

PNP General Purpose Transistor

UMT3906 / SST3906 / MMST3906 / 2N3906

●Features

- 1) $BV_{CEO} < -40V$ ($I_C = -1mA$)
- 2) Complements the UMT3904 / SST3904 / MMST3904 / 2N3904.

●Package, marking, and packaging specifications

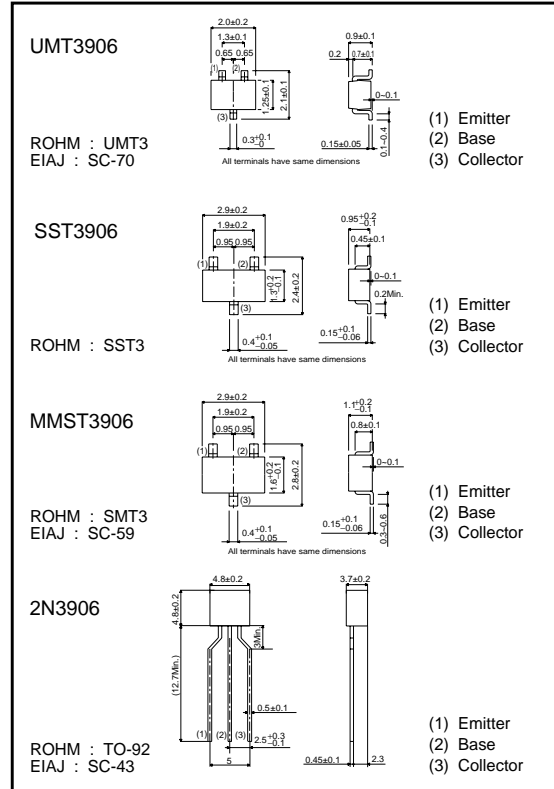
Part No.	UMT3906	SST3906	MMST3906	2N3906
Packaging type	UMT3	SST3	SMT3	TO-92
Marking	R2A	R2A	R2A	-
Code	T106	T116	T146	T93
Basic ordering unit (pieces)	3000	3000	3000	3000

●Absolute maximum ratings ($T_a = 25^\circ C$)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	-40	V
Collector-emitter voltage	V_{CEO}	-40	V
Emitter-base voltage	V_{EBO}	-5	V
Collector current	I_C	-0.2	A
Collector power dissipation	UMT3906	0.2	W
	SST3906, MMST3906	0.3	W
	2N3906	0.625	W
Junction temperature	T_j	150	$^\circ C$
Storage temperature	T_{stg}	-55 ~ +150	$^\circ C$

* When mounted on a 7 x 5 x 0.6mm ceramic board.

●External dimensions (Units : mm)



●Electrical characteristics ($T_a = 25^\circ C$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-40	-	-	V	$I_C = -10\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	-40	-	-	V	$I_C = -10mA$
Emitter-base breakdown voltage	BV_{EBO}	-5	-	-	V	$I_E = -10\mu A$
Collector cutoff current	I_{CES}	-	-	-50	nA	$V_{CB} = -30V$
Emitter cutoff current	I_{EBO}	-	-	-50	nA	$V_{EB} = -3V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	-0.25	V	$I_C/I_B = -10mA/-1mA$
		-	-	-0.4	V	$I_C/I_B = -50mA/-5mA$
Base-emitter saturation voltage	$V_{BE(sat)}$	0.65	-	-0.85	V	$I_C/I_B = -10mA/-1mA$
		-	-	-0.95	V	$I_C/I_B = -50mA/-5mA$
DC current transfer ratio	h_{FE}	60	-	-	-	$V_{CE} = -1V, I_C = -0.1mA$
		80	-	-	-	$V_{CE} = -1V, I_C = -1mA$
		100	-	300	-	$V_{CE} = -1V, I_C = -10mA$
		60	-	-	-	$V_{CE} = -1V, I_C = -50mA$
		30	-	-	-	$V_{CE} = -1V, I_C = -100mA$
Transition frequency	f_r	250	-	-	MHz	$V_{CE} = -20V, I_E = 10mA, f = 100MHz$
Collector output capacitance	C_{ob}	-	-	4.5	pF	$V_{CB} = -10V, f = 100kHz$
Emitter input capacitance	C_{ib}	-	-	10	pF	$V_{EB} = -0.5V, f = 100kHz$
Delay time	t_d	-	-	35	ns	$V_{CC} = -3V, V_{BE(OFF)} = -0.5V, I_C = -10mA, I_{B1} = -1mA$
Rise time	t_r	-	-	35	ns	$V_{CC} = -3V, V_{BE(OFF)} = -0.5V, I_C = -10mA, I_{B1} = -1mA$
Storage time	t_{stg}	-	-	225	ns	$V_{CC} = -3V, I_C = -10mA, I_{B1} = -I_{B2} = -1mA$
Fall time	t_f	-	-	75	ns	$V_{CC} = -3V, I_C = -10mA, I_{B1} = -I_{B2} = -1mA$

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● Electrical characteristic curves

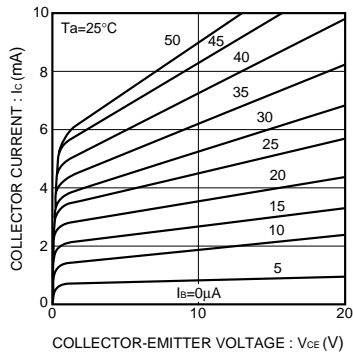


Fig.1 Grounded emitter output characteristics

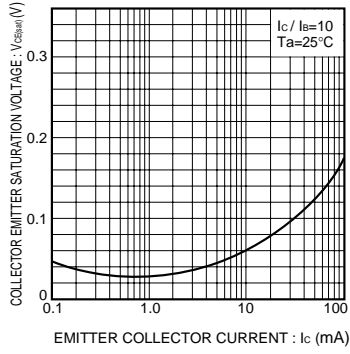


Fig.2 Collector-emitter saturation voltage vs. collector current

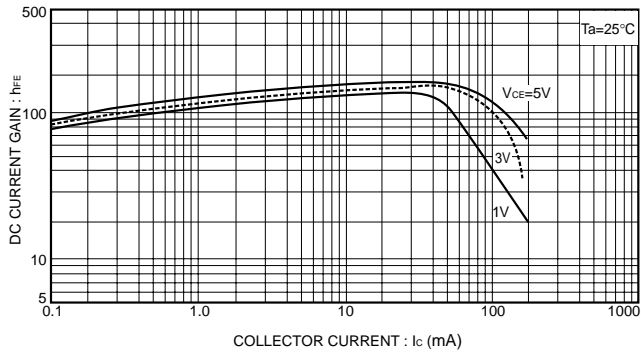


Fig.3 DC current gain vs. collector current(I)

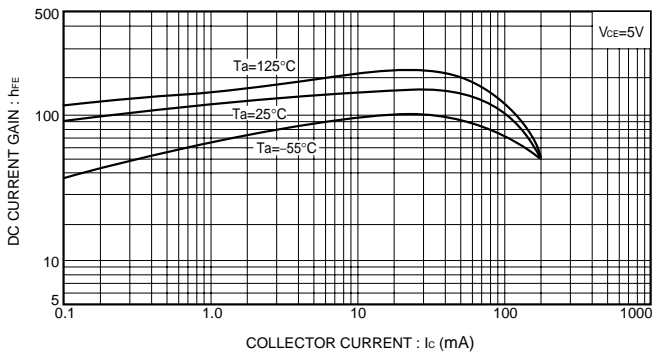


Fig.4 DC current gain vs. collector current(II)

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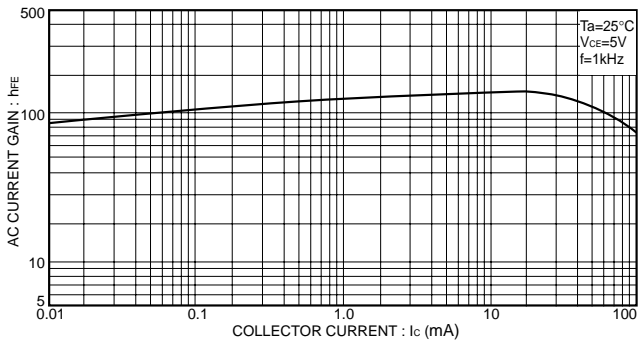


Fig.5 AC current gain vs. collector current

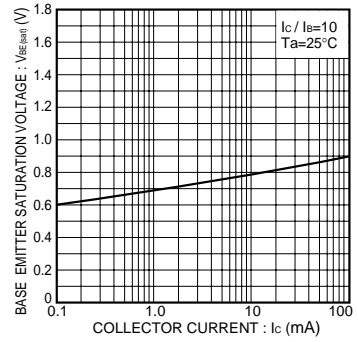


Fig.6 Base-emitter saturation voltage vs. collector current

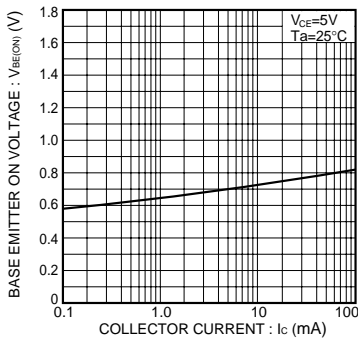


Fig.7 Grounded emitter propagation characteristics

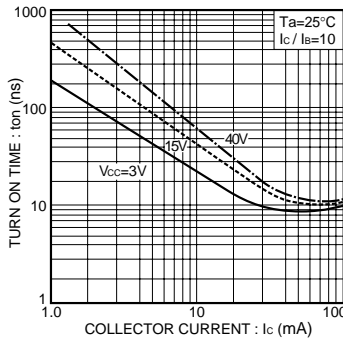


Fig.8 Turn-on time vs. collector current

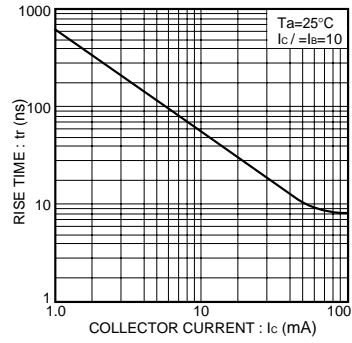


Fig.9 Rise time vs. collector current

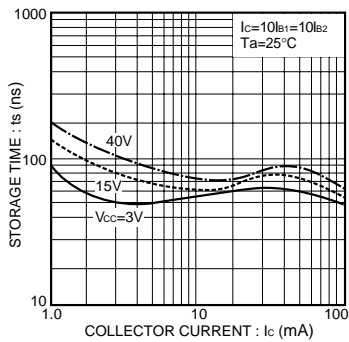


Fig.10 Storage time vs. collector current

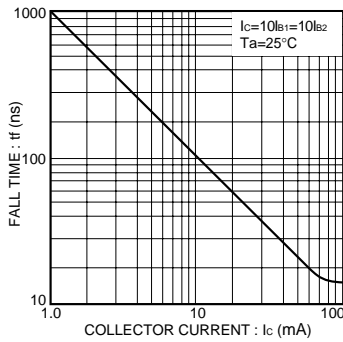


Fig.11 Fall time vs. collector current

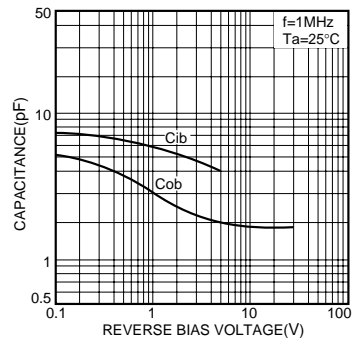


Fig.12 Input/output capacitance vs. voltage

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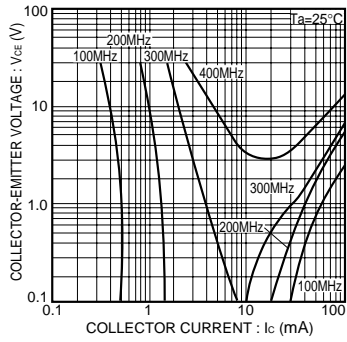


Fig.13 Gain bandwidth product

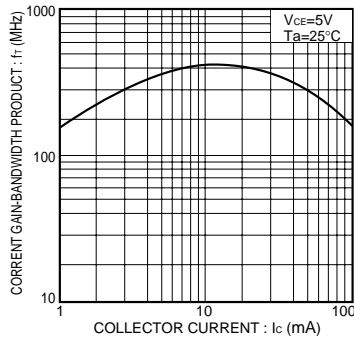


Fig.14 Gain bandwidth product vs. collector current

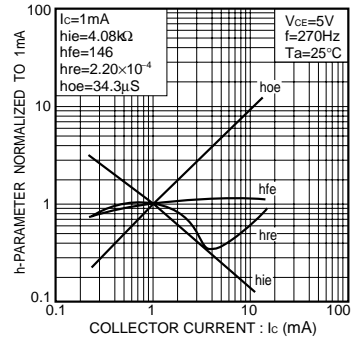


Fig.15 h parameter vs. collector current

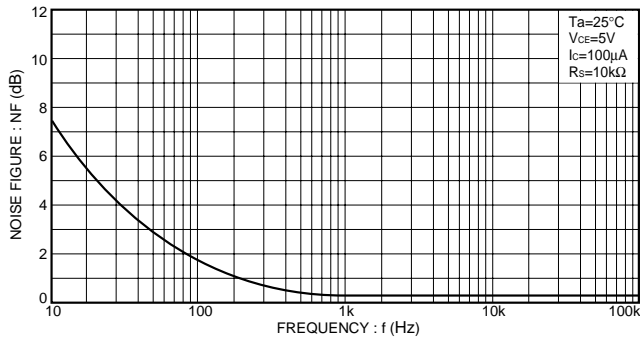


Fig.16 Noise vs. collector current

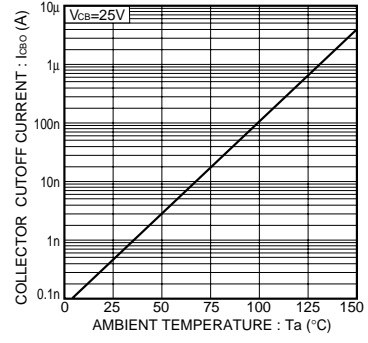


Fig.17 Noise characteristics(I)

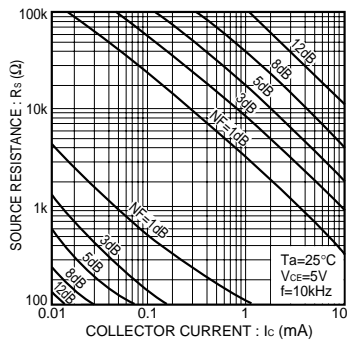


Fig.18 Noise characteristics(II)

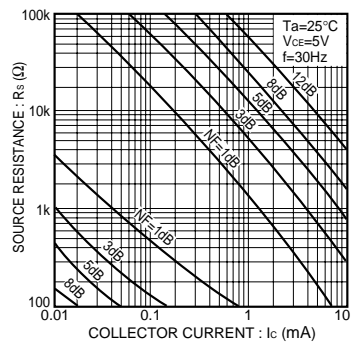


Fig.19 Noise characteristics(III)

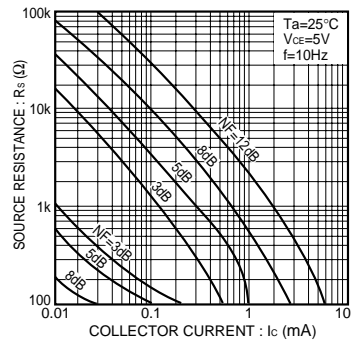


Fig.20 Noise characteristics(IV)