

# General purpose transistors (dual transistors)

## EMX1 / UMX1N / IMX1

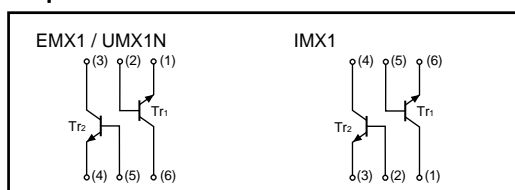
### ●Features

- 1) Two 2SC2412K chips in a EMT or UMT or SMT package.
- 2) Mounting possible with EMT3 or UMT3 or SMT3 automatic mounting machines.
- 3) Transistor elements are independent, eliminating interference.
- 4) Mounting cost and area can be cut in half.

### ●Structure

Epitaxial planar type  
NPN silicon transistor

### ●Equivalent circuit



The following characteristics apply to both Tr1 and Tr2.

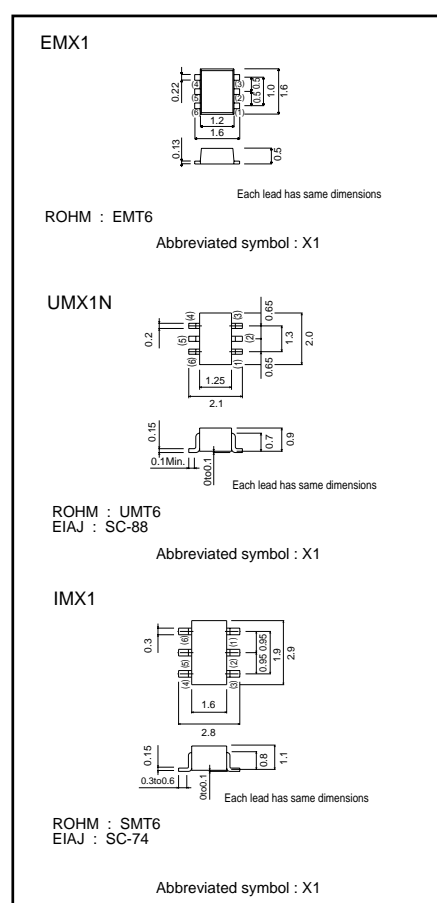
### ●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CBO}$	60	V
Collector-emitter voltage	$V_{CEO}$	50	V
Emitter-base voltage	$V_{EBO}$	7	V
Collector current	$I_C$	150	mA
Power dissipation	EMX1, UMX1N	$P_C$ 150 (TOTAL)	mW *1
	IMX1	300 (TOTAL)	mW *2
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55~+150	°C

\*1 120mW per element must not be exceeded.

\*2 200mW per element must not be exceeded.

### ●External dimensions (Units : mm)



## Transistors

## ●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CBO}$	60	—	—	V	$I_C=50\mu A$
Collector-emitter breakdown voltage	$BV_{CEO}$	50	—	—	V	$I_C=1mA$
Emitter-base breakdown voltage	$BV_{EBO}$	7	—	—	V	$I_E=50\mu A$
Collector cutoff current	$I_{CBO}$	—	—	0.1	$\mu A$	$V_{CB}=60V$
Emitter cutoff current	$I_{EBO}$	—	—	0.1	$\mu A$	$V_{EB}=7V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	0.4	V	$I_C/I_B=50mA/5mA$
DC current transfer ratio	$h_{FE}$	120	—	560	—	$V_{CE}=6V, I_C=1mA$
Transition frequency	$f_T$	—	180	—	MHz	$V_{CE}=12V, I_E=-2mA, f=100MHz$ *
Output capacitance	$C_{ob}$	—	2	3.5	PF	$V_{CB}=12V, I_E=0A, f=1MHz$

## ●Packaging specifications

Type	Package	Taping		
	Code	T2R	TN	T110
	Basic ordering unit (pieces)	8000	3000	3000
EMX1	○	—	—	—
UMX1N	—	○	—	—
IMX1	—	—	—	○

## ●Electrical characteristic curves

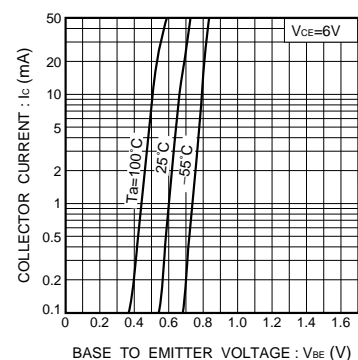


Fig.1 Grounded emitter propagation characteristics

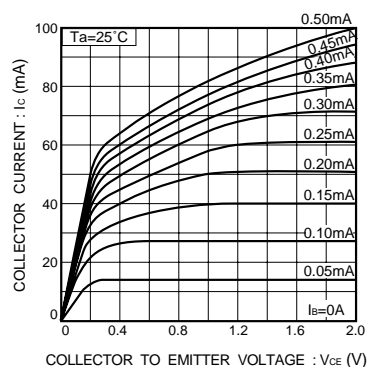


Fig.2 Grounded emitter output characteristics (I)

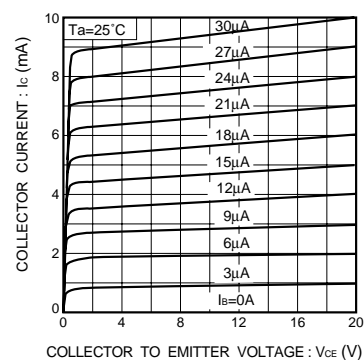


Fig.3 Grounded emitter output characteristics (II)

Transistors

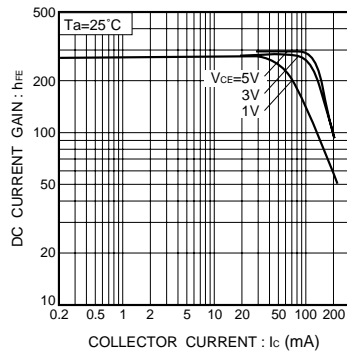


Fig.4 DC current gain vs. collector current ( I )

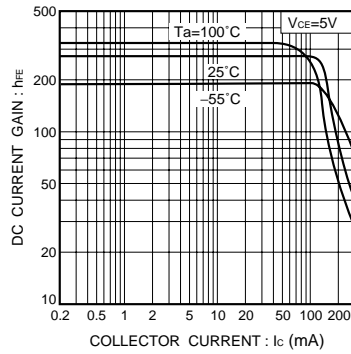


Fig.5 DC current gain vs. collector current ( II )

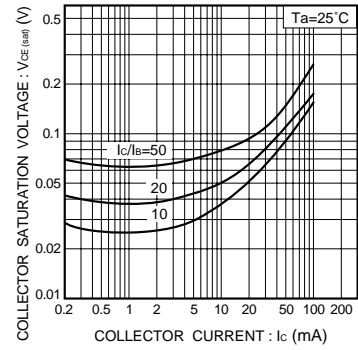


Fig.6 Collector-emitter saturation voltage vs. collector current

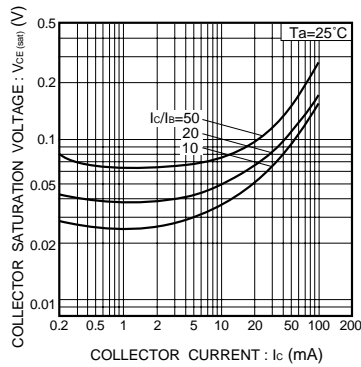


Fig.7 Collector-emitter saturation voltage vs. collector current ( I )

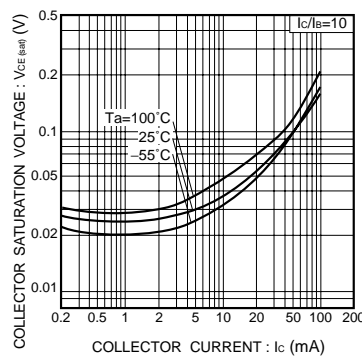


Fig.8 Collector-emitter saturation voltage vs. collector current ( II )

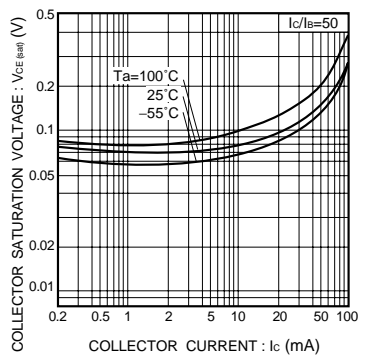


Fig.9 Collector-emitter saturation voltage vs. collector current ( III )

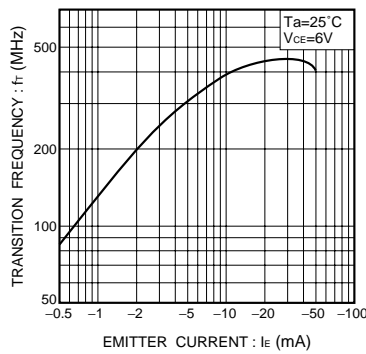


Fig.10 Gain bandwidth product vs. emitter current

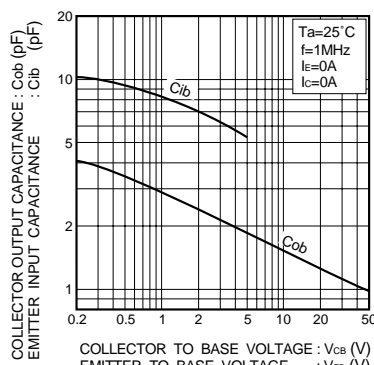


Fig.11 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

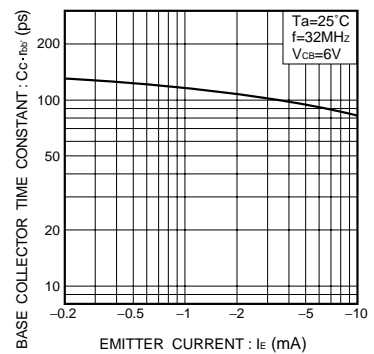


Fig.12 Base-collector time constant vs. emitter current

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