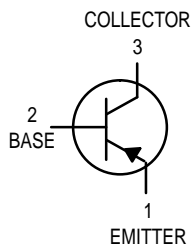
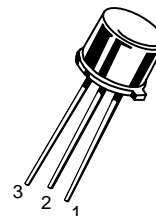


General Purpose Transistors

PNP Silicon



2N4036
2N4037



CASE 79-04, STYLE 1
TO-39 (TO-205AD)

MAXIMUM RATINGS

Rating	Symbol	2N4036	2N4037	Unit
Collector–Emitter Voltage	V_{CEO}	-65	-40	Vdc
Collector–Base Voltage	V_{CBO}	-90	-60	Vdc
Emitter–Base Voltage	V_{EBO}	-7.0	-7.0	Vdc
Base Current	I_B	-0.5		Adc
Collector Current — Continuous	I_C	-1.0		Adc
Continuous Power Dissipation at or Below $T_C = 25^\circ\text{C}$ Linear Derating Factor	P_D	5.0 28.6	5.0 28.6	Watts mW/ $^\circ\text{C}$
Continuous Power Dissipation at or Below $T_A = 25^\circ\text{C}$ Linear Derating Factor	P_D	1.0 5.72	1.0 5.72	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^\circ\text{C}$
Lead Temperature 1/16" from Case for 10 Seconds	T_L	230		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	2N4036	2N4037	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	35	35	$^\circ\text{C}/\text{W}$

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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Sustaining Voltage ⁽¹⁾ ($I_C = -100 \text{ mAdc}, I_B = 0$)	2N4036 2N4037	$V_{CEO(sus)}$	-65 -40	— —	Vdc
Collector–Base Breakdown Voltage ($I_C = -0.1 \text{ mAdc}$)	2N4037	$V_{(BR)CBO}$	-60	—	Vdc
Collector Cutoff Current ($V_{CE} = -85 \text{ Vdc}, V_{EB} = -1.5 \text{ Vdc}$) ($V_{CE} = -30 \text{ Vdc}, V_{EB} = -1.5 \text{ Vdc}, T_C = 150^\circ\text{C}$)	2N4036 2N4037	I_{CEX}	— —	-0.1 -100	mAdc
Collector Cutoff Current ($V_{CB} = -90 \text{ Vdc}, I_E = 0$) ($V_{CB} = -60 \text{ Vdc}, I_E = 0$)	2N4036 2N4037	I_{CBO}	— —	-1.0 -0.25	μAdc
Emitter Cutoff Current ($V_{EB} = -7.0 \text{ Vdc}, I_C = 0$) ($V_{EB} = -5.0 \text{ Vdc}, I_C = 0$)	2N4036 2N4037	I_{EBO}	— —	-10 -1.0	μAdc

1. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

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

Characteristic		Symbol	Min	Max	Unit
ON CHARACTERISTICS					
DC Current Gain ($I_C = -0.1\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$)	2N4036	hFE	20	—	—
($I_C = -1.0\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$)	2N4037		15	—	—
($I_C = -150\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$)(1)	2N4036		40	140	—
	2N4037		50	250	—
($I_C = -150\text{ mAdc}$, $V_{CE} = -2.0\text{ Vdc}$)(1)	2N4036		20	200	—
($I_C = -500\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$)(1)	2N4036	20	—	—	—
Collector–Emitter Saturation Voltage ⁽¹⁾ ($I_C = -150\text{ mAdc}$, $I_B = -15\text{ mAdc}$)	2N4036 2N4037	$V_{CE(\text{sat})}$	— —	-0.65 -1.4	Vdc
Base–Emitter Saturation Voltage ⁽¹⁾ ($I_C = -150\text{ mAdc}$, $I_B = -15\text{ mAdc}$)	2N4036	$V_{BE(\text{sat})}$	—	-1.4	Vdc
Base–Emitter On Voltage ⁽¹⁾ ($I_C = -150\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$)	2N4037	$V_{BE(\text{on})}$	—	-1.5	Vdc

SMALL–SIGNAL CHARACTERISTICS

Collector–Base Capacitance ($V_{CB} = -10\text{ Vdc}$, $f = 1.0\text{ MHz}$)	2N4037	C_{cb}	—	30	pF
Current Gain — High Frequency ($I_C = -50\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$, $f = 20\text{ MHz}$)	2N4036 2N4037	$ h_{fe} $	3.0 3.0	— 10	—

SWITCHING CHARACTERISTICS

Rise Time ($I_{B1} = -15\text{ mAdc}$)	2N4036	t_r	—	70	ns
Storage Time ($I_{B2} = -15\text{ mAdc}$)	2N4036	t_s	—	600	ns
Fall Time ($I_{B2} = -15\text{ mAdc}$)	2N4036	t_f	—	100	ns
Turn–On Time ($I_{B1} = I_{B2}$)	2N4036	t_{on}	—	110	ns
Turn–Off Time ($I_{B1} = I_{B2}$)	2N4036	t_{off}	—	700	ns

1. Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

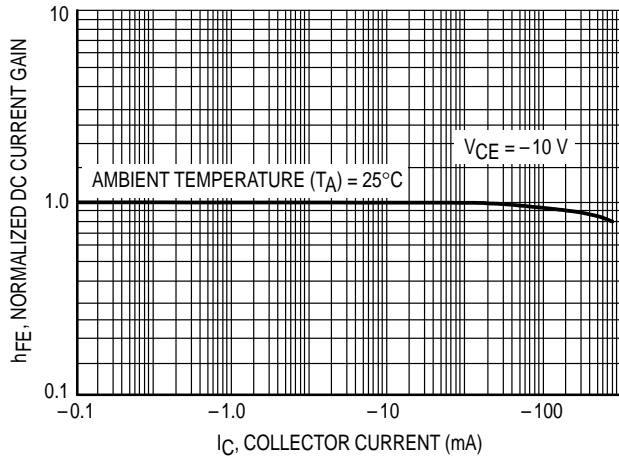


Figure 1. Current Gain Characteristics versus Collector-Emitter Voltage

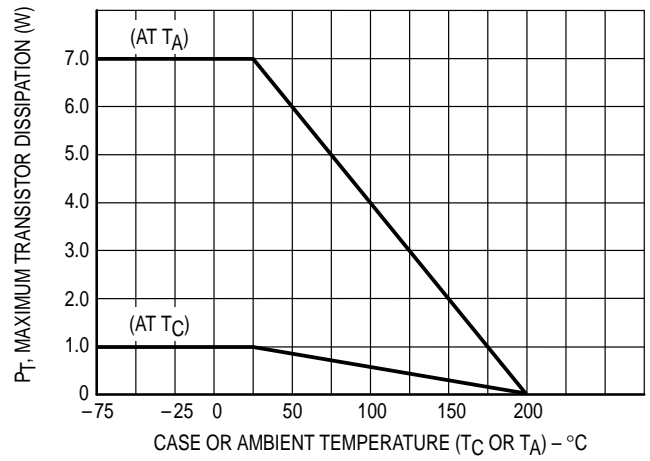


Figure 2. Dissipation Derating Curve

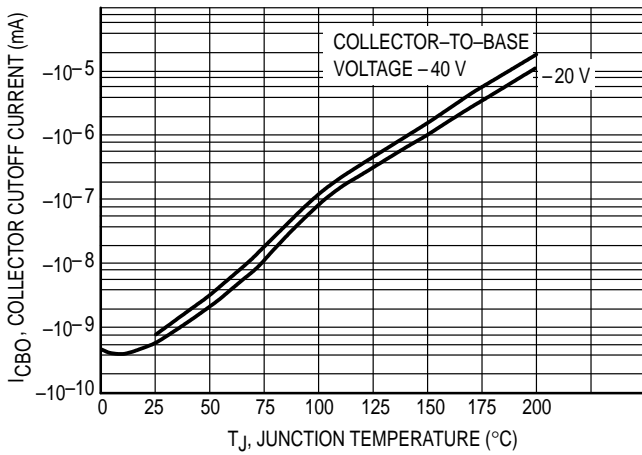


Figure 3. Typical Collector-Cutoff Current versus Junction Temperature

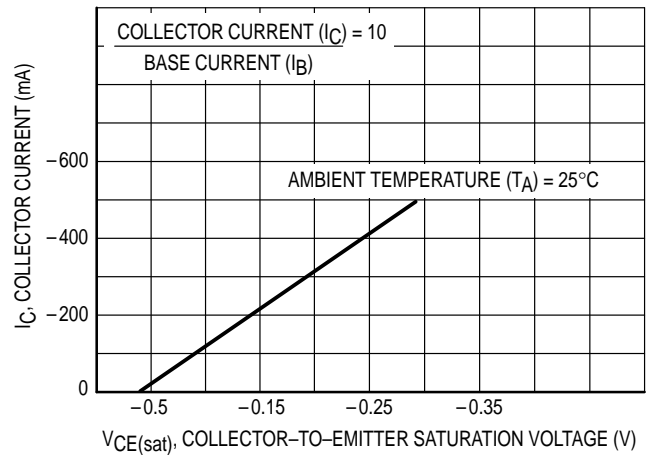


Figure 4. Typical Saturation-Voltage Characteristics

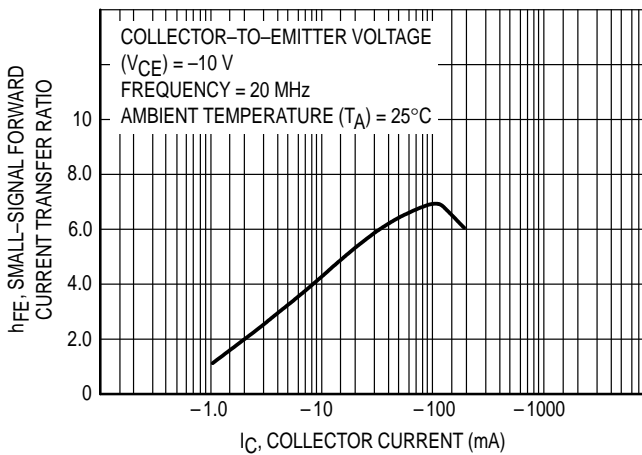


Figure 5. Typical Small-Signal Beta Characteristics

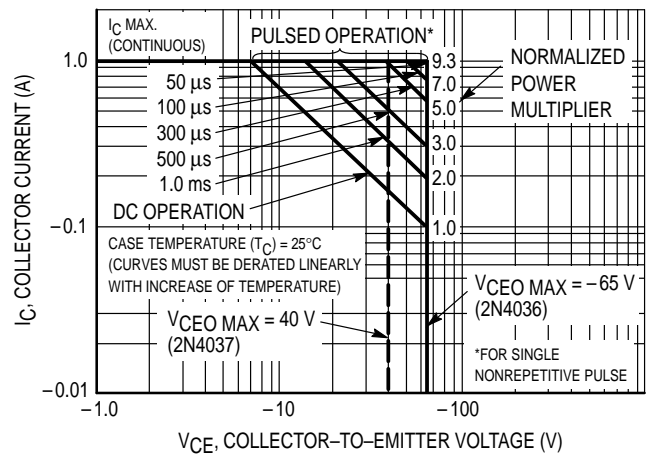
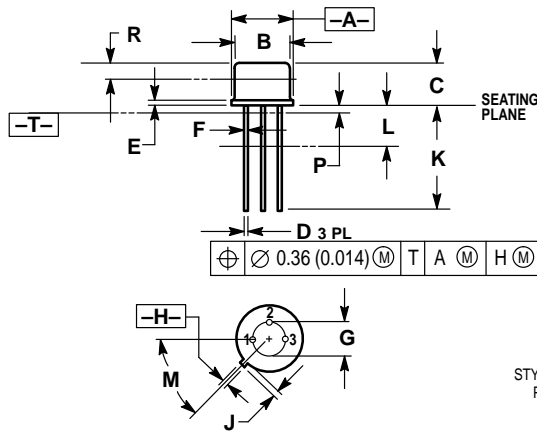


Figure 6. Maximum Safe Operating Areas (SOA)

PACKAGE DIMENSIONS



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION J MEASURED FROM DIMENSION A MAXIMUM.
 4. DIMENSION B SHALL NOT VARY MORE THAN 0.25 (0.010) IN ZONE R. THIS ZONE CONTROLLED FOR AUTOMATIC HANDLING.
 5. DIMENSION F APPLIES BETWEEN DIMENSION P AND L. DIMENSION D APPLIES BETWEEN DIMENSION L AND K MINIMUM. LEAD DIAMETER IS UNCONTROLLED IN DIMENSION P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.335	0.370	8.51	9.39
B	0.305	0.335	7.75	8.50
C	0.240	0.260	6.10	6.60
D	0.016	0.021	0.41	0.53
E	0.009	0.041	0.23	1.04
F	0.016	0.019	0.41	0.48
G	0.200 BSC		5.08 BSC	
H	0.028	0.034	0.72	0.86
J	0.029	0.045	0.74	1.14
K	0.500	0.750	12.70	19.05
L	0.250	—	6.35	—
M	45° BSC		45° BSC	
P	—	0.050	—	1.27
R	0.100	—	2.54	—

STYLE 1:
 PIN 1. EMITTER
 2. BASE
 3. COLLECTOR

CASE 079-04
 (TO-205AD)
 ISSUE N

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