



NEC
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.

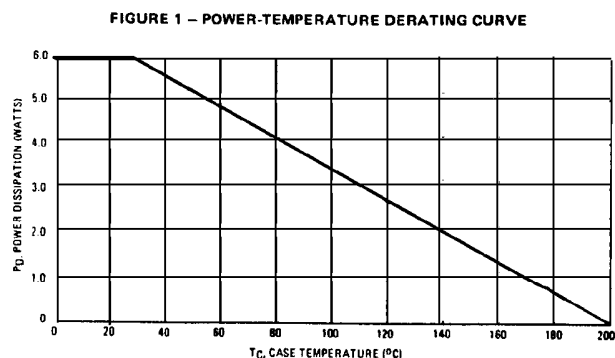
- Low Collector-Emitter Saturation Voltage –
 $V_{CE(sat)} = 1.2 \text{ Vdc (Max) @ } I_C = 5.0 \text{ Amp}$
- DC Current Gain Specified to 5 Amperes
- Excellent Safe Operating Area
- Packaged in the Compact TO-39 Case for Critical Space-Limited Applications
- Complement to 2N6190 thru 2N6193

MAXIMUM RATINGS

Rating	Symbol	2N5336 2N5337	2N5338 2N5339	Unit
Collector-Emitter Voltage	V_{CE}	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 @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	6.0 34.3		Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	29.2	$^\circ\text{C/W}$

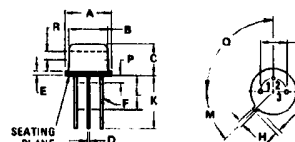


All limits are applicable and must be observed.

5 AMPERE

POWER TRANSISTORS PNP SILICON

80-100 VOLTS
6 WATTS



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

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.89	9.40	0.350	0.370
B	8.90	9.51	0.316	0.336
C	8.18	8.80	0.240	0.260
D	0.406	0.533	0.016	0.021
E	0.229	3.18	0.009	0.126
F	0.480	0.493	0.019	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	12.10	—	0.480	—
L	8.35	—	0.330	—
M	40 NOM	—	40 NOM	—
P	—	1.27	—	0.050
Q	80 NOM	—	80 NOM	—
R	2.54	—	0.100	—

AN JEDEC dimensions and notes apply.

TO-39

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6 Lake Street Lawrence, MA 01841
1-800-446-1158 / (978) 794-1666 / FAX: (978) 689-0803

T4-4.8-860-330 REV: —



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

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

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

FIGURE 2 – SWITCHING TIME TEST CIRCUIT

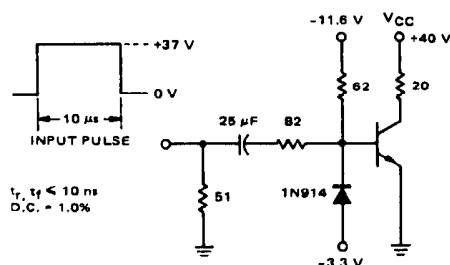
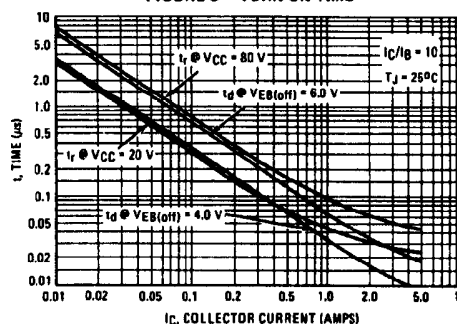


FIGURE 3 – TURN-ON TIME



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