2N3733 (SILICON)

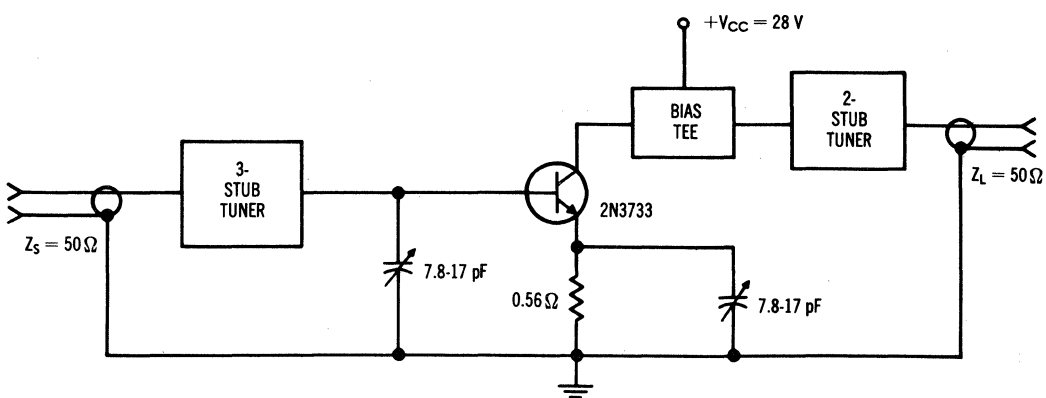
CASE 36
(TO-60)
stud isolated from case

NPN silicon transistor designed for amplifier, frequency multiplier, and oscillator applications.

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	40	Vdc
Collector-Emitter Voltage ($V_{EB(off)}$ = 1.5 Vdc)	V_{CEV}	65	Vdc
Collector-Base Voltage	V_{CB}	65	Vdc
Emitter-Base Voltage	V_{EB}	4.0	Vdc
Collector Current	I_C	3.0	Amps
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	23 0.13	Watts W/°C
Operating and Storage Junction Temperature Range	T_J,T_{stg}	-65 to +200	°C

FIGURE 1 — 400-MHz TEST CIRCUIT



ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (1) (I_C = 0 to 200 mAdc, I_B = 0)	BV_{CEO}	40	-	-	Vdc
Collector-Emitter Breakdown Voltage (1) (I_C = 0 to 200 mAdc, $V_{EB(off)}$ = 1.5 Vdc)	BV_{CEV}	65	-	-	Vdc
Collector-Base Breakdown Voltage (I_C = 0.5 mAdc, I_E = 0)	BV_{CBO}	65	-	-	Vdc
Emitter-Base Breakdown Voltage (I_E = 0.25 mAdc, I_C = 0)	BV_{EBO}	4.0	-	-	Vdc
Collector Cutoff Current (V_{CE} = 30 Vdc, I_B = 0)	I_{CEO}	-	-	0.25	mAdc
ON CHARACTERISTICS					
Collector-Emitter Saturation Voltage (I_C = 500 mAdc, I_B = 100 mAdc)	$V_{CE(sat)}$	-	-	1.0	Vdc
DYNAMIC CHARACTERISTICS					
Current-Gain — Bandwidth Product (I_C = 150 mAdc, V_{CE} = 28 Vdc, f = 100 MHz)	f_T	-	400	-	MHz
Output Capacitance (V_{CB} = 30 Vdc, I_E = 0)	C_{ob}	-	-	20	pF
Collector-Case Capacitance	C_s	-	-	6.0	pF
Base-Spreading Resistance (I_C = 250 mAdc, V_{CE} = 28 Vdc, f = 200 MHz)	$r_{bb'}$	-	6.5	-	Ohms
FUNCTIONAL TEST					
Power Output	V_{CE} = 28 Vdc, P_{in} = 4 W, f = 260 MHz	P_{out}	-	14.5	-	Watts
Efficiency		η	-	60	-	%
Power Output	V_{CE} = 28 Vdc, P_{in} = 4 W, f = 400 MHz (Figure 1)	P_{out}	10	-	-	Watts
Efficiency		η	45	-	-	%

(1) Pulsed through a 25 mH inductor; duty cycle = 50%