

**Radiation Hardended, 100V,
Single 10A, Solid State Relay**

RDHA710FR10A1NK

Product Summary

Part Number	Voltage	Current	Configuration	Rad Level
RDHA710FR10A1NK	100V	10A	Single DC	100K



Description

The RDHA710FR10A1NX is a radiation hardened Solid State Relay in a hermetic package. It is configured as a single pole single throw (SPST) normally open relay. This device is characterized for 100KRad (Si) total ionizing dose. The output MOSFET utilizes International Rectifier's R6 Technology.

Features:

- Total Dose Capability to 100KRad (Si)
- Optically Coupled
- 1000Vdc Input-to-Output and Pin-to-Case Isolation
- Hermetically Sealed Ceramic Package

Absolute Maximum Ratings @ T_j = 25°C (unless otherwise specified)

Parameter	Symbol	Value	Units
Output Withstand Voltage	V _{O (OFF)}	100	V
Output Current ⓘ	I _O	10	A
Peak Output Current ⓘ	I _{O pk}	20	
Input Forward Current	I _F	40	mA
Peak Input Forward Current (t ≤ 1.0ms)	I _{F pk}	100	
Peak Input Reverse Voltage (t ≤ 1.0ms)	V _R	5.0	V
Power Dissipation	P _{DISS}	4.0	W
Operating Temperature Range	T _J	-55 to +125	°C
Storage Temperature Range	T _S	-65 to +150	
Lead Temperature	T _L	300	
Weight		2.5 (Typ)	g

For notes, please refer to page 2

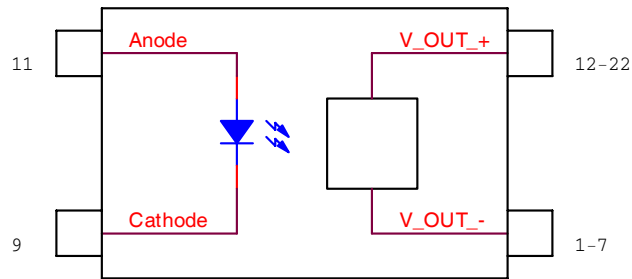
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Electrical Characteristics @ $-55^{\circ}\text{C} \leq T_C \leq +125^{\circ}\text{C}$ (Unless Otherwise Specified)

Parameter	Group A Subgroups	Test Conditions	Symbol	Min.	Typ.	Max.	Units
Output On-Resistance	1	$I_F = 10\text{mA}$, $I_O = 4.0\text{A}$	$R_{DS(ON)}$	--	0.012	0.020	Ω
	2			--	0.018	0.040	
Output Leakage Current	1	$I_F = 0$, $V_{OUT} = 100\text{V}$	I_O	--	--	10	μA
	2			--	--	25	
Input Forward Voltage	1, 2, 3	$I_F = 10\text{mA}$	V_F	1.0	--	1.85	V
Input-to-Output Leakage Current	1	$V_{I-O} = 1000\text{Vdc}$, $d_{well} = 5\text{s}$	I_{L-O}	--	--	1.0	μA
Pin-to-Case Leakage Current			I_{CASE}				
Turn-On Time ②③④	9, 10, 11	$I_F = 0$ to 10mA , $V_{BUS} = 28\text{V}$, $I_O = 2.5\text{A}$, Duty Cycle $\leq 1.0\%$	t_{on}	--	--	8.0	ms
Turn-Off Time ②③④	9, 10, 11	$I_F = 0$ to 10mA , $V_{BUS} = 28\text{V}$, $I_O = 2.5\text{A}$, Duty Cycle $\leq 1.0\%$	t_{off}	--	--	0.3	
Output Capacitance ①		$I_F = 0$, $V = +25\text{V}$, $f = 1\text{MHz}$, $T_C = 25^{\circ}\text{C}$	C_{OSS}	--	1600	--	pF
Thermal Resistance ①			R_{THJC}	--	--	5.0	$^{\circ}\text{C/W}$
MTBF		MIL-HDBK-217F, $T_C = 25^{\circ}\text{C}$		6.5	--	--	MHrs

Notes for Maximum Ratings and Electrical Characteristic Tables

- ① Specification is guaranteed by design.
- ② Optically coupled Solid State Relays (SSRs) have relatively slow turn-on and turn-off times. Care must be taken to insure that transient currents do not cause a violation of SOA. If transient conditions are present, IR recommends a complete simulation to be performed by the end user to ensure compliance with SOA requirements as specified in the IRHNA67160 data sheet.
- ③ Reference Fig. 2 for Switching Test Circuit and Fig. 3 for Switching Test Wave Form.
- ④ Turn-on Time (t_{on}) includes the turn-on delay and rise time; Turn-off Time (t_{off}) includes the turn-off delay and fall time.
- ⑤ While the SSR design meets the design requirements specified in MIL-PRF-38534, the end user is responsible for product derating, as applicable for the application.



Pins 8, 10, and 17 are no connects.

Fig 1: Block Diagram

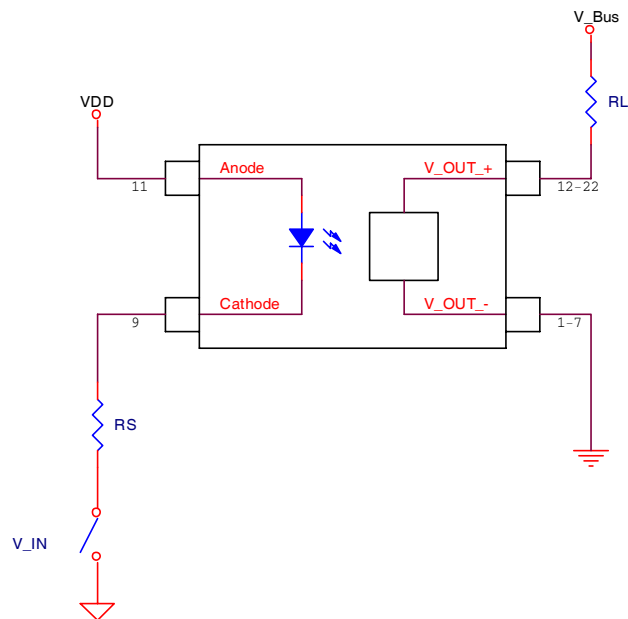


Fig 2: Switching Test Circuit

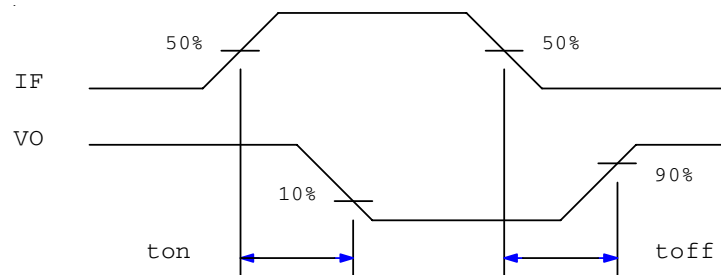
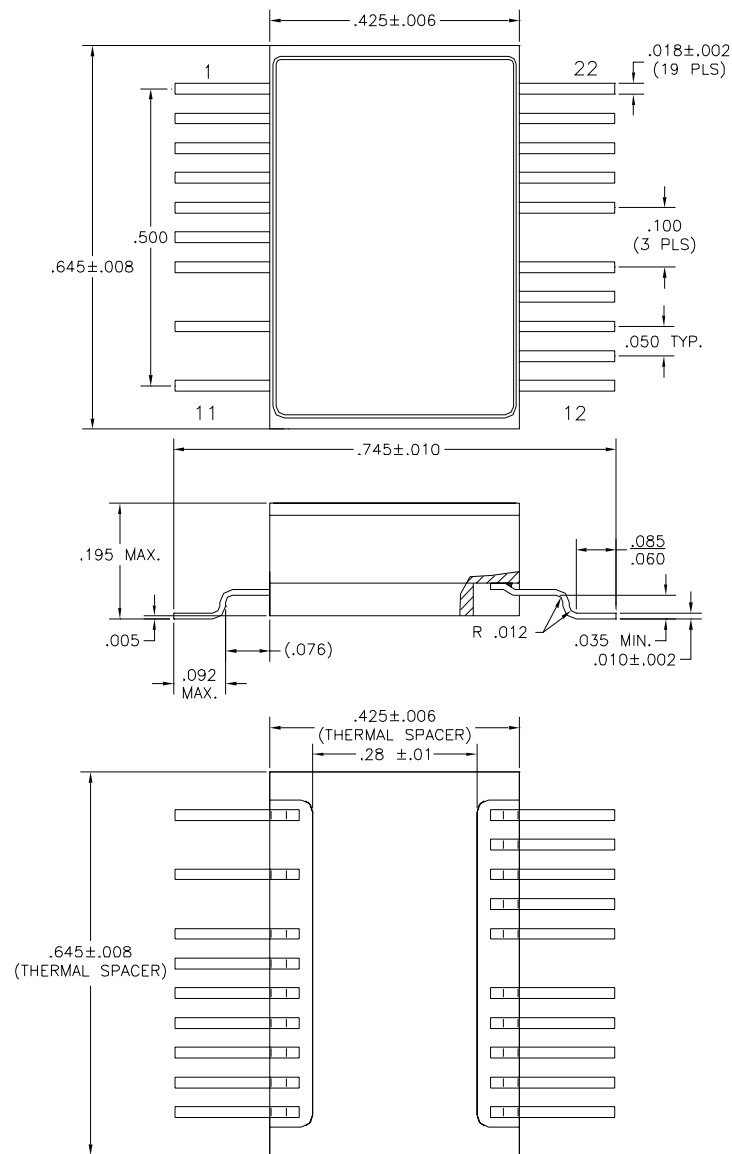


Fig 3: Switching Test Waveform

RDHA710FR10A1NK

International
IOR Rectifier

Case Outline and Dimensions - Package - 22 Pin Flat Pack



Notes

1. Dimensioning and Tolerancing per ASME Y14.5SM-1994
2. Controlling Dimension: Inch
3. Dimensions are shown in inches
4. Tolerances are ± 0.005 UOS

Part Numbering Nomenclature

