

2SD2033A

Transistor, NPN

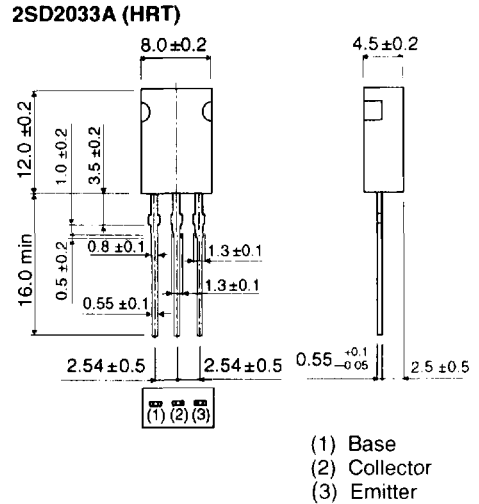
Features

- available in HRT package
- high breakdown voltage:
 $BV_{CEO} = 160\text{ V}$
- high transition frequency (f_T) and low output capacitance (C_{ob})
- wide safe operating area (SOA)

Applications

- low frequency power amplifier

Dimensions (Units : mm)



Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit	Conditions
Collector-to-base voltage	V_{CBO}	160	V	
Collector-to-emitter voltage	V_{CEO}	160	V	
Emitter-to-base voltage	V_{EBO}	5	V	
Collector current	I_C	1.5	A	Continuous (dc)
		3	A	Single pulse, $P_W = 100\text{ ms}$
Collector dissipation	P_C	1.8	W	
Junction temperature	T_j	150	$^\circ\text{C}$	
Storage temperature	T_{stg}	-55 ~ +150	$^\circ\text{C}$	

Electrical characteristics (unless otherwise noted, $T_a = 25^\circ\text{C}$)

Parameter	Symbol	Min	Typical	Max	Unit	Conditions
Collector-to-base breakdown voltage	BV_{CBO}	160			V	$I_C = 50 \mu\text{A}$
Collector-to-emitter breakdown voltage	BV_{CEO}	160			V	$I_C = 1 \text{ mA}$
Emitter-to-base breakdown voltage	BV_{EBO}	5			V	$I_E = 50 \mu\text{A}$
Collector cutoff current	I_{CBO}			1.0	μA	$V_{CB} = 120 \text{ V}$
Emitter cutoff current	I_{EBO}			1.0	μA	$V_{EB} = 4 \text{ V}$
DC current gain	h_{FE}	60		200		$V_{CE} = 5 \text{ V}, I_C = 0.1 \text{ A}$
Collector-to-emitter saturation voltage	$V_{CE(sat)}$			2.0	V	$I_C/I_B = 1 \text{ A}/0.1 \text{ A}$, single pulse
Base-to-emitter saturation voltage	$V_{BE(sat)}$			1.5	V	$I_C/I_B = 1 \text{ A}/0.1 \text{ A}$, single pulse
Transition frequency	f_T		80		MHz	$V_{CE} = 5 \text{ V}, I_E = -0.1 \text{ A}, f = 30 \text{ MHz}$
Output capacitance	C_{ob}		20		pF	$V_{CB} = 10 \text{ V}, I_E = 0 \text{ A}, f = 1 \text{ MHz}$

h_{FE} rankings

Item	D	E
h_{FE}	60 ~ 120	100 ~ 200

Electrical characteristic curves

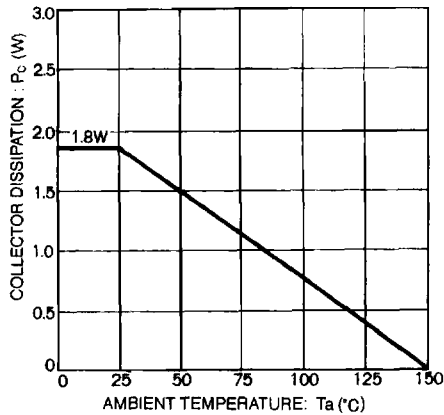


Figure 1

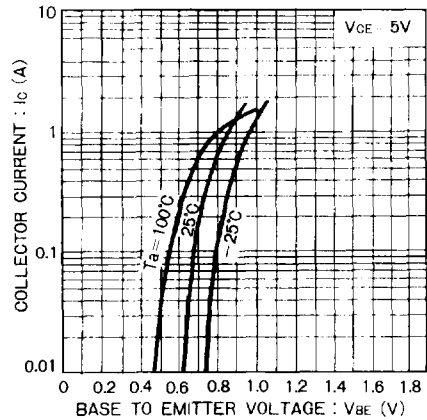


Figure 2

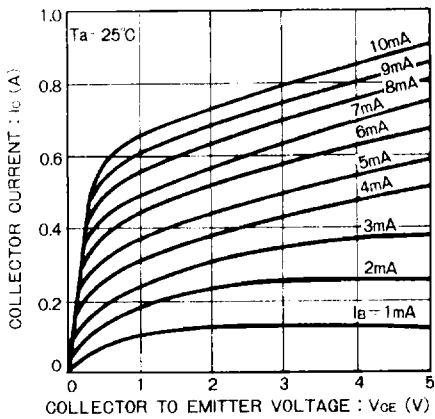


Figure 3

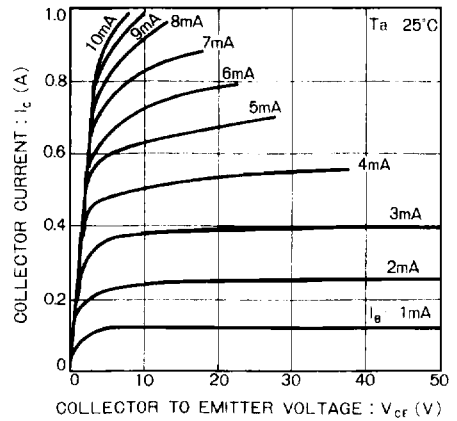


Figure 4

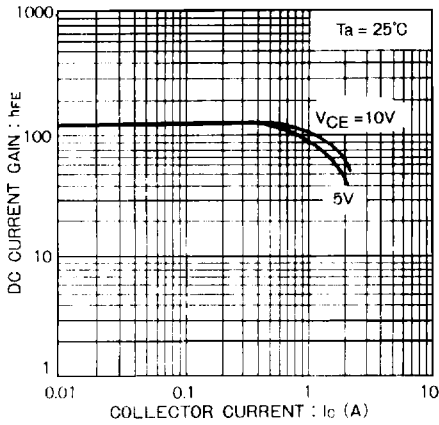


Figure 5

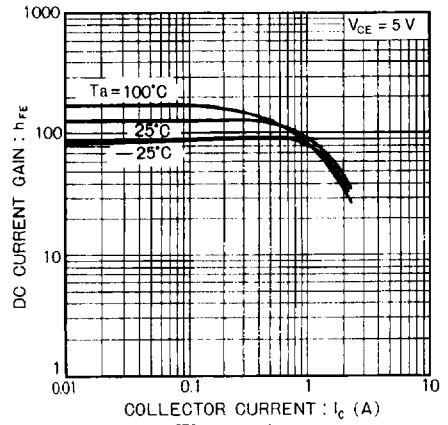


Figure 6

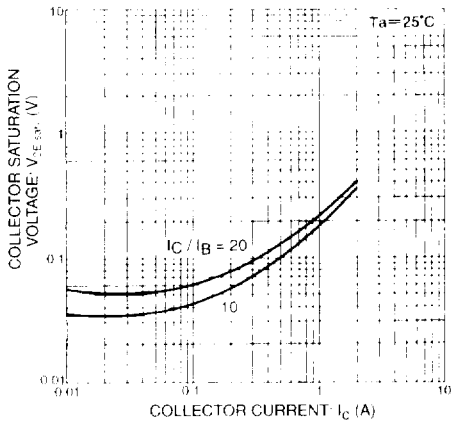


Figure 7

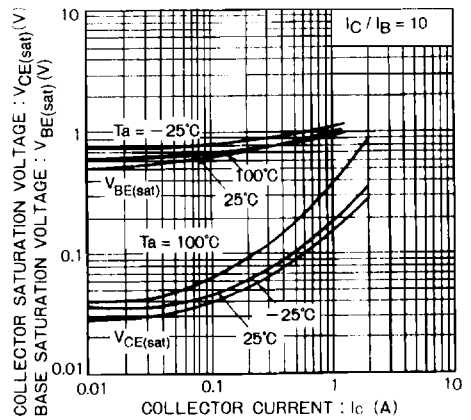


Figure 8

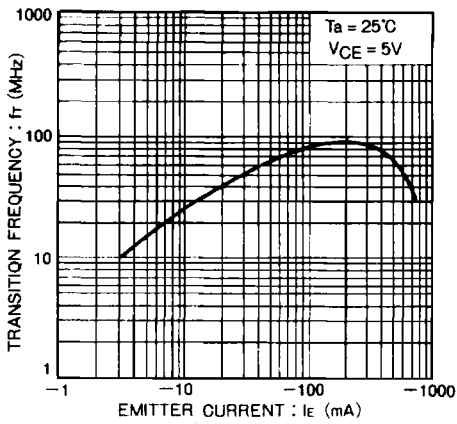


Figure 9

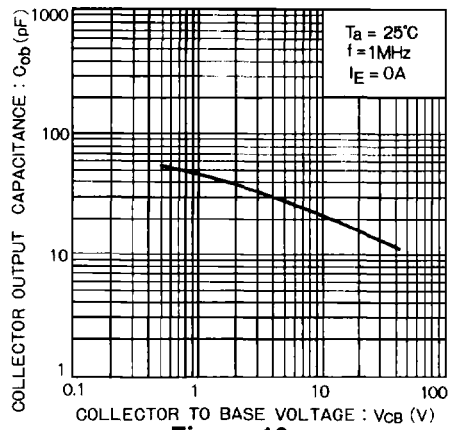


Figure 10

Ordering information

Package	Tape
Code	T114
Basic order quantity	1 000
2SD2033A	★
★ = Standard, ☆ = Semi-standard, * = Special order	