



PNP POWER TRANSISTORS

COMPLEMENTARY TO THE TIP41 SERIES

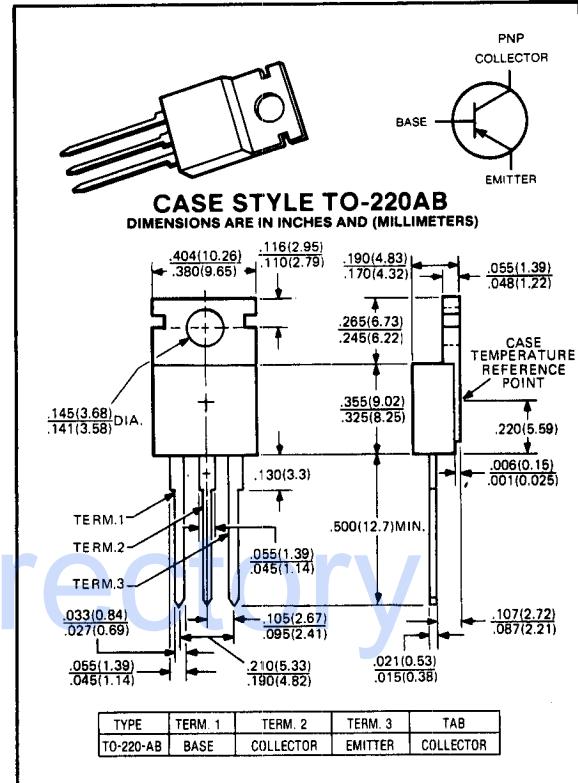
TIP 42 Series

-40 ~ -100 VOLTS
-6 AMP, 65 WATTS

The TIP42 Series power transistors are designed for use in general purpose amplifier and switching applications.

Features:

- 65W at 25°C case temperature
- 6A continuous collector current
- 10A peak collector current
- Minimum f_T of 3 MHz at 10V, 0.5A
- Customer-specified selections available



maximum ratings ($T_C = 25^\circ\text{C}$) (unless otherwise noted)

RATING	SYMBOL	TIP42	TIP42A	TIP42B	TIP42C	UNITS
Collector-Emitter Voltage	V_{CEO}	-40	-60	-80	-100	Volts
Collector-Base Voltage	V_{CBO}	-80	-100	-120	-140	Volts
Emitter Base Voltage	V_{EBO}	-5	-5	-5	-5	Volts
Collector Current — Continuous Peak	I_C I_{CM}	-6 -10	-6 -10	-6 -10	-6 -10	A
Base Current — Continuous	I_B	-3	-3	-3	-3	A
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ @ $T_C = 25^\circ\text{C}$	P_D	2 65	2 65	2 65	2 65	Watts
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +150	-65 to +150	-65 to +150	-65 to +150	°C

thermal characteristics

Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.92	1.92	1.92	1.92	°C/W
Maximum Lead Temperature for Soldering Purposes: $\frac{1}{2}''$ from Case for 5 Seconds	T_L	250	250	250	250	°C

electrical characteristics ($T_C = 25^\circ C$) (unless otherwise specified)

CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT
off characteristics					
Collector-Emitter Breakdown Voltage ($I_C = 30\text{mA}$)	TIP42 TIP42A TIP42B TIP42C	V_{CEO}	-40 -60 -80 -100	— — — —	Volts
Collector Cutoff Current ($V_{CE} = -30\text{V}$) ($V_{CE} = -60\text{V}$)	TIP42, TIP42A TIP42B, TIP42C	I_{CEO}	— —	— —	mA
Collector Cutoff Current ($V_{CE} = -80\text{V}$) ($V_{CE} = -100\text{V}$) ($V_{CE} = -120\text{V}$) ($V_{CE} = -140\text{V}$)	TIP42 TIP42A TIP42B TIP42C	I_{CES}	— — — —	-0.4 -0.4 -0.4 -0.4	mA
Emitter Cutoff Current ($V_{EB} = -5\text{V}$, $I_C = 0$)	I_{EBO}	—	—	-1	mA

second breakdown

Second Breakdown with Base Forward Biased	FBSOA	SEE FIGURE 3
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on characteristics

DC Current Gain ($I_C = -3\text{A}$, $V_{CE} = -4\text{V}$) ($I_C = -3\text{A}$, $V_{CE} = -4\text{V}$)	h_{FE}	30 15	—	— 75	—
Collector-Emitter Saturation Voltage ($I_C = -6\text{A}$, $I_B = -0.6\text{A}$)	$V_{CE(\text{sat})}$	—	—	-1.5	V
Base-Emitter Voltage ($I_C = -6\text{A}$, $V_{CE} = -4\text{V}$)	$V_{BE(\text{on})}$	—	—	-2	V

switching characteristics

Turn-on Time	$R_L = 5\Omega$, $I_C = -6\text{A}$ $I_{B1} = I_{B2} = 0.6\text{A}$ $V_{BE(\text{off})} = 4\text{V}$	t_{on}	—	0.4	—	μs
Turn-off Time		t_{off}	—	0.7	—	

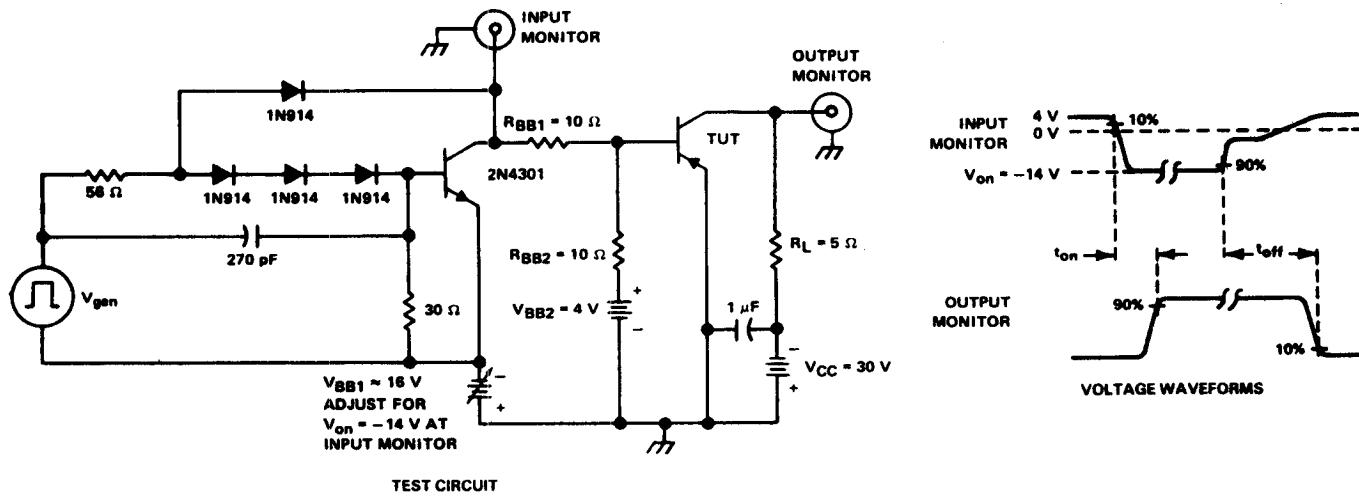


FIGURE 1. RESISTIVE-LOAD SWITCHING

**STATIC FORWARD CURRENT TRANSFER RATIO
vs
COLLECTOR CURRENT**

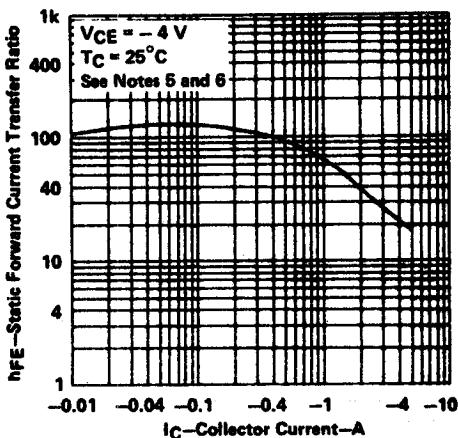


FIGURE 2. TYPICAL CHARACTERISTICS

FORWARD-BIAS SAFE OPERATING AREA

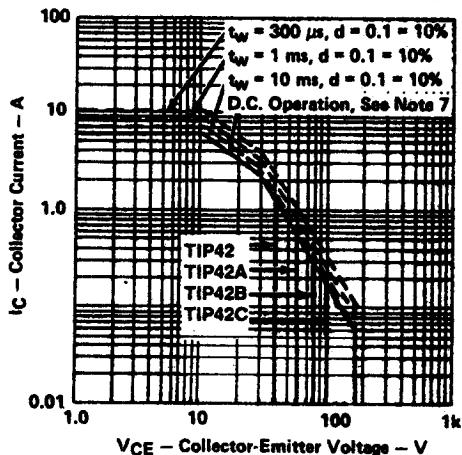


FIGURE 3 MAXIMUM SAFE OPERATING AREA

NOTE 7: This combination of maximum voltage and current may be achieved only when switching from saturation to cutoff with a clamped inductive-load.

DISSIPATION DERATING CURVE

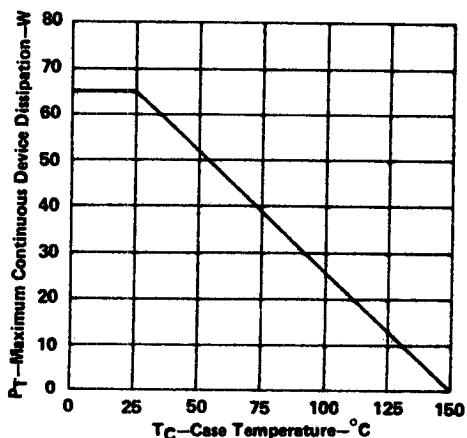


FIGURE 4 THERMAL INFORMATION