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2N6437

High-Power PNP Silicon Transistors

High-power PNP silicon transistors are designed for use in industrial-military power amplifier and switching circuit applications.

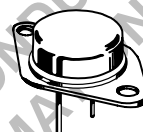
- High Collector-Emitter Sustaining Voltage —
 $V_{CE(sus)} = 100 \text{ Vdc (Min)} \text{ — } 2N6437$
 $= 120 \text{ Vdc (Min)} \text{ — } 2N6438$
- High DC Current Gain —
 $h_{FE} = 20\text{--}80 \text{ @ } I_C = 10 \text{ Adc}$
 $= 12 \text{ (Min) @ } I_C = 25 \text{ Adc}$
- Low Collector-Emitter Saturation Voltage —
 $V_{CE(sat)} = 1.0 \text{ Vdc (Max) @ } I_C = 10 \text{ Adc}$
- Fast Switching Times @ $I_C = 10 \text{ Adc}$
 $t_r = 0.3 \text{ } \mu\text{s (Max)}$
 $t_s = 1.0 \text{ } \mu\text{s (Max)}$
 $t_f = 0.25 \text{ } \mu\text{s (Max)}$
- Complement to NPN 2N6339 thru 2N6341



ON Semiconductor®

<http://onsemi.com>

**25 AMPERE
POWER TRANSISTORS
PNP SILICON
100, 120 VOLTS, 200 WATTS**



(TO-3)
CASE 1-07
TO-204AA

MAXIMUM RATINGS (1)

Rating	Symbol	2N6437	2N6438	Unit
Collector–Base Voltage	V _{CB}	120	140	Vdc
Collector–Emitter Voltage	V _{CEO}	100	120	Vdc
Emitter–Base Voltage	V _{EB}	6.0		Vdc
Collector Current — Continuous Peak	I _C	25 50		Adc
Base Current	I _B	10		Adc
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	200 1.14		Watts W/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	–65 to +200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.875	$^\circ\text{C/W}$

(1) Indicates JEDEC Registered Data.

Preferred devices are ON Semiconductor recommended choices for future use and best overall value.

2N6437

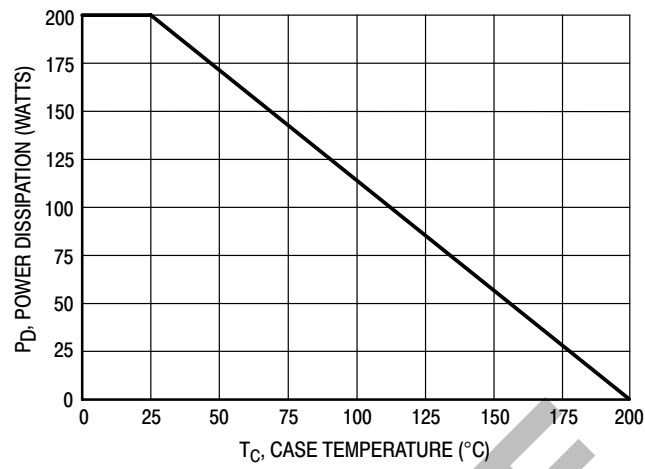


Figure 1. Power Derating

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (1) ($I_C = 50\text{ mA}$, $I_B = 0$)	$V_{CEO(sus)}$	100	—	Vdc
	2N6437	120	—	
Collector Cutoff Current ($V_{CE} = 50\text{ Vdc}$, $I_B = 0$)	I_{CEO}	—	50	μA
	2N6438	—	50	
Collector Cutoff Current ($V_{CE} = 110\text{ Vdc}$, $V_{BE(off)} = -1.5\text{ Vdc}$)	I_{CEX}	—	10	μA
	2N6438	—	10	
($V_{CE} = 130\text{ Vdc}$, $V_{BE(off)} = -1.5\text{ Vdc}$)		—	1.0	mA
	2N6437	—	1.0	
($V_{CE} = 100\text{ Vdc}$, $V_{BE(off)} = -1.5\text{ Vdc}$, $T_C = 150^\circ\text{C}$)		—	1.0	
	2N6438	—	1.0	
Collector Cutoff Current ($V_{CB} = 120\text{ Vdc}$, $I_E = 0$)	I_{CBO}	—	10	μA
	2N6438	—	10	
Emitter Cutoff Current ($V_{EB} = 6.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	100	μA

ON CHARACTERISTICS

DC Current Gain (1) ($I_C = 0.5\text{ A}$, $V_{CE} = 2.0\text{ Vdc}$) ($I_C = 10\text{ A}$, $V_{CE} = 2.0\text{ Vdc}$) ($I_C = 25\text{ A}$, $V_{CE} = 2.0\text{ Vdc}$)	h_{FE}	30 20 12	— 120 —	—
Collector-Emitter Saturation Voltage (1) ($I_C = 10\text{ A}$, $I_B = 1.0\text{ A}$) ($I_C = 25\text{ A}$, $I_B = 2.5\text{ A}$)	$V_{CE(sat)}$	— —	1.0 1.8	Vdc
Base-Emitter Saturation Voltage (1) ($I_C = 10\text{ A}$, $I_B = 1.0\text{ A}$) ($I_C = 25\text{ A}$, $I_B = 2.5\text{ A}$)	$V_{BE(sat)}$	— —	1.8 2.5	Vdc

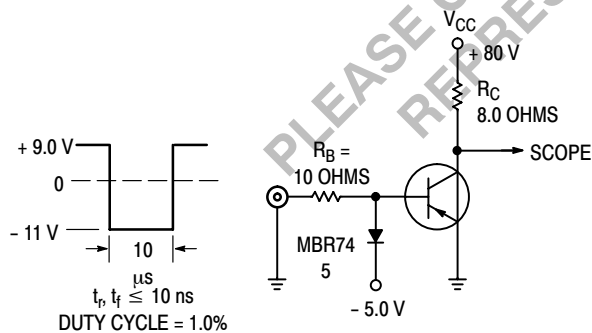
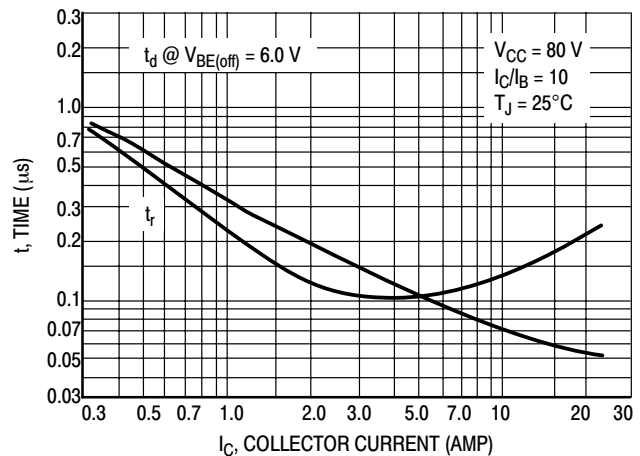
DYNAMIC CHARACTERISTICS

Current-Gain — Bandwidth Product ($I_C = 1.0\text{ A}$, $V_{CE} = 10\text{ Vdc}$, $f_{test} = 10\text{ MHz}$)	f_T	40	—	MHz
Output Capacitance ($V_{CE} = 10\text{ Vdc}$, $I_E = 0$, $f = 100\text{ kHz}$)	C_{ob}	—	700	pF

SWITCHING CHARACTERISTICS

Rise Time ($V_{CC} = 80\text{ Vdc}$, $I_C = 10\text{ A}$, $V_{BE(off)} = 6.0\text{ Vdc}$, $I_{B1} = 1.0\text{ A}$)	t_r	—	0.3	μs
Storage ($V_{CC} = 80\text{ Vdc}$, $I_C = 10\text{ A}$, $V_{BE(off)} = 6.0\text{ Vdc}$, $I_{B1} = I_{B2} = 1.0\text{ A}$)	t_s	—	1.0	μs
Fall Time ($V_{CC} = 80\text{ Vdc}$, $I_C = 10\text{ A}$, $V_{BE(off)} = 6.0\text{ Vdc}$, $I_{B1} = I_{B2} = 1.0\text{ A}$)	t_f	—	0.25	μs

*Indicates JEDEC Registered Data.

(1) Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$; Duty Cycle $\leq 2.0\%$.NOTE: For information on Figures 3 and 6, R_B and R_C were varied to obtain desired test conditions.**Figure 2. Switching Time Test Circuit****Figure 3. Turn-On Time**

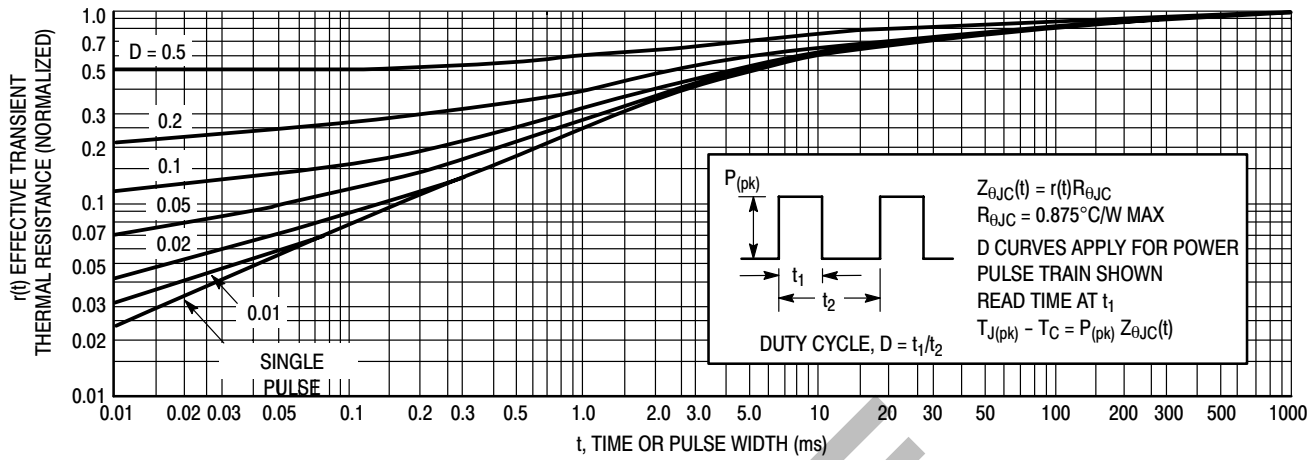


Figure 4. Thermal Response

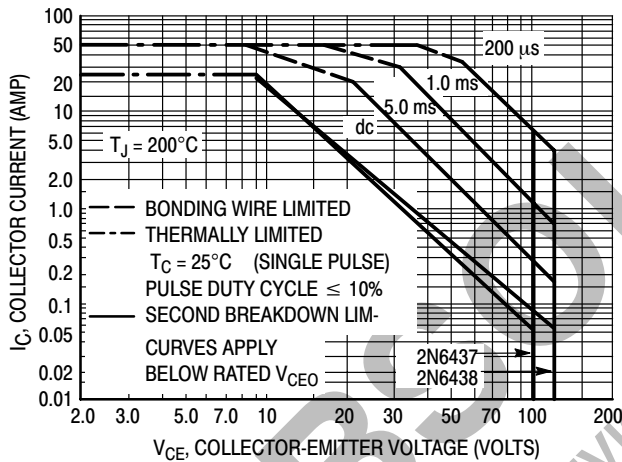


Figure 5. Active Region Safe Operating Area

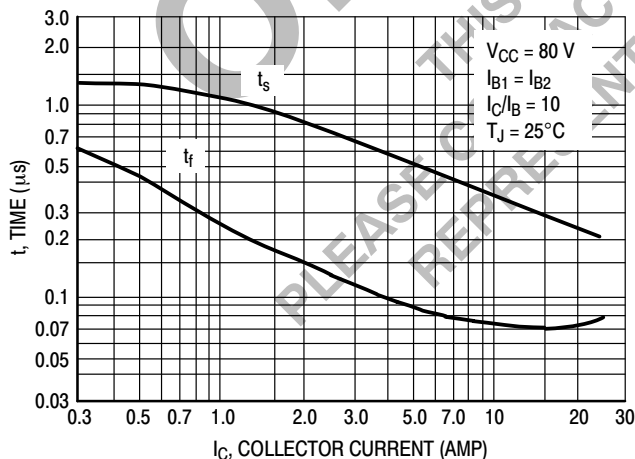


Figure 6. Turn-Off Time

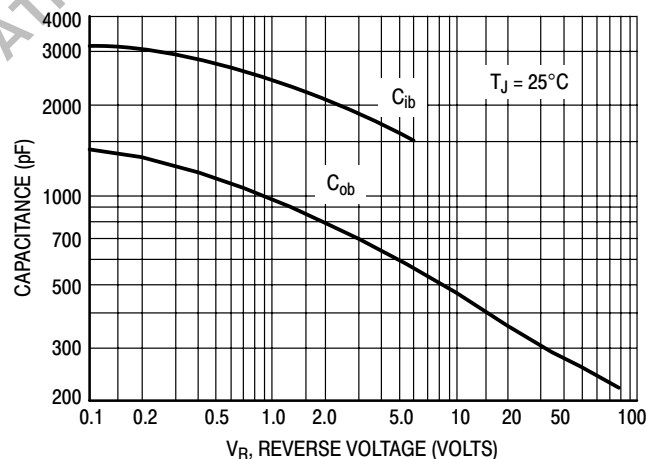


Figure 7. Capacitance

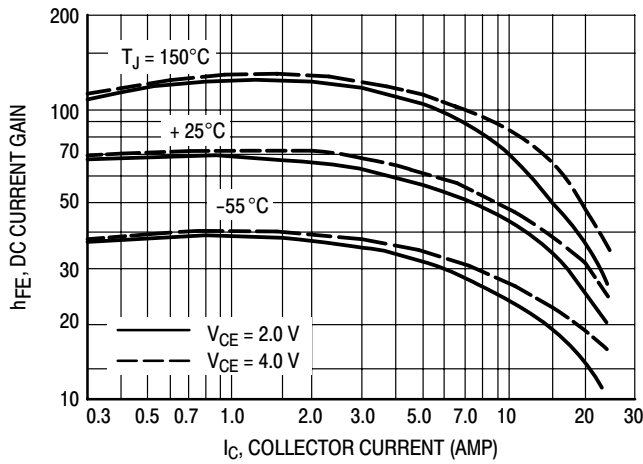


Figure 8. DC Current Gain

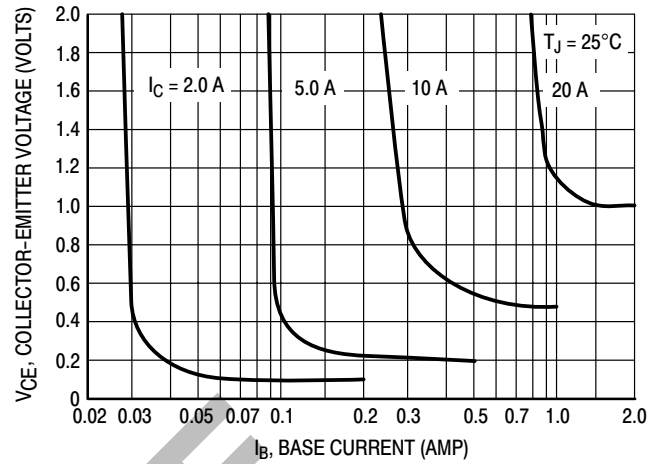


Figure 9. Collector Saturation Region

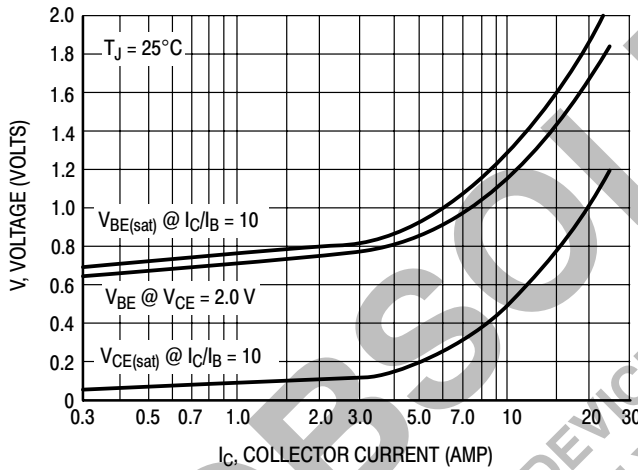


Figure 10. "On" Voltages

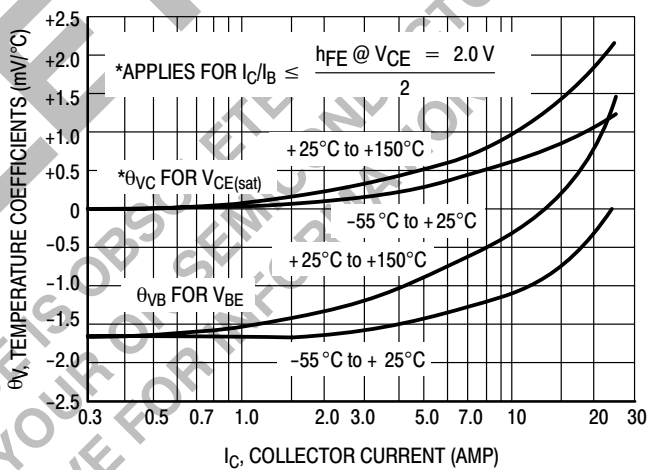


Figure 11. Temperature Coefficients

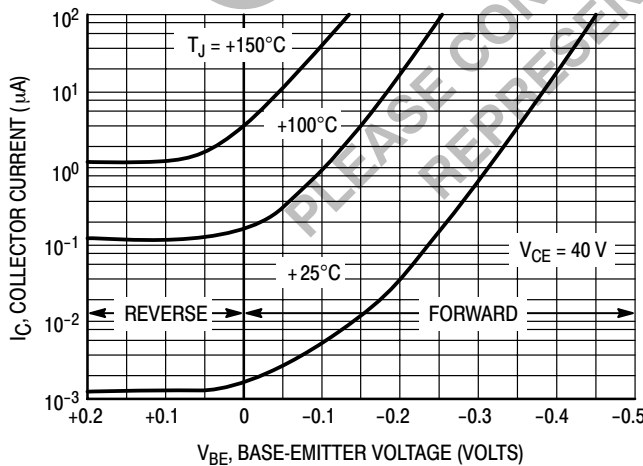


Figure 12. Collector Cut-Off Region

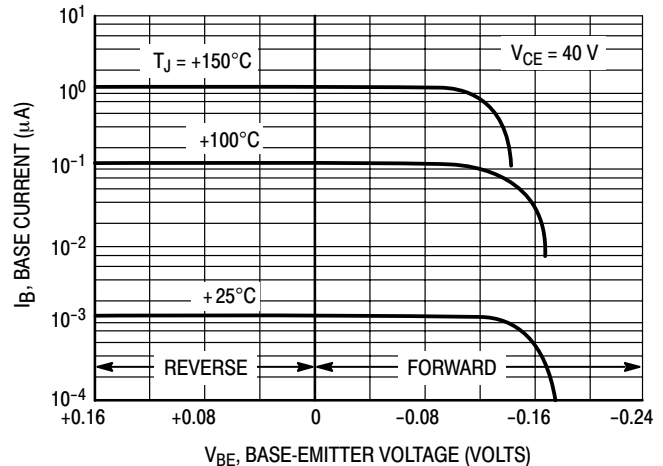
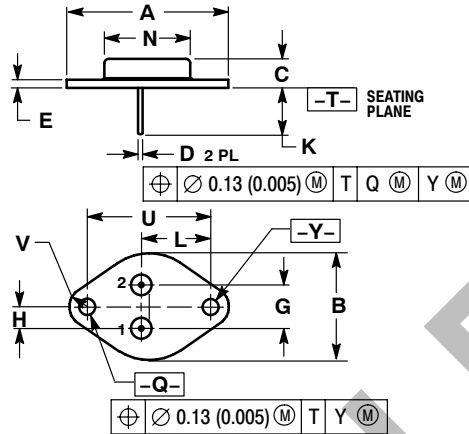


Figure 13. Base Cutoff Region

PACKAGE DIMENSIONS

CASE 1-07
TO-204AA (TO-3)
ISSUE Z

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. ALL RULES AND NOTES ASSOCIATED WITH REFERENCED TO-204AA OUTLINE SHALL APPLY.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.550 REF		39.37 REF	
B	---	1.050	---	26.67
C	0.250	0.335	6.35	8.51
D	0.038	0.043	0.97	1.09
E	0.055	0.070	1.40	1.77
G	0.430 BSC		10.92 BSC	
H	0.215 BSC		5.46 BSC	
K	0.440	0.480	11.18	12.19
L	0.665 BSC		16.89 BSC	
N	---	0.830	---	21.08
Q	0.151	0.165	3.84	4.19
U	1.187 BSC		30.15 BSC	
V	0.131	0.188	3.33	4.77

STYLE 1:

PIN 1: BASE

2: EMITTER

CASE: COLLECTOR

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