NEW ENGLAND SEMICONDUCTOR

2N5336
2N5337
2N5338
2N5339*

*also available as JAN, JANTX, JANTXV

MEDIUM-POWER NPN SILICON TRANSISTORS

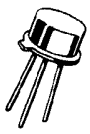
. . . designed for switching and wide band amplifier applications.

- Low Collector-Emitter Saturation Voltage – $V_{CE(sat)}$ = 1.2 Vdc (Max) @ I_C = 5.0 Amp
- DC Current Gain Specified to 5 Amperes
- Excellent Safe Operating Area
- Packaged in the Compact TO-39 Case for Critical Space-Limited Applications
- Complement to 2N6190 thru 2N6193

5 AMPERE

POWER TRANSISTORS PNP SILICON

80-100 VOLTS
6 WATTS



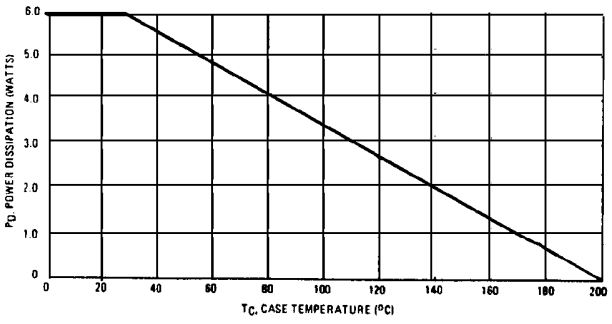
MAXIMUM RATINGS

Rating	Symbol	2N5336 2N5337	2N5338 2N5339	Unit
Collector-Emitter Voltage	V_{CEO}	80	100	Vdc
Collector-Base Voltage	V_{CB}	80	100	Vdc
Emitter-Base Voltage	V_{EB}	6.0		Vdc
Collector Current – Continuous	I_C	5.0		Adc
Base Current	I_B	1.0		Adc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	6.0 34.3		Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +200		°C

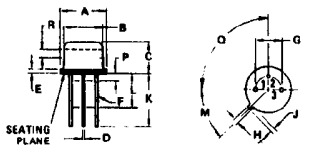
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	29.2	°C/W

FIGURE 1 – POWER-TEMPERATURE DERATING CURVE



All limits are applicable and must be observed.



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

DIM	MILLIMETERS MIN	MAX	INCHES MIN	MAX
A	8.89	9.40	0.350	0.370
B	8.00	8.51	0.315	0.335
C	6.10	6.60	0.240	0.260
D	0.406	0.533	0.016	0.021
E	0.229	3.18	0.009	0.125
F	0.406	0.483	0.016	0.019
G	4.83	5.33	0.190	0.210
H	0.711	0.864	0.028	0.034
J	0.737	1.02	0.029	0.040
K	12.70	–	0.500	–
L	6.35	–	0.250	–
M	45° NOM		45° NOM	
P	–	1.27	–	0.050
Q	90° NOM		90° NOM	
R	2.54	–	0.100	–

All JEDEC dimensions and notes apply.

TO-39

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ELECTRICAL CHARACTERISTICS (T_C = 25°C, unless otherwise noted)

Characteristic		Fig. No.	Symbol	Min	Max	Unit
OFF CHARACTERISTICS						
Collector-Emitter Sustaining Voltage*		–	$BV_{CEO(sus)}$*			Vdc
(I_C = 50 mAdc, I_B = 0)	2N5336, 2N5337			80	–	
	2N5338, 2N5339			100	–	
Collector Cutoff Current		–	I_{CEO}			μAdc
(V_{CE} = 75 Vdc, I_B = 0)	2N5336, 2N5337			–	100	
(V_{CE} = 90 Vdc, I_B = 0)	2N5338, 2N5339			–	100	
Collector Cutoff Current		12	I_{CEX}			μAdc
(V_{CE} = 75 Vdc, $V_{EB(off)}$ = 1.5 Vdc)	2N5336, 2N5337			–	10	
(V_{CE} = 90 Vdc, $V_{EB(off)}$ = 1.5 Vdc)	2N5338, 2N5339			–	10	
(V_{CE} = 75 Vdc, $V_{EB(off)}$ = 1.5 Vdc, T_C = 150°C)	2N5336, 2N5337			–	1.0	mAdc
(V_{CE} = 90 Vdc, $V_{EB(off)}$ = 1.5 Vdc, T_C = 150°C)	2N5338, 2N5339			–	1.0	
Collector Cutoff Current		–	I_{CBO}			μAdc
(V_{CB} = 80 Vdc, I_E = 0)	2N5336, 2N5337			–	10	
(V_{CB} = 100 Vdc, I_E = 0)	2N5338, 2N5339			–	10	
Emitter Cutoff Current		–	I_{EBO}			μAdc
(V_{BE} = 6.0 Vdc, I_C = 0)				–	100	
ON CHARACTERISTICS						
DC Current Gain*		8	h_{FE}*			–
(I_C = 500 mAdc, V_{CE} = 2.0 Vdc)	2N5336, 2N5338			30	–	
	2N5337, 2N5339			60	–	
(I_C = 2.0 Adc, V_{CE} = 2.0 Vdc)	2N5336, 2N5338			30	120	
	2N5337, 2N5339			60	240	
(I_C = 5.0 Adc, V_{CE} = 2.0 Vdc)	2N5336, 2N5338			20	–	
	2N5337, 2N5339			40	–	
Collector-Emitter Saturation Voltage*		9, 11, 13	$V_{CE(sat)}$*			Vdc
(I_C = 2.0 Adc, I_B = 0.2 Adc)				–	0.7	
(I_C = 5.0 Adc, I_B = 0.5 Adc)				–	1.2	
Base-Emitter Saturation Voltage*		11, 13	$V_{BE(sat)}$*			Vdc
(I_C = 2.0 Adc, I_B = 0.2 Adc)				–	1.2	
(I_C = 5.0 Adc, I_B = 0.5 Adc)				–	1.8	
DYNAMIC CHARACTERISTICS						
Current-Gain–Bandwidth Product (I_C = 0.5 Adc, V_{CE} = 10 Vdc, f = 10 MHz)		–	f_T	30	–	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 100 kHz)		7	C_{ob}	–	250	pF
Input Capacitance (V_{BE} = 2.0 Vdc, I_C = 0, f = 100 kHz)		7	C_{ib}	–	1,000	pF
SWITCHING CHARACTERISTICS						
Delay Time	(V_{CC} = 40 Vdc, $V_{EB(off)}$ = 3.0 Vdc,	2, 3	t_d	–	100	ns
Rise Time	(I_C = 2.0 Adc, I_{B1} = 0.2 Adc)		t_r	–	100	ns
Storage Time	(V_{CC} = 40 Vdc, I_C = 2.0 Adc,	2, 6	t_s	–	2.0	μs
Fall Time	I_{B1} = I_{B2} = 0.2 Adc)		t_f	–	200	ns

*Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

FIGURE 2 – SWITCHING TIME TEST CIRCUIT

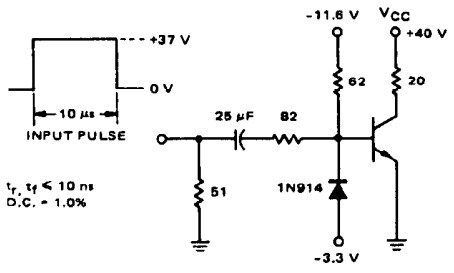
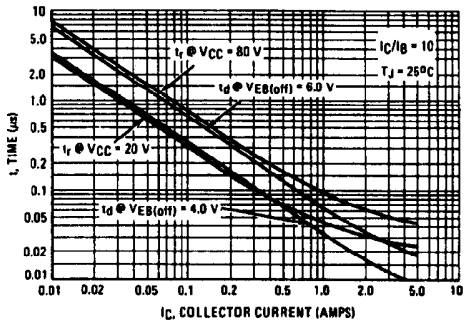


FIGURE 3 – TURN-ON TIME



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