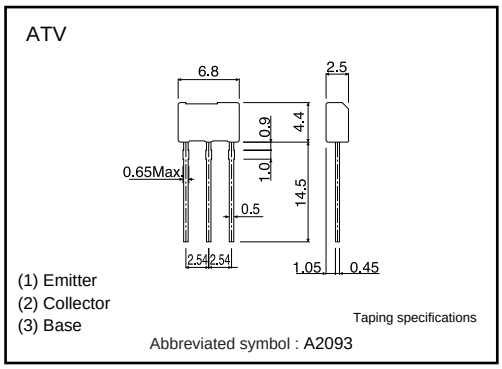
Power transistor (–60V, –2A)

2SA2093

●**Features**

1) High speed switching.
   (tf : Typ. : 30ns at I_C = −2A)
2) Low saturation voltage, typically
   (Typ. : −200mV at I_C = −1.0A, I_B = −0.1A)
3) Strong discharge power for inductive load and capacitance load.
4) Complements the 2SC5880

●**Dimensions** (Unit : mm)



●**Applications**

Small signal low frequency amplifier
High speed switching

●**Structure**

PNP Silicon epitaxial planar transistor

●**Packaging specifications**

Type	Package	Taping
	Code	TV2
	Basic ordering unit (pieces)	2500
2SA2093		◯

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

Parameter		Symbol	Limits	Unit	
Collector-base voltage		V_{CBO}	–60	V	
Collector-emitter voltage		V_{CEO}	–60	V	
Emitter-base voltage		V_{EBO}	–6	V	
Collector current	DC	I_C	–2.0	A	
	Pulsed	I_{CP}	–4.0	A	*
Power dissipation		P_C	1.0	W	
Junction temperature		Tj	150	°C	
Range of storage temperature		Tstg	–55 to 150	°C	

*Pw=10ms

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Collector-emitter breakdown voltage	BV_{CEO}	–60	–	–	V	I_C= –1mA
Collector-base breakdown voltage	BV_{CBO}	–60	–	–	V	I_C= –100μA
Emitter-base breakdown voltage	BV_{EBO}	–6	–	–	V	I_E= –100μA
Collector cut-off current	I_{CBO}	–	–	–1.0	μA	V_{CB}= –40V
Emitter cut-off current	I_{EBO}	–	–	–1.0	μA	V_{EB}= –4V
Collector-emitter saturation voltage	$V_{CE\ (sat)}$	–	–200	–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	–	310	–	MHz	V_{CE}= –10V * I_E=100mA f=10MHz
Corrector output capacitance	Cob	–	25	–	pF	V_{CB}= –10V I_E=0mA f=1MHz
Turn-on time	Ton	–	25	–	ns	I_C= –2.0A *
Storage time	Tstg	–	120	–	ns	I_{B1}= –200mA I_{B2}=200mA
Fall time	Tf	–	30	–	ns	V_{CC} ≒ –25V

*Single non repetitive pulse

●h_{FE} RANK

Q	R
120–270	180–390

●Electrical characteristic curves

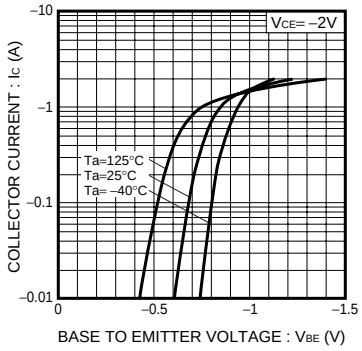


Fig.1 Grounded Emitter Propagation Characteristics

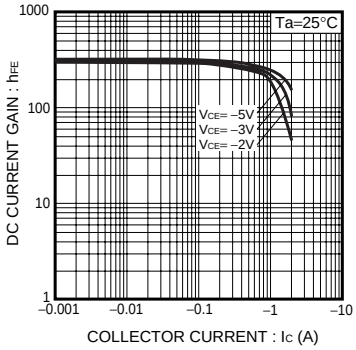


Fig.2 DC Current Gain vs. Collector Current (I)

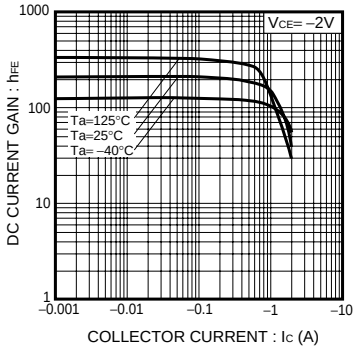


Fig.3 DC Current Gain vs. Collector Current (II)

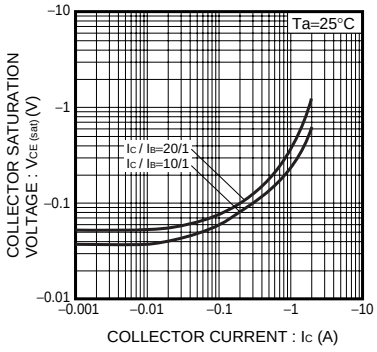


Fig.4 Collector-Emitter Saturation Voltage vs. Collector Current (I)

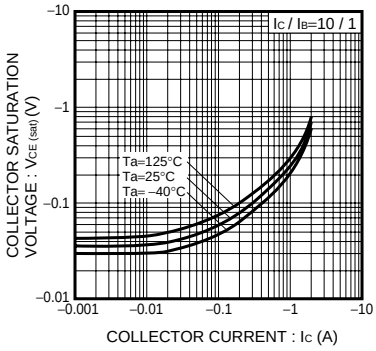


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (II)

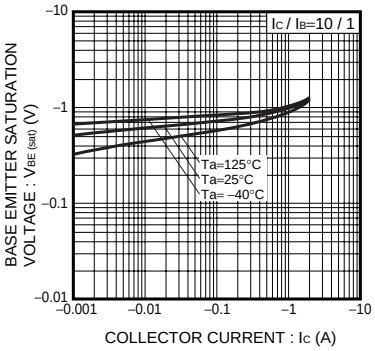


Fig.6 Base-Emitter Saturation Voltage vs. Collecter Current

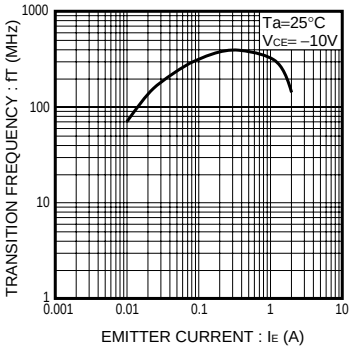


Fig.7 Transition Frequency

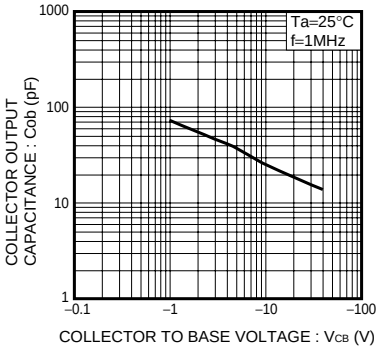


Fig.8 Collector Output Capacitance

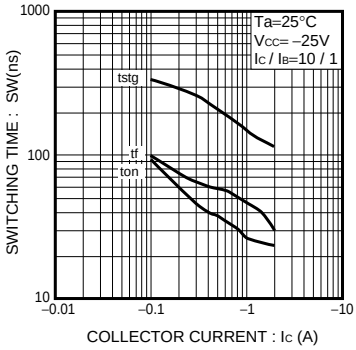


Fig.9 Switching Time

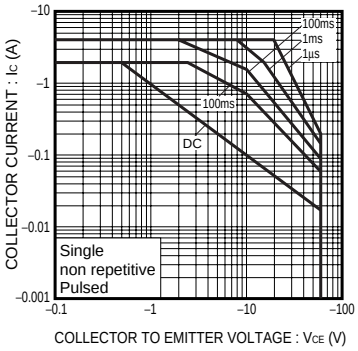
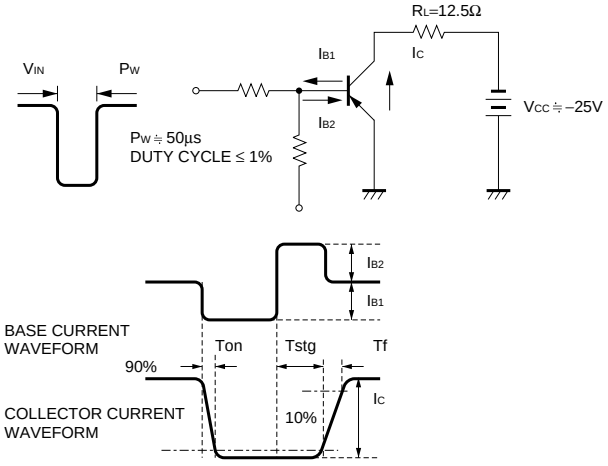


Fig.10 Safe Operating Area

●Switching characteristics measurement circuits



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