

TIP41, TIP41A, TIP41B, TIP41C (NPN); TIP42, TIP42A, TIP42B, TIP42C (PNP)



ON Semiconductor®

Complementary Silicon Plastic Power Transistors

Designed for use in general purpose amplifier and switching applications.

Features

- ESD Ratings: Machine Model, C; > 400 V
Human Body Model, 3B; > 8000 V
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Pb-Free Packages are Available*

MAXIMUM RATINGS

Rating		Symbol	Value	Unit
Collector-Emitter Voltage	TIP41, TIP42 TIP41A, TIP42A TIP41B, TIP42B TIP41C, TIP42C	V_{CEO}	40 60 80 100	Vdc
Collector-Base Voltage	TIP41, TIP42 TIP41A, TIP42A TIP41B, TIP42B TIP41C, TIP42C	V_{CB}	40 60 80 100	Vdc
Emitter-Base Voltage		V_{EB}	5.0	Vdc
Collector Current-Continuous	Peak	I_C	6.0 10	Adc
Base Current		I_B	2.0	Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C		P_D	65 0.52	W $\text{W}/^\circ\text{C}$
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C		P_D	2.0 0.016	W $\text{W}/^\circ\text{C}$
Unclamped Inductive Load Energy (Note 1)		E	62.5	mJ
Operating and Storage Junction, Temperature Range		T_J, T_{stg}	—65 to +150	°C

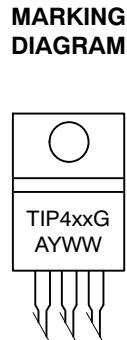
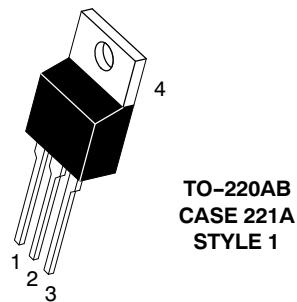
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.67	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	57	°C/W

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. $I_C = 2.5 \text{ A}$, $L = 20 \text{ mH}$, P.R.F. = 10 Hz, $V_{CC} = 10 \text{ V}$, $R_{BE} = 100 \Omega$.

6 AMPERE COMPLEMENTARY SILICON POWER TRANSISTORS 40-60-80-100 VOLTS, 65 WATTS



TIP4xx = Device Code
 xx = 1, 1A, 1B, 1C
 2, 2A, 2B, 2C
 A = Assembly Location
 Y = Year
 WW = Work Week
 G = Pb-Free Package

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERMM/D.

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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 (Note 2) ($I_C = 30 \text{ mA}_\text{dc}$, $I_B = 0$)	TIP41, TIP42 TIP41A, TIP42A TIP41B, TIP42B TIP41C, TIP42C	$V_{\text{CEO}(\text{sus})}$	40 60 80 100	- - - -
Collector Cutoff Current ($V_{\text{CE}} = 30 \text{ V}_\text{dc}$, $I_B = 0$) ($V_{\text{CE}} = 60 \text{ V}_\text{dc}$, $I_B = 0$)	TIP41, TIP41A, TIP42, TIP42A TIP41B, TIP41C, TIP42B, TIP42C	I_{CEO}	- -	0.7 0.7
Collector Cutoff Current ($V_{\text{CE}} = 40 \text{ V}_\text{dc}$, $V_{\text{EB}} = 0$) ($V_{\text{CE}} = 60 \text{ V}_\text{dc}$, $V_{\text{EB}} = 0$) ($V_{\text{CE}} = 80 \text{ V}_\text{dc}$, $V_{\text{EB}} = 0$) ($V_{\text{CE}} = 100 \text{ V}_\text{dc}$, $V_{\text{EB}} = 0$)	TIP41, TIP42 TIP41A, TIP42A TIP41B, TIP42B TIP41C, TIP42C	I_{CES}	- - - -	400 400 400 400
Emitter Cutoff Current ($V_{\text{BE}} = 5.0 \text{ V}_\text{dc}$, $I_C = 0$)		I_{EBO}	-	1.0
ON CHARACTERISTICS (Note 2)				
DC Current Gain ($I_C = 0.3 \text{ Adc}$, $V_{\text{CE}} = 4.0 \text{ V}_\text{dc}$) ($I_C = 3.0 \text{ Adc}$, $V_{\text{CE}} = 4.0 \text{ V}_\text{dc}$)		h_{FE}	30 15	- 75
Collector-Emitter Saturation Voltage ($I_C = 6.0 \text{ Adc}$, $I_B = 600 \text{ mA}_\text{dc}$)		$V_{\text{CE}(\text{sat})}$	-	1.5
Base-Emitter On Voltage ($I_C = 6.0 \text{ Adc}$, $V_{\text{CE}} = 4.0 \text{ V}_\text{dc}$)		$V_{\text{BE}(\text{on})}$	-	2.0
DYNAMIC CHARACTERISTICS				
Current-Gain — Bandwidth Product ($I_C = 500 \text{ mA}_\text{dc}$, $V_{\text{CE}} = 10 \text{ V}_\text{dc}$, $f_{\text{test}} = 1.0 \text{ MHz}$)		f_T	3.0	-
Small-Signal Current Gain ($I_C = 0.5 \text{ Adc}$, $V_{\text{CE}} = 10 \text{ V}_\text{dc}$, $f = 1.0 \text{ kHz}$)		h_{fe}	20	-

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

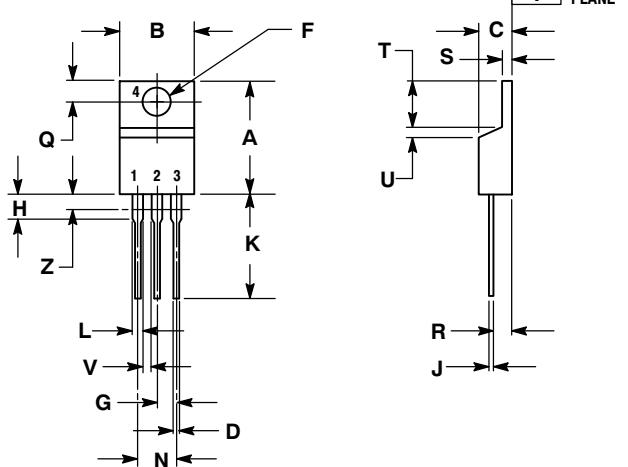
ORDERING INFORMATION

Device	Package	Shipping
TIP41	TO-220	50 Units / Rail
TIP41G	TO-220 (Pb-Free)	50 Units / Rail
TIP41A	TO-220	50 Units / Rail
TIP41AG	TO-220 (Pb-Free)	50 Units / Rail
TIP41B	TO-220	50 Units / Rail
TIP41BG	TO-220 (Pb-Free)	50 Units / Rail
TIP41C	TO-220	50 Units / Rail
TIP41CG	TO-220 (Pb-Free)	50 Units / Rail
TIP42	TO-220	50 Units / Rail
TIP42G	TO-220 (Pb-Free)	50 Units / Rail
TIP42A	TO-220	50 Units / Rail
TIP42AG	TO-220 (Pb-Free)	50 Units / Rail
TIP42B	TO-220	50 Units / Rail
TIP42BG	TO-220 (Pb-Free)	50 Units / Rail
TIP42C	TO-220	50 Units / Rail
TIP42CG	TO-220 (Pb-Free)	50 Units / Rail

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PACKAGE DIMENSIONS

TO-220
CASE 221A-09
ISSUE AE



NOTES:
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.014	0.025	0.36	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04