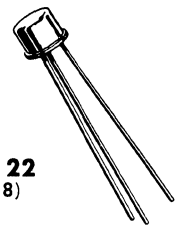
2N2273 (GERMANIUM)
2N2273 JAN



CASE 22
(TO-18)

Collector connected to case

High-frequency germanium PNP transistor, designed for military and high-reliability industrial as well as commercial VHF amplifier applications.

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

Rating	Symbol	Value	Unit
Collector-Base Voltage	V_{CB}	25	Volts
Collector-Emitter Voltage	V_{CES}	25	Volts
Collector-Emitter Voltage	V_{CEO}	15	Volts
Emitter-Base Voltage	V_{EB}	1.0	Volt
Collector Current	I_C	100	mA
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	150 2.0	mW mW/°C
Junction Operating & Storage Temperature Range	T_J, T_{stg}	-65 to +100	°C

TABLE I — GROUP A INSPECTION (T_A = 25°C unless otherwise noted)

BOTH TYPES (LTPD applies to JAN 2N2273 only)

Examination or Test	MIL-STD-750 Method	Symbol	Limits Min	Limits Max	Unit	LTPD
SUBGROUP 1						
Visual and Mechanical Examination	2071	—	—	—	—	5
SUBGROUP 2						
Collector-Base Cutoff Current (V_{CB} = 12 Vdc, I_E = 0)	3036 Condition D	I_{CBO}	—	10	μAdc	5
Collector-Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	3001 Condition D	BV_{CBO}	25	—	Vdc	
Emitter-Base Breakdown Voltage (I_E = 100 μAdc, I_C = 0)	3026 Condition D	BV_{EBO}	1.0	—	Vdc	
Forward Current Transfer Ratio* (I_C = 1 mAdc, V_{CE} = 10 Vdc)	3076	h_{FE}*	20	75	—	
Collector-Emitter Breakdown Voltage (I_C = 200 μAdc, V_{BE} = 0)	3011 Condition C	BV_{CES}	25	—	Vdc	
Small-Signal Forward Current Transfer Ratio (I_C = 1 mAdc, V_{CE} = 6 Vdc, f = 10 MHz)	3306	h_{fe}	20	28	dB	

* Applies to MIL unit only

TABLE I — GROUP A INSPECTION (continued)

Examination or Test	MIL-STD-750 Method	Symbol	Limits Min	Limits Max	Unit	LTPD
SUBGROUP 3						
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 1 MHz)	3236	C_{ob}	—	3.5	pF	10
Base Spreading Resistance (I_C = 1 mAdc, V_{CE} = 10 Vdc, f = 250 MHz)	3266	r_b'	—	250	ohms	
Small-Signal Forward Current Transfer Ratio* (I_C = 1 mAdc, V_{CE} = 6 Vdc, f = 100 MHz)	3306	h_{fe}*	2.5	—	—	
Noise Figure* (V_{CB} = 10 Vdc, I_C = 1 mAdc, f = 10 MHz, R_G = 50 ohms)	3246	NF*	—	12	dB	
STANDARD UNIT ONLY						
Emitter-Base Leakage Current (V_{EB} = 0.5 Vdc, I_C = 0)		I_{EBO}	—	100	μAdc	
Collector-Emitter Breakdown Voltage (I_C = 100 μAdc, I_E = 0)		BV_{CEO}	15	—	Vdc	
Forward Current Transfer Ratio (I_C = 1 mAdc, V_{CE} = 10 Vdc)		h_{FE}	20	150	—	—
Real Part of Small-Signal Short-Circuit Input Impedance (V_{CE} = 10 Vdc, I_C = 1 mAdc, f = 250 MHz)		$Re(h_{ie})$	50	250	ohms	
Power Gain (See Figure 1) (V_{CE} = 9 Vdc, I_C = 1 mAdc, f = 30 MHz)		G_{PE}	10	30	dB	

* Applies to MIL unit only

TABLE II — GROUP B INSPECTION — JAN 2N2273 only

(T_A = 25°C unless otherwise noted)

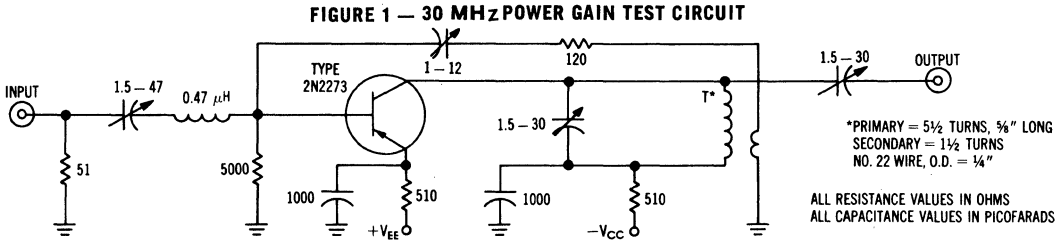
Examination or Test	MIL-STD-750 Method	Symbol	Limits Min	Limits Max	Unit	LTPD
SUBGROUP 1						
Physical Dimensions	2066	—	—	—	—	10
SUBGROUP 2						
Solderability	2026	—	—	—	—	10
Temperature Cycling (T_{high} = 100^{+3}_{-0}°C; 10 cycles)	1051 Condition B	—	—	—	—	
Thermal Shock (Glass Strain)	1056 Condition A	—	—	—	—	
Moisture Resistance	1021	—	—	—	—	
End Points: (Subgroups 2, 3, 5, 6, 7)						
Collector-Base Cutoff Current (V_{CB} = 12 Vdc, I_E = 0)	3036 Condition D	I_{CBO}	—	20	μAdc	
DC Forward Current Transfer Ratio (I_C = 1 mAdc, V_{CE} = 10 Vdc)	3076	h_{FE}	15	—	—	

TABLE II — GROUP B INSPECTION (continued)

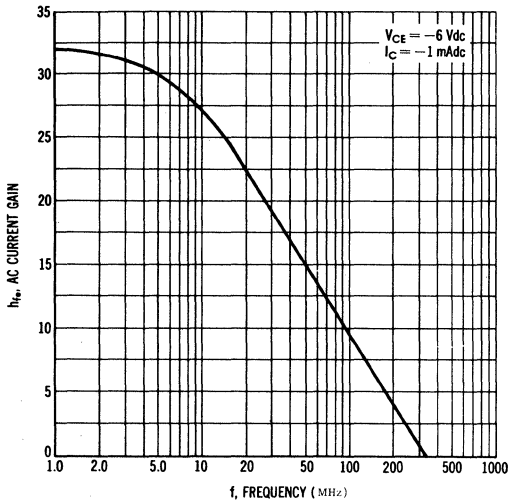
Examination or Test	MIL-STD-750 Method	Symbol	Limits Min	Limits Max	Unit	LTPD
SUBGROUP 3						
Shock (500 G, 1 msec, 5 blows each orientation: Y_1, Y_2, X_1 and Z_1)	2016 Nonoperating	—	—	—	—	10
Vibration, Variable Frequency (10 G)	2056	—	—	—	—	
Constant Accelerating (10,000 G)	2006	—	—	—	—	
End Points: Same as Subgroup 2						
SUBGROUP 4						
Lead Fatigue (Note 1)	2036 Condition E	—	—	—	—	10
SUBGROUP 5						
High Temperature Operation (Note 2) ($T_A = 70^{+3}_{-0}°C$)		—	—	—	—	10
Collector-Base Cutoff Current (V_{CB} = 12 Vdc, I_E = 0)	3036	I_{CBO}	—	100	μAdc	
Low Temperature Operation (Note 2) ($T_A = -55±3°C$)		—	—	—	—	
Forward Current Transfer Ratio (V_{CE} = 10 Vdc, I_C = 1 mAdc)	3076	h_{FE}	8.0	—	—	
Salt Atmosphere (Corrosion)	1041	—	—	—	—	
End Points: Same as Subgroup 2						
SUBGROUP 6						
High Temperature Life ($T_A = 100^{+5}_{-0}°C$)	1031 (Nonoperating)	—	—	—	—	λ = 10
End Points: Same as Subgroup 2						
SUBGROUP 7						
Steady State Operation Life (V_{CB} = 10 Vdc, P_C = 60 mW, $T_A = 55^{+3}_{-0}°C$)	1026	—	—	—	—	λ = 10
End Points: Same as Subgroup 2						

Note 1. Rejects from prior electrical tests from the same lot may be used for this test.
Note 2. Test measurement shall be made after thermal equilibrium has been reached at the temperature specified.

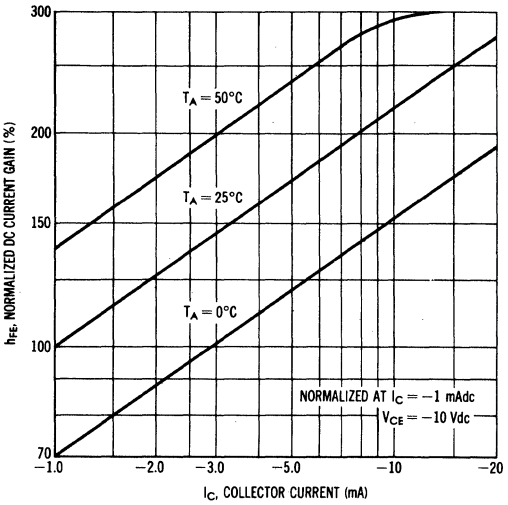
FIGURE 1 — 30 MHz POWER GAIN TEST CIRCUIT



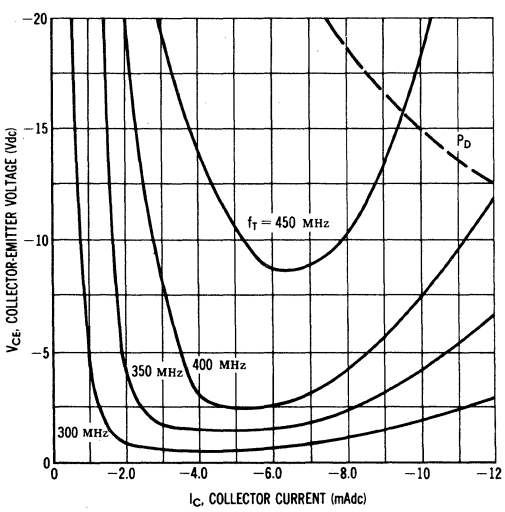
AC CURRENT GAIN versus FREQUENCY



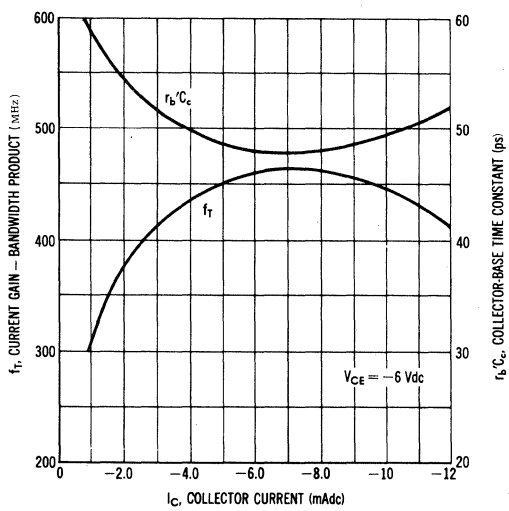
VARIATION IN DC GAIN versus COLLECTOR CURRENT



CONTOURS OF CURRENT GAIN — BANDWIDTH PRODUCT



f_T AND $r_b'C_c$ versus COLLECTOR CURRENT



2N2285 thru 2N2287

For Specifications, See 2N1651 Data.