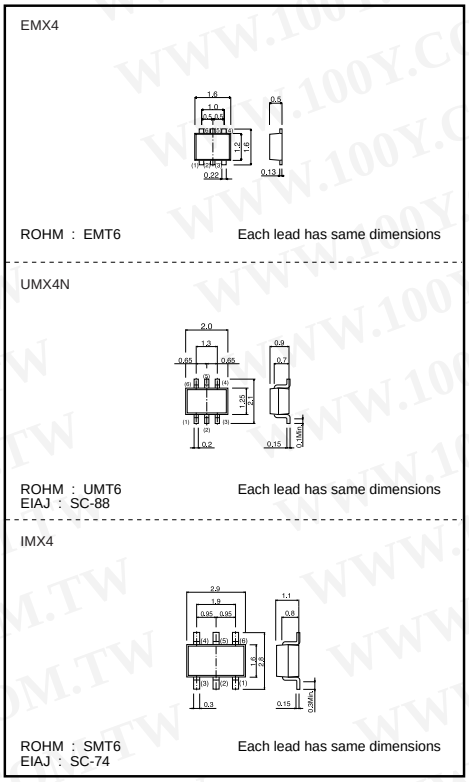


●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit	
Collector-base voltage		V_{CBO}	30	V	
Collector-emitter voltage		V_{CEO}	20	V	
Emitter-base voltage		V_{EBO}	3	V	
Collector current		I_C	50	mA	
Collector power dissipation	EMX4 / UMX4N	Pc	150(TOTAL)	mW	∗1
	IMX4		300(TOTAL)		∗2
Junction temperature		Tj	150	°C	
Storage temperature		Tstg	−55 to +150	°C	

∗1 120mW per element must not be exceeded.
∗2 200mW per element must not be exceeded.

●Dimensions (Unit : mm)



●Package, marking, and packaging specifications

Type	EMX4	UMX4N	IMX4
Package	EMT6	UMT6	SMT6
Marking	X4	X4	X4
Code	T2R	TR	T108
Basic ordering unit (pieces)	8000	3000	3000

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	30	–	–	V	I_C=10μA
Collector-emitter breakdown voltage	BV_{CEO}	20	–	–	V	I_C=1mA
Emitter-base breakdown voltage	BV_{EBO}	3	–	–	V	I_E=10μA
Collector cutoff current	I_{CBO}	–	–	0.5	μA	V_{CB}=15V
Emitter cutoff current	I_{EBO}	–	–	0.5	μA	V_{EB}=2V
DC current transfer ratio	h_{FE}	56	–	180	–	V_{CE}/I_C=10V/10mA
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	–	0.5	V	I_C/I_B=20mA/4mA
Transition frequency	f_T	600	1500	–	MHz	V_{CE}/I_E=10V/ −10mA, f=200MHz ∗
Output capacitance	Cob	–	0.95	1.6	pF	V_{CB}/f=10V/1MHz, I_E=0A
Collector-base time constant	rbb'・Cc	–	6	13	ps	V_{CB}=10V, I_C=10mA , f=31.8MHz
Noise factor	NF	–	4.5	–	dB	V_{CE}=12V, I_C=2mA , f=200MHz , Rg=50Ω

∗Transition frequency of the device.

This product might cause chip aging and breakdown under the large electrified environment.
Please consider to design ESD protection circuit.

●**Electrical characteristic curves**

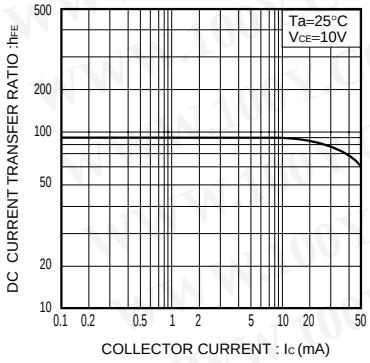


Fig.1 DC current gain vs. collector current

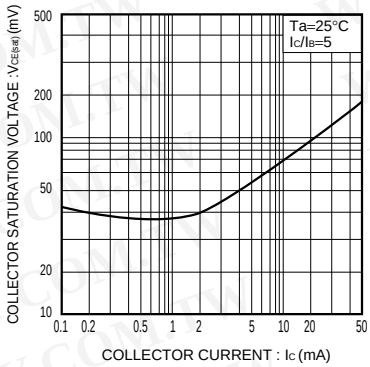


Fig.2 Collector-emitter saturation voltage vs. collector current

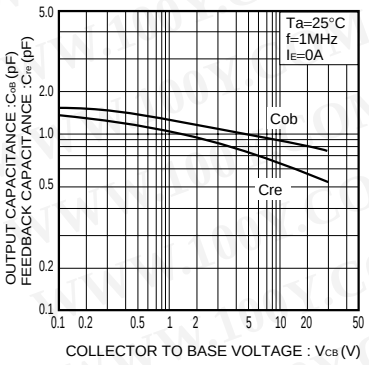


Fig.3 Capacitance vs. reverse bias voltage

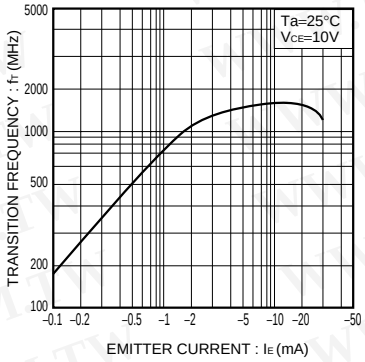


Fig.4 Gain bandwidth product vs. emitter current

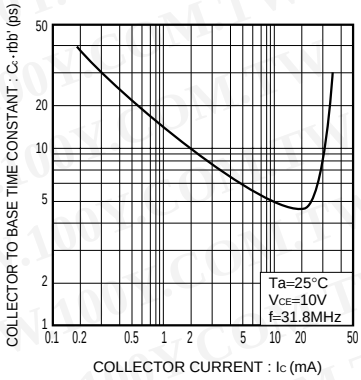


Fig.5 Collector to base time constance vs. collector current

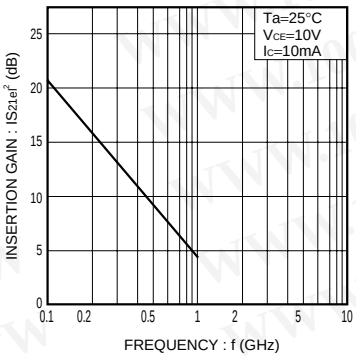


Fig.6 Insertion gain vs. frequency

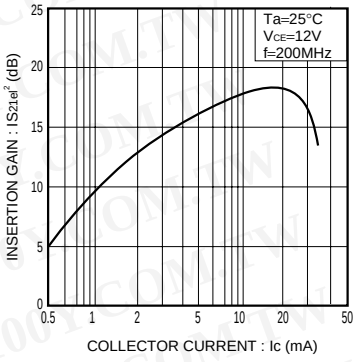


Fig.7 Insertion gain vs. collector current

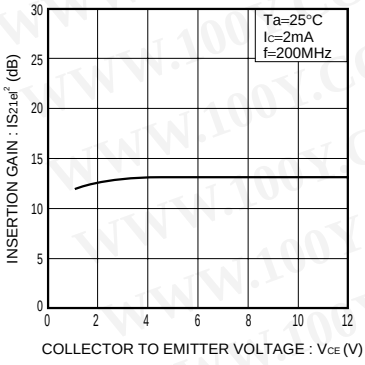


Fig.8 Insertion gain vs. collector voltage

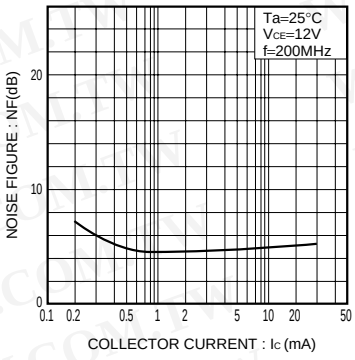


Fig.9 Noise factor vs. collector current

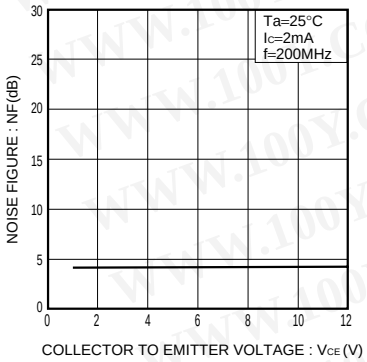


Fig.10 Noise factor vs. collector voltage

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