

FEATURES

- **FOR OPTICAL DAA CIRCUIT**
Solid State Relay
Photocoupler (AC Input Response)
Diode Bridge
Darlington Transistor
- **SMALL AND THIN PACKAGE**
16 Pin SOP = 255 mil, Pin Pitch = 1.27 mm,
Height = 2.1 mm
- **HIGH ISOLATION VOLTAGE**
BV = 1500 Vr.m.s.
- **AVAILABLE IN TAPE AND REEL**
PS7841-A15-F3, F4

DESCRIPTION

PS7841-A15 is a solid state relay for optical DAA (Data Access Arrangement) containing a diode bridge, MOSFET, photocoupler, Darlington transistor and LED.

This device is suitable for analog signal control applications such as notebook PCs, modem cards, voice telephone and fax machines.

APPLICATIONS

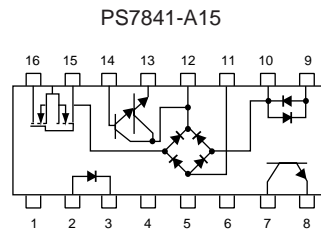
- **NOTEBOOK PC, PDA**
- **MODEM CARD**
- **TELEPHONE, FAX**
- **MODEM**

ELECTRICAL CHARACTERISTICS (TA = 25°C)

PART NUMBER		PS7841-A15				
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX	
Solid State Relay ¹	Diode					
	V _F	Forward Voltage, I _F = 10 mA	V	1.2	1.4	
	MOSFET					
	I _{OFF}	Off-State Leakage Current, V _L = 400 V, I _F = 0 mA	μA		1.0	
	Coupled					
	R _{ON}	On-State Resistance, I _F = 10 mA, I _L = 10 mA I _F = 10 mA, I _L = 120 mA	Ω		20 16	30 25
	t _{ON}	Turn-On Time, I _F = 10 mA, V _L = 5 V, R _L = 500 Ω, PW ≥ 10 mS	ms		0.3	1.0
	t _{OFF}	Turn-Off Time, I _F = 10 mA, V _L = 5 V, R _L = 500 Ω, PW ≥ 10 mS	ms		0.04	0.2
	Isolation Resistance					
	R _{in-out}	Isolation Resistance, V _{in-out} = 500 Vdc	Ω	10 ⁹		
Isolation Capacitance						
C _{i-o}	Isolation Capacitance, V = 0, f = 1 MHz	pF		1.1		

Notes:

1. Pin No. 2, 3, 15, 16.



ELECTRICAL CHARACTERISTICS (T_A = 25°C)

		PART NUMBER		PS7841-A15		
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX	
Photocoupler ¹	Diode					
	V _F	Forward Voltage, I _F = 10 mA	V		1.2	1.4
	Transistor					
	I _{CEO}	Collector to Emitter Dark Current, V _{CE} = 40 V, I _F = 0 mA	μA			0.1
	Coupler					
	CTR	Current Transfer Ratio (I _C /I _F), I _F = 5 mA, V _{CE} = 5 V	%	50	200	400
	V _{CE(SAT)}	Collector Saturation Voltage, I _F = 10 mA, I _C = 2 mA	V		0.1	0.3
	t _r	Rise Time, V _{CC} = 5 V, I _C = 2 mA, R _L = 100 Ω,	μs		3.0	
	t _f	Fall Time, V _{CC} = 5 V, I _C = 2 mA, R _L = 100 Ω,	μs		5.0	
	Isolation Resistance					
	R _{in-out}	Isolation Resistance, V _{in-out} = 500 VDC	Ω	10 ¹¹		
	Isolation Capacitance					
C _{I-O}	Isolation Capacitance, V = 0, f = 1 MHz	pF		0.4		
Diode Bridge ²	V _F	Forward Voltage, I _F = 120 mA	V		0.9	1.2
	I _R	Reverse Current, V _R = 100 V	μA			10
Darlington Transistor ³	V _{CE(SAT)}	Collector Saturation Voltage, I _C = 120 mA, I _B = 100 μA	V		0.9	1.2
	I _{CEX}	Collector to Emitter Dark Current, I _B = 0 mA, V _{CE} = 30 V	μA		0.01	1.0
	h _{FE}	DC Current Gain, I _C = 120 mA, V _{CE} = 10 V			10000	30000

Notes:

1. Pin No. 7, 8, 9, 10.
2. Pin No. 10, 11, 12, 15.
3. Pin No. 12,13, 14.

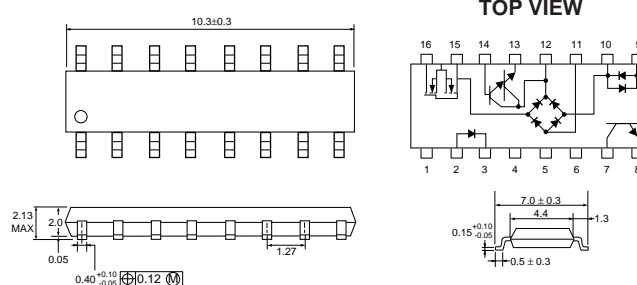
ABSOLUTE MAXIMUM RATINGS¹ (TA = 25°C)

	SYMBOLS	PARAMETERS	UNITS	RATINGS
Solid State Relay ²	Diode			
	VR	Reverse Voltage	V	5
	IF	Forward Current	mA	50
	PD	Power Dissipation	mW/ch	50
	IF (Peak)	Peak Forward Current ³	A	1
	MOSFET			
	VL	Break Down Voltage	V	400
	IL	Continuous Load Current	mA	120
	Pd	Power Dissipation	mW/ch	430
Photocoupler ⁴	Diode			
	IF	Forward Current	mA	50
	PD	Power Dissipation	mW/ch	50
	IF (Peak)	Peak Forward Current ³	A	1
	Transistor			
	VCEO	Collector to Emitter Voltage	V	40
IC	Collector Current	mA	80	
	PD	Power Dissipation	mW/ch	50
Diode Bridge ⁵	IF	Forward Current	mA	140
	VR	Reverse Voltage	V	100
Darlington Transistor ⁶	VCEO	Collector to Emitter Voltage	V	40
	IC	Collector Current	mA	120
	PD	Power Dissipation	mW/ch	500
	BV	Isolation Voltage ³	Vr.m.s.	1500
	PT	Total Power Dissipation	mW	650
	TSTG	Storage Temperature	°C	-40 to +100
	TA	Operating Ambient Temp.	°C	-40 to +80

RECOMMENDED OPERATING CONDITIONS (TA = 25 °C)

SYMBOL	PARAMETER	UNITS	MIN	TYP	MAX
IF	LED Operating Current	mA	2	10	20
VF	LED Off Voltage	V	0		0.5

OUTLINE DIMENSIONS (Units in mm)



- 1. NC
- 2. LED Anode
- 3. LED Cathode
- 4. NC
- 5. NC
- 6. NC
- 7. Tr. Collector
- 8. Tr. Emitter
- 9. LED Anode, Cathode
- 10. LED Cathode, Anode
- 11. Di. Input
- 12. Di. Output
- 13. Tr. Emitter (Darlington)
- 14. Tr. Base (Darlington)
- 15. MOSFET
- 16. MOSFET

Notes:

- Operation in excess of any one of these parameters may result in permanent damage.
- Pin No. 2, 3, 15, 16.
- PW = 100 μs, Duty Cycle = 1 %
- Pin No. 7, 8, 9, 10.
- Pin No. 10, 11, 12, 16.
- Pin No. 12, 13, 14.
- AC voltage for 1 minute at TA = 25 °C, RH = 60 % between input and output.

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