

# MOTOROLA SEMICONDUCTOR TECHNICAL DATA

T-33-01

## Complementary Silicon Power Transistors

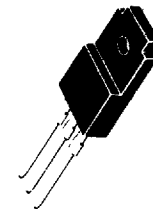
- Designed for use as High Frequency Drivers in Audio Amplifiers
- High Gain, Identified with  $h_{FE}$  Classification Letter
- Excellent Frequency Response —  $f_T = 100$  MHz

**NPN**  
**2SC3298B**  
**PNP**  
**2SA1306B**

**SILICON  
POWER TRANSISTORS**  
**1.5 AMPERES**  
**200 VOLTS**  
**20 WATTS**

### MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ )

Rating	Symbol	Max	Unit
Collector-Base Voltage	$V_{CB0}$	200	V
Collector-Emitter Voltage	$V_{CEO}$	200	V
Emitter-Base Voltage	$V_{EBO}$	5.0	V
Collector Current	$I_C$	1.5	A
Base Current	$I_B$	0.15	A
Collector Power Dissipation ( $T_C = 25^\circ\text{C}$ )	$P_D$	20	W
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^\circ\text{C}$



CASE 221H-01

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	6.25	$^\circ\text{C}/\text{W}$

### ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ )

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 160$ V, $I_E = 0$	—	—	1.0	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 5.0$ V, $I_C = 0$	—	—	1.0	$\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10$ mA, $I_B = 0$	200	—	—	V
DC Current Gain	$h_{FE}$	$V_{CE} = 5.0$ V, $I_C = 100$ mA	70	—	240	—
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 500$ mA, $I_B = 50$ mA	—	—	1.5	V
Base-Emitter Voltage	$V_{BE}$	$V_{CE} = 5.0$ V, $I_C = 500$ mA	—	—	1.0	V
Current-Gain Bandwidth Product	$f_T$	$V_{CE} = 10$ V, $I_C = 100$ mA	—	100	—	MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 10$ V, $I_C = 0$ , $f = 1.0$ MHz	—	25	—	pF

NOTE:  $h_{FE}$  Classifications; O: 70 to 140 Y: 120 to 240. Units may not be ordered by  $h_{FE}$  classification.


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NPN TYPICAL CHARACTERISTICS — 2SC3298B

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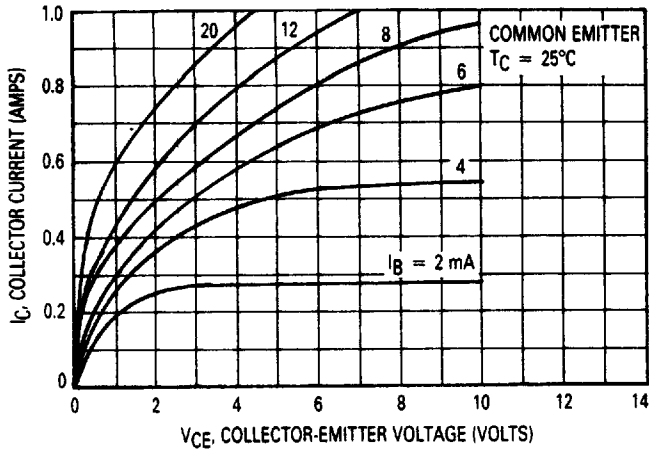


Figure 1. On-Region Characteristics

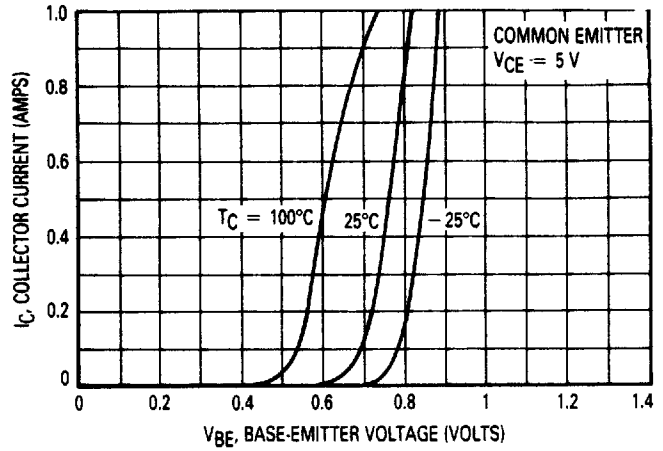


Figure 2. Base-Emitter Voltage

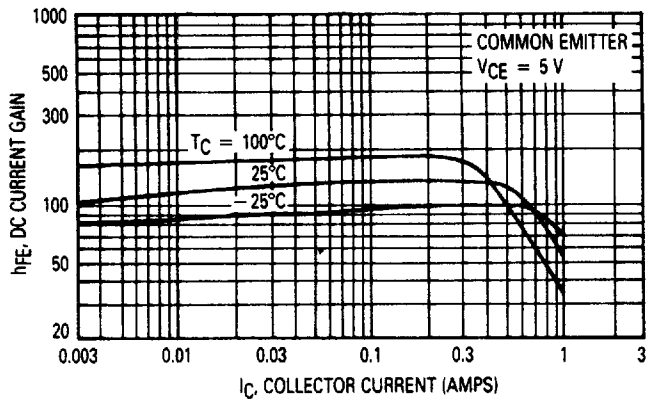


Figure 3. DC Current Gain

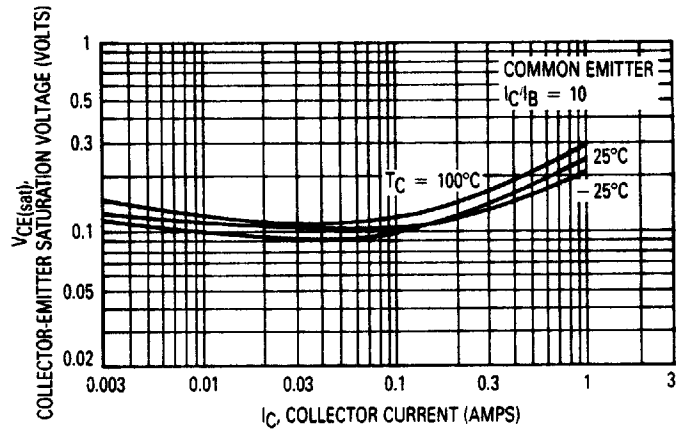


Figure 4. "On" Voltage versus Collector Current

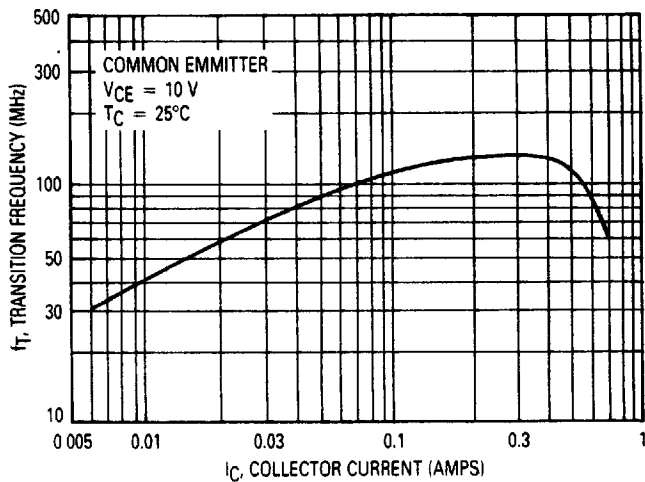


Figure 5. Current-Gain Bandwidth Product

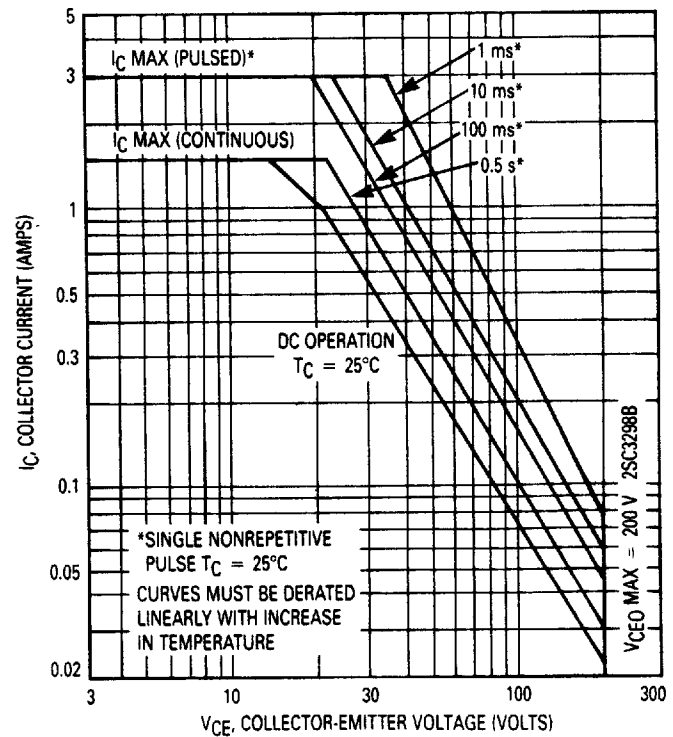


Figure 6. Maximum Forward Bias Safe Operating Area

PNP TYPICAL CHARACTERISTICS — 2SA1306B

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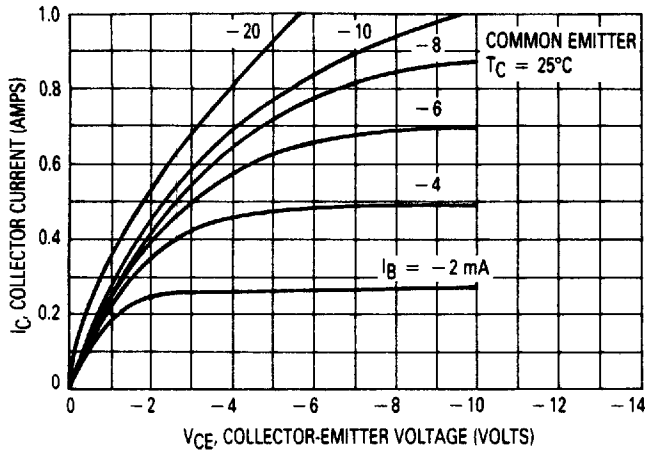


Figure 7. On-Region Characteristics

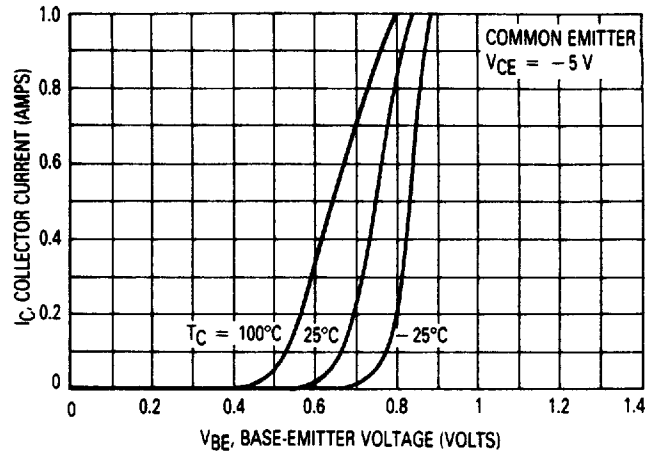


Figure 8. Base-Emitter Voltage

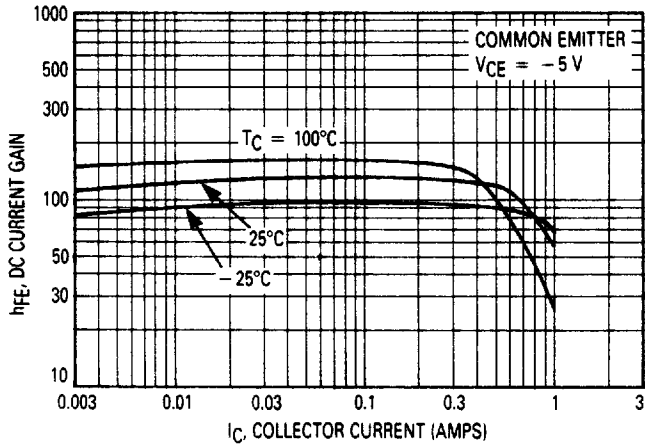


Figure 9. DC Current Gain

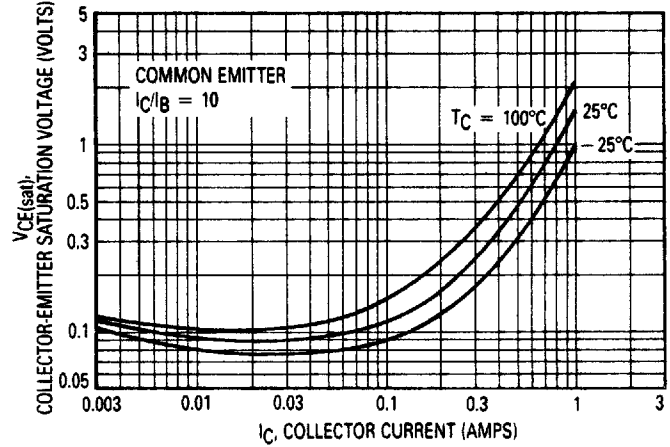


Figure 10. "On" Voltage versus Collector Current

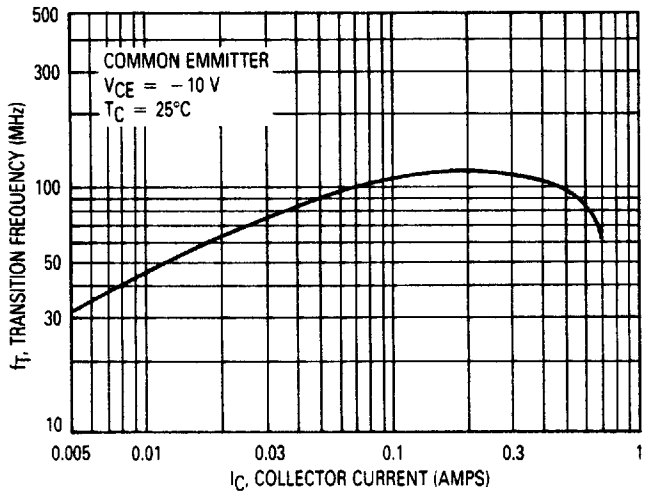


Figure 11. Current-Gain Bandwidth Product

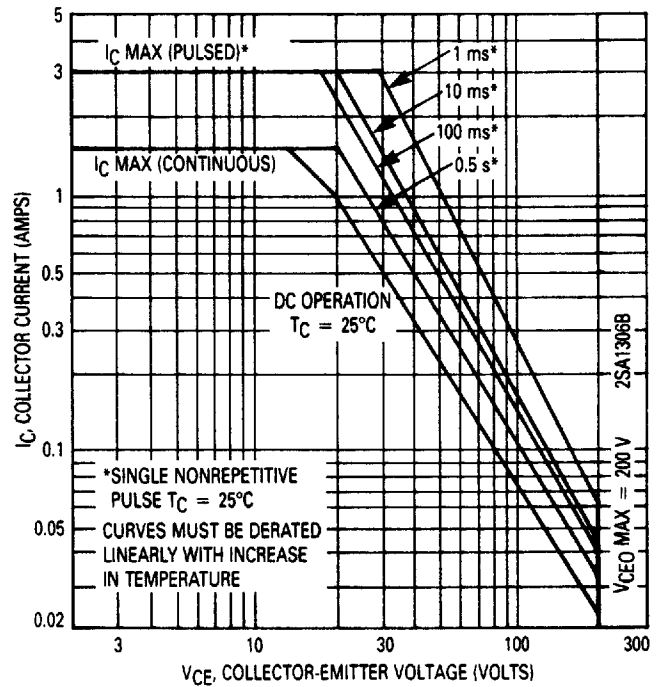
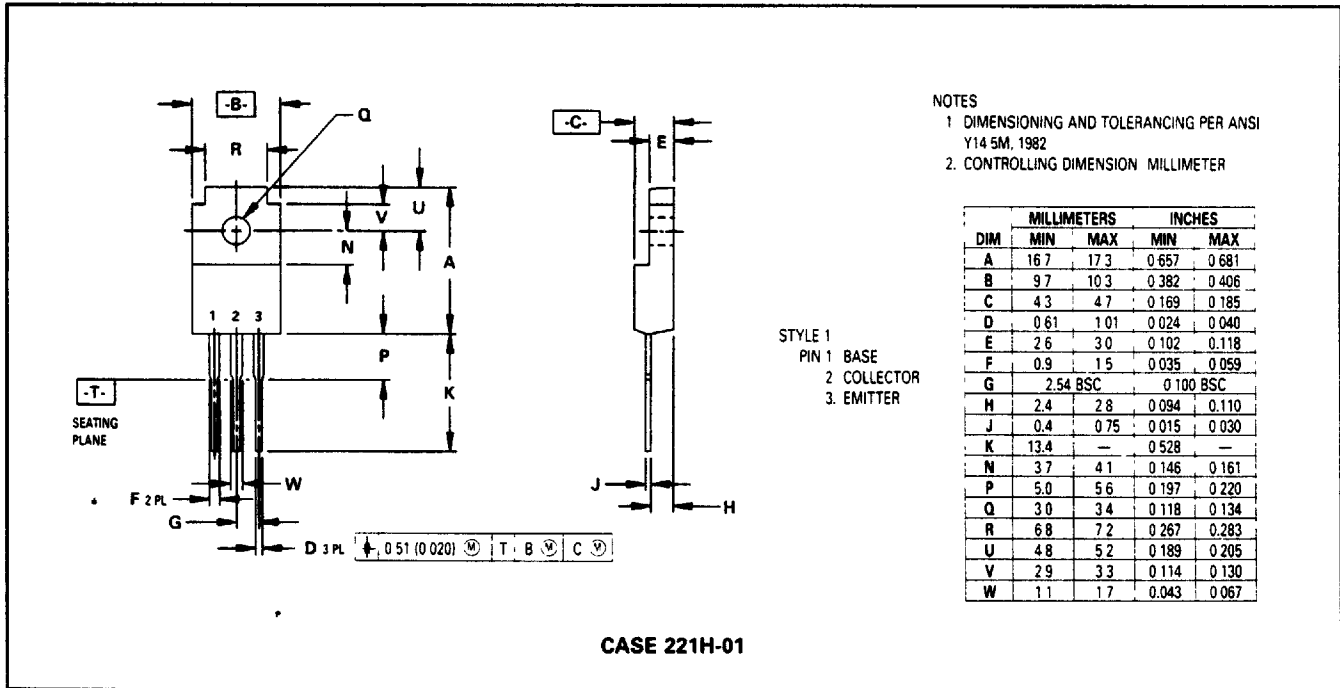


Figure 12. Maximum Forward Bias Safe Operating Area

OUTLINE DIMENSIONS



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