Emitter common (dual transistors)

EMY1 / UMY1N / FMY1A

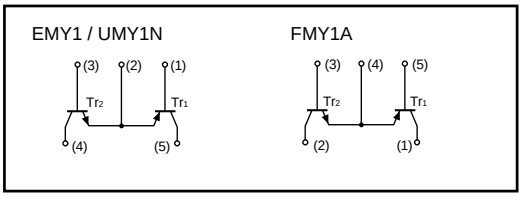
●Features

1) Includes a 2SA1037AK and a 2SC2412K transistor in a EMT or UMT or SMT package.
2) PNP and NPN transistors have common emitters.
3) Mounting cost and area can be cut in half.

●Structure

Epitaxial planar type
PNP / NPN silicon transistor

●Equivalent circuit



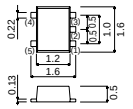
●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits		Unit
			Tr_1	Tr_2	
Collector-base voltage		V_{CBO}	–60	60	V
Collector-emitter voltage		V_{CEO}	–50	50	V
Emitter-base voltage		V_{EBO}	–6	7	V
Collector current		I_C	–150	150	mA
Power dissipation	EMY1, UMY1N	P_C	150 (TOTAL)*1		mW
	FMY1A		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.

●External dimensions (Unit : mm)

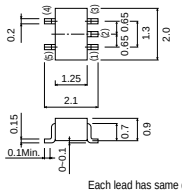
EMY1



ROHM : EMT5

Abbreviated symbol : Y1

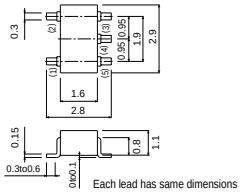
UMY1N



ROHM : UMT5
EIAJ : SC-88A

Abbreviated symbol : Y1

FMY1A



ROHM : SMT5
EIAJ : SC-74A

Abbreviated symbol : Y1

●Electrical characteristics (Ta = 25°C)

Tr1 (PNP)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	–60	–	–	V	I_C=–50μA
Collector-emitter breakdown voltage	BV_{CEO}	–50	–	–	V	I_C=–1mA
Emitter-base breakdown voltage	BV_{EBO}	–6	–	–	V	I_E=–50μA
Collector cutoff current	I_{CBO}	–	–	–0.1	μA	V_{CB}=–60V
Emitter cutoff current	I_{EBO}	–	–	–0.1	μA	V_{EB}=–6V
Collector-emitter saturation voltage	$V_{CE\ (sat)}$	–	–	–0.5	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	–	140	–	MHz	V_{CE}=–12V, I_E=2mA, f=100MHz
Output capacitance	Cob	–	4	5	PF	V_{CB}=–12V, I_E=0A, f=1MHz

Tr2 (NPN)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	60	–	–	V	I_C=50μA
Collector-emitter breakdown voltage	BV_{CEO}	50	–	–	V	I_C=1mA
Emitter-base breakdown voltage	BV_{EBO}	7	–	–	V	I_E=50μA
Collector cutoff current	I_{CBO}	–	–	0.1	μA	V_{CB}=60V
Emitter cutoff current	I_{EBO}	–	–	0.1	μA	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	Cob	–	2	3.5	PF	V_{CB}=12V, I_E=0A, f=1MHz

●Packaging specifications

	Packaging type	Taping		
	Code	T2R	TR	T148
Type	Basic ordering unit (pieces)	8000	3000	3000
EMY1		○	—	—
UMY1N		—	○	—
FMY1		—	—	○

●Electrical characteristic curves

Tr1 (PNP)

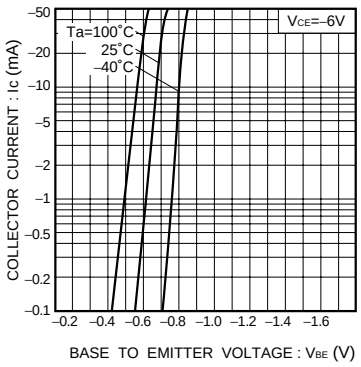


Fig.1 Grounded emitter propagation characteristics

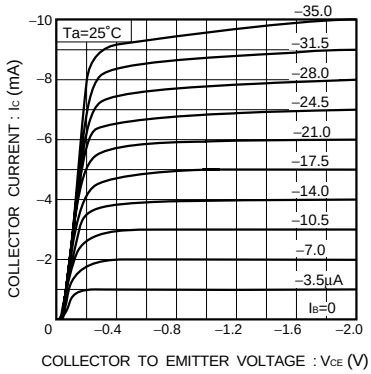


Fig.2 Grounded emitter output characteristics (I)

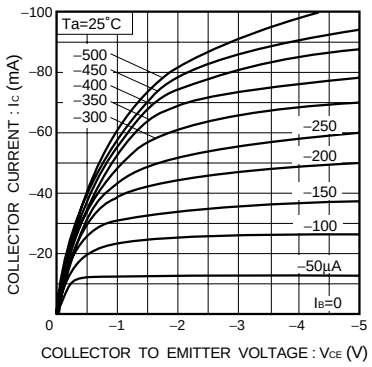


Fig.3 Grounded emitter output characteristics (II)

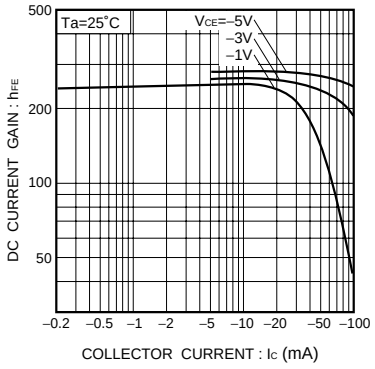


Fig.4 DC current gain vs. collector current (I)

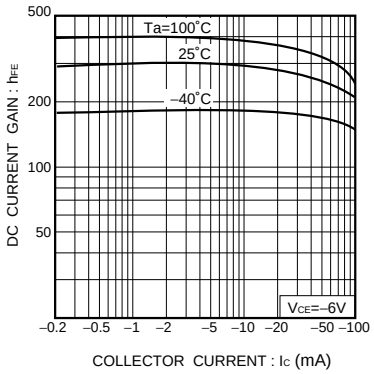


Fig.5 DC current gain vs. collector current (II)

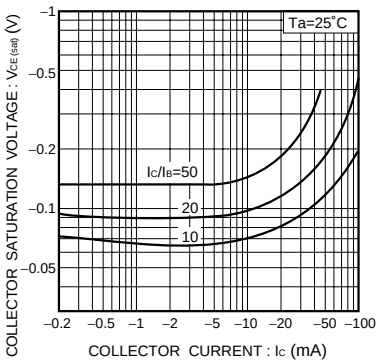


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

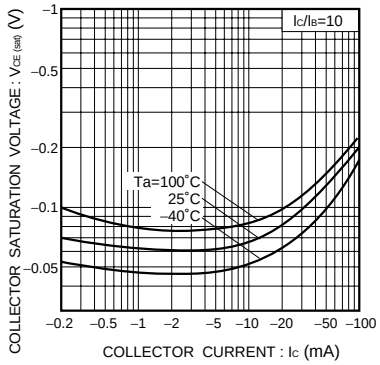


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

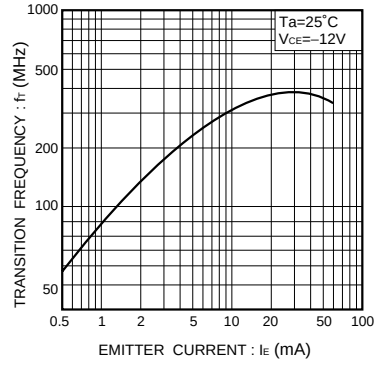


Fig.8 Gain bandwidth product vs. emitter current

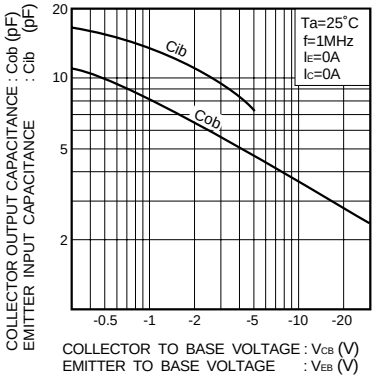


Fig.9 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

Tr2 (NPN)

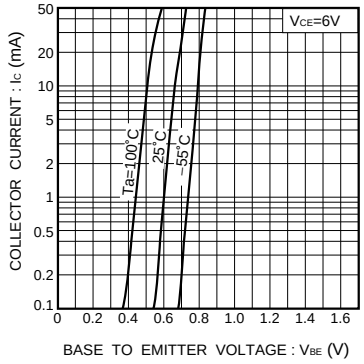


Fig.10 Grounded emitter propagation characteristics

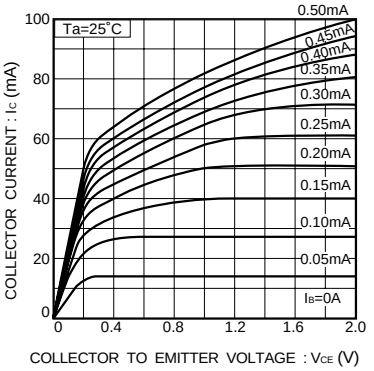


Fig.11 Grounded emitter output characteristics (I)

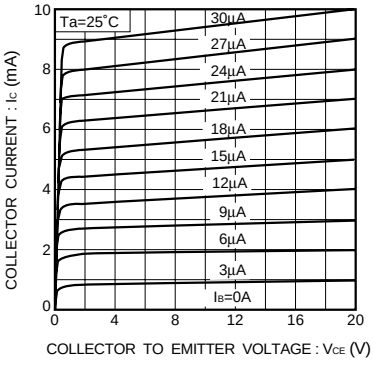


Fig.12 Grounded emitter output characteristics (II)

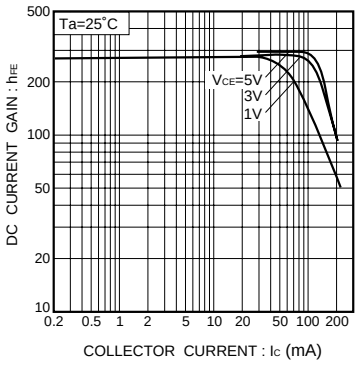


Fig.13 DC current gain vs. collector current (I)

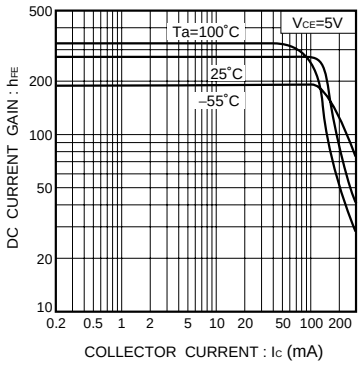


Fig.14 DC current gain vs. collector current (II)

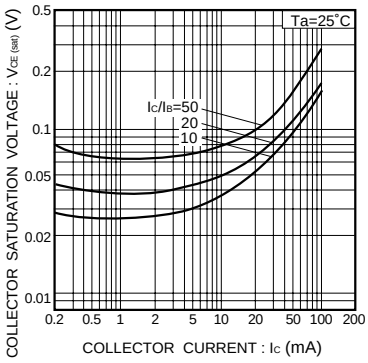


Fig.15 Collector-emitter saturation voltage vs. collector current (I)

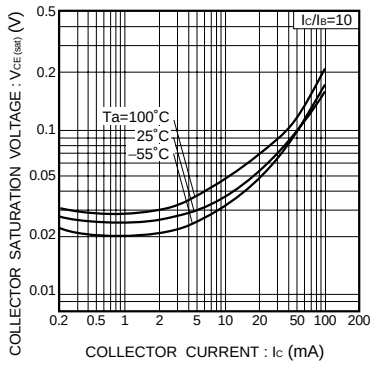


Fig.16 Collector-emitter saturation voltage vs. collector current (II)

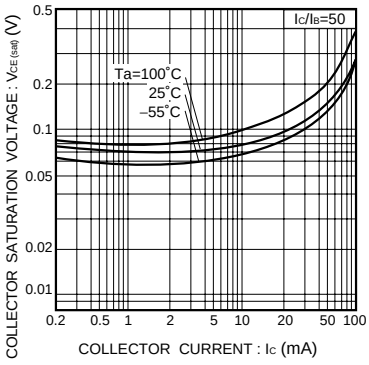


Fig.17 Collector-emitter saturation voltage vs. collector current (III)

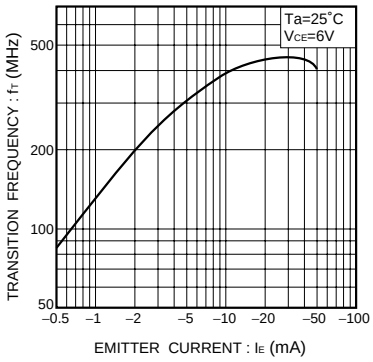


Fig.18 Gain bandwidth product vs. emitter current

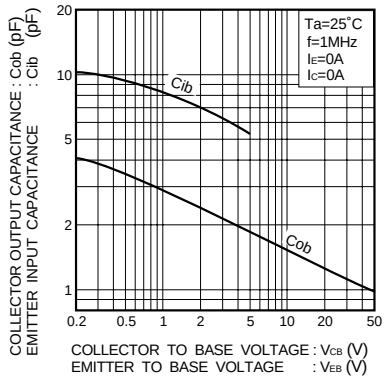


Fig.19 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

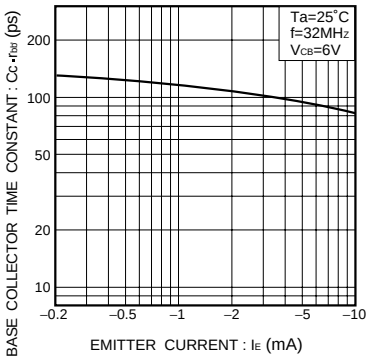


Fig.20 Base-collector time constant vs. emitter current

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