

RCA TRANSISTOR MANUAL

MAXIMUM RATINGS

COLLECTOR-TO-BASE VOLTAGE (with emitter open).....	-30 max	volts
COLLECTOR-TO-EMITTER VOLTAGE:		
With base open.....	-15 max	volts
With base-to-emitter volts = 1.....	-20 max	volts
EMITTER-TO-BASE VOLTAGE (with collector open).....	-20 max	volts
PEAK COLLECTOR CURRENT.....	-400 max	ma
DC COLLECTOR CURRENT.....	-200 max	ma
TRANSISTOR DISSIPATION:		
At ambient temperatures up to 25°C.....	150 max	mw
At ambient temperatures above 25°C.....	See curve page 68	
AMBIENT-TEMPERATURE RANGE:		
Operating and storage.....	-65 to 85	°C
LEAD TEMPERATURE (for 10 seconds maximum).....	240 max	°C

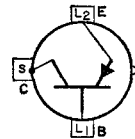
CHARACTERISTICS

Collector-Cutoff Current (with collector-to-base volts = -12 and emitter current = 0).....	-5 max	µa
<i>In Common-Base Circuit</i>		
Collector-to-Base Capacitance (with collector-to-base volts = -6 and emitter ma = 1).....	11	pf
Forward-Current-Transfer-Ratio Cutoff Frequency (with collector-to-base volts = -6 and emitter ma = 1).....	8	Mc
Small-Signal Open-Circuit Reverse Voltage-Transfer Ratio (with collector- base volts = -6, emitter ma = 1, and frequency = 1 kilocycle).....	0.0005	
<i>In Common-Emitter Circuit</i>		
Small-Signal Forward Current-Transfer Ratio (with collector-to-emitter volts = -6, emitter ma = 1, and frequency = 1 kilocycle).....	80	

POWER TRANSISTOR

2N441

Germanium p-n-p type used in a wide variety of switching and amplifier applications in industrial and military equipment requiring transistors having high voltage, current, and dissipation values. It is used in power-



switching, voltage- and current-regulating, dc-to-dc converter, inverter, power-supply, and relay- and solenoid-actuating circuits; and in low-frequency oscillator and audio-amplifier service. This type is designed to provide satisfactory performance under extreme environmental conditions of temperature, moisture, and altitude; it is stud-mounted to provide positive heat-sink contact, and has a cold-weld seal to insure reliable performance under severe environmental conditions. JEDEC No. TO-36 package; outline 14, Outlines Section.

MAXIMUM RATINGS

COLLECTOR-TO-BASE VOLTAGE (with emitter-to-base volts = -1.5).....	-40 max	volts
EMITTER-TO-BASE VOLTAGE (with collector open).....	-20 max	volts
COLLECTOR CURRENT.....	-15 max	amperes
EMITTER CURRENT.....	15 max	amperes
BASE CURRENT.....	-4 max	amperes
TRANSISTOR DISSIPATION:		
At case temperatures up to 25°C.....	150 max	watts
At case temperatures above 25°C.....	See curve page 68	
CASE-TEMPERATURE RANGE:		
Operating and storage.....	-65 to 100	

CHARACTERISTICS

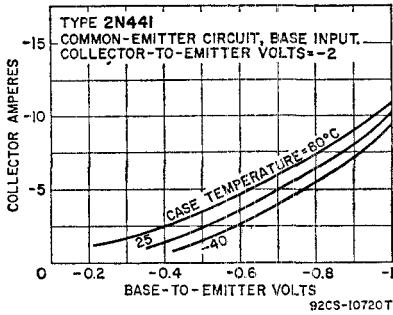
Collector-to-Emitter Breakdown Voltage:		
With base short-circuited to emitter and collector amperes = -0.3.....	-40 min	volts
With base open and collector amperes = -0.3.....	-40	volts
Base-to-Emitter Voltage (with collector-to-emitter volts = -2 and collector amperes = -5).....	-0.65	volt

Emitter-to-Base Voltage (with collector-to-base volts = -40 and emitter current = 0)	-1 max	volt
Collector-to-Emitter Saturation Voltage (with collector amperes = -12 and base amperes = -2)	-0.3	volt
Collector-to-Emitter Reach-Through Voltage	-40 min	volts
Emitter-Cutoff Current (with emitter-to-base volts = -20 and collector current = 0)	-1	ma
Collector-Cutoff Current:		
With collector-to-base volts = -2 and emitter current = 0	-100	μ a
With collector-to-base volts = -40 and emitter current = 0	-2	ma
Thermal Resistance (junction-to-case)	0.35	$^{\circ}$ C/watt
Thermal Capacity (for pulse durations of 1 to 10 milliseconds)	0.075	watt-sec/ $^{\circ}$ C
Thermal Time Constant	26.25	msec

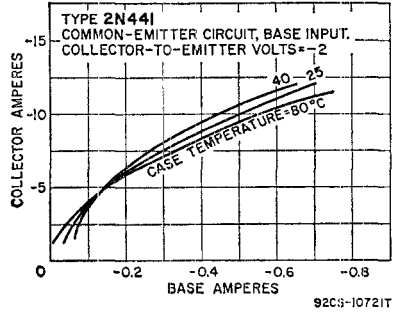
In Common-Emitter Circuit

DC Forward Current-Transfer Ratio:		
With collector-to-emitter volts = -2 and collector amperes = -5	20 to 40	
With collector-to-emitter volts = -2 and collector amperes = -12	20	
Small-Signal Forward-Current-Transfer-Ratio Cutoff Frequency (with collector-to-emitter volts = -6 and collector amperes = -5)	10	kc

TYPICAL TRANSFER CHARACTERISTICS



TYPICAL TRANSFER CHARACTERISTICS



TYPICAL OPERATION IN POWER-SWITCHING CIRCUIT

DC Collector Supply Voltage	-12	volts
DC Base Supply Voltage	6	volts
On DC Collector Current	-12	amperes
Turn-On DC Base Current	-2	amperes
Turn-Off DC Base Current	0	amperes
Switching Time:		
Rise time	15	μ sec
Fall time	15	μ sec

TYPICAL COLLECTOR CHARACTERISTICS

