

NPN Medium Power Transistor (Switching)

UMT2222A / SST2222A / MMST2222A

●Features

- 1) $BV_{CEO} > 40V$ ($I_C=10mA$)
- 2) Complements the UMT2907A/ SST2907A / MMST2907A.

●Package, marking, and packaging specifications

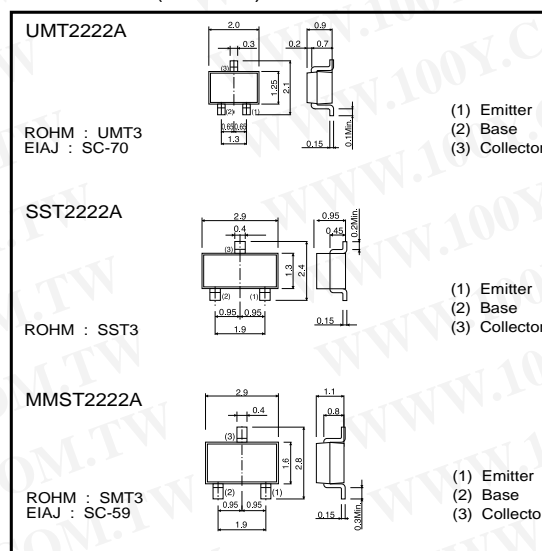
Part No.	UMT2222A	SST2222A	MMST2222A
Packaging type	UMT3	SST3	SMT3
Marking	R1P	R1P	R1P
Code	T106	T116	T146
Basic ordering unit (pieces)	3000	3000	3000

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

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CB0}	75	V
Collector-emitter voltage	V_{CE0}	40	V
Emitter-base voltage	V_{EB0}	6	V
Collector current	I_C	0.6	A
Collector power dissipation	P_C	0.2	W
		0.35	W *
Junction temperature	T_J	150	$^\circ C$
Storage temperature	T_{stg}	-55 to +150	$^\circ C$

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

●Dimensions (Unit : mm)



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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CB0}	75	-	-	V	$I_C=10\mu A$
Collector-emitter breakdown voltage	BV_{CE0}	40	-	-	V	$I_C=10mA$
Emitter-base breakdown voltage	BV_{EB0}	6	-	-	V	$I_E=10\mu A$
Collector cutoff current	I_{C0}	-	-	100	nA	$V_{CB}=60V$
Emitter cutoff current	I_{E0}	-	-	100	nA	$V_{EB}=3V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	0.3	V	$I_C/I_B=150mA/15mA$
		-	-	1	V	$I_C/I_B=500mA/50mA$
Base-emitter saturation voltage	$V_{BE(sat)}$	0.6	-	1.2	V	$I_C/I_B=150mA/15mA$
		-	-	2	V	$I_C/I_B=500mA/50mA$
DC current transfer ratio	h_{FE}	35	-	-	-	$V_{CE}=10V, I_C=0.1mA$
		50	-	-	-	$V_{CE}=10V, I_C=1mA$
		75	-	-	-	$V_{CE}=10V, I_C=10mA$
		50	-	-	-	$V_{CE}=1V, I_C=150mA$
		100	-	300	-	$V_{CE}=10V, I_C=150mA$
		40	-	-	-	$V_{CE}=10V, I_C=500mA$
Transition frequency	f_T	300	-	-	MHz	$V_{CE}=20V, I_C=20mA, f=100MHz$
Output capacitance	C_{ob}	-	-	8	pF	$V_{CB}=10V, f=100kHz$
Emitter input capacitance	C_{ib}	-	-	25	pF	$V_{EB}=0.5V, f=100kHz$
Delay time	t_d	-	-	10	ns	$V_{CC}=30V, V_{BE(OFF)}=0.5V, I_C=150mA, I_{B1}=15mA$
Rise time	t_r	-	-	25	ns	$V_{CC}=30V, V_{BE(OFF)}=0.5V, I_C=150mA, I_{B1}=15mA$
Storage time	t_{stg}	-	-	225	ns	$V_{CC}=30V, I_C=150mA, I_{B1}=-I_{B2}=15mA$
Fall time	t_f	-	-	60	ns	$V_{CC}=30V, I_C=150mA, I_{B1}=-I_{B2}=15mA$

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Transistors

●Electrical characteristic curves

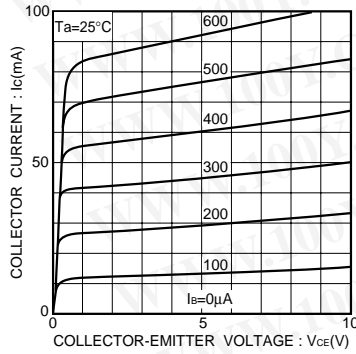


Fig.1 Grounded emitter output characteristics

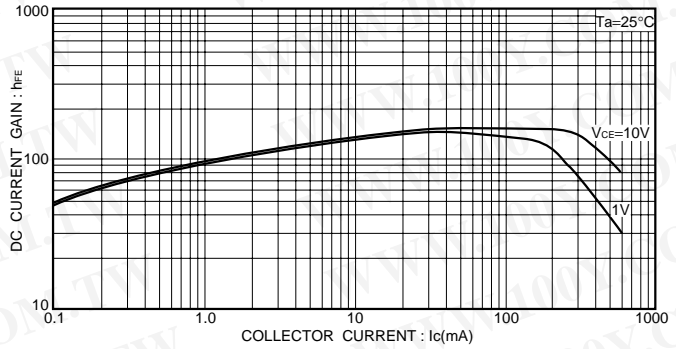


Fig.3 DC current gain vs. collector current(I)

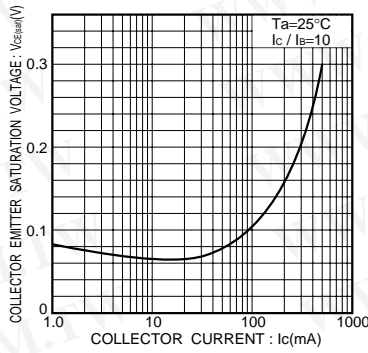


Fig.2 Collector-emitter saturation voltage vs. collector current

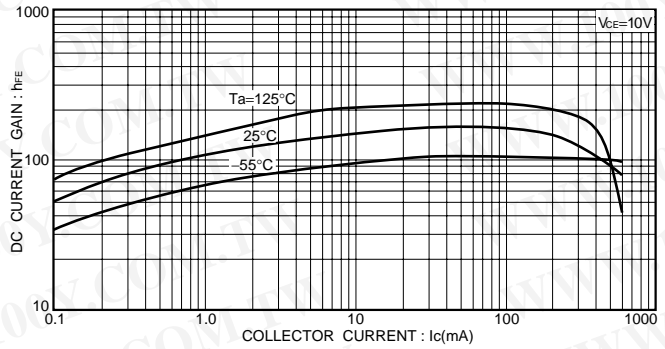


Fig.4 DC current gain vs. collector current(II)

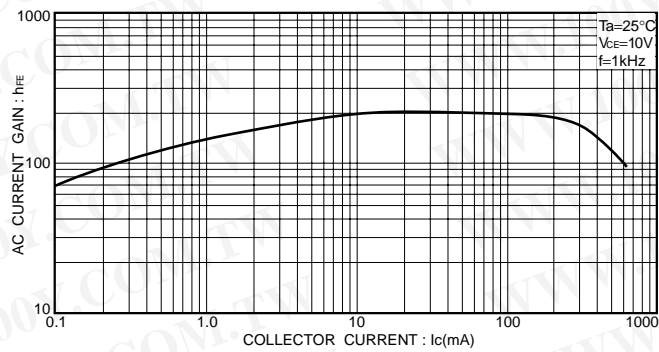


Fig.5 AC current gain vs. collector current

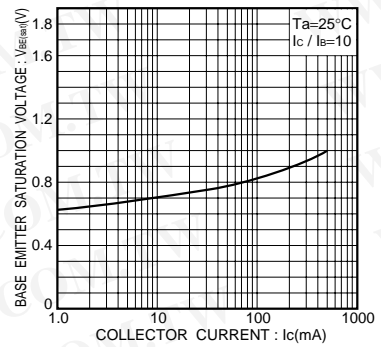


Fig.6 Base-emitter saturation voltage vs. collector current

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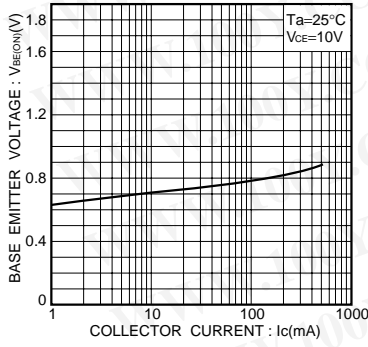


Fig.7 Grounded emitter propagation characteristics

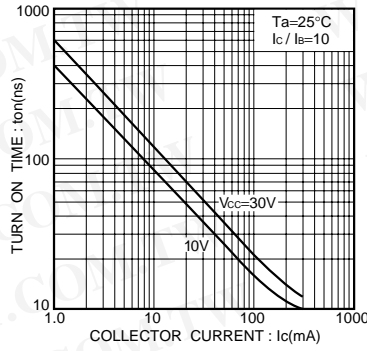


Fig.8 Turn-on time vs. collector current

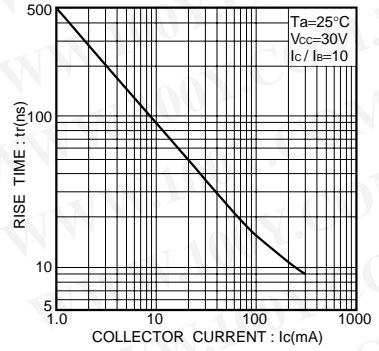


Fig.9 Rise time vs. collector current

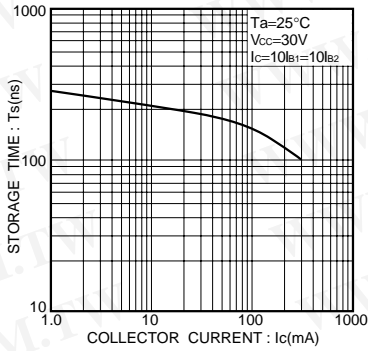


Fig.10 Storage time vs. collector current

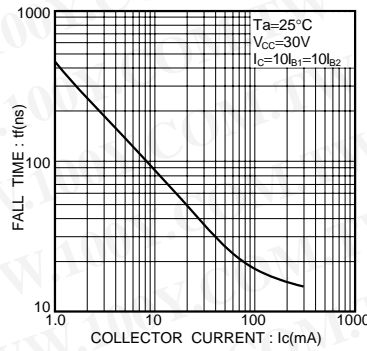


Fig.11 Fall time vs. collector current

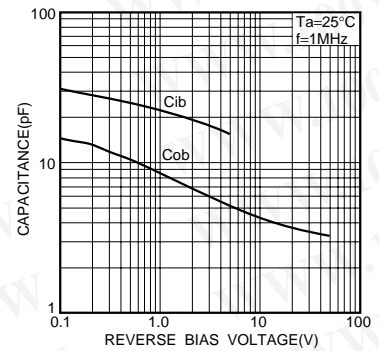


Fig.12 Input/output capacitance vs. voltage

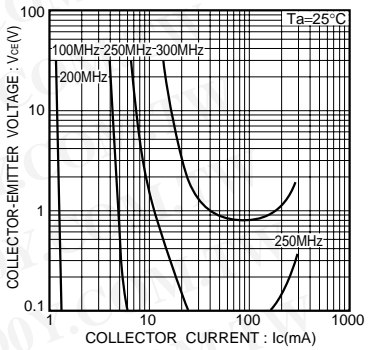


Fig.13 Gain bandwidth product

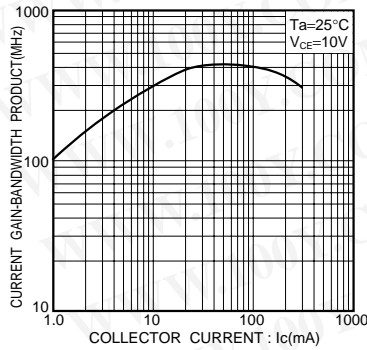


Fig.14 Gain bandwidth product vs. collector current

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Appendix

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