

Emitter common (dual transistors)

UMY1N / FMY1A

●Features

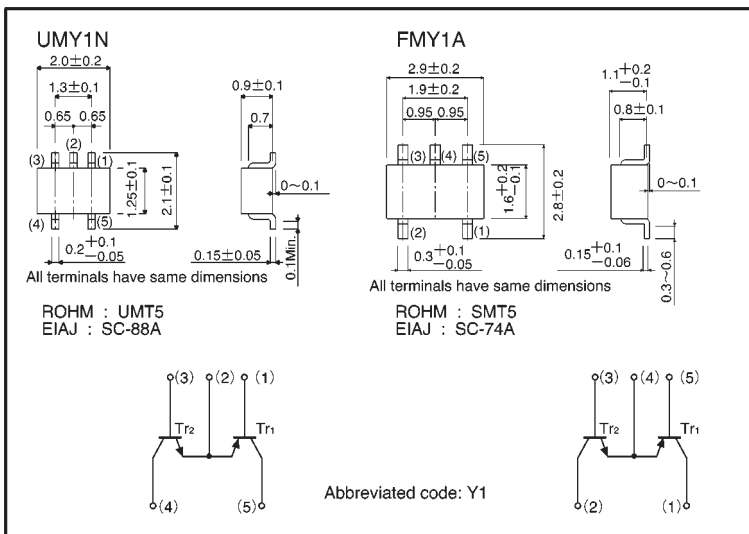
- 1) Includes a 2SA1037AK and a 2SC2412K transistor in a single UMT and a SMT package.
- 2) PNP and NPN transistors have common emitters.
- 3) Mounting cost and area can be cut in half.

●Structure

Epitaxial planar type

PNP/NPN silicon transistor

●External dimensions (Units: mm)



●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits		Unit
			Tr ₁	Tr ₂	
Collector-base voltage		V _{CB0}	−60	60	V
Collector-emitter voltage		V _{CE0}	−50	50	V
Emitter-base voltage		V _{EBO}	−6	7	V
Collector current		I _c	−150	150	mA
Collector power dissipation	UMY1N	P _C	150 (TOTAL)		mW *1 *2
	FMY1A		300 (TOTAL)		
Junction temperature		T _j	150		℃
Storage temperature		T _{stg}	−55~+150		℃

*1 120mW per element must not be exceeded.

*2 200mW per element must not be exceeded.

●Electrical characteristics (Ta = 25°C)

Tr₁

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CBO}	−60	—	—	V	I _C = −50 μA
Collector-emitter breakdown voltage	BV _{CEO}	−50	—	—	V	I _C = −1mA
Emitter-base breakdown voltage	BV _{EBO}	−6	—	—	V	I _E = −50 μA
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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CBO}	60	—	—	V	I _C = 50 μA
Collector-emitter breakdown voltage	BV _{CEO}	50	—	—	V	I _C = 1mA
Emitter-base breakdown voltage	BV _{EBO}	7	—	—	V	I _E = 50 μA
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

Part No.	Packaging type	Taping	
	Code	TR	T148
	Basic ordering unit (pieces)	3000	3000
UMY1N		○	—
FMY1A		—	○

●Electrical characteristic curves

Tr1 (PNP)

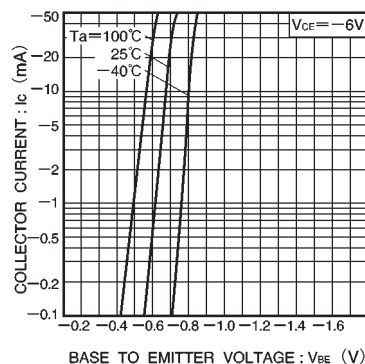


Fig.1 Grounded emitter propagation characteristics

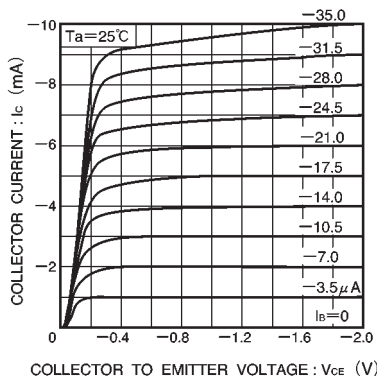


Fig.2 Grounded emitter output characteristics (I)

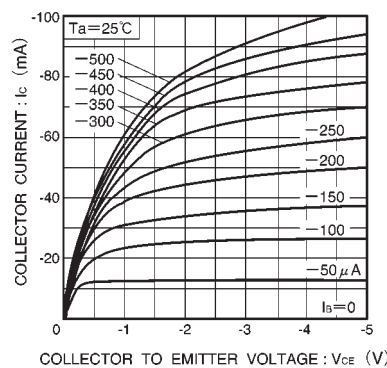


Fig.3 Grounded emitter output characteristics (II)

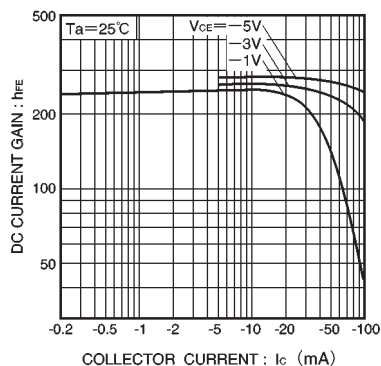


Fig.4 DC current gain vs. collector current (I)

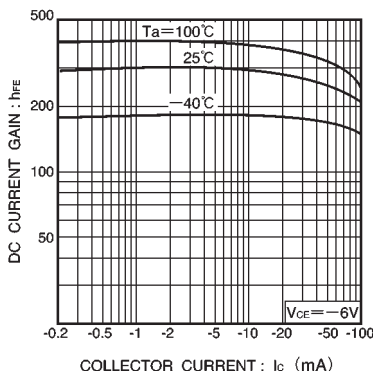


Fig.5 DC current gain vs. collector current (II)

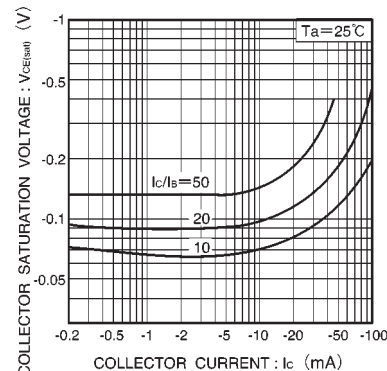


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

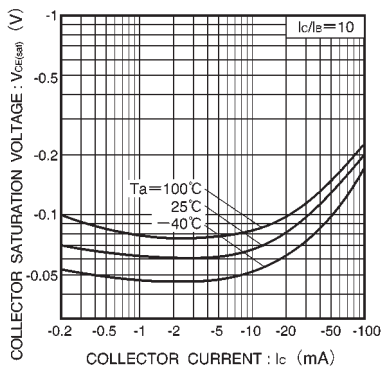


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

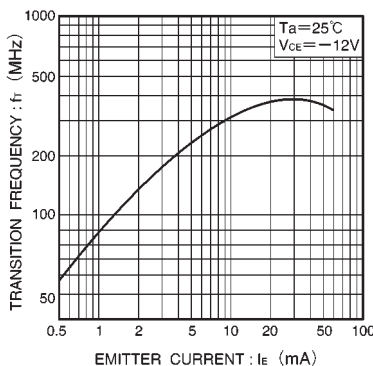


Fig.8 Gain bandwidth product vs. emitter current

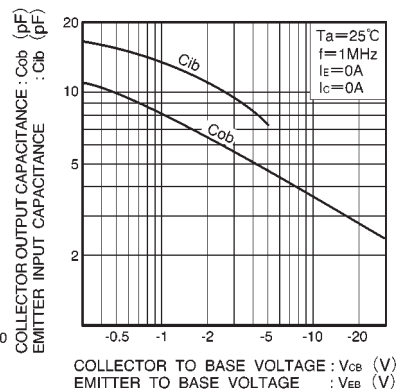


Fig.9 Collector output capacitance vs. collector-base voltage. Emitter input capacitance vs. emitter-base voltage

Tr₂ (NPN)

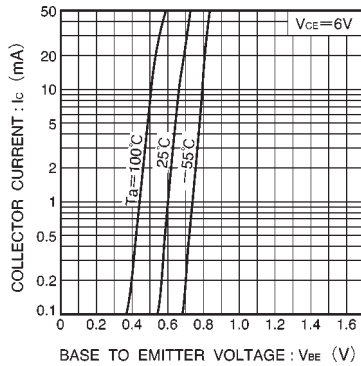


Fig.10 Grounded emitter propagation characteristics

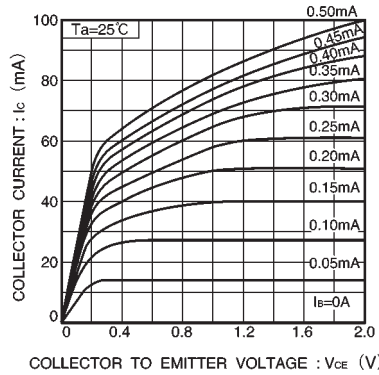


Fig.11 Grounded emitter output characteristics (I)

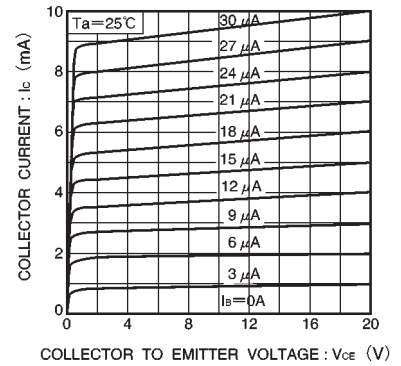


Fig.12 Grounded emitter output characteristics (II)

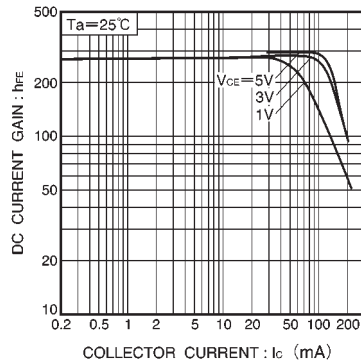


Fig.13 DC current gain vs. collector current (I)

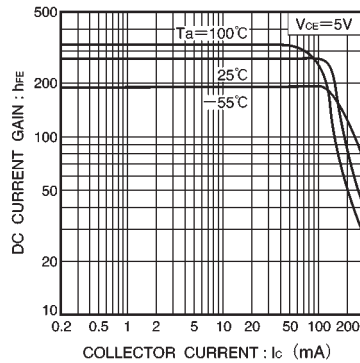


Fig.14 DC current gain vs. collector current (II)

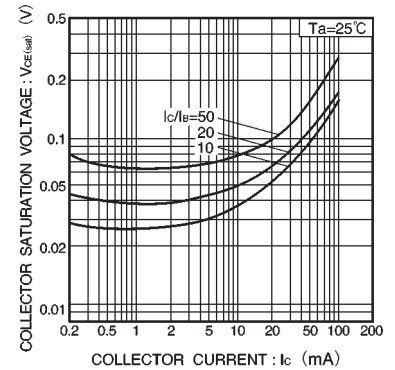


Fig.15 Collector-emitter saturation voltage vs. collector current (I)

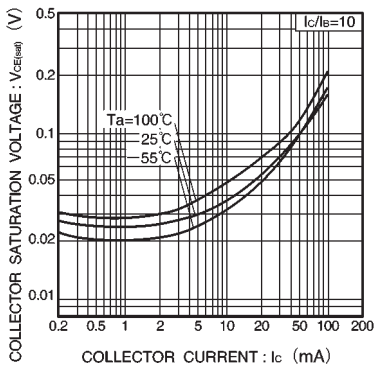


Fig.16 Collector-emitter saturation voltage vs. collector current (II)

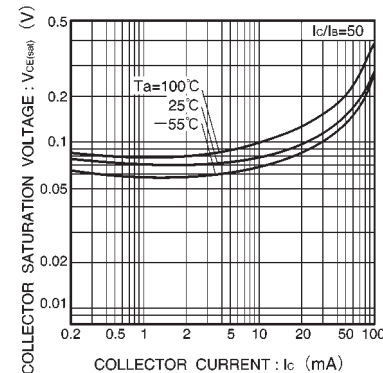


Fig.17 Collector-emitter saturation voltage vs. collector current (III)

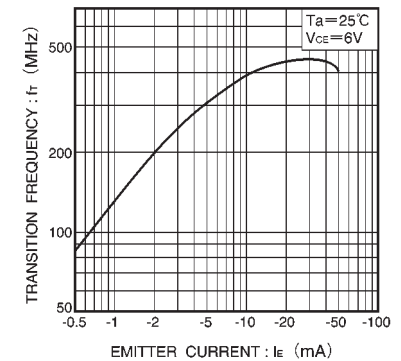


Fig.18 Gain bandwidth product vs. emitter current

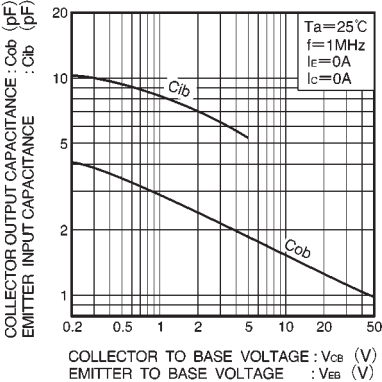


Fig.19 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

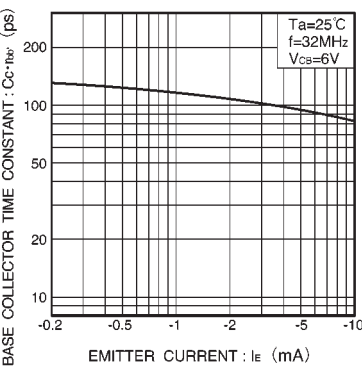


Fig.20 Base-collector time constant vs. emitter current