PNP General Purpose Transistor

UMT3906 / SST3906 / MMST3906

●Features

1) BV_{CEO} > –40V (I_C=–1mA)
2) Complements the T3904/SST3904/MMST3909.
3) Low capacitance.

●Package, marking, and packaging specifications

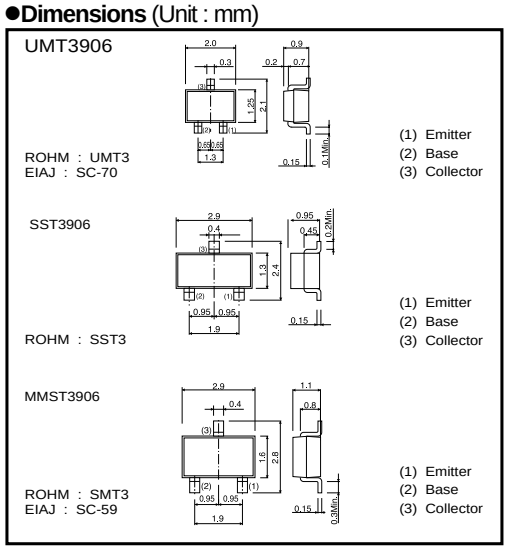
Type	UMT3906	SST3906	MMST3906
Packaging type	UMT3	SST3	SMT3
Marking	R2A	R2A	R2A
Code	T106	T116	T146
Basic ordering unit (pieces)	3000	3000	3000

●Absolute maximum ratings (Ta=25°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_O	–0.2	A
Collector Power dissipation	UMT3906 SST3906,MMST3906	Pd	6.2	W
	SST3906,MMST3906		0.35	W *
Junction temperature		Tj	150	°C
Storage temperature		Tstg	–55 to +150	°C

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

●Dimensions (Unit : mm)



●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	–40	–	–	V	I_C=–10μA
Collector-emitter breakdown voltage	BV_{CEO}	–40	–	–	V	I_C=–1mA
Emitter-base breakdown voltage	BV_{EBO}	–5	–	–	V	I_E=–10μA
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		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		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_T	250	–	–	MHz	V_{CE}=–20V, I_E=10mA, f=100MHz
Collector output capacitance	Cob	–	–	4.5	pF	V_{CB}=–10V, f=100kHz, I_E=0A
Emitter input capacitance	Cib	–	–	10	pF	V_{CB}=–0.5V, f=100kHz, I_C=0A
Delay time	td	–	–	35	ns	V_{CC}=–3V, $V_{BE(OFF)}$=–0.5V, I_C=–10mA, I_{B1}=–1mA
Rise time	tr	–	–	35	ns	V_{CC}=–3V, $V_{BE(OFF)}$=–0.5V, I_C=–10mA, I_{B1}=–1mA
Storage tiem	tstg	–	–	225	ns	V_{CC}=–3V, I_C=–10mA, I_{B1}=–I_{B2}=–1mA
Fall time	tf	–	–	75	ns	V_{CC}=–3V, I_C=–10mA, I_{B1}=–I_{B2}=–1mA

●Electrical characteristics curves

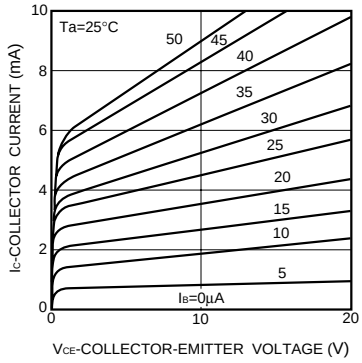


Fig.1 Grounded emitter output characteristics

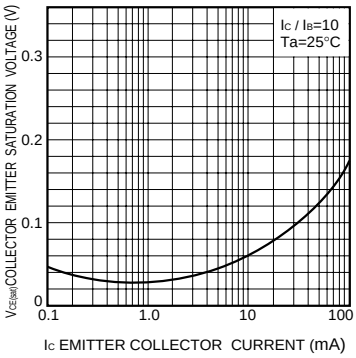


Fig.2 Collector-emitter saturation voltage vs. collector current

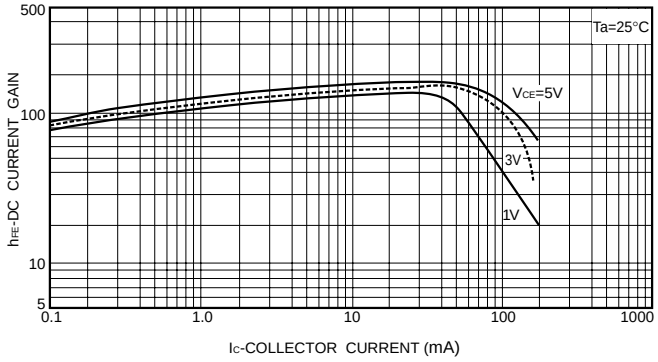


Fig.3 DC current gain vs.collector current (I)

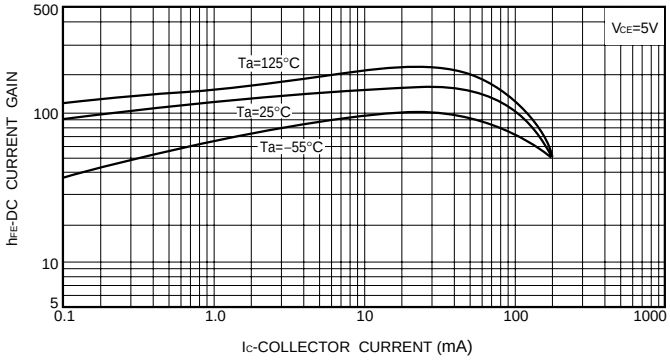


Fig.4 DC current gain vs. collector current (II)

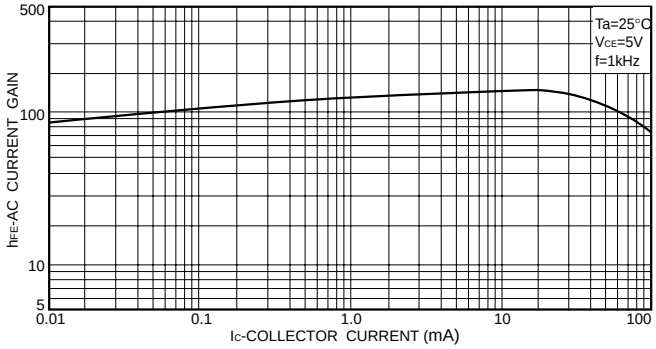


Fig.5 AC current gain vs. collector current

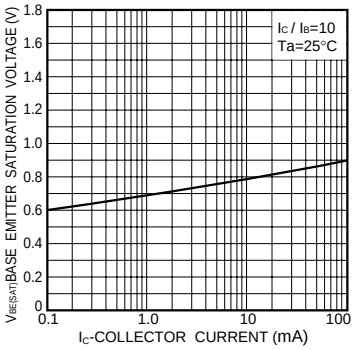


Fig.6 Base-emitter saturation voltage vs. collector current

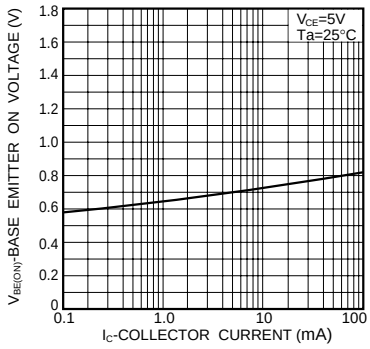


Fig.7 Grounded emitter propagation characteristics

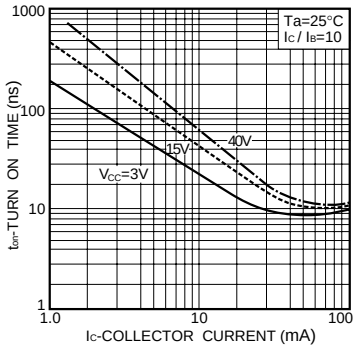


Fig.8 Turn-on time vs. collector current

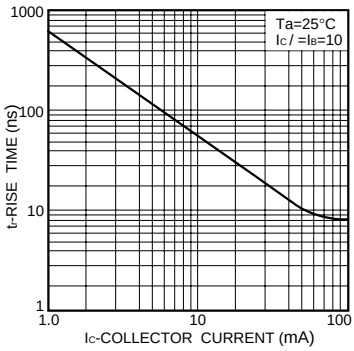


Fig.9 Rise time vs. collector current

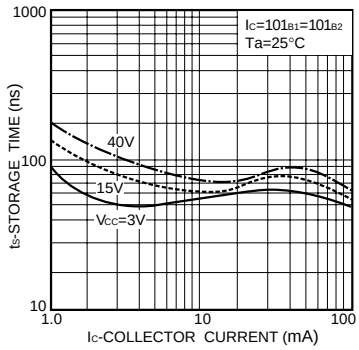


Fig.10 Storage time vs. collector current

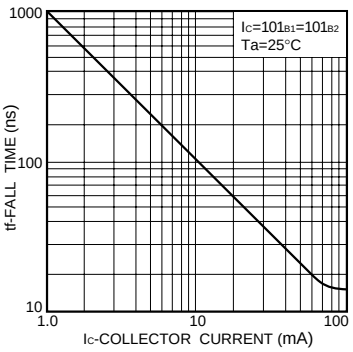


Fig.11 Fall time vs. collector current

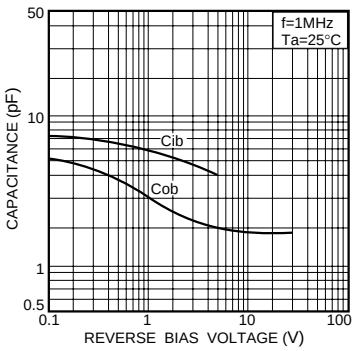


Fig.12 Input / output capacitance vs. voltage

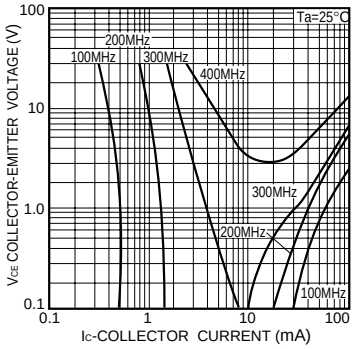


Fig.13 Gain bandwidth product

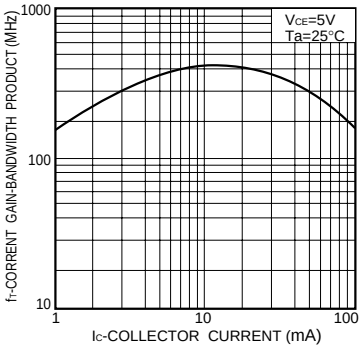


Fig.14 Gain bandwidth product vs. collector current

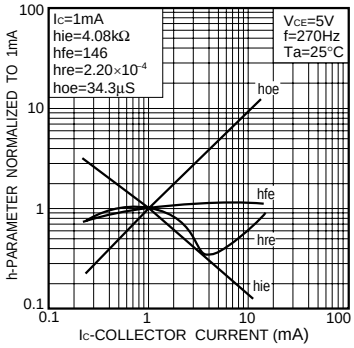


Fig.15 h parameter vs. collector current

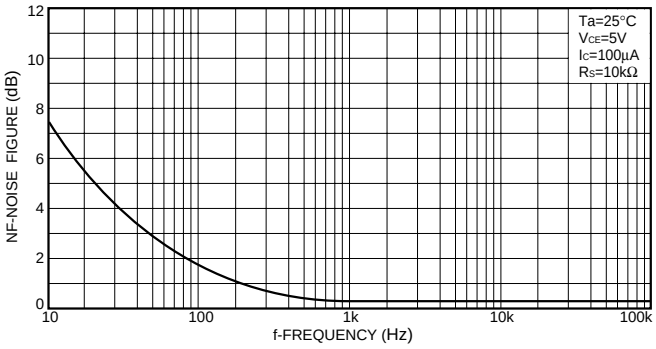


Fig.16 Noise vs. collector current

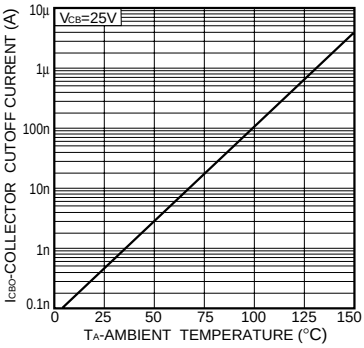


Fig.17 Noise characteristics (I)

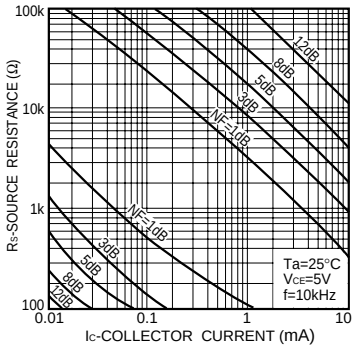


Fig.18 Noise characteristics (II)

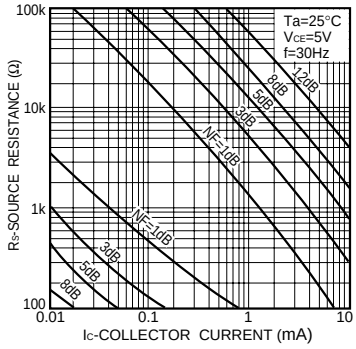


Fig.19 Noise characteristics (III)

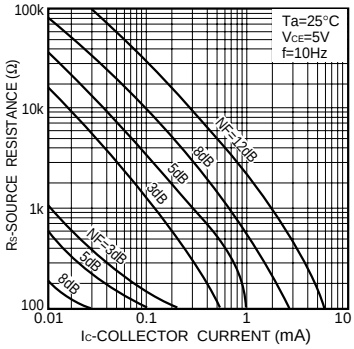


Fig.20 Noise characteristics (IV)

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