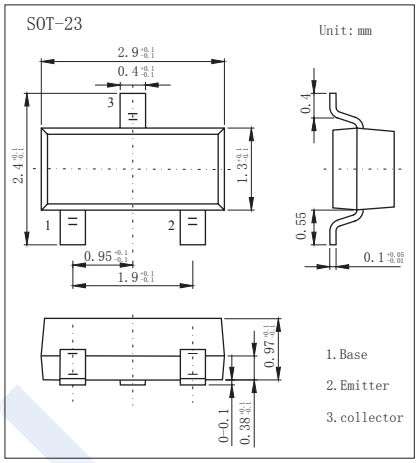
NPN Transistors

2SD780



■ Features

- High DC current gain
- Complimentary to 2SB736

■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	60	V
Collector - Emitter Voltage	V_{CEO}	60	
Emitter - Base Voltage	V_{EBO}	5	
Collector Current - Continuous	I_C	300	mA
Collector Power Dissipation	P_C	200	mW
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{stg}	-55 to 150	

■ 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	60			V
Collector- emitter breakdown voltage	V_{CEO}	I_C= 1 mA, I_B= 0	60			
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 (Note.1)	$V_{CE(sat)}$	I_C=300 mA, I_B=30mA		0.15	0.6	V
Base - emitter saturation voltage (Note.1)	$V_{BE(sat)}$	I_C=300 mA, I_B=30mA			1.2	
Base - emitter voltage (Note.1)	V_{BE}	V_{CE}= 6V, I_C=10mA	600	645	700	mV
DC current gain (Note.1)	$h_{FE(1)}$	V_{CE}= 1V, I_C= 50mA	110	200	400	
	$h_{FE(2)}$	V_{CE}= 2V, I_C= 300mA	30			
Collector output capacitance	C_{ob}	V_{CB}= 6V, I_E=0,f=1MHz		7		pF
Transition frequency	f_T	V_{CE}= 6V, I_E= -10mA		140		MHz

Note.1: Pulse test : Pulse width ≤350μs,Duty Cycle≤2%.

■ Classification of $h_{fe(1)}$

Type	2SD780-DW1	2SD780-DW2	2SD780-DW3	2SD780-DW4	2SD780-DW5
Range	110-180	135-220	170-270	200-320	250-400
Marking	DW1	DW2	DW3	DW4	DW5

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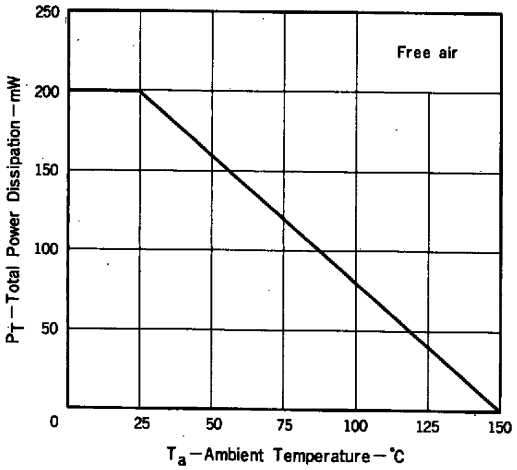
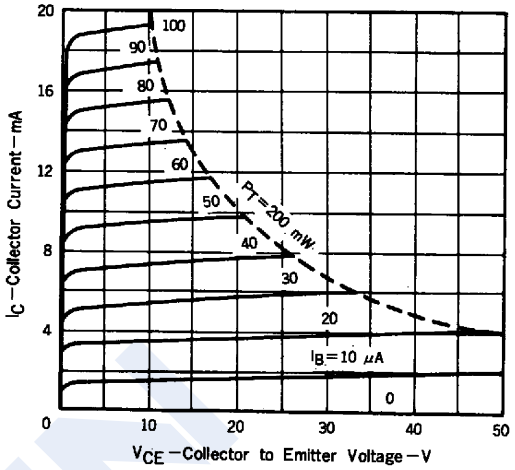
■ Typical Characterisitics

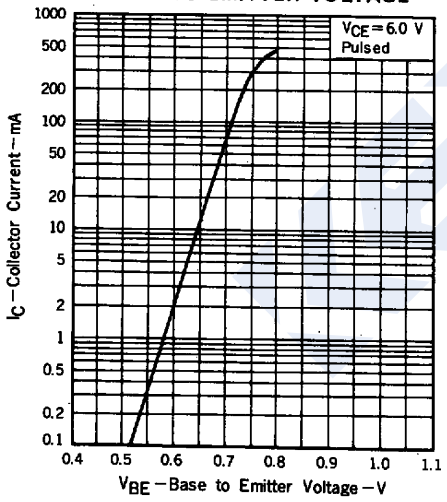
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



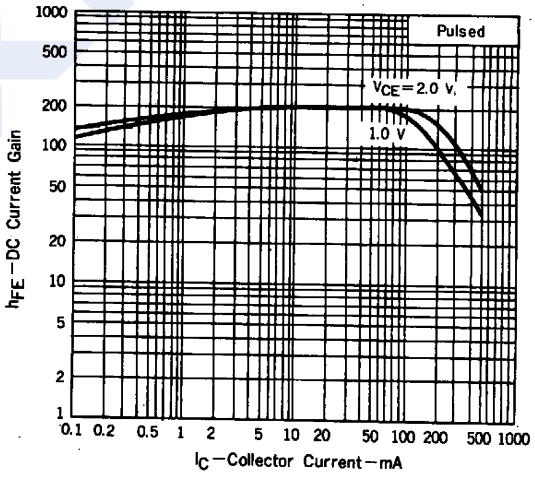
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



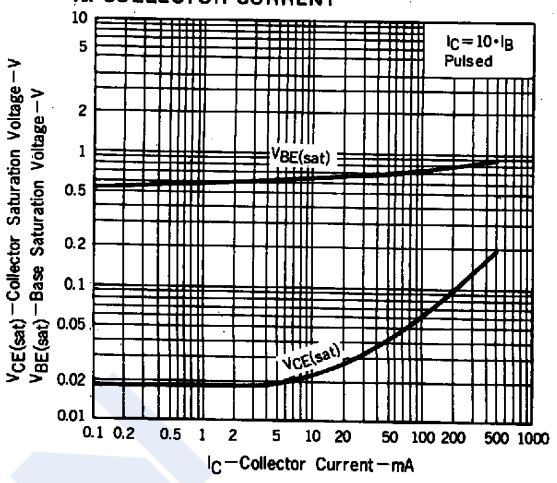
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



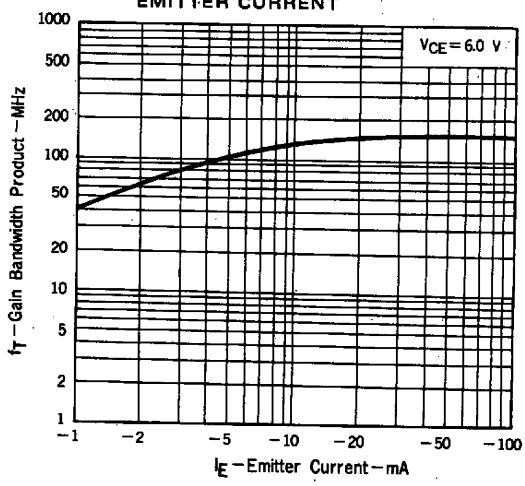
DC CURRENT GAIN vs. COLLECTOR CURRENT



BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



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■ Typical Characterisitics