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TIP42A, TIP42B, TIP42C Silicon PNP Transistors General Purpose Amp, Switch TO-220 Type Package

Absolute Maximum Ratings: ($T_C = +25^\circ\text{C}$, Note 1 unless otherwise specified)

Collector-Emitter Voltage, V_{CE0}	
TIP42A	60V
TIP42B	80V
TIP42C	100V
Collector-Base Voltage, V_{CBO}	
TIP42A	60V
TIP42B	80V
TIP42C	100V
Emitter-Base Voltage, V_{EBO}	5V
Continuous Current, I_C	
Continuous	6A
Pulse	10A
Continuous Base Current, I_B	2A
Total Power Dissipation ($T_C = +25^\circ\text{C}$), P_D	65W
Derate Above 25°C	0.52W/ $^\circ\text{C}$
Total Power Dissipation ($T_A = +25^\circ\text{C}$), P_D	2W
Derate Above 25°C	0.016W/ $^\circ\text{C}$
Unclamped Inductive Load Energy (Note 2), E	62.5mJ
Operating Junction Temperature Range, T_J	-65° to $+150^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+150^\circ\text{C}$
Thermal Resistance, Junction-to-Case, R_{thJC}	1.67 $^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient, R_{thJA}	57 $^\circ\text{C}/\text{W}$

Note 1. Stresses exceeding Absolute 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.

Note 2. $I_C = 2.5\text{A}$, $L = 20\text{mH}$, P.R.F = 10Hz, $V_{CC} = 10\text{V}$, $R_{BE} = 100\Omega$.

Electrical Characteristics: ($T_C = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Sustaining Voltage TIP42A	$V_{CEO(sus)}$	$I_C = 30\text{mA}, I_B = 0, \text{Note 3}$	60	–	–	V
TIP42B			80	–	–	V
TIP42C			100	–	–	V
Collector Cutoff Current TIP42A	I_{CEO}	$V_{CE} = 30\text{V}, I_B = 0$	–	–	0.7	mA
TIP42B, TIP42C		$V_{CE} = 60\text{V}, I_B = 0$	–	–	0.7	mA
Collector Cutoff Current TIP42A	I_{CES}	$V_{CE} = 60\text{V}, V_{EB} = 0$	–	–	400	μA
TIP42B		$V_{CE} = 80\text{V}, V_{EB} = 0$	–	–	400	μA
TIP42C		$V_{CE} = 100\text{V}, V_{EB} = 0$	–	–	400	μA
Emitter Cutoff Current	I_{EBO}	$V_{BE} = 5\text{V}, I_C = 0$	–	–	1.0	mA
ON Characteristics (Note 3)						
DC Current Gain	h_{FE}	$V_{CE} = 4\text{V}, I_C = 0.3\text{A}$	30	–	–	
		$V_{CE} = 4\text{V}, I_C = 3.0\text{A}$	15	–	75	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 6\text{A}, I_B = 600\text{mA}$	–	–	1.5	V
Base–Emitter ON Voltage	$V_{BE(on)}$	$V_{CE} = 4\text{V}, I_C = 6\text{A}$	–	–	2.0	V
Dynamic Characteristics						
Current–Gain – Bandwidth Product	f_T	$V_{CE} = 10\text{V}, I_C = 0.5\text{A}, f_{test} = 1\text{MHz}$	3.0	–	–	MHz
Small–Signal Current Gain	h_{fe}	$V_{CE} = 10\text{V}, I_C = 0.5\text{A}, f = 1\text{kHz}$	20	–	–	

Note 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

