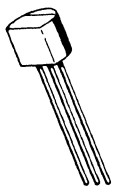
2N4125 (SILICON)
2N4126



CASE 29 (1)
(TO-92)

PNP silicon transistors designed for general purpose switching and amplifier applications and for complementary circuitry with NPN types 2N4123 and 2N4124. Features one-piece, injection-molded plastic package for high reliability.

MAXIMUM RATINGS

Rating	Symbol	2N4125	2N4126	Unit
Collector-Emitter Voltage	V_{CEO}	30	25	Vdc
Collector-Base Voltage	V_{CB}	30	25	Vdc
Emitter-Base Voltage	V_{EB}	4.0		Vdc
Collector Current	I_C	200		mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	350 2.73		mW mW/°C
Operating and Storage Junction Temperature Range	T_J,T_{stg}	-55 to +150		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	θ_{JA}	0.357	°C/mW

FIGURE 1 — CAPACITANCE

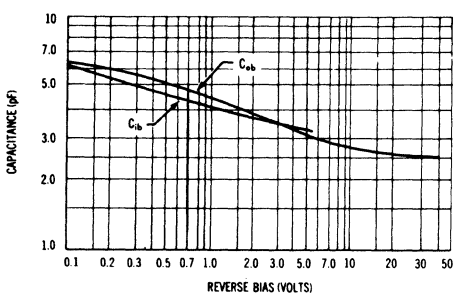
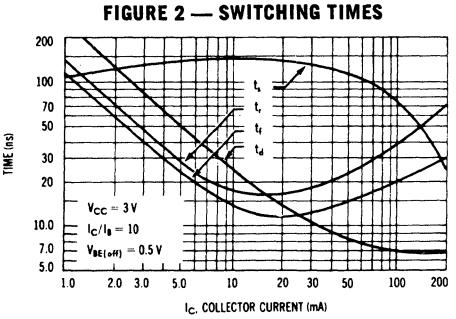


FIGURE 2 — SWITCHING TIMES



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

Characteristic		Fig. No.	Symbol	Min	Max	Unit
OFF CHARACTERISTICS						
Collector-Emitter Breakdown Voltage[1] (I_C = 1 mAdc, I_E = 0)	2N4125 2N4126		BV_{CEO}	30 25	– –	Vdc
Collector-Base Breakdown Voltage (I_C = 10 μAdc, I_E = 0)	2N4125 2N4126		BV_{CBO}	30 25	– –	Vdc
Emitter-Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)			BV_{EBO}	4.0	–	Vdc
Collector Cutoff Current (V_{CB} = 20 Vdc, I_E = 0)			I_{CBO}	–	50	nAdc
Emitter Cutoff Current (V_{BE} = 3 Vdc, I_C = 0)			I_{EBO}	–	50	nAdc
ON CHARACTERISTICS						
DC Current Gain[1] (I_C = 2 mAdc, V_{CE} = 1 Vdc)	2N4125 2N4126	9	h_{FE}	50 120	150 360	–
(I_C = 50 mAdc, V_{CE} = 1 Vdc)	2N4125 2N4126			25 60	– –	
Collector-Emitter Saturation Voltage[1] (I_C = 50 mAdc, I_B = 5 mAdc)		10, 11	$V_{CE(sat)}$	–	0.4	Vdc
Base-Emitter Saturation Voltage[1] (I_C = 50 mAdc, I_B = 5 mAdc)		11	$V_{BE(sat)}$	–	0.95	Vdc
SMALL SIGNAL CHARACTERISTICS						
High-Frequency Current Gain (I_C = 10 mAdc, V_{CE} = 20 Vdc, f = 100 MHz)	2N4125 2N4126		$\lvert h_{fe} \rvert$	2.0 2.5	– –	–
Current-Gain – Bandwidth Product (I_C = 10 mAdc, V_{CE} = 20 Vdc, f = 100 MHz)	2N4125 2N4126		f_T	200 250	– –	MHz
Output Capacitance (V_{CB} = 5 Vdc, I_E = 0, f = 100 kHz)		1	C_{ob}	–	4.5	pF
Input Capacitance (V_{BE} = 0.5 Vdc, I_C = 0, f = 100 kHz)		1	C_{ib}	–	10	pF
Small-Signal Current Gain (I_C = 2 mAdc, V_{CE} = 1 Vdc, f = 1 kHz)	2N4125 2N4126	5	h_{fe}	50 120	200 480	–
Noise Figure (I_C = 100 μAdc, V_{CE} = 5 Vdc, R_S = 1 k ohm, Noise Bandwidth = 10 Hz to 15.7 kHz)	2N4125 2N4126	3, 4	NF	– –	5.0 4.0	dB

SWITCHING CHARACTERISTICS

Characteristic		Fig. No.	Symbol	Typ	Unit
Delay Time	V_{CC} = 3 Vdc, $V_{BE(off)}$ = 0.5 Vdc,	2	t_d	25	ns
Rise Time	I_C = 10 mAdc, I_{B1} = 1 mAdc	2	t_r	18	ns
Storage Time	V_{CC} = 3 Vdc, I_C = 10 mAdc,	2	t_s	140	ns
Fall Time	I_{B1} = I_{B2} = 1 mAdc	2	t_f	15	ns

[1] Pulse Test: Pulse Width = 300 μsec, Duty Cycle = 2%

AUDIO SMALL SIGNAL CHARACTERISTICS

NOISE FIGURE

V_{CE} = 5 Vdc, T_A = 25°C

FIGURE 3 — FREQUENCY VARIATIONS

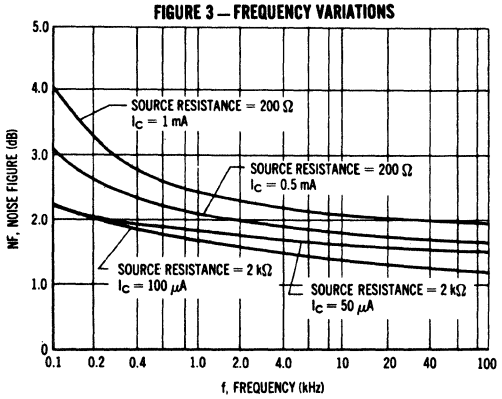
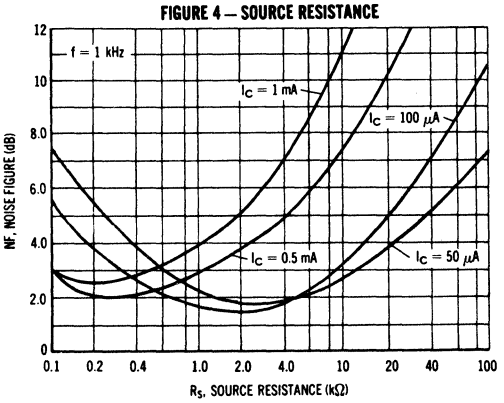


FIGURE 4 — SOURCE RESISTANCE



h PARAMETERS

V_{CE} = 10 V, f = 1 kHz, T_A = 25°C

FIGURE 5 — CURRENT GAIN

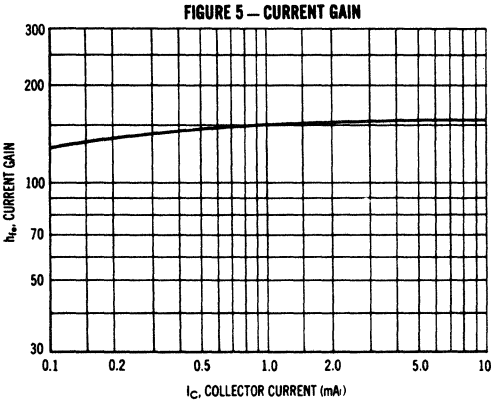


FIGURE 6 — OUTPUT ADMITTANCE

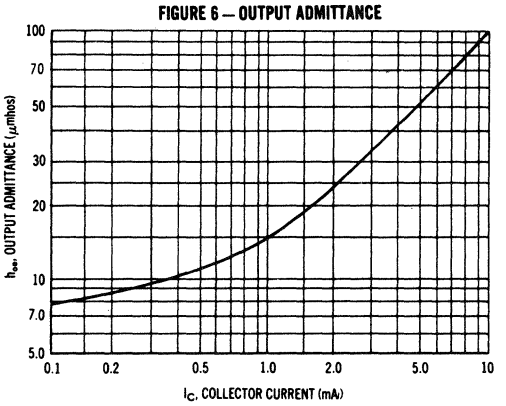


FIGURE 7 — INPUT IMPEDANCE

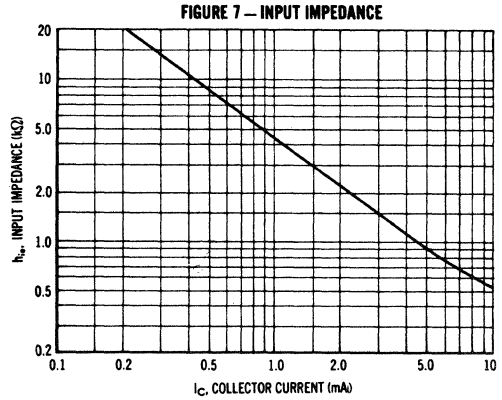
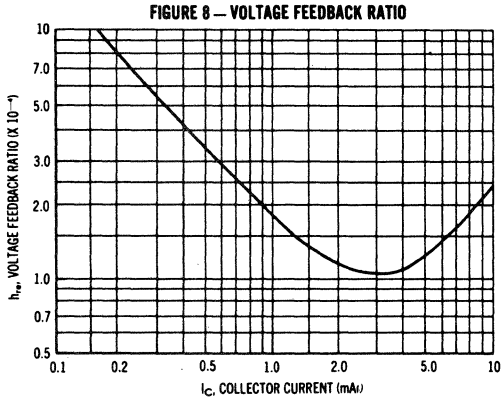


FIGURE 8 — VOLTAGE FEEDBACK RATIO



STATIC CHARACTERISTICS

FIGURE 9 — NORMALIZED CURRENT GAIN

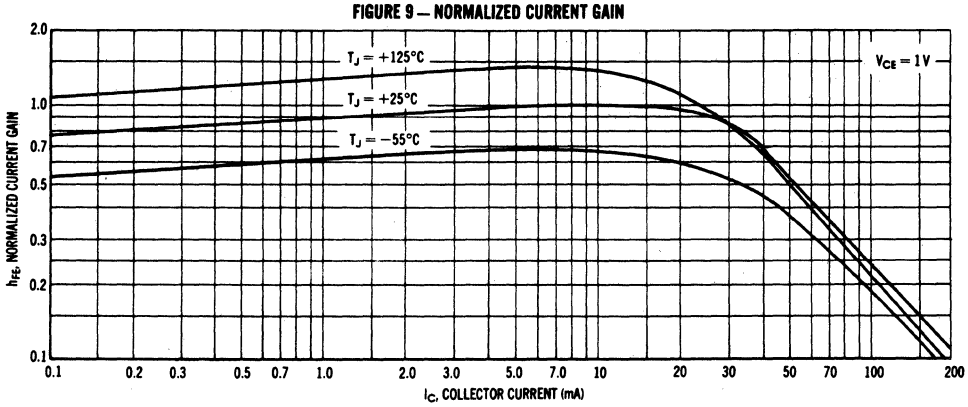


FIGURE 10 — COLLECTOR SATURATION REGION

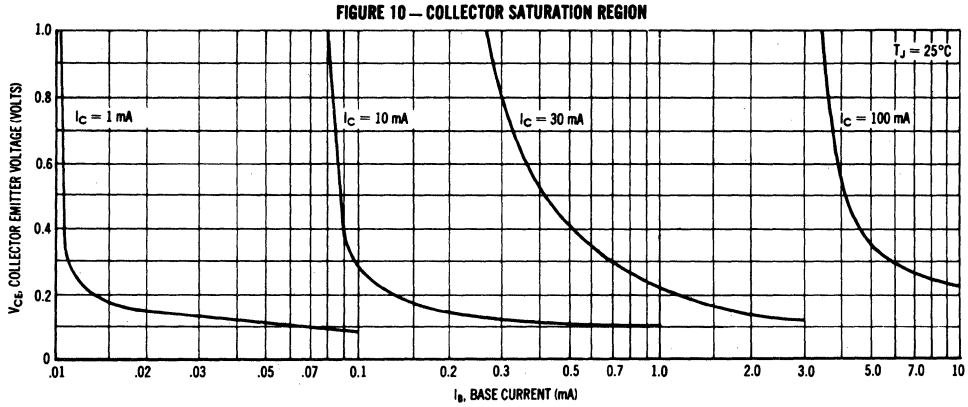


FIGURE 11 — "ON" VOLTAGES

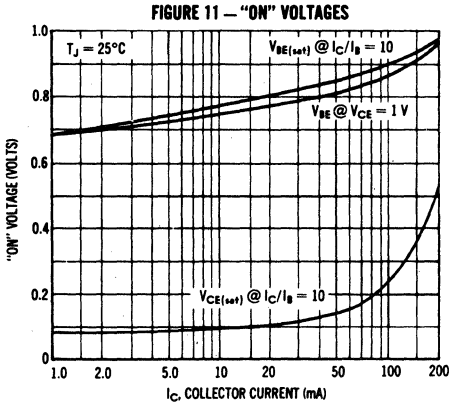


FIGURE 12 — TEMPERATURE COEFFICIENTS