

NPN small signal transistor

MMSTA13

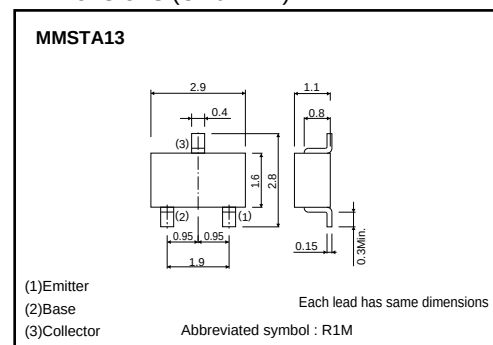
●Features

(1) High Current Gain.

●Packaging specifications

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

●Dimensions (Unit : mm)



●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	T_J	150	°C
Storage temperature	T_{stg}	-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	$I_C = 100\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	30	—	—	V	$I_C = 10\mu A$
Emitter-base breakdown voltage	BV_{EBO}	10	—	—	V	$I_E = 10\mu A$
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	$I_C/I_E = 100mA/100\mu A$
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	C_{ob}	—	5.4	—	pF	$V_{CB} = 10V, f = 100kHz, I_E = 0$

* Pulsed

●Electrical characteristics curves

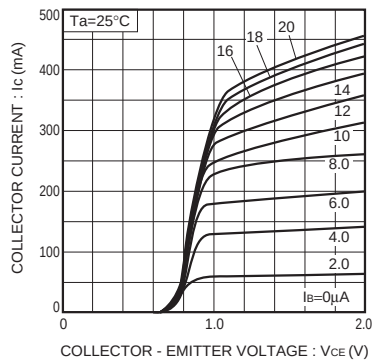


Fig.1 Typical output characteristics (I)

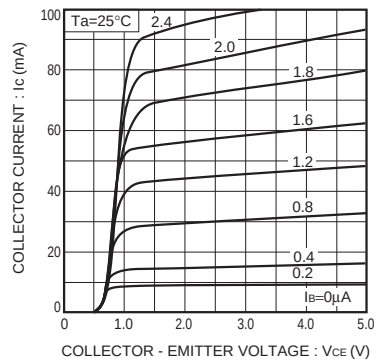


Fig.2 Typical output characteristics (II)

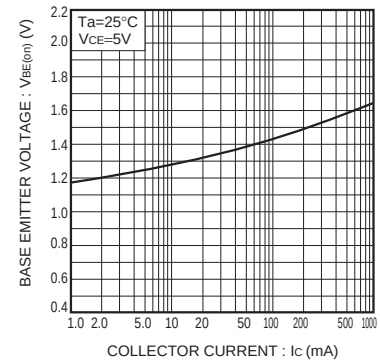


Fig.3 Base emitter 'ON' voltage vs. collector current

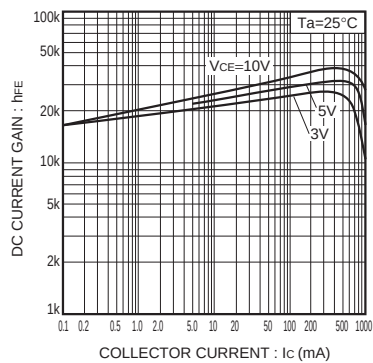


Fig.4 DC current gain vs. collector current (I)

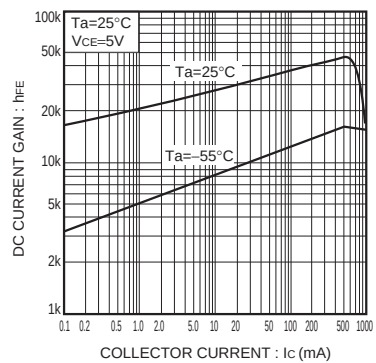


Fig.5 DC current gain vs. collector current (II)

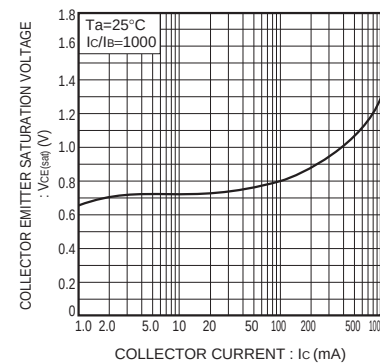


Fig.6 Collector emitter saturation voltage vs. collector current

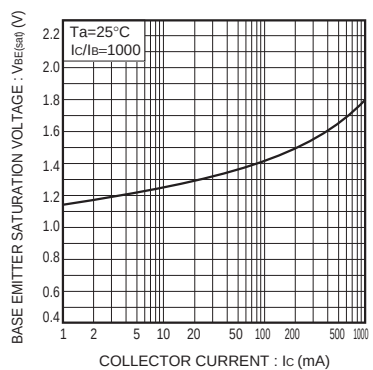


Fig.7 Base emitter saturation voltage vs. collector current

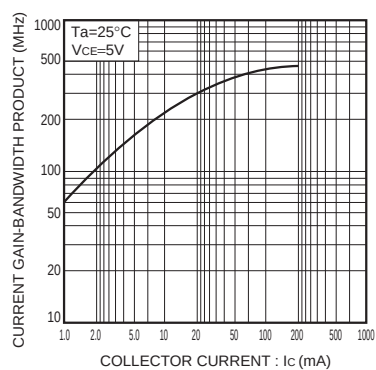


Fig.8 Current gain-bandwidth product vs. collector current

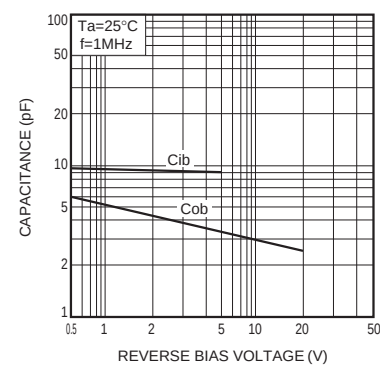


Fig.9 Capacitance vs. reverse bias voltage

Notes

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