NPN small signal transistor

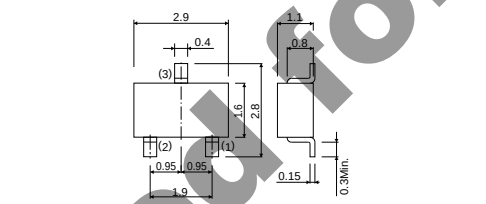
MMSTA13

●Features

(1) High Current Gain.

●Dimensions (Unit : mm)

MMSTA13



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

Each lead has same dimensions

Abbreviated symbol : R1M

●Packaging specifications

Type	Package	Taping
	Code	T146
	Basic ordering unit (pieces)	3000
MMSTA13		○

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	30	V
Collector-emitter voltage	V_{CES}	30	V
Emitter-base voltage	V_{EBO}	10	V
Collector current	I_C	0.3	A
Collector power dissipation	P_C	0.2	W
		0.35	W ＊
Junction temperature	Tj	150	°C
Storage temperature	Tstg	−55 to 125	°C

＊ Mounted on a 7×5×0.6 mm CERAMIC SUBSTRATE

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BV_{CES}	30	–	–	V	I_C= 100μA
Collector-emitter breakdown voltage	BV_{CEO}	30	–	–	V	I_C= 10μA
Emitter-base breakdown voltage	BV_{EBO}	10	–	–	V	I_E= 10μA
Collector-base cutoff current	I_{CBO}	–	–	0.1	μA	V_{CB}= 30V
Emitter-base cutoff current	I_{CEO}	–	–	0.1	μA	V_{EB}= 10V
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	–	1.5	V	I_C/I_B= 100mA/ 100μA
Base-emitter voltage	$V_{BE(on)}$	–	–	2.0	V	V_{CE}= 5V, I_C= 100mA ＊
DC current transfer ratio	h_{FE}	5000	–	–	–	V_{CE}= 5V, I_C= 10mA
		10000	–	–		V_{CE}= 5V, I_C= 100mA ＊
Transition frequency	f_T	125	–	–	MHz	V_{CE}= 5V, I_E= −10mA, f=100MHz
Collector output capacitance	Cob	–	5.4	–	pF	V_{CB}= 10V, f=100kHz, I_E= 0

＊ Pulsed

●Electrical characteristics curves

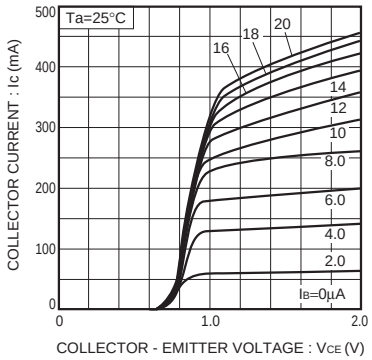


Fig.1 Typical output characteristics (I)

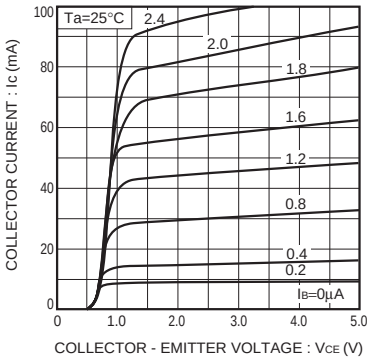


Fig.2 Typical output characteristics (II)

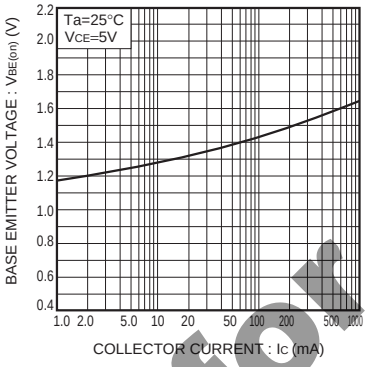


Fig.3 Base emitter 'ON' voltage vs. collector current

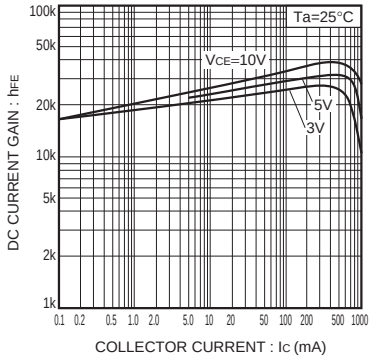


Fig.4 DC current gain vs. collector current (I)

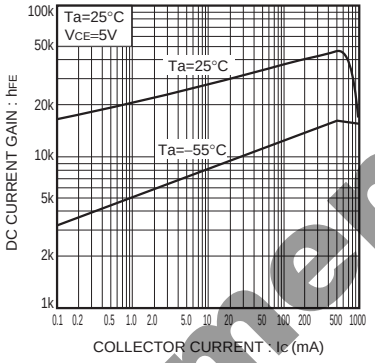


Fig.5 DC current gain vs. collector current (II)

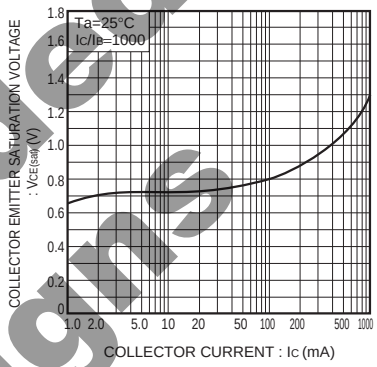


Fig.6 Collector emitter saturation voltage vs. collector current

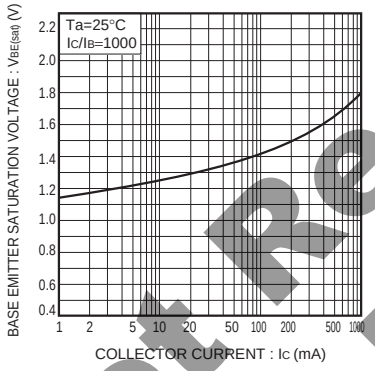


Fig.7 Base emitter saturation voltage vs. collector current

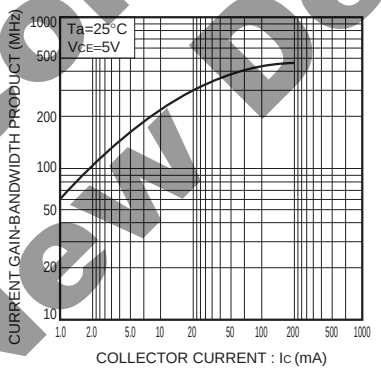


Fig.8 Current gain-bandwidth product vs. collector current

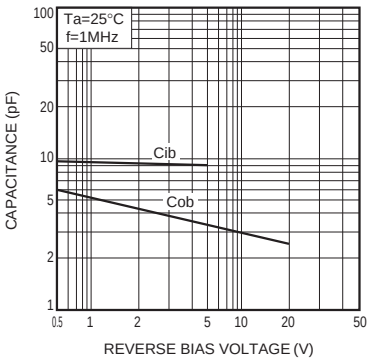


Fig.9 Capacitance vs. reverse bias voltage

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