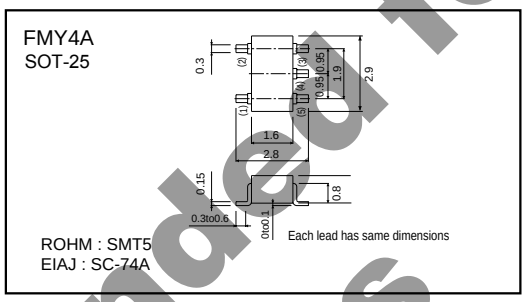
Power management (dual transistors)

FMY4A

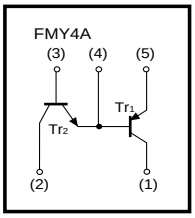
●Feature

1) Both a 2SA1037AK chip and 2SC2412K chip in a EMT or UMT or SMT package.

●External dimensions (Unit : mm)



●Equivalent circuits



●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits		Unit	
		Tr1	Tr2		
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	
Collector power dissipation	P_C	300 (TOTAL)		mW	※1
Junction temperature	Tj	150		°C	
Storage temperature	Tstg	−55 to +150		°C	

※1 200mW per element must not be exceeded.

●Package, marking, and packaging specifications

Part No.	FMY4A
Package	SMT5
Marking	Y4
Code	T148
Basic ordering unit (pieces)	3000

●Electrical characteristics (Ta=25°C)

Tr_1 (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

* Transition frequency of the device.

Tr_2 (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

* Transition frequency of the device.

●Electrical characteristics curves

PNP Tr

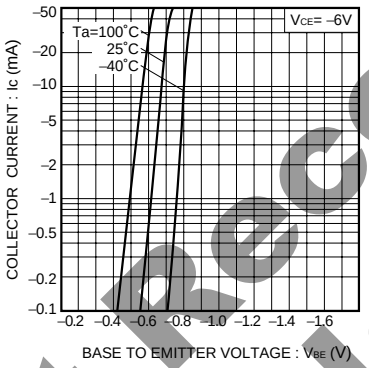


Fig.1 Grounded emitter propagation characteristics

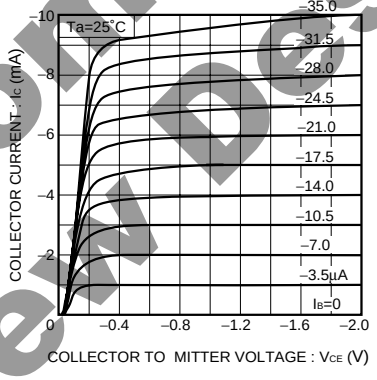


Fig.2 Grounded emitter output characteristics (I)

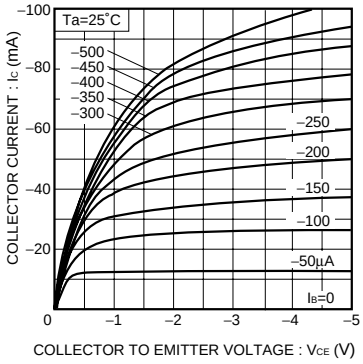


Fig.3 Grounded emitter output characteristics (II)

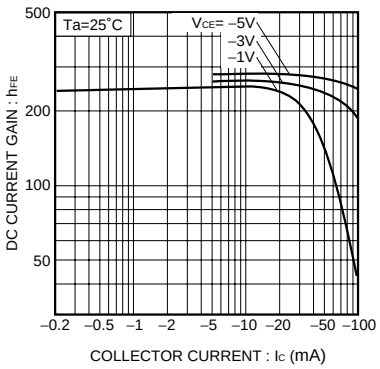


Fig.4 DC current gain vs. collector current (I)

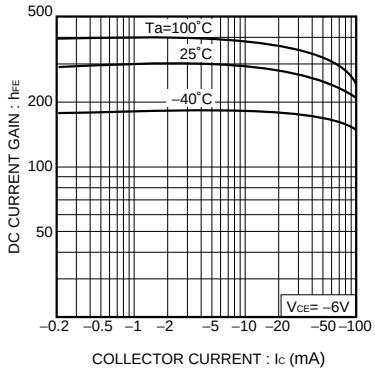


Fig.5 DC current gain vs. collector current (II)

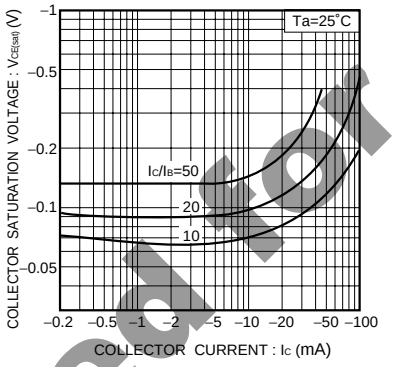


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

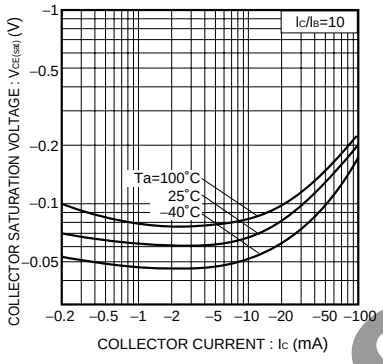


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

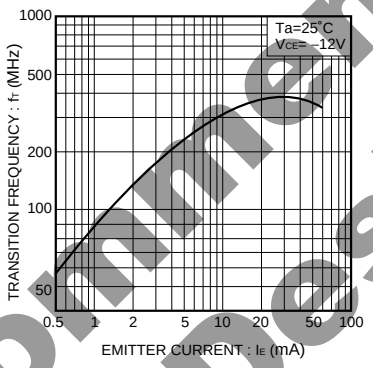


Fig.8 Gain bandwidth product vs. emitter current

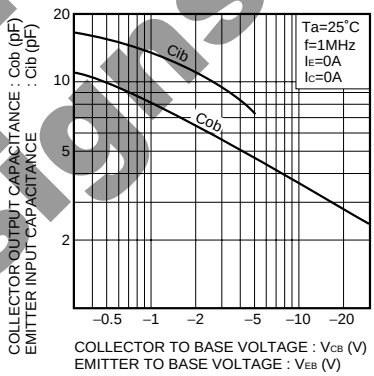


Fig.9 Collector output capacitance vs. collector-base voltage
Emitter inputcapacitance vs. emitter-base voltage

NPN Tr

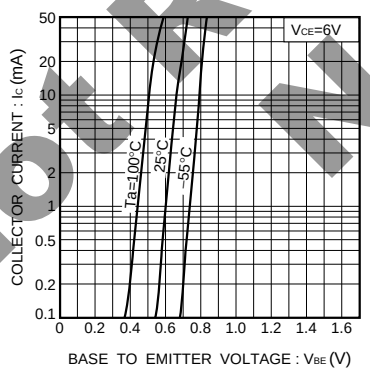


Fig.10 Grounded emitter propagation characteristics

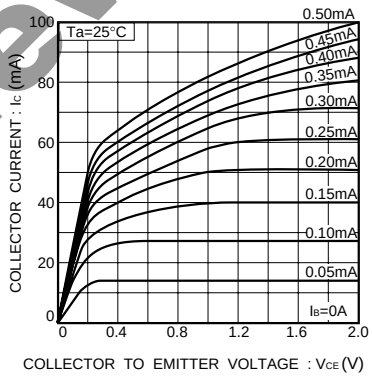


Fig.11 Grounded emitter output characteristics (I)

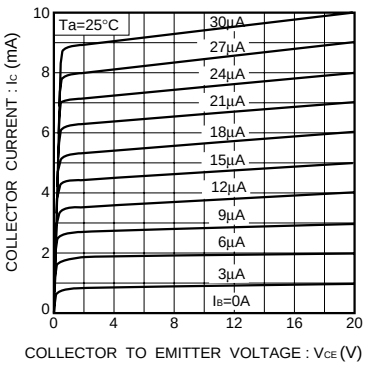


Fig.12 Grounded emitter output characteristics (II)

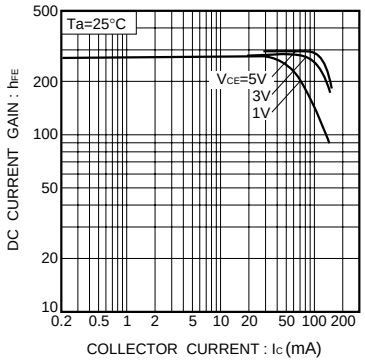


Fig.13 DC current gain vs. collector current (I)

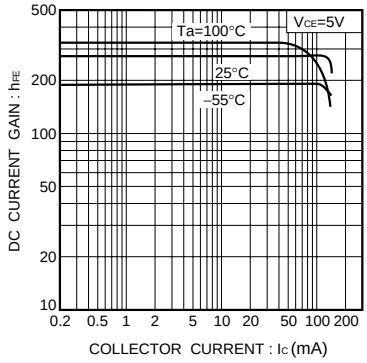


Fig.14 DC current gain vs. collector current (II)

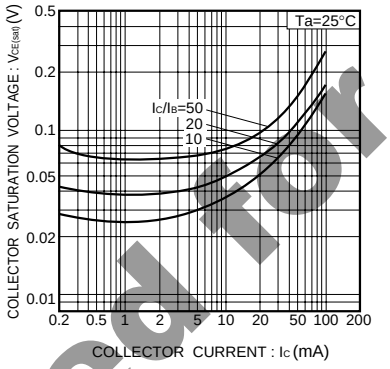


Fig.15 Collector-emitter saturation voltage vs. collector current

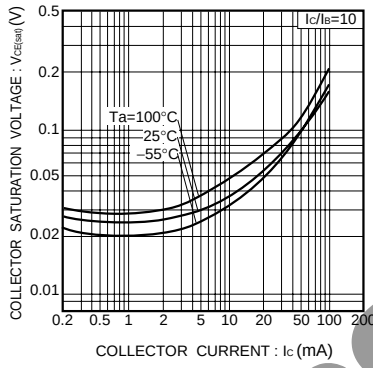


Fig.16 Collector-emitter saturation voltage vs. collector current (I)

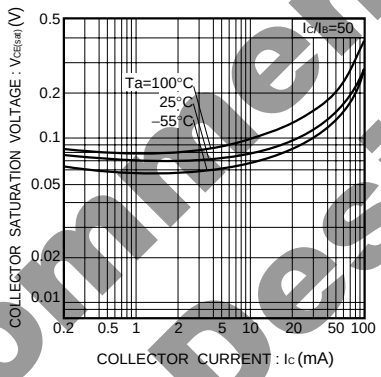


Fig.17 Collector-emitter saturation voltage vs. collector current (II)

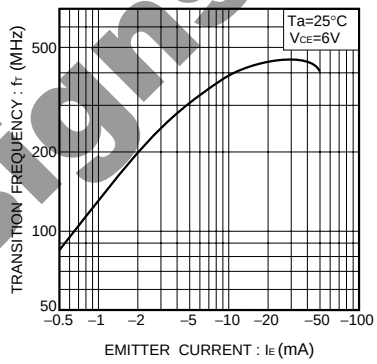


Fig.18 Gain bandwidth product vs. emitter current

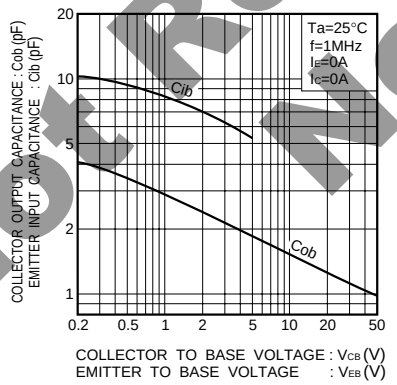


Fig.19 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

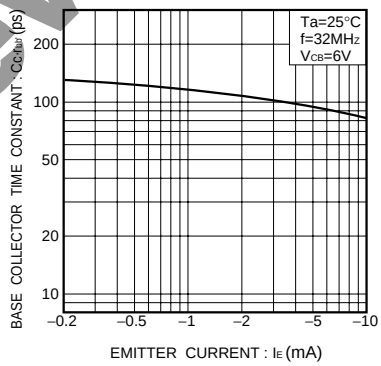


Fig.20 Base-collector time constant vs. emitter current

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