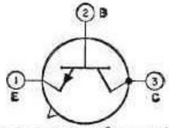
2N2405

POWER TRANSISTOR



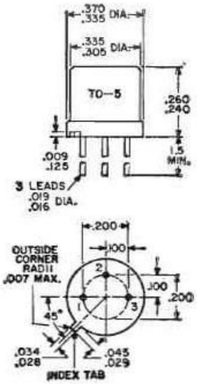
Silicon n-p-n type used in a wide variety of small-signal and medium-power switching applications in industrial and military equipment. It features high collector-to-emitter sustaining voltage, low leakage characteristics, high switching speeds, and a high dc forward current-transfer ratio. JEDEC No. TO-5 package; outline 6, Outlines Section. For curve of typical transfer characteristics, refer to type 2N1893.

MAXIMUM RATINGS

Collector-to-Base Voltage (with base-to-emitter reverse bias = 1.5 volts)	120 max	volts
Collector-to-Base Voltage (with emitter open)	120 max	volts
Collector-to-Emitter Voltage:		
With external base-to-emitter resistance = 10 ohms or less	140 max	volts
With external base-to-emitter resistance = 500 ohms	120 max	volts
Collector-to-Emitter Voltage (with base open)	90 max	volts
Emitter-to-Base Voltage (with collector open)	7 max	volts
Collector Current	1 max	ampere
Transistor Dissipation:		
At case temperatures up to 25°C	5 max	watts
At ambient temperatures up to 25°C	1 max	watt
At case or ambient temperatures above 25°C	See curve page 80	
Temperature Range:		
Operating (junction) and Storage	−65 to 200	°C
Lead Temperature (for 10 seconds maximum)	255 max	°C

CHARACTERISTICS

Collector-to-Base Breakdown Voltage (with collector ma = 0.1 and emitter current = 0)	120 min	volts
Emitter-to-Base Breakdown Voltage (with emitter ma = 0.1 and collector current = 0)	7 min	volts
Collector-to-Emitter Saturation Voltage:		
With base ma = 15 and collector ma = 150	0.5 max	volt
With base ma = 5 and collector ma = 50	0.2 max	volt
Base-to-Emitter Saturation Voltage:		
With base ma = 15 and collector ma = 150	1.1 max	volts
With base ma = 5 and collector ma = 50	0.9 max	volt
Collector-to-Emitter Sustaining Voltage:		
With base current = 0 and pulsed collector ma = 100*	90 min	volts
With base current = 0 and pulsed collector ma = 30*	90 min	volts
With external base-to-emitter resistance = 10 ohms and pulsed collector ma = 100*	140 min	volts
With external base-to-emitter resistance = 500 ohms and pulsed collector ma = 100*	120 min	volts
Collector-Cutoff Current:		
With case temperature = 25°C, collector-to-base volts = 90, and emitter current = 0	0.01 max	μa
With case temperature = 150°C, collector-to-base volts = 90, and emitter current = 0	10 max	μa
Emitter-Cutoff Current (with emitter-to-base volts = 5 and collector current = 0)	0.01 max	μa
Thermal Resistance:		
Junction-to-case	35 max	°C/watt
Junction-to-ambient	175 max	°C/watt



* Pulse duration = 300 μsec, duty factor = 0.018

In Common-Base Circuit

Input Resistance at 1 kilocycle:		
With collector-to-base volts = 5 and collector ma = 1	24 to 34	ohms
With collector-to-base volts = 10 and collector ma = 5	4 to 8	ohms
Emitter-to-Base Capacitance (with emitter-to-base volts = 0.5 and collector current = 0)	80 max	pf
Collector-to-Base Capacitance (with collector-to-base volts = 10 and emitter current = 0)	15 max	pf
Output Conductance at 1 kilocycle:		
With collector-to-base volts = 5 and collector ma = 1	0.5 max	μmho
With collector-to-base volts = 10 and collector ma = 5	0.5 max	μmho
Small-Signal Open-Circuit Reverse Voltage-Transfer Ratio at 1 kilocycle:		
With collector-to-base volts = 5 and collector ma = 1	3×10^{-4}	
With collector-to-base volts = 10 and collector ma = 5	3×10^{-4}	

In Common-Emitter Circuit

DC Forward Current-Transfer Ratio:		
With collector-to-emitter volts = 10 and pulsed collector ma = 500*	25 min	
With collector-to-emitter volts = 10 and pulsed collector ma = 150*	60 to 200	
With collector-to-emitter volts = 10 and collector ma = 10	35 min	
With collector-to-emitter volts = 10, collector ma = 10, and case temperature = −55°C	20 min	
Small-Signal Forward Current-Transfer Ratio:		
With collector-to-emitter volts = 5, collector ma = 5, and frequency = 1 kilocycle	50 to 275	
With collector-to-emitter volts = 10, collector ma = 50, and frequency = 20 Mc	6 min	
Noise Figure (with collector-to-emitter volts = 10, collector ma = 0.3 generator resistance = 500 ohms, circuit bandwidth = 15 kilocycles, and signal frequency = 1 kilocycle)	6 max	db

* Pulse duration = 300 μsec, duty factor = 0.018