

Transistors

# PNP Medium Power Transistor (Switching)

## UMT2907A / SST2907A / MMST2907A

●Features

- 1)  $BV_{CEO} < -60V$  ( $I_C = -10mA$ )
- 2) Complements the UMT2222A / SST2222A / MMST2222A.

●Package, marking and packaging specifications

Part No.	UMT2907A	SST2907A	MMST2907A
Packaging type	UMT3	SST3	SMT3
Marking	R2F	R2F	R2F
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	$V_{CBO}$	-60	V
Collector-emitter voltage	$V_{CEO}$	-60	V
Emitter-base voltage	$V_{EBO}$	-5	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	$^\circ C$

\* Mounted on a 7x5x0.6mm ceramic substrate.

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CBO}$	-60	-	-	V	$I_C = -10\mu A$
Collector-emitter breakdown voltage	$BV_{CEO}$	-60	-	-	V	$I_C = -10mA$
Emitter-base breakdown voltage	$BV_{EBO}$	-5	-	-	V	$I_E = -10\mu A$
Collector cutoff current	$I_{CBO}$	-	-	-100	nA	$V_{CB} = -50V$
	$I_{CES}$	-	-	-100	nA	$V_{CB} = -30V$
Emitter cutoff current	$I_{EBO}$	-	-	-100	nA	$V_{EB} = -3V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	-0.4	V	$I_C/I_B = -150mA / -15mA$
		-	-	-1.6	V	$I_C/I_B = -500mA / -50mA$
Base-emitter saturation voltage	$V_{BE(sat)}$	-	-	-1.3	V	$I_C/I_B = -150mA / -15mA$
		-	-	-2.6	V	$I_C/I_B = -500mA / -50mA$
DC current transfer ratio	$h_{FE}$	75	-	-	-	$V_{CE} = -10V, I_C = -0.1mA$
		100	-	-	-	$V_{CE} = -10V, I_C = -1mA$
		100	-	-	-	$V_{CE} = -10V, I_C = -10mA$
		100	-	300	-	$V_{CE} = -10V, I_C = -150mA$
		50	-	-	-	$V_{CE} = -10V, I_C = -500mA$
Transition frequency	$f_T$	200	-	-	MHz	$V_{CE} = -20V, I_E = 50mA, f = 100MHz$
Collector output capacitance	$C_{ob}$	-	-	8	pF	$V_{CB} = -10V, f = 100kHz$
Emitter input capacitance	$C_{ib}$	-	-	30	pF	$V_{EB} = -2V, f = 100kHz$
Turn-on time	$t_{on}$	-	-	50	ns	$V_{CC} = -30V, V_{BE(OFF)} = -1.5V, I_C = -150mA, I_{B1} = -15mA$
Delay time	$t_d$	-	-	10	ns	$V_{CC} = -30V, V_{BE(OFF)} = -1.5V, I_C = -150mA, I_{B1} = -15mA$
Rise time	$t_r$	-	-	40	ns	$V_{CC} = -30V, V_{BE(OFF)} = -1.5V, I_C = -150mA, I_{B1} = -15mA$
Turn-off time	$t_{off}$	-	-	100	ns	$V_{CC} = -30V, I_C = -150mA, I_{B1} = I_{B2} = -15mA$
Storage time	$t_{stg}$	-	-	80	ns	$V_{CC} = -30V, I_C = -150mA, I_{B1} = I_{B2} = -15mA$
Fall time	$t_f$	-	-	30	ns	$V_{CC} = -30V, I_C = -150mA, I_{B1} = I_{B2} = -15mA$

●Dimensions (Unit : mm)

UMT2907A

ROHM : UMT3  
EIAJ : SC-70  
SOT-323

(1) Emitter  
(2) Base  
(3) Collector

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SST2907A

ROHM : SST3

(1) Emitter  
(2) Base  
(3) Collector

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MMST2907A

ROHM : SMT3  
EIAJ : SC-59

(1) Emitter  
(2) Base  
(3) Collector

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●Electrical characteristic curves

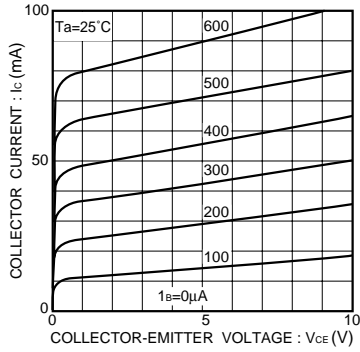


Fig.1 Grounded emitter output characteristics

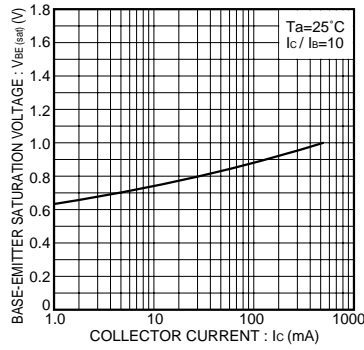


Fig.2 Base-emitter saturation voltage vs. collector current

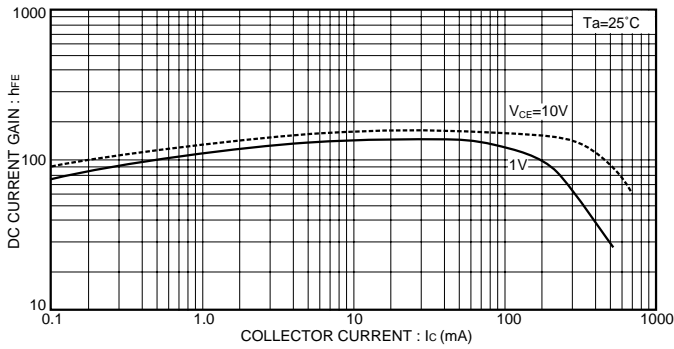


Fig.3 DC current gain vs. collector current (I)

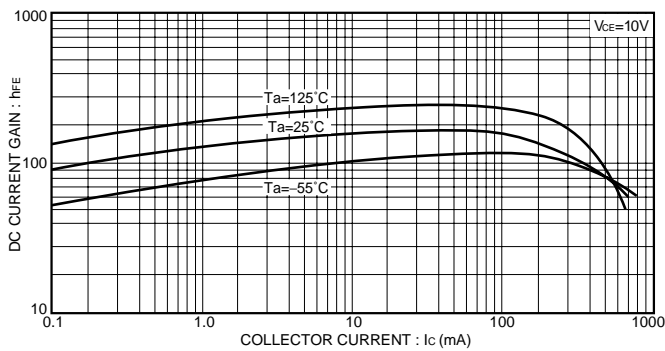


Fig.4 DC current gain vs. collector current (II)

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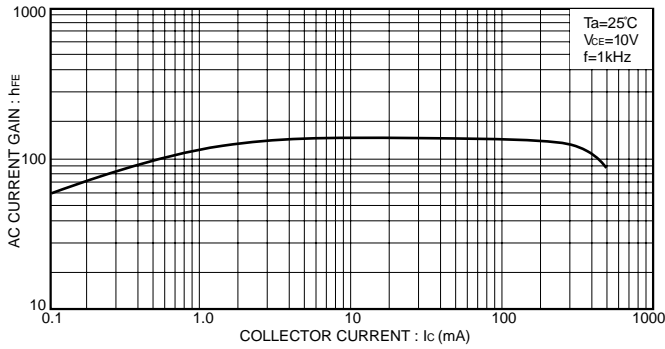


Fig.5 AC current gain vs. collector current

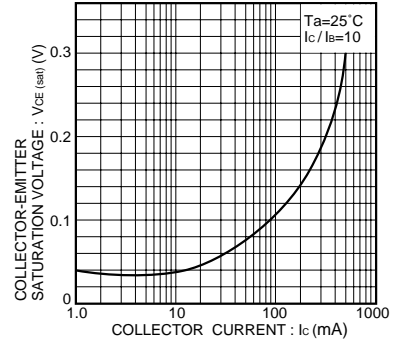


Fig.6 Collector-emitter saturation voltage vs. collector current

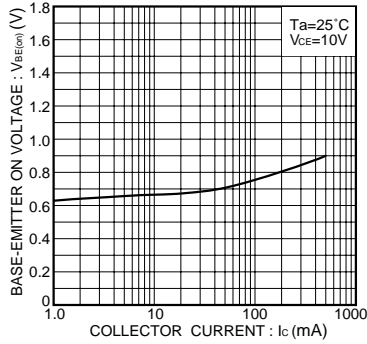


Fig.7 Grounded emitter propagation characteristics

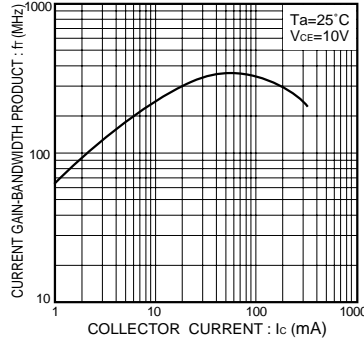


Fig.8 Gain bandwidth product vs. collector current

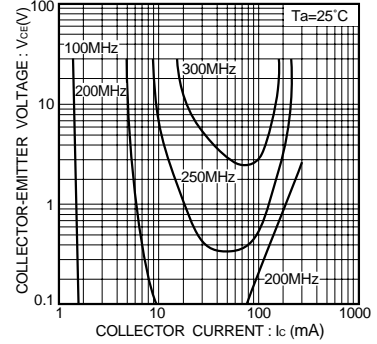


Fig.9 Gain bandwidth product

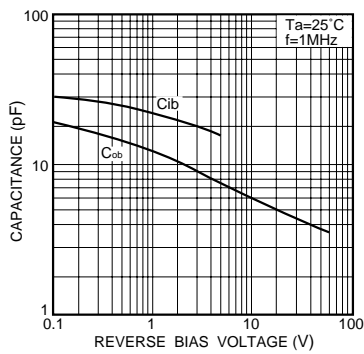


Fig.10 Input/output capacitance vs. voltage

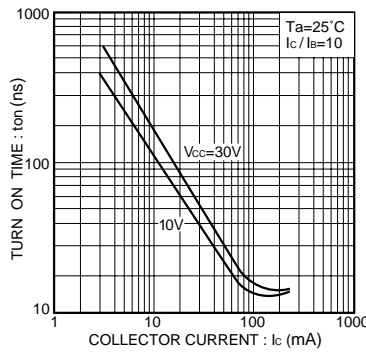


Fig.11 Turn-on time vs. collector current

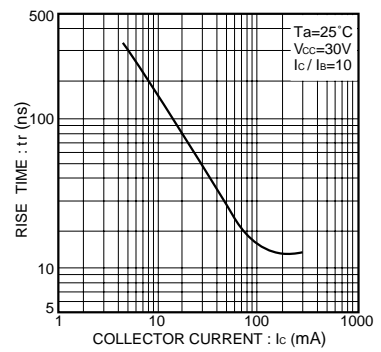


Fig.12 Rise time vs. collector current

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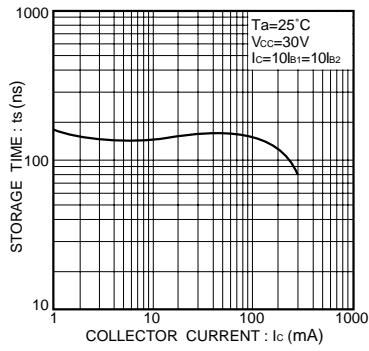


Fig.13 Storage time vs. collector current

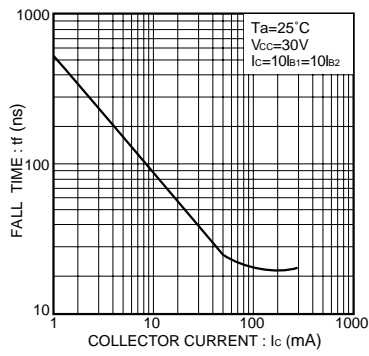


Fig.14 Fall time vs. collector current

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