

MOTOROLA

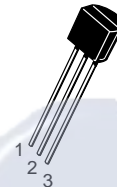
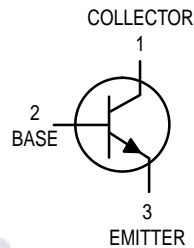
SEMICONDUCTOR TECHNICAL DATA

Order this document
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Amplifier Transistors

NPN Silicon

BC337,-16,-25,-40
BC338,-16,-25,-40



CASE 29-04, STYLE 17
TO-92 (TO-226AA)

MAXIMUM RATINGS

Rating	Symbol	BC337	BC338	Unit
Collector–Emitter Voltage	V_{CEO}	45	25	Vdc
Collector–Base Voltage	V_{CBO}	50	30	Vdc
Emitter–Base Voltage	V_{EBO}	5.0		Vdc
Collector Current — Continuous	I_C	800		mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625	5.0	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.5	12	Watt mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–55 to +150		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	$^\circ\text{C}/\text{W}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ($I_C = 10\text{ mA}, I_B = 0$)	BC337 BC338	$V_{(BR)CEO}$	45 25	— —	— —	Vdc
Collector–Emitter Breakdown Voltage ($I_C = 100\text{ }\mu\text{A}, I_E = 0$)	BC337 BC338	$V_{(BR)CES}$	50 30	— —	— —	Vdc
Emitter–Base Breakdown Voltage ($I_E = 10\text{ }\mu\text{A}, I_C = 0$)		$V_{(BR)EBO}$	5.0	—	—	Vdc
Collector Cutoff Current ($V_{CE} = 30\text{ V}, I_E = 0$) ($V_{CE} = 20\text{ V}, I_E = 0$)	BC337 BC338	I_{CBO}	— —	— —	100 100	nAdc
Collector Cutoff Current ($V_{CE} = 45\text{ V}, V_{BE} = 0$) ($V_{CE} = 25\text{ V}, V_{BE} = 0$)	BC337 BC338	I_{CES}	— —	— —	100 100	nAdc
Emitter Cutoff Current ($V_{EB} = 4.0\text{ V}, I_C = 0$)		I_{EBO}	—	—	100	nAdc



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ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Typ	Max	Unit	
ON CHARACTERISTICS						
DC Current Gain ($I_C = 100\text{ mA}, V_{CE} = 1.0\text{ V}$)	h_{FE}	BC337/BC338	100	—	630	—
		BC337-16/BC338-16	100	—	250	—
		BC337-25/BC338-25	160	—	400	—
		BC337-40/BC338-40	250	—	630	—
			60	—	—	—
($I_C = 300\text{ mA}, V_{CE} = 1.0\text{ V}$)						
Base-Emitter On Voltage ($I_C = 300\text{ mA}, V_{CE} = 1.0\text{ V}$)	$V_{BE(on)}$	—	—	1.2	Vdc	
Collector-Emitter Saturation Voltage ($I_C = 500\text{ mA}, I_B = 50\text{ mA}$)	$V_{CE(sat)}$	—	—	0.7	Vdc	

SMALL-SIGNAL CHARACTERISTICS

Output Capacitance ($V_{CB} = 10\text{ V}, I_E = 0, f = 1.0\text{ MHz}$)	C_{ob}	—	15	—	pF
Current-Gain — Bandwidth Product ($I_C = 10\text{ mA}, V_{CE} = 5.0\text{ V}, f = 100\text{ MHz}$)	f_T	—	210	—	MHz

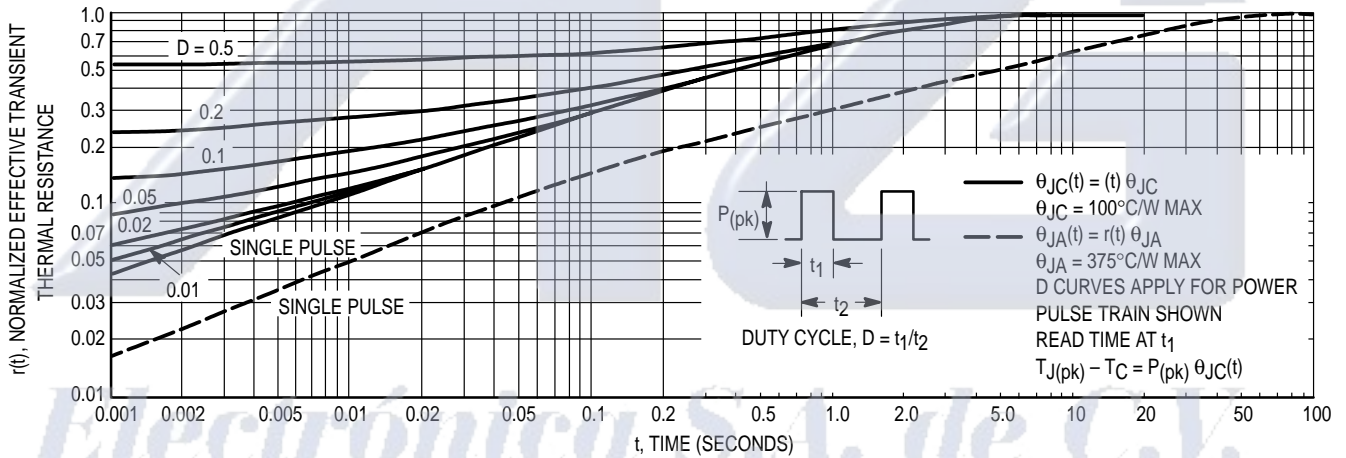


Figure 1. Thermal Response

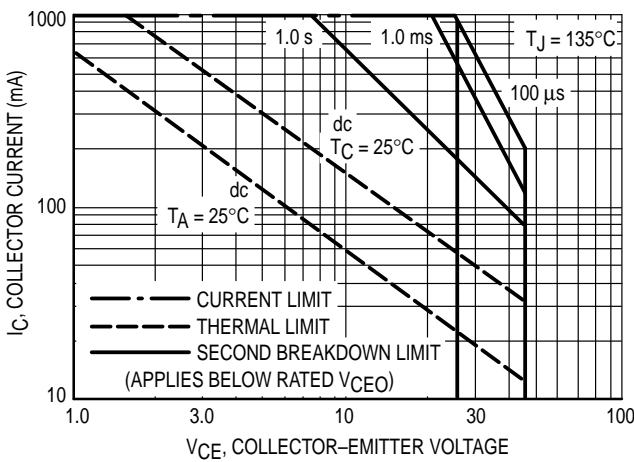


Figure 2. Active Region — Safe Operating Area

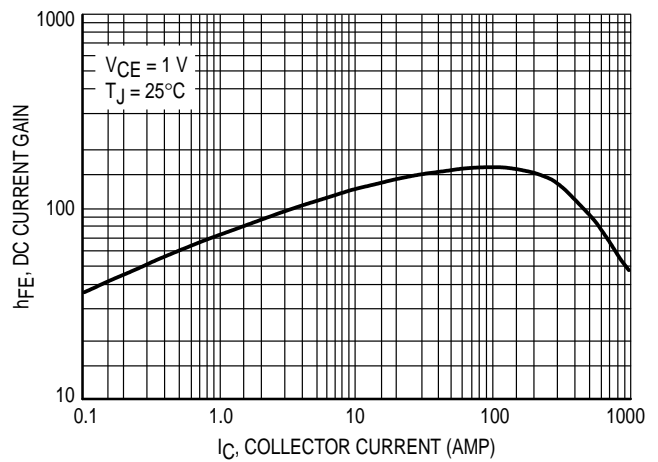


Figure 3. DC Current Gain

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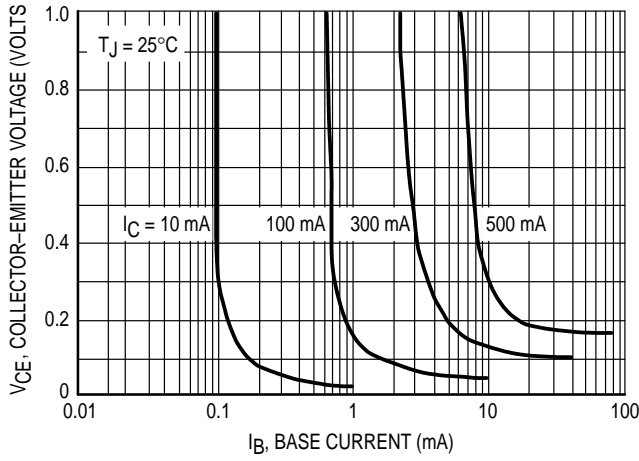


Figure 4. Saturation Region

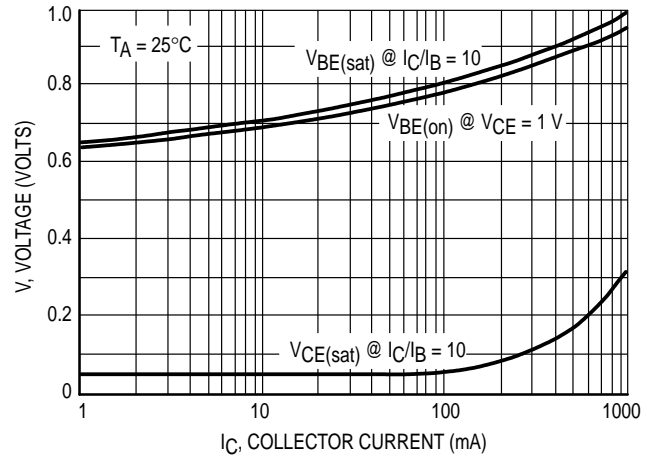


Figure 5. "On" Voltages

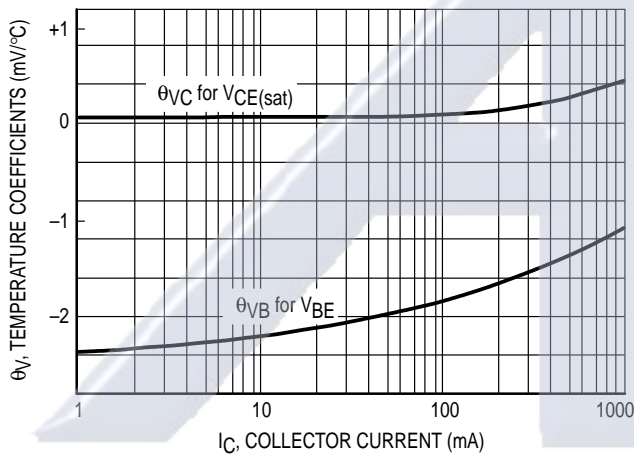


Figure 6. Temperature Coefficients

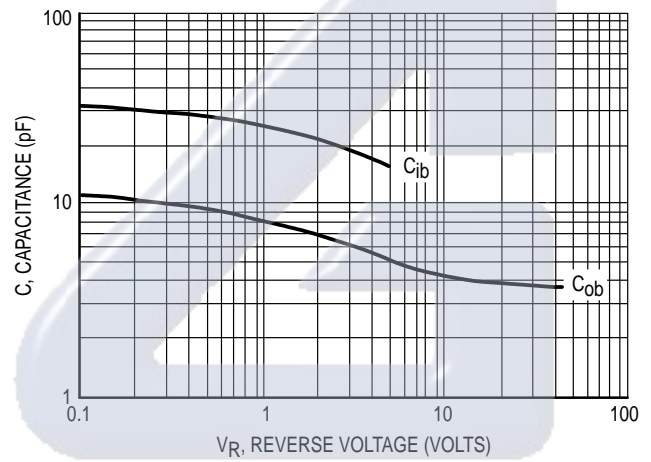
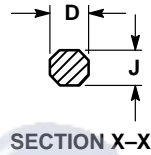
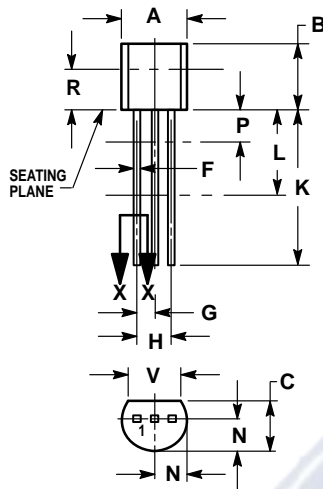


Figure 7. Capacitances

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BC337,-16,-25,-40 BC338,-16,-25,-40**PACKAGE DIMENSIONS**

SECTION X-X

**CASE 029-04
(TO-226AA)
ISSUE AD**

NOTES:


1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K. MINIMUM LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.022	0.41	0.55
F	0.016	0.019	0.41	0.48
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	—	12.70	—
L	0.250	—	6.35	—
N	0.080	0.105	2.04	2.66
P	—	0.100	—	2.54
R	0.115	—	2.93	—
V	0.135	—	3.43	—

STYLE 17:

1. COLLECTOR
2. BASE
3. EMITTER

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