

4N22U
4N23U
4N24U

JAN, JANTX, AND JANTXV OPTOCOUPLEDERS



02/12/2020

Features:

- Certified to MIL-PRF-14500/486
- High reliability
- Base lead provided for conventional transistor biasing
- Very high gain, high voltage transistor
- Hermetically sealed for reliability and stability
- Stability over wide temperature range
- High voltage electrical isolation

Applications:

- Line Receivers
- Switchmode Power Supplies
- Signal ground isolation
- Process Control input/output isolation

DESCRIPTION

Very high gain optocoupler utilizing GaAIAs infrared LED optically coupled to an N-P-N silicon phototransistor packaged in a hermetically sealed 6-pin leadless chip carrier. The **4N22U**, **4N23U** and **4N24U** optocouplers can be supplied to customer specifications as well as JAN, JANTX, and JANTXV quality levels.

***ABSOLUTE MAXIMUM RATINGS**

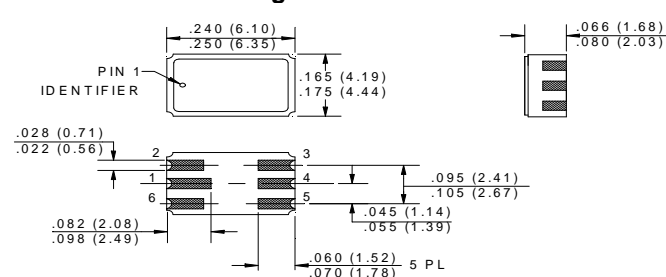
Input to Output Voltage.....	±1kV
Collector-Base Voltage.....	45V
Collector-Emitter Voltage (See Note 1).....	40V
Emitter-Base Voltage.....	7V
Input Diode Reverse Voltage.....	2V
Input Diode Continuous Forward Current at (or below) 65°C Free-Air Temperature (see note 2).....	40mA
Continuous Collector Current.....	50mA
Peak Diode Current (See Note 3).....	1A
Continuous Transistor Power Dissipation at (or below) 25°C Free-Air Temperature (see Note 4).....	300mW
Operating Free-Air Temperature Range.....	-55°C to +125°C
Storage Temperature.....	-65°C to +125°C
Lead Temperature (1/16" (1.6mm) from case for 10 seconds).....	240°C

Notes:

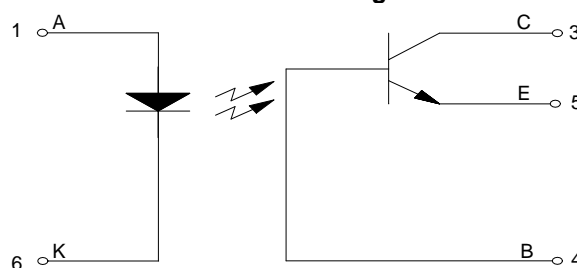
1. Derate linearly to 125°C free-air temperature at the rate of 0.67 mW/°C above 65°C.
2. Derate linearly to 125°C free-air temperature at the rate of 3 mW/°C above 25°C.

* JEDEC registered data

Package Dimensions



Schematic Diagram



02/12/2020

ELECTRICAL CHARACTERISTICS INPUT LED

T_A = 25°C Unless otherwise specified

PARAMETER	SYMBOL	MIN	MAX	UNITS	TEST CONDITIONS	NOTE
Input Diode Static Reverse Current	IR		100	µA	VR = 2V	
Input Diode Static Forward Voltage	VF	-55°C	0.9	1.7	IF = 10mA	
		+25°C	0.8	1.5		
		+100°C	0.7	1.3		

OUTPUT TRANSISTOR

T_A = 25°C Unless otherwise specified

PARAMETER	SYMBOL	MIN	MAX	UNITS	TEST CONDITIONS	NOTE
Collector-Base Breakdown Voltage	V(BR)CBO	45		V	IC = 100µA, IB = 0, IF = 0	
Collector-Emitter Breakdown Voltage	V(BR)CEO	40		V	IC = 1mA, IB = 0, IF = 0	
Emitter-Base Breakdown Voltage	V(BR)EBO	7		V	IC = 0, IE = 100µA, IF = 0	

COUPLED CHARACTERISTICS

T_A = 25°C Unless otherwise specified

PARAMETER	SYMBOL	MIN	MAX	UNITS	TEST CONDITIONS	NOTE
On State Collector Current	IC(ON)	4N22U	0.15	mA	VCE = 5V, IB = 0, IF = 2mA	
		4N23U	0.2			
		4N24U	0.4			
On State Collector Current	IC(ON)	4N22U	2.5	mA	VCE = 5V, IB = 0, IF = 10mA	
		4N23U	6.0			
		4N24U	10.0			
On State Collector Current	IC(ON)	4N22U	1.0	mA	VCE = 5V, IB = 0, IF = 10mA	
-55°C		4N23U	2.5			
		4N24U	4.0			
On State Collector Current	IC(ON)	4N22U	1.0	mA	VCE = 5V, IB = 0, IF = 10mA	
+100°C		4N23U	2.5			
		4N24U	4.0			
Off State Collector Current	IC(OFF)		100	nA	VCE = 20V, IB = 0, IF = 0mA	
Off State Collector Current	IC(OFF)		100	µA	VCE = 20V, IB = 0, IF = 0mA	
Collector-Emitter Saturation Voltage	VCE(SAT)		0.3	V	IC = 2.5mA, IB = 0, IF = 20mA	
	VCE(SAT)		0.3	V	IC = 5mA, IB = 0, IF = 20mA	
	VCE(SAT)		0.3	V	IC = 10mA, IB = 0, IF = 20mA	
Input to Output Resistance	RI-O	10 ¹¹			VIN-OUT = 1kV	1
Input to Output Capacitance	CI-O		5	pF	f = 1MHz, VIN-OUT = 0	1
Rise Time	tr		15	µs	VCC = 10V, IF = 10mA, RL = 100Ω	
	tr		15	µs		
	tr		20	µs		
Fall Time	tf		15	µs	VCC = 10V, IF = 10mA, RL = 100Ω	
	tf		15	µs		
	tf		20	µs		

NOTES:

- These parameters are measured between all phototransistor leads shorted together and with both input diode leads shorted together.

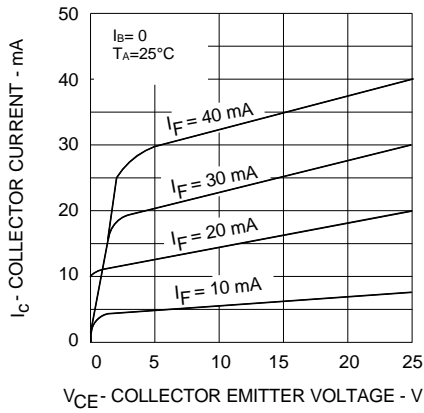
RECOMMENDED OPERATING CONDITIONS:

PARAMETER	SYMBOL	MIN	MAX	UNITS
Input Current, Low Level	IFL	0	1	µA
Input Current, High Level	IFH	2	10	mA
Supply Voltage	VCE	5	10	V

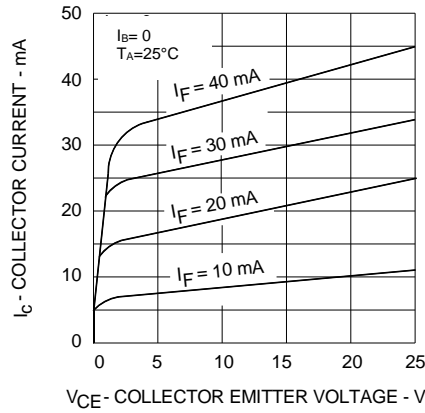
SELECTION GUIDE

JEDEC PART NUMBER	MICROPAC PART NUMBER	PART DESCRIPTION
JAN4N22U	66138-602	4N22U Optocoupler, JAN Screening level
JAN4N23U	66138-603	4N23U Optocoupler, JAN Screening level
JAN4N24U	66138-604	4N24U Optocoupler, JAN Screening level
JANTX4N22U	66138-702	4N22U Optocoupler, JANTX Screening level
JANTX4N23U	66138-703	4N23U Optocoupler, JANTX Screening level
JANTX4N24U	66138-704	4N24U Optocoupler, JANTX Screening level
JANTXV4N22U	66138-802	4N22U Optocoupler, JANTXV Screening level
JANTXV4N23	66138-803	4N23U Optocoupler, JANTXV Screening level
JANTXV4N24U	66138-804	4N24U Optocoupler, JANTXV Screening level

4N22U
COLLECTOR CURRENT
VS
COLLECTOR-EMITTER VOLTAGE



4N23U
COLLECTOR CURRENT
VS
COLLECTOR-EMITTER VOLTAGE



4N24U
COLLECTOR CURRENT
VS
COLLECTOR-EMITTER VOLTAGE

