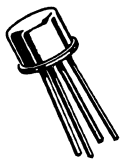
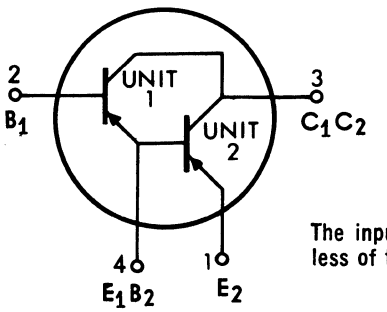
2N4974 (SILICON)
2N4975



CASE 34A
(TO-12)

PNP silicon annular darlington amplifiers contain two PNP silicon annular transistors connected as a darlington amplifier.



The input unit is identified as Unit 1 regardless of terminal numbering.

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

Numerical subscripts refer to unit number

Rating	Symbol	Value	Unit
Collector-Emitter Voltage (Base 1 and Base 2 open)	V_{CE2}	30	Vdc
Collector-Base Voltage	V_{CB1}	40	Vdc
Emitter-Base Voltage	V_{E2B1}	10	Vdc
Collector Current — Continuous	I_C	1.0	Adc
Total Device Dissipation @T_A = 25°C Derate above 25°C	P_D	0.8 4.57	Watt mW/°C
Total Device Dissipation @T_C = 25°C Derate above 25°C	P_D	2.5 14.3	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Typ	Unit
Thermal Resistance, Junction to Case Output Device Driver Device	θ_{JC}	 60 85	°C/W
Thermal Resistance, Junction to Junction	θ_{JJ}	30	°C/W

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

Numerical subscripts refer to unit number, lead 4 open unless otherwise noted.

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage [1] (I_C = 10 mAdc, E_2B_1 termination open)	BV_{CE2}	30	40	-	Vdc
Collector-Base Breakdown Voltage (I_C = 10 μAdc)	BV_{CB1O}	40	50	-	Vdc
Emitter-Base Breakdown Voltage (I_{B1} = 10 μAdc)	BV_{E2B1O}	10	12.5	-	Vdc
Collector Cutoff Current (V_{CB1} = 30 Vdc)	I_{CB1O}	-	0.5	10	nAdc
Emitter Cutoff Current (V_{E2B1} = 5.0 Vdc)	I_{E2B1O}	-	0.15	10	nAdc
ON CHARACTERISTICS					
DC Current Gain	h_{FE}				-
(I_C = 1.0 μAdc, V_{CE2} = 5.0 Vdc) 2N4974		5,000	9,000	-	
2N4975		1,000	4,000	-	
(I_C = 1.0 μAdc, V_{CE2} = 5.0 Vdc, T_A = -55°C) 2N4974		-	2,000	-	
2N4975		-	1,000	-	
(I_C = 10 μAdc, V_{CE2} = 5.0 Vdc) 2N4974		10,000	15,000	-	
2N4975		5,000	9,000		
(I_C = 10 μAdc, V_{CE2} = 5.0 Vdc, T_A = -55°C) 2N4974		-	3,500	-	
2N4975		-	2,000	-	
(I_C = 100 μAdc, V_{CE2} = 5.0 Vdc) 2N4974		20,000	30,000	-	
2N4975		10,000	20,000	-	
(I_C = 1.0 mAdc, V_{CE2} = 5.0 Vdc) 2N4974		25,000	50,000	-	
2N4975		15,000	30,000		
(I_C = 10 mAdc, V_{CE2} = 5.0 Vdc)* 2N4974		30,000	60,000	150,000	
2N4975		15,000	30,000	75,000	
(I_C = 10 mAdc, V_{CE2} = 5.0 Vdc, T_A = -55°C) [1] 2N4974		-	15,000	-	
2N4975		-	10,000	-	
(I_C = 100 mAdc, V_{CE2} = 5.0 Vdc)* 2N4974		25,000	50,000	-	
2N4975		15,000	30,000	-	
(I_C = 500 mAdc, V_{CE2} = 5.0 Vdc)* 2N4974		15,000	25,000	-	
2N4975		5,000	10,000	-	
(I_C = 1.0 Adc, V_{CE2} = 5.0 Vdc)* 2N4974		2,000	4,000	-	
2N4975		1,000	2,000	-	
Collector-Emitter Saturation Voltage [1] (I_C = 500 mAdc, I_{B1} = 1.0 mAdc)	$V_{CE2(sat)}$	-	1.4	2.0	Vdc
Base-Emitter Voltage [1] (I_C = 500 mAdc, I_{B1} = 1.0 mAdc)	V_{B1E2}	-	2.0	2.7	Vdc
DYNAMIC CHARACTERISTICS					
Current-Gain — Bandwidth Product (I_C = 20 mAdc, V_{CE2} = 5.0 Vdc, f = 100 MHz)	f_T	175	275	-	MHz
Output Capacitance (V_{CB1} = 10 Vdc, I_{E2} = 0, f = 140 kHz)	C_{ob1}	-	4.0	8.0	pF
Small-Signal Current Gain (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc, f = 1.0 kHz)	h_{fe}				-
2N4974		25,000	-	-	
2N4975		15,000	-	-	
Noise Figure (I_C = 1.0 mAdc, V_{CB1} = 10 Vdc, R_S = 10 k ohms, BW = 15.7 kHz)	NF	-	3.0	6.0	dB

[1] Pulse Test: Pulse width ≤ 300 μs, duty cycle ≤ 2%