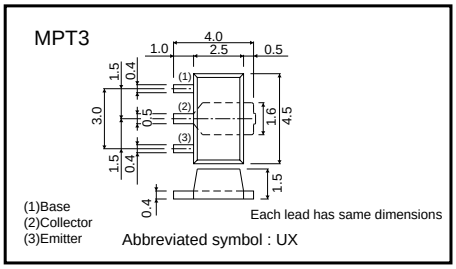
Medium power transistor (–30V, –2.0A)

2SA2049

●Features

1) High speed switching. (Tf : Typ. : 20ns at I_C = −2.0A)
2) Low saturation voltage, typically
   (Typ. : –250mV at I_C = −1.0A, I_B = −100mA)
3) Strong discharge power for inductive load and
   capacitance load.
4) Complements the 2SC5731

●External dimensions (Units : mm)



●Applications

Small signal low frequency amplifier
High speed switching

●Structure

PNP Silicon epitaxial planar transistor

●Packaging specifications

Type	Package	Taping
	Code	T100
	Basic ordering unit (pieces)	1000
2SA2049		○

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	–30	V
Collector-emitter voltage	V_{CEO}	–30	V
Emitter-base voltage	V_{EBO}	–6	V
Collector current	I_C	–2.0	A
	I_{CP}	–4.0	A *1
Power dissipation	P_C	500	mW
		2.0	W *2
Junction temperature	Tj	150	°C
Range of storage temperature	Tstg	–55~+150	°C

∗1 Pw=100ms
*2 Mounted on a 40×40×0.7 (mm) ceramic substrate

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	–30	–	–	V	I_C= –100μA
Collector-emitter breakdown voltage	BV_{CEO}	–30	–	–	V	I_C= –1mA
Emitter-base breakdown voltage	BV_{EBO}	–6	–	–	V	I_E= –100μA
Collector cut-off current	I_{CBO}	–	–	–1.0	μA	V_{CB}= –20V
Emitter cut-off current	I_{EBO}	–	–	–1.0	μA	V_{EB}= –4V
Collector-emitter saturation voltage	$V_{CE\ (sat)}$	–	–250	–500	mV	I_C= –1.0A, I_B= –100mA
DC current gain	h_{FE}	120	–	390	–	V_{CE}= –2V, I_C= –100mA
Transition frequency	f_T	–	350	–	MHz	V_{CE}= –10V, I_E=100mA, f=10MHz
Collector output capacitance	Cob	–	25	–	pF	V_{CB}= –10V, I_E=0A, f=1MHz
Turn-on time	Ton	–	25	–	ns	I_C= –2.0A I_{B1}= –200mA I_{B2}=200mA V_{CC}≒ –25V
Storage time	Tstg	–	100	–	ns	
Fall time	Tf	–	20	–	ns	

●h_{FE} RANK

Q	R
120–270	180–390

●Electrical characteristic curves

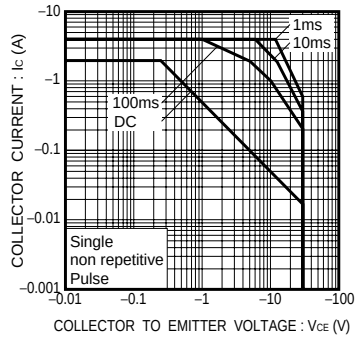


Fig.1 Safe Operating Area

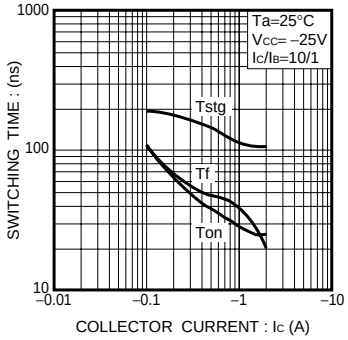


Fig.2 Switching Time

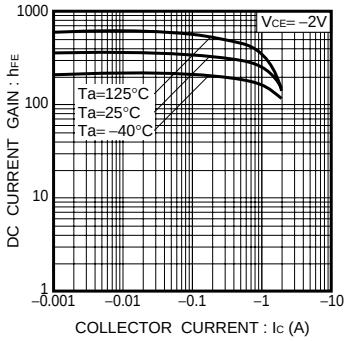


Fig.3 DC Current Gain vs. Collector Current (I)

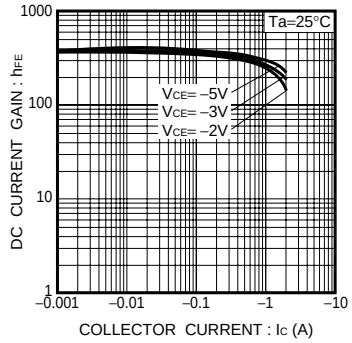


Fig.4 DC Current Gain vs. Collector Current (II)

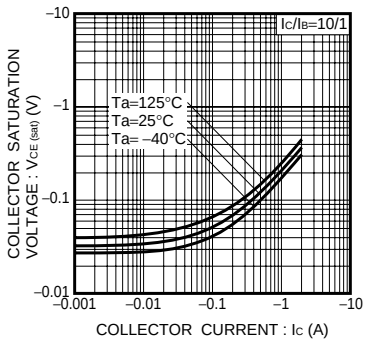


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

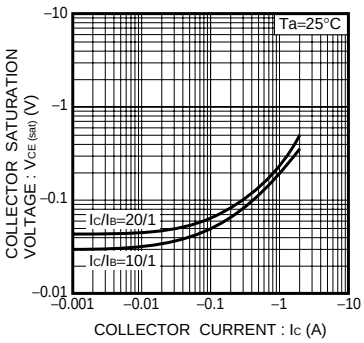


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

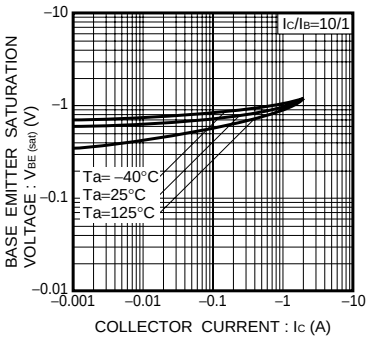


Fig.7 Base-Emitter Saturation Voltage vs.Collecter Current

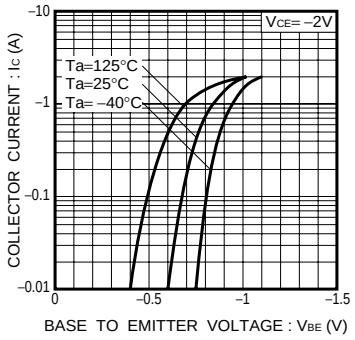


Fig.8 Grounded Emitter Propagation Characteristics

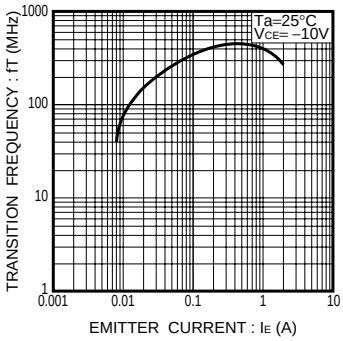


Fig.9 Transition Frequency

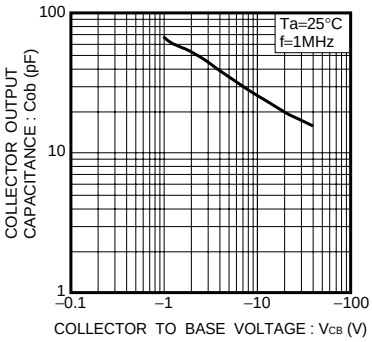
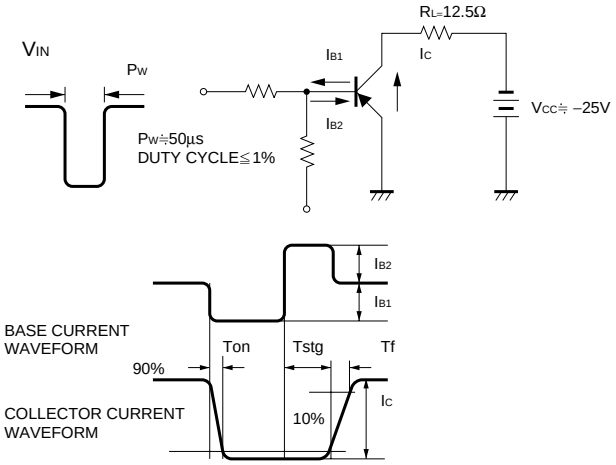


Fig.10 Collector Output Capacitance

●Switching characteristics measurement circuits



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