NEW ENGLAND SEMICONDUCTOR

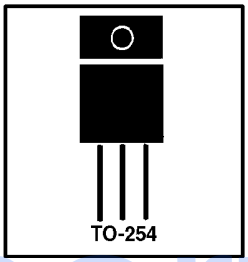
NPN	PNP
TIP35A	TIP36A
TIP35B	TIP36B
TIP35C	TIP36C

COMPLEMENTARY SILICON HIGH-POWER TRANSISTORS

...FOR GENERAL-PURPOSE POWER AMPLIFIER AND SWITCHING APPLICATIONS

25 AMPERE COMPLEMENTARY SILICON POWER TRANSISTORS
60 - 100 VOLTS
125 WATTS

- 25 A Collector Current
- Low Leakage Current — I_{CEO} = 1.0 mA @ 30 and 60 V
- Excellent DC Gain — h_{FE} = 40 Typ @ 15 A
- High Current Gain Bandwidth Product — $|h_{fe}|$ = 3.0 min @ I_C = 1.0 A, f = 1.0 MHz



MAXIMUM RATINGS

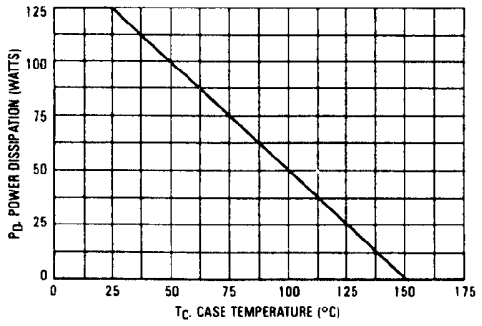
Rating	Symbol	TIP35A TIP36A	TIP35B TIP36B	TIP35C TIP36C	Unit
Collector-Emitter Voltage	V_{CEO}	60 V	80 V	100 V	Vdc
Collector-Base Voltage	V_{CB}	60 V	80 V	100 V	Vdc
Emitter-Base Voltage	V_{EB}	5.0			Vdc
Collector Current — Continuous Peak (1)	I_C	25 40			Adc
Base Current — Continuous	I_B	5.0			Adc
Total Power Dissipation @ T_C = 25°C Derate above 25°C	P_D	125 1.0			Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +150			°C
Unclamped Inductive Load	E_{SB}	90			mJ

THERMAL CHARACTERISTICS

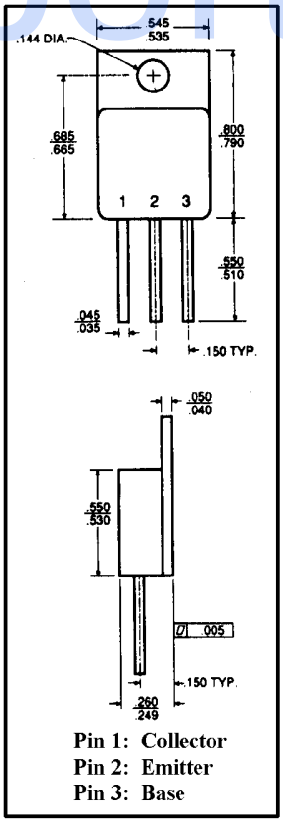
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.0	°C/W
Junction-To-Free-Air Thermal Resistance	$R_{\theta JA}$	35.7	°C/W

(1) Pulse Test: Pulse Width = 10 ms, Duty Cycle ≤ 10%.

FIGURE 1 — POWER DERATING



MECHANICAL OUTLINE



Pin 1: Collector
Pin 2: Emitter
Pin 3: Base

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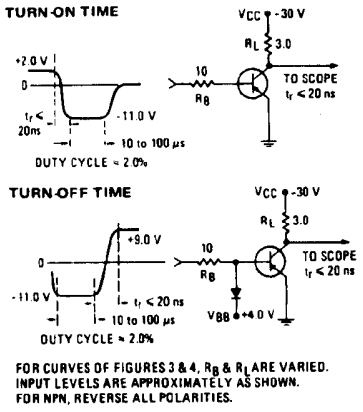
NPN	PNP
TIP35A	TIP36A
TIP35B	TIP36B
TIP35C	TIP36C

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (1) (I_C = 30 mA, I_B = 0) TIP35A, TIP36A / TIP35B, TIP36B / TIP35C, TIP36C	$V_{CEO(sus)}$	60 / 80 / 100	— / — / —	Vdc
Collector-Emitter Cutoff Current (V_{CE} = 30 V, I_B = 0) TIP35A, TIP36A	I_{CEO}	—	1.0	mA
(V_{CE} = 60 V, I_B = 0) TIP35B, TIP35C, TIP36B, TIP36C		—	1.0	
Collector-Emitter Cutoff Current (V_{CE} = Rated V_{CEO}, V_{EB} = 0)	I_{CES}	—	0.7	mA
Emitter-Base Cutoff Current (V_{EB} = 5.0 V, I_C = 0)	I_{EBO}	—	1.0	mA
ON CHARACTERISTICS (1)				
DC Current Gain (I_C = 1.5 A, V_{CE} = 4.0 V)	h_{FE}	25	—	—
(I_C = 15 A, V_{CE} = 4.0 V)		15	75	
Collector-Emitter Saturation Voltage (I_C = 15 A, I_B = 1.5 A)	$V_{CE(sat)}$	—	1.8	Vdc
(I_C = 25 A, I_B = 5.0 A)		—	4.0	
Base-Emitter On Voltage (I_C = 15 A, V_{CE} = 4.0 V)	$V_{BE(on)}$	—	2.0	Vdc
(I_C = 25 A, V_{CE} = 4.0 V)		—	4.0	
DYNAMIC CHARACTERISTICS				
Small-Signal Current Gain (I_C = 1.0 A, V_{CE} = 10 V, f = 1.0 kHz)	h_{fe}	25	—	—
Current-Gain—Bandwidth Product (I_C = 1.0 A, V_{CE} = 10 V, f = 1.0 MHz)	f_T	3.0	—	MHz

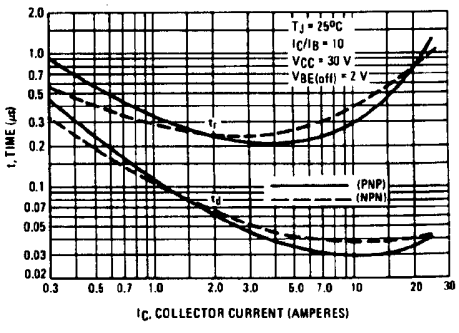
(1) Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤2.0%.

FIGURE 2 — SWITCHING TIME EQUIVALENT TEST CIRCUITS



FOR CURVES OF FIGURES 3 & 4, R_B & R_L ARE VARIED.
INPUT LEVELS ARE APPROXIMATELY AS SHOWN.
FOR NPN, REVERSE ALL POLARITIES.

FIGURE 3 — TURN-ON TIME



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