

2SD2396

Transistor, NPN

Features

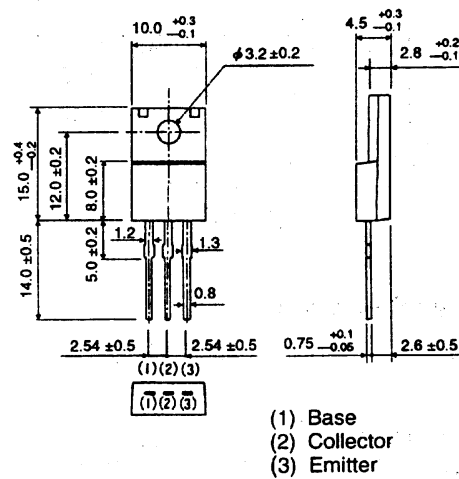
- available in TO-220FN package
- high dc current gain (h_{FE}), typically $h_{FE} = 1000$
- low collector saturation voltage, typically $V_{CE(sat)} = 0.3$ V at $I_C/I_B = 2$ A/ 0.05 A
- large collector power dissipation: $P_C = 30$ W at $T_C = 25^\circ\text{C}$
- easily insulated from the heat sink as the fin is molded
- 2 mm lower than ROHM'S TO-220FP package which allows higher density mounting
- wide safe operating area (SOA)

Applications

- low frequency power amplifier

Dimensions (Units : mm)

2SD2396 (TO-220FN)



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

Parameter	Symbol	Limits	Unit	Conditions
Collector-to-base voltage	V_{CBO}	80	V	
Collector-to-emitter voltage	V_{CEO}	60	V	
Emitter-to-base voltage	V_{EBO}	6	V	
Collector current	I_C	3	A	Continuous (dc)
	I_{CP}	6	A	Single pulse, $P_W = 100$ ms
Collector dissipation	P_C	2	W	
		30	W	$T_C = 25^\circ\text{C}$
Junction temperature	T_j	150	$^\circ\text{C}$	
Storage temperature	T_{stg}	-55 ~ +150	$^\circ\text{C}$	

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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}	80			V	$I_C = 50 \mu\text{A}$
Collector-to-emitter breakdown voltage	BV_{CEO}	60			V	$I_C = 1 \text{ mA}$
Emitter-to-base breakdown voltage	BV_{EBO}	6			V	$I_E = 50 \mu\text{A}$
Collector cutoff current	I_{CBO}			100	μA	$V_{CB} = 80 \text{ V}$
Emitter cutoff current	I_{EBO}			100	μA	$V_{EB} = 6 \text{ V}$
DC current gain	h_{FE}	400	1000	2000		$V_{CE} = 4 \text{ V}$, $I_C = 0.5 \text{ A}$, single pulse
Collector-to-emitter saturation voltage	$V_{CE(sat)}$		0.3	0.8	V	$I_C/I_B = 2 \text{ A}/0.05 \text{ A}$, single pulse
Collector-to-base saturation voltage	$V_{BE(sat)}$			1.5	V	$I_C/I_B = 2 \text{ A}/0.05 \text{ A}$, single pulse
Transition frequency	f_T		40		MHz	$V_{CE} = 5 \text{ V}$, $I_E = -0.2 \text{ A}$, $f = 10 \text{ MHz}$, single pulse
Output capacitance	C_{ob}		55		pF	$V_{CB} = 10 \text{ V}$, $I_E = 0 \text{ A}$, $f = 1 \text{ MHz}$

h_{FE} rankings

Item	H	J	K
h_{FE}	400 ~ 800	600 ~ 1200	1000 ~ 2000

Electrical characteristic curves

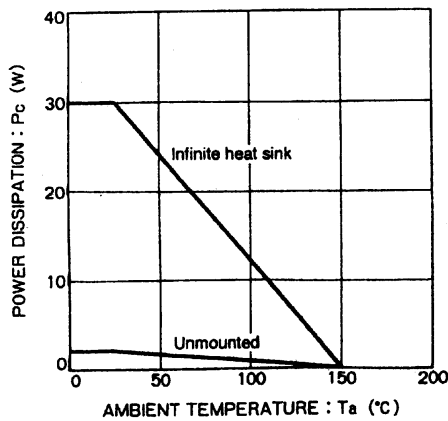


Figure 1

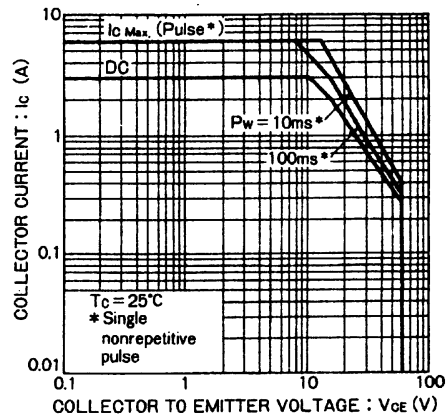


Figure 2

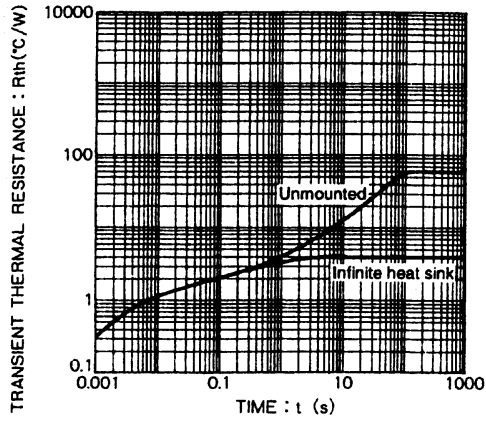


Figure 3

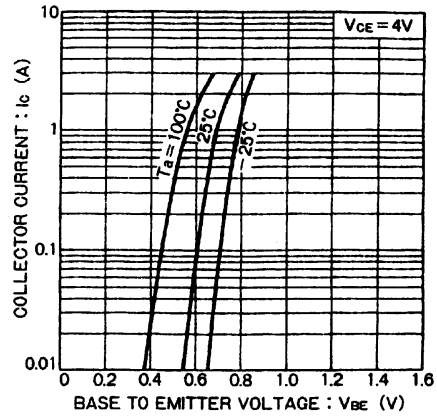


Figure 4

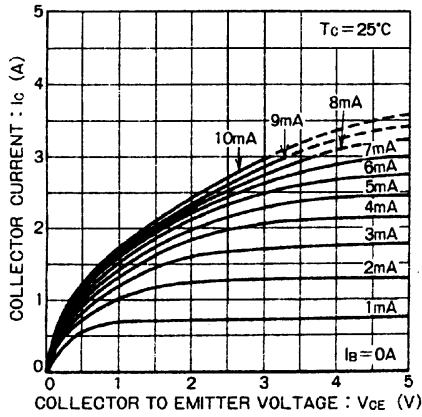


Figure 5

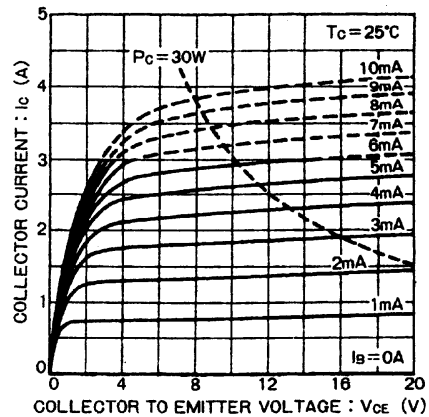


Figure 6

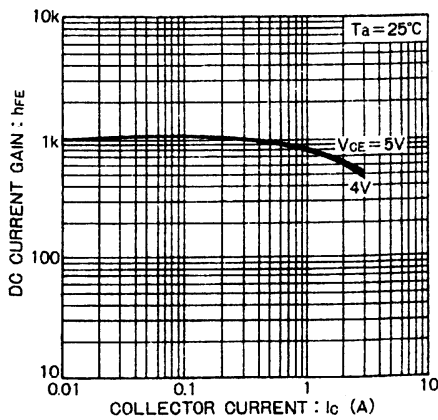


Figure 7

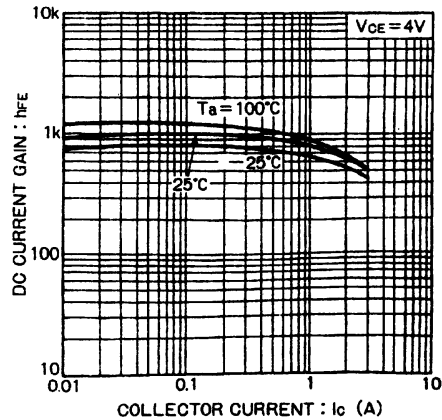


Figure 8

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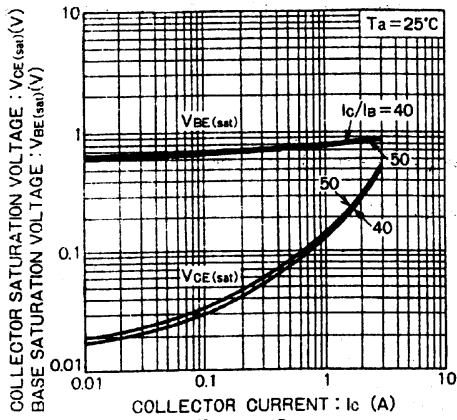


Figure 9

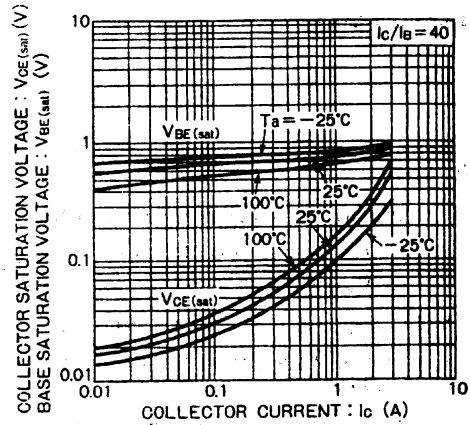


Figure 10

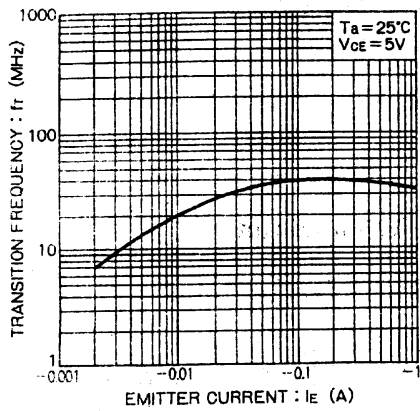


Figure 11

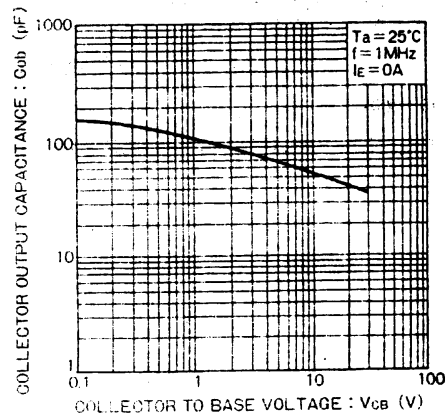


Figure 12

Ordering information

Package	Bulk
Code	
Basic order quantity	500
2SD2396	★
★ = Standard, ☆ = Semi-standard, * = Special order	

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