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2N2222A Silicon NPN Transistor Small Signal General Purpose Amplifier & Switch TO-18 Type Package

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

Collector-Emitter Voltage, V_{CEO}	40V
Collector-Base Voltage, V_{CBO}	75V
Emitter-Base Voltage, V_{EBO}	6V
Continuous Collector Current, I_C	800mA
Total Device Dissipation, P_D	
$T_A = +25^\circ\text{C}$	500mW
$T_C = +25^\circ\text{C}$	1W
Operating Temperature Range, T_J	-65° to $+200^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+200^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient, R_{thJA}	325°C/W
Thermal Resistance, Junction-to-Case, R_{thJC}	150°C/W

Note 1. Stresses exceeding Absolute Maximum Ratings may damage the devices. 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.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}$	40	–	–	V
Collector-Base Cutoff Current	I_{CBO}	$V_{CB} = 60\text{V}$	–	–	10	nA
		$V_{CB} = 75\text{V}$	–	–	10	μA
Emitter-Base Cutoff Current	I_{EBO}	$V_{EB} = 4\text{V}$	–	–	10	nA
		$V_{EB} = 6\text{V}$	–	–	10	μA
Collector-Emitter Cutoff Current	I_{CES}	$V_{CE} = 50\text{V}$	–	–	50	nA

Electrical Characteristics (Cont'd): ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
ON Characteristics (Note 1)							
DC Current Gain	h_{FE}	$V_{CE} = 10V$	$I_C = 0.1mA$	50	–	–	
			$I_C = 1mA$	75	–	325	
			$I_C = 10mA$	100	–	–	
			$I_C = 150mA$	100	–	300	
			$I_C = 500mA$	30	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 150mA, I_B = 15mA$	–	–	0.3	V	
		$I_C = 500mA, I_B = 50mA$	–	–	1.0	V	
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 150mA, I_B = 15mA$	0.6	–	1.2	V	
		$I_C = 500mA, I_B = 50mA$	–	–	2.0	V	
Small–Signal Characteristics							
Magnitude of Small–Signal Current Gain	$ h_{fe} $	$I_C = 20mA, V_{CE} = 20V, f = 100MHz$		2.5	–	–	
Small–Signal Current Gain	h_{fe}	$I_C = 1mA, V_{CE} = 10V, f = 1kHz$		50	–	–	
Input Capacitance	C_{ibo}	$V_{EB} = 5V, I_C = 0, 100kHz \leq f \leq 1MHz$		–	–	25	pF
Output Capacitance	C_{obo}	$V_{CB} = 10V, I_E = 0, 100kHz \leq f \leq 1MHz$		–	–	8	pF
Switching Characteristics							
Turn–On Time	t_{on}			–	–	35	ns
Turn–Off Time	t_{off}			–	–	300	ns

Note 1. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

