



| | IAD112N | Units |
|---------------------|---------|-------|
| Load Voltage | 350 | V |
| Load Current | 100 | mA |
| Max R _{ON} | 35 | Ω |

Features

- 16 Pin Narrow SOIC Package
- Three Functions in One Package
- Bi-Directional Current Sensing
- Bi-Directional Current Switching
- 3750V_{RMS} Input/Output Isolation
- FCC Compatible
- No EMI/RFI Generation
- Machine Insertable, Wave Solderable
- Tape & Reel Versions Available

Applications

- Telecommunications
 - Telecom Switching
 - Tip/Ring Circuits
 - Modem Switching (Laptop, Notebook, Pocket Size)
 - Hookswitch
 - Dial Pulsing
 - Ground Start
 - Ringer Injection
- Instrumentation
 - Multiplexers
 - Data Acquisition
 - Electronic Switching
 - I/O Subsystems
 - Meters (Watt-Hour, Water, Gas)
- Medical Equipment-Patient/Equipment Isolation
- Security
- Aerospace
- Industrial Controls

Description

The IAD112N Multifunction Telecom switch combines a 350V Form A relay and two optocouplers in a single package. The relay uses optically coupled MOSFET technology to provide 1500V of input to output isolation. The efficient MOSFET switch and photovoltaic die use Clare's patented OptoMOS architecture. The optically coupled input uses highly efficient GaAIAs infrared LEDs. IAD112N's allow telecom circuit designers to combine three discrete functions in a single component. The IAD112N's small package uses less space than traditional discrete component solutions.

Approvals

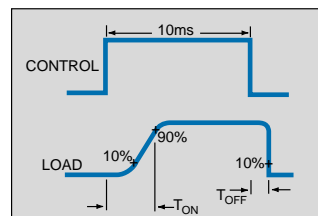
- UL Recognized: File Number E76270
- CSA Certified: File Number LR 43639-12
- VDE Compatible
- BSI Certified:
 - BS EN 60950:1992 (BS7002:1992) Certificate #:7969
 - BS EN 41003:1993 Certificate #:7969

Ordering Information

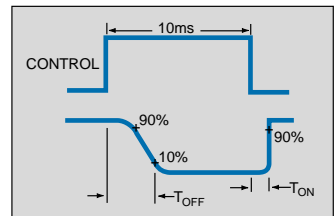
| Part # | Description |
|---------|----------------------------------|
| IAD112N | 16 Pin SOIC (Narrow) (50/Tube) |
| IAD112N | 16 Pin SOIC (Narrow) (1000/Reel) |

Pin Configuration

Switching Characteristics of Normally Open (Form A) Devices



Switching Characteristics of Normally Closed (Form B) Devices



Absolute Maximum Ratings (@ 25° C)

| Parameter | Min | Typ | Max | Units |
|--|------|-----|----------------|------------------|
| Total Package Dissipation | - | - | 1 ¹ | W |
| Isolation Voltage Input to Output | 3750 | - | - | V _{RMS} |
| Operational Temperature | -40 | - | +85 | °C |
| Storage Temperature | -40 | - | +125 | °C |
| Soldering Temperature (10 Seconds Max.) | - | - | +220 | °C |

¹ Above 25° derate linearly 1.67mw/°C

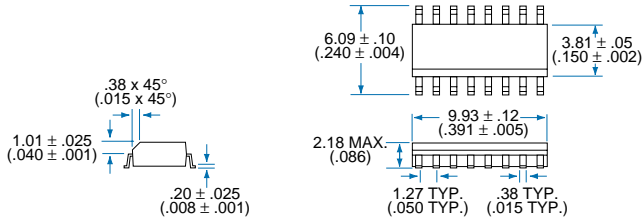
Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this data sheet is not implied. Exposure of the device to the absolute maximum ratings for an extended period may degrade the device and effect its reliability.

Electrical Characteristics

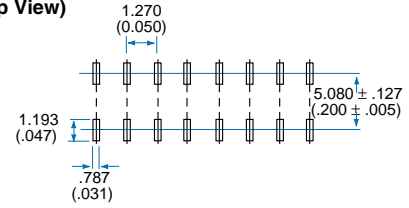
| Parameter | Conditions | Symbol | Min | Typ | Max | Units |
|---|--|-------------------|------|-----|-----|------------------|
| Relay Portion | | | | | | |
| Output Characteristics @ 25°C | | | | | | |
| Load Voltage (Peak) | I _L = 1μA | V _L | - | - | 350 | V |
| Load Current (Continuous) | - | I _L | - | - | 100 | mA |
| Peak Load Current | 10ms | I _{LPK} | - | - | 350 | mA |
| On-Resistance | I _L = 100mA | R _{ON} | - | - | 35 | Ω |
| Off-State Leakage Current | V _L = 350V; T _J = 25°C | I _{LEAK} | - | - | 1 | μA |
| Switching Speeds | | | | | | |
| Turn-On | I _F = 5mA, V _L = 10V | T _{ON} | - | - | 3 | ms |
| Turn-Off | I _F = 5mA, V _L = 10V | T _{OFF} | - | - | 3 | ms |
| Output Capacitance | V _L = 50V, f = 1MHz | - | - | 25 | - | pF |
| Relay Portion | | | | | | |
| Input Characteristics @ 25°C | | | | | | |
| Input Control Current | I _L = 100mA | I _F | 5 | - | 50 | mA |
| Input Dropout Current | I _L = 1mA | I _F | 0.4 | - | - | mA |
| Input Voltage Drop | I _F = 5mA | V _F | 0.9 | 1.2 | 1.4 | V |
| Reverse Input Voltage | - | V _R | - | - | 5 | V |
| Reverse Input Current | V _R = 5V | I _R | - | - | 10 | μA |
| Detector Portion | | | | | | |
| Output Characteristics @ 25°C | | | | | | |
| Phototransistor Blocking Voltage | I _C = 10μA | BV _{CEO} | 20 | 50 | - | V |
| Phototransistor Dark Current | V _{CE} = 5V, I _F = 0mA | I _{CEO} | - | 50 | 500 | nA |
| Saturation Voltage | I _C = 2mA, I _F = 16mA | V _{SAT} | - | 0.3 | 0.5 | V |
| Current Transfer Ratio | I _F = 6mA, V _{CE} = 0.5V | C _{TR} | 33 | - | - | % |
| Detector Portion | | | | | | |
| Input Characteristics @ 25°C | | | | | | |
| Input Control Current | I _C = 2mA, V _{CE} = 0.5V | I _F | 6 | 2 | - | mA |
| Input Voltage Drop | I _F = 5mA | I _{CEO} | 0.9 | 1.2 | 1.4 | V |
| Input Current (Detector must be off) | I _C = 1μA, V _{CE} = 5V | - | 5 | 25 | - | μA |
| Input to Output Capacitance | V _L = 50V, f = 1MHz | C _{I/O} | - | 3 | - | pF |
| Input to Output Isolation | - | V _{I/O} | 3750 | - | - | V _{RMS} |

Mechanical Dimensions

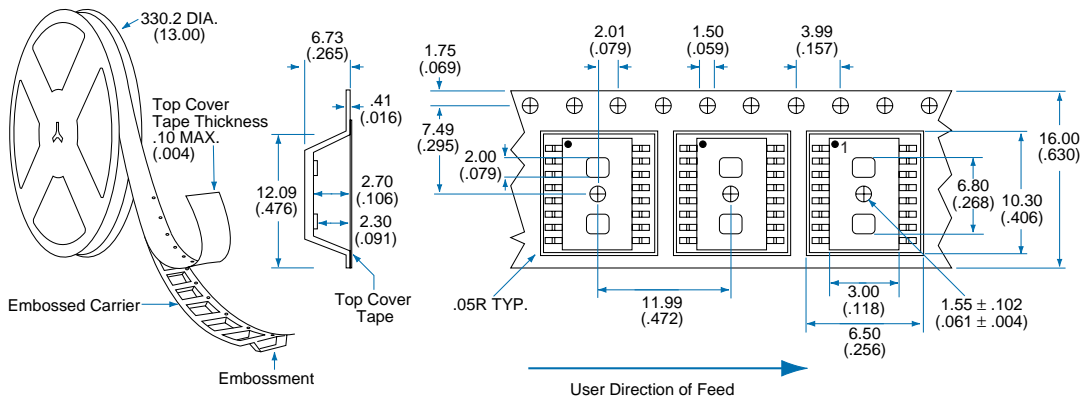
16 Pin SOIC Narrow ("N" Suffix)



PC Board Pattern (Top View)



Tape and Reel Packaging for 8 and 16 Pin Narrow SOIC Package



Dimensions
mm
(inches)



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Specification: DS-IAD112N-R2.0
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6/25/02

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