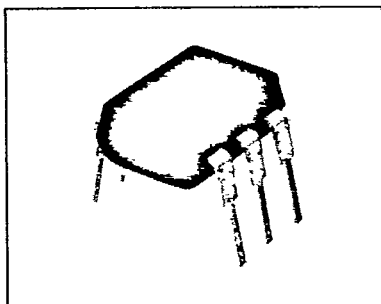


SIEMENS

T-41-83

4N25/4N26**4N27/4N28****PHOTOTRANSISTOR
OPTOCOUPLER****FEATURES**

- I/O Compatible with Integrated Circuits
- 0.5 pF Coupling Capacitance
- Underwriters Lab Approval #E52744
-  VDE Approvals 0883/6.80, 0804/1.83

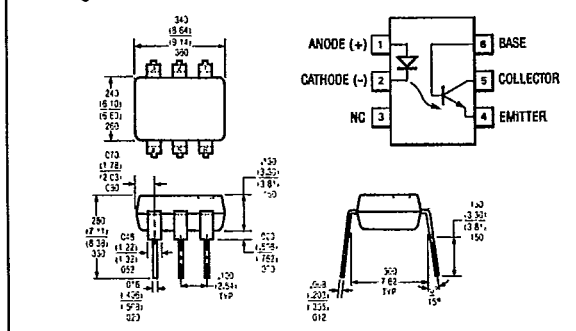
DESCRIPTION

The 4N25, 4N26, 4N27, and 4N28 are optically coupled isolated pairs, each consisting of a Gallium Arsenide infrared LED and a silicon NPN phototransistor. Signal information, including a DC level, can be transmitted by the device while maintaining a high degree of electrical isolation between input and output. They can be used to replace relays and transformers in many digital interface applications. They have excellent frequency response when used in analog applications.

Maximum Ratings

Gallium Arsenide LED	
Power Dissipation at 25°C	150 mW
Derate Linearly from 25°C	2.0 mW/°C
Continuous Forward Current	80 mA
Forward Current Peak (1μs pulse, 300 pps)	3.0 A
Peak Reverse Voltage	3.0 V
Detector (Silicon Phototransistor)	
Power Dissipation at 25°C	150 mW
Derate Linearly from 25°C	2.0 mW/°C
Collector-Emitter Breakdown Voltage (BV _{CEO})	30 V
Emitter-Collector Breakdown Voltage (BV _{ECO})	7.0 V
Collector-Base Breakdown Voltage (BV _{CBO})	70 V
Package	
Total Package Dissipation at 25°C Ambient (equal power in each element)	250 mW
Derate Linearly from 25°C	3.3 mW/°C
Isolation Test Voltage	3750 VAC/5300 VDC
in Accordance with DIN57883/6 80	3750 VAC/5300 VDC
Creepage Path	8 mm min.
Clearance Path	7 mm min.
Tracking Index According to VDE 0303	KB100/A
Storage Temperature	-55 to +150°C
Operating Temperature	-55 to +100°C
Lead Soldering Time at 260 °C	10 sec

Package Dimensions in Inches (mm)

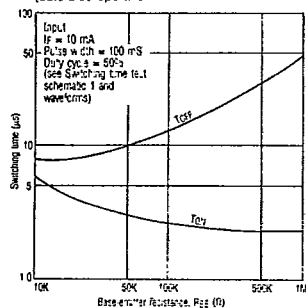
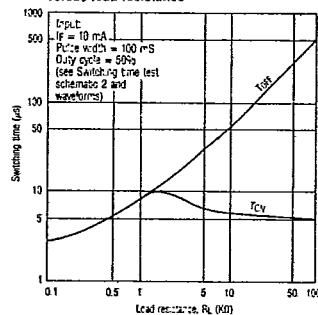
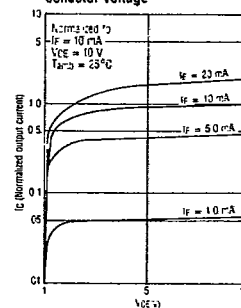
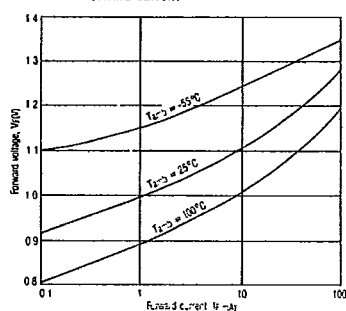
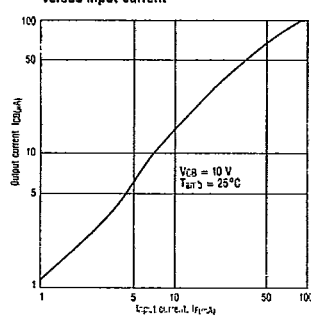
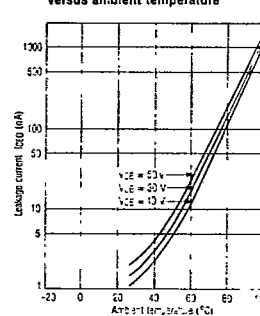
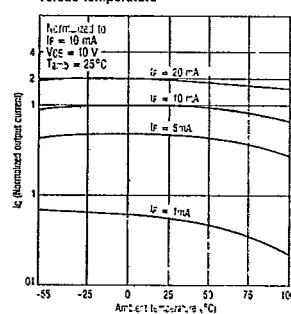
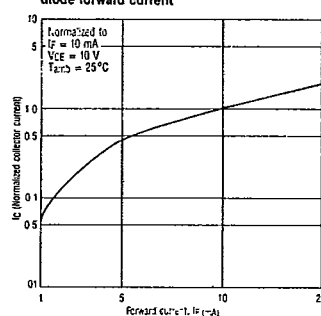
**Electrical Characteristics (T_{amb} = 25°C)**

Parameter	Min	Typ	Max	Unit	Test Condition
Gallium Arsenide LED					
*Forward Voltage		1.3	1.5	V	I _F = 50 mA
*Reverse Current		0.1	100	μA	V _R = 3.0 V
Capacitance			100	pF	V _R = 0
Phototransistor Detector					
I _{FE}			150		V _{CE} = 5.0 V
*BV _{CEO}	30			V	I _C = 1 mA
*BV _{ECO}	7			V	I _E = 100 μA
*BV _{CBO}	70			V	I _C = 100 μA
*I _{CEO} (dark)					
4N25,					V _{CE} = 10 V
4N26, 4N27	5	50	nA		(base open)
4N28	10	100	nA		V _{CB} = 10 V
*I _{CBO} (dark)	2	20	nA		(emitter open)
Collector-Emitter Capacitance		2		pF	V _{CE} = 0
Coupled Characteristics					
*DC Current Transfer Ratio					
4N25, 4N26	0.2	0.5			I _F = 10 mA,
					V _{CE} = 10 V
4N27, 4N28	0.1	0.3			I _F = 10 mA,
					V _{CE} = 10 V
Capacitance, Input to Output		0.5		pF	
Breakdown Voltage					
*4N25	2500			V	Peak, 60 Hz
*4N26, 4N27	1500			V	Peak, 60 Hz
*4N28	500			V	Peak, 60 Hz
UL Qualified for	7500			VDC	
*Resistance, Input to Output	100			GΩ	
Rise and Fall Times		2		μs	I _F = 10 mA,
					V _{CE} = 10 V
*Collector-Emitter Saturation Voltage			0.5	V	I _F = 50 mA,
					I _C = 2.0 mA

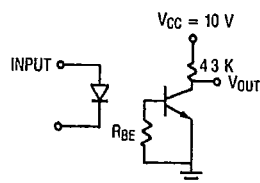
*Indicates JEDEC registered values

Optocouplers
(Optoisolators)

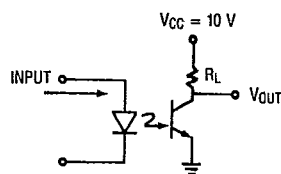
T-41-83

Typical switching characteristics
versus base resistance
(Saturated operation)Typical switching times
versus load resistanceCollector current versus
collector voltageTypical forward voltage
versus forward currentTypical output current (ICB)
versus input currentTypical leakage current
versus ambient temperatureOutput current
versus temperatureCollector current versus
diode forward current

Switching time test schematic and waveforms



Switching time test schematic 1



Switching time test schematic 2

