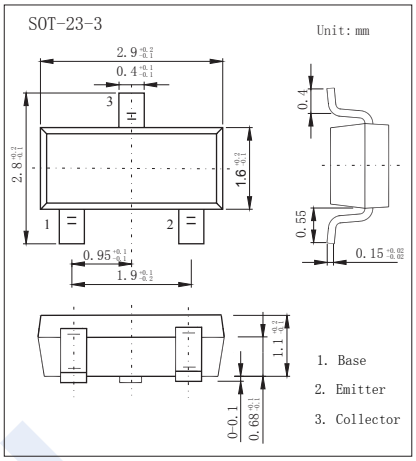
NPN Transistors

2SC1009



■ Features

- Collector Current Capability I_C=50mA
- Collector Emitter Voltage V_{CEO}=30V

■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	50	V
Collector - Emitter Voltage	V_{CEO}	30	
Emitter - Base Voltage	V_{EBO}	5	
Collector Current - Continuous	I_C	50	mA
Collector Power Dissipation	P_C	150	mW
Junction Temperature	T_J	125	℃
Storage Temperature Range	T_{stg}	-55 to 125	

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V_{CBO}	I_C= 100 μA, I_E= 0	50			V
Collector- emitter breakdown voltage	V_{CEO}	I_C= 1 mA, I_B= 0	30			
Emitter - base breakdown voltage	V_{EBO}	I_E= 100 μ A, I_C= 0	5			
Collector-base cut-off current	I_{CBO}	V_{CB}= 50 V , I_E= 0			0.1	uA
Emitter cut-off current	I_{EBO}	V_{EB}= 5V , I_C=0			0.1	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=10mA, I_B=1mA			0.3	V
Base - emitter saturation voltage	$V_{BE(sat)}$	I_C=10mA, I_B=1mA			1.2	
Base - emitter voltage	V_{BE}	V_{CE}= 6V, I_C= 1mA	0.65		0.75	
DC current gain	h_{FE}	V_{CE}= 6V, I_C= 1mA	60		180	
Noise figure	NF	V_{CE}= 6V, I_E=-1mA,f=1MHz,R_G=500Ω			4	dB
Collector-base time constant	$C_{c\cdot rb'b}$	V_{CB}= 6V, I_E=-10mA,f=31.9MHz			15	ps
Collector output capacitance	C_{ob}	V_{CB}= 6V, I_E=0,f=1MHz			2.2	pF
Transition frequency	f_T	V_{CE}= 6V, I_E= -1mA	150			MHz

■ Classification of h_{fe}

Type	2SC1009-FA3	2SC1009-FA4
Range	60-120	90-180
Marking	FA3	FA4

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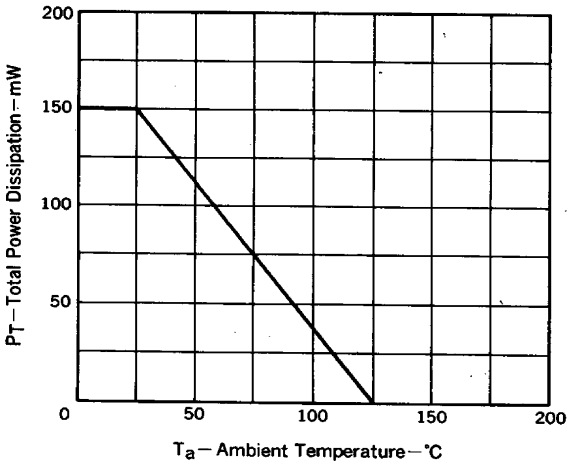
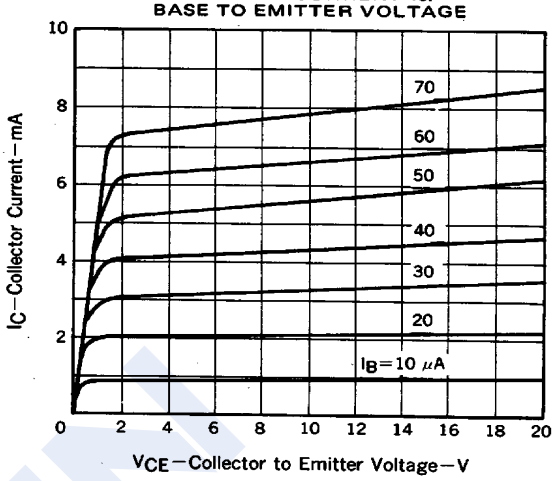
■ Typical Characterisitics

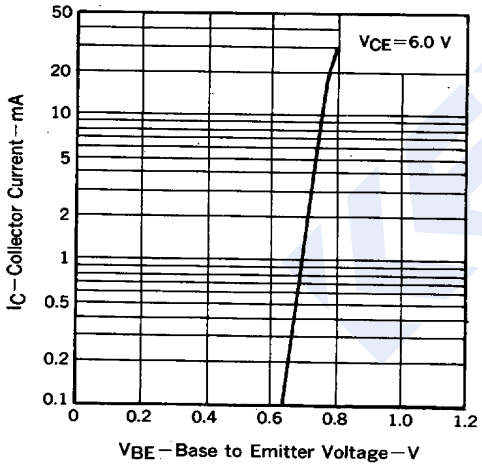
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



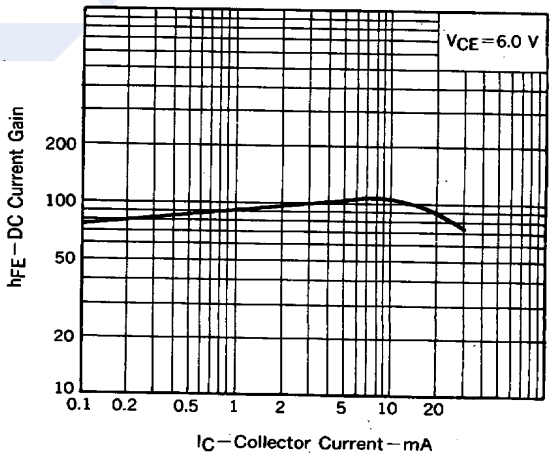
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



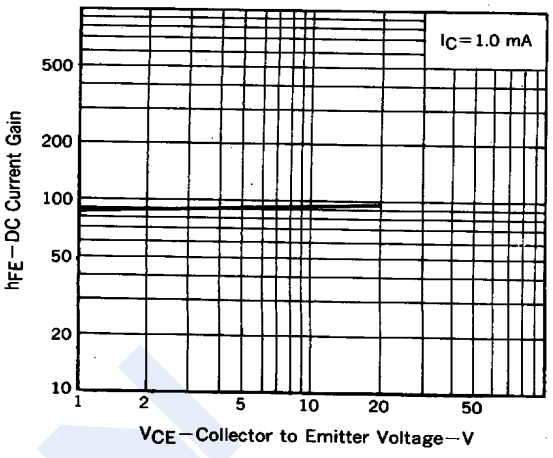
DC CURRENT GAIN vs. COLLECTOR TO EMITTER VOLTAGE



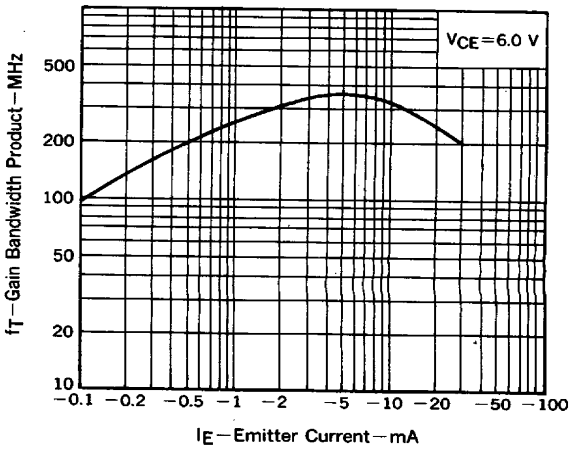
DC CURRENT GAIN vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



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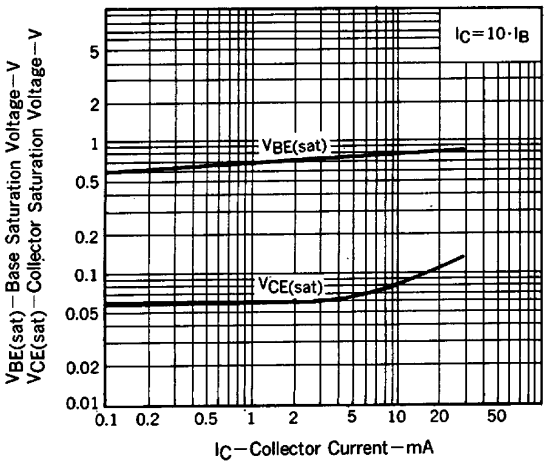
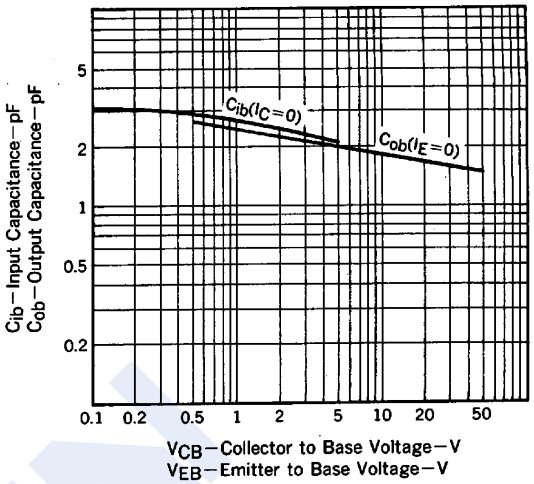
■ Typical Characterisitics

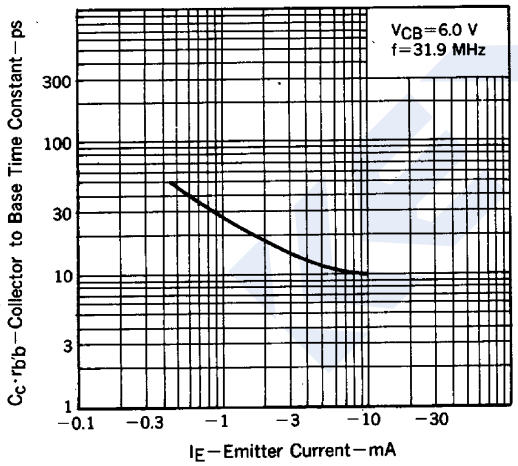
BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



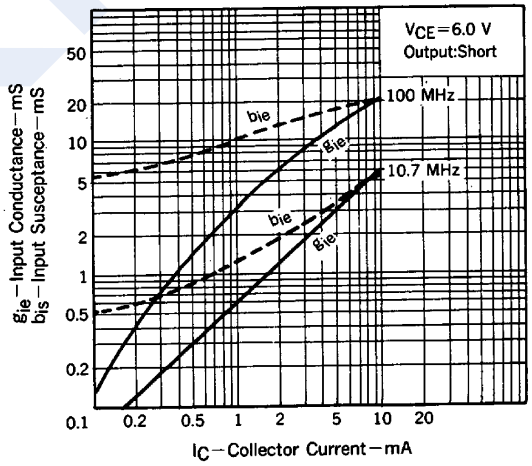
INPUT AND OUTPUT CAPACITANCE vs. REVERSE VOLTAGE



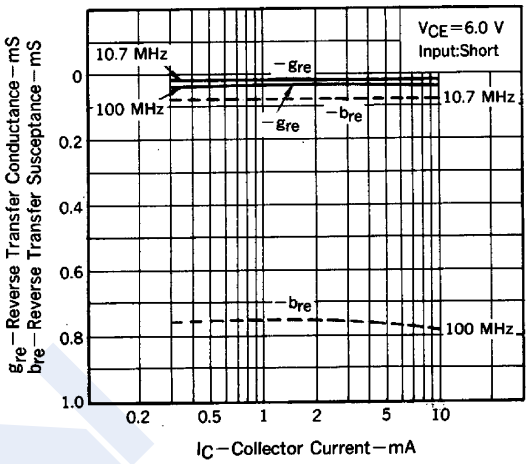
COLLECTOR TO BASE TIME CONSTANT vs. EMITTER CURRENT



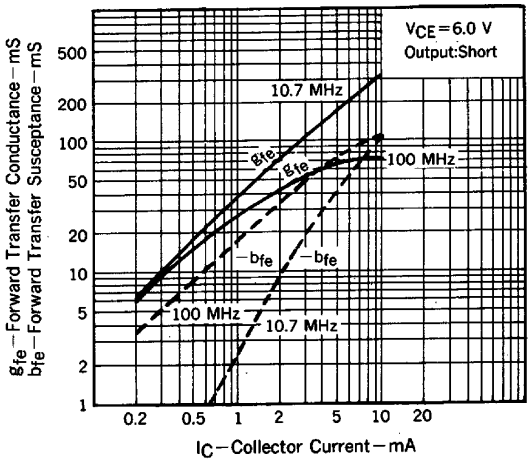
INPUT ADMITTANCE (y_{ie}) vs. COLLECTOR CURRENT



REVERSE TRANSFER ADMITTANCE (y_{re}) vs. COLLECTOR CURRENT



FORWARD TRANSFER ADMITTANCE (y_{fe}) vs. COLLECTOR CURRENT



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■ Typical Characterisitics