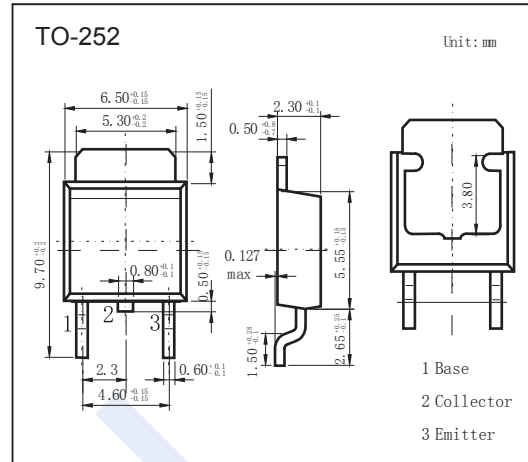


NPN Transistors

2SD1033

■ Features

- High voltage $V_{CE0}=150V$.
- Complimentary to 2SB768

■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CB0}	200	V
Collector - Emitter Voltage	V_{CE0}	150	
Emitter - Base Voltage	V_{EB0}	5	
Collector Current - Continuous	I_C	2	A
Collector Current - Pulse	I_{CP}	3	
Collector Power Dissipation	P_C	2	W
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55 to 150	

■ Electrical Characteristics $T_a = 25^\circ C$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V_{CB0}	$I_C = 100 \mu A, I_E = 0$	200			V
Collector- emitter breakdown voltage	V_{CE0}	$I_C = 1 mA, R_{BE} = \infty$	150			
Emitter - base breakdown voltage	V_{EB0}	$I_E = 100 \mu A, I_C = 0$	5			
Collector-base cut-off current	I_{CBO}	$V_{CB} = 150 V, I_E = 0$			50	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 4V, I_C = 0$			50	
Collector-emitter saturation voltage (Note.1)	$V_{CE(sat)}$	$I_C = 500 mA, I_B = 50 mA$		0.2	1	mV
Base - emitter saturation voltage (Note.1)	$V_{BE(sat)}$	$I_C = 500 mA, I_B = 50 mA$			1.2	V
DC current gain (Note.1)	h_{FE}	$V_{CE} = 10V, I_C = 400 mA$	40	100	200	
Transition frequency	f_T	$V_{CE} = 10V, I_E = -0.4A$		10		MHz

Note.1: Pulse test : Pulse width $\leq 350 \mu s$, Duty Cycle $\leq 2\%$.

■ Classification of h_{FE}

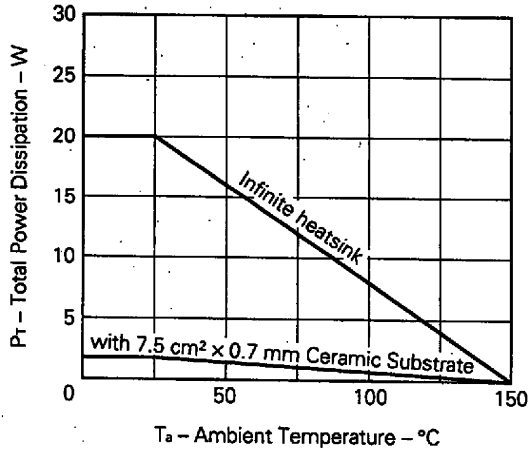
Type	2SD1033-M	2SD1033-L	2SD1033-K
Range	40-80	60-120	100-200

NPN Transistors

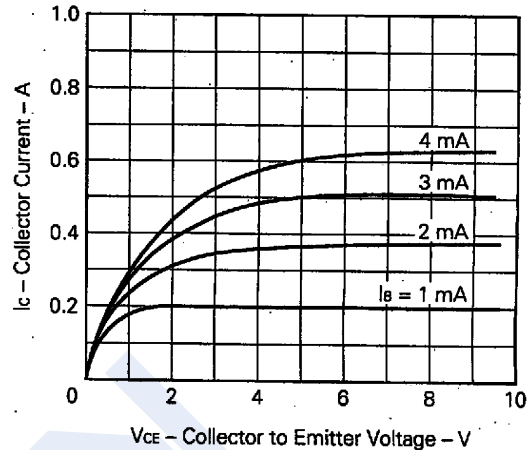
2SD1033

■ Typical Characteristics

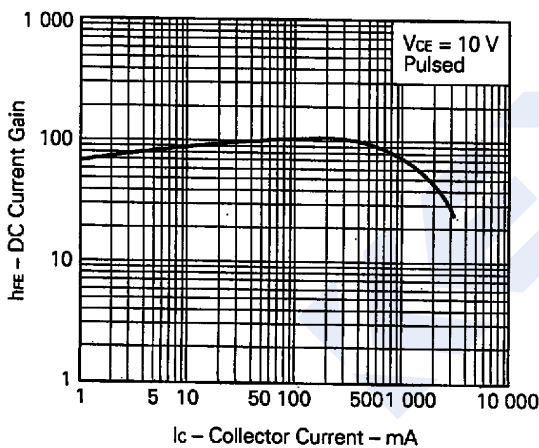
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



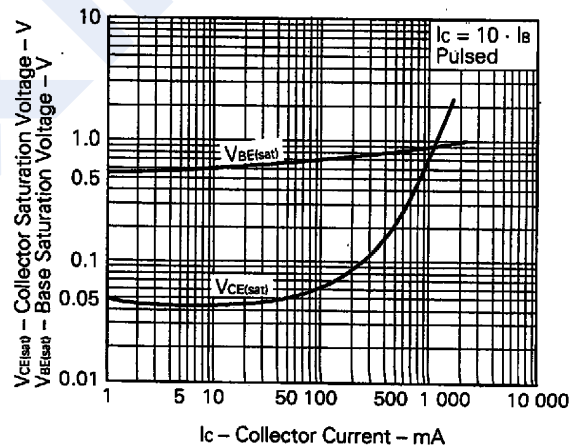
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



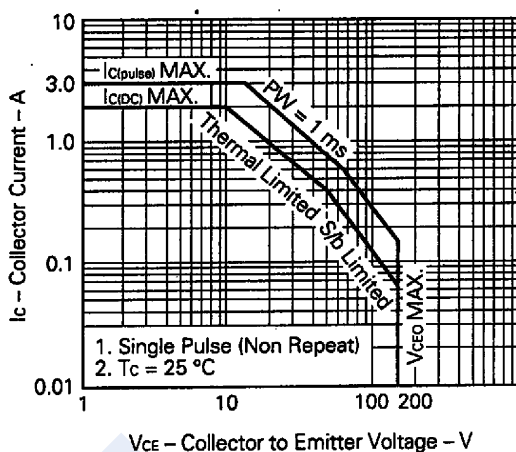
DC CURRENT GAIN vs. COLLECTOR CURRENT



BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



SAFE OPERATING AREA



DERATING CURVE OF SAFE OPERATING AREA

