

DESCRIPTION

The IS280-4 quad channel optocoupler each channel consist of two infrared emitting diodes in reverse parallel connection optically coupled to an NPN silicon photo transistor.

This device belongs to Isocom Compact Range of Optocouplers.

FEATURES

- Half Pitch 1.27mm
- High AC Isolation voltage 3750V_{RMS}
- Wide Operating Temperature Range -55°C to 110°C
- Pb Free and RoHS Compliant
- UL Approval E91231 Model "AHP"

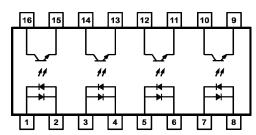
APPLICATIONS

- Hybrid Substrates with High Density Mounting
- Industrial System Controllers
- Measuring Instruments
- System Appliances

ORDER INFORMATION

Available in Tape and Reel
 IS280-4: 2000pcs per reel





1, 3, 5, 7 Anode / Cathode 9, 11, 13, 15 Emitter 2, 4, 6, 8 Cathode / Anode 10, 12, 14, 16 Collector

ABSOLUTE MAXIMUM RATINGS $(T_A = 25^{\circ}C)$

Stresses exceeding the absolute maximum ratings can cause permanent damage to the device.

Exposure to absolute maximum ratings for long periods of time can adversely affect reliability.

Input

Forward Current	±50mA
Power dissipation	65mW

Output

Collector to Emitter Voltage BV _{CEO}	80V
Emitter to Collector Voltage BV _{ECO}	7V
Collector Current	50mA
Junction Temperature	125°C
Power Dissipation	100mW

Total Package

Isolation Voltage	$3750V_{RMS}$
Total Power Dissipation	170mW
Operating Temperature	-55 to 110 °C
Storage Temperature	-55 to 150 °C
Lead Soldering Temperature (10s)	260°C

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ELECTRICAL CHARACTERISTICS ($T_A = 25^{\circ}C$ unless otherwise specified)

INPUT

Parameter	Symbol	Test Condition	Min	Тур.	Max	Unit
Forward Voltage	V_{F}	$I_F = \pm 20 \text{mA}$		1.2	1.4	V
Terminal Capacitance	C_{IN}	V = 0V, $f = 1KHz$		60		pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Тур.	Max	Unit
Collector-Emitter Breakdown Voltage	BV _{CEO}	$I_C = 0.1 \text{mA}, I_F = 0 \text{ mA}$	80			V
Emitter-Collector Breakdown Voltage	BV _{ECO}	$I_E = 10 \mu A, I_F = 0 mA$	7			V
Collector-Emitter Dark Current	I_{CEO}	$V_{CE} = 20V, I_F = 0mA$			100	nA

COUPLED

Parameter	Symbol	Test Condition	Min	Тур.	Max	Unit
Current transfer ratio	CTR	$I_F = \pm 1 \text{mA}, V_{CE} = 5 \text{V}$	20		400	%
Collector-Emitter Saturation Voltage	V _{CE(sat)}	$I_F = \pm 8mA, I_C = 2.4mA$			0.4	V
Floating Capacitance	C_{f}	$V_F = 0V$, $f = 1MHz$		0.8	1	pF
Output Rise Time	$t_{\rm r}$	$V_{CE} = 2V$ $Ic = \pm 2mA$		3	18	μs
Output Fall Time	t_{f}	$R_{\rm L} = 100\Omega$		4	18	

ISOLATION

Parameter	Symbol	Test Condition	Min	Тур.	Max	Unit
Isolation Voltage	V _{ISO}	R.H. = 40% to 60%, t = 1 min Note 1	3750			V_{RMS}
Input - Output Resistance	R _{I-O}	$V_{I-O} = 500 VDC$ R.H. = 40% to 60% Note 1	5x10 ¹⁰	1x10 ¹¹		Ω

Note 1 : Measured with input leads shorted together and output leads shorted together.



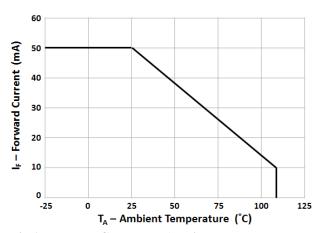


Fig 1 Forward Current vs Ambient Temperature

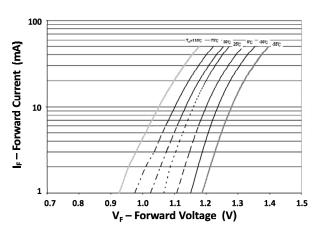


Fig 3 Forward Current vs Forward Voltage

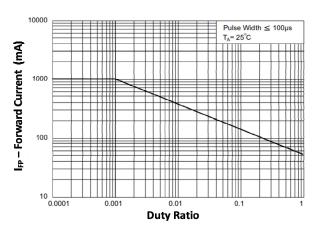


Fig 5 Pulsed Forward Current vs Duty Ratio

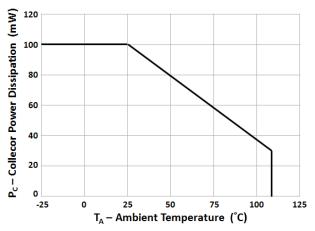


Fig 2 Output Power Dissipation vs Ambient Temperature

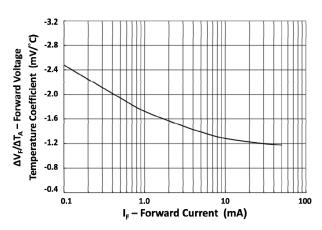


Fig 4 Forward Voltage Temperature Coefficient vs Forward Current

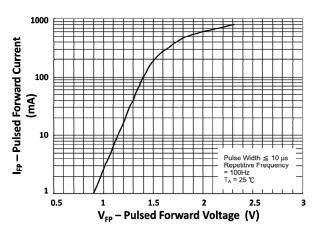


Fig 6 Pulsed Forward Current vs Pulsed Forward Voltage



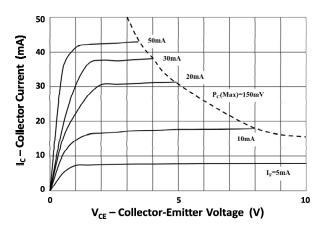


Fig 7 Collector Current vs Collector-Emitter Voltage (1)

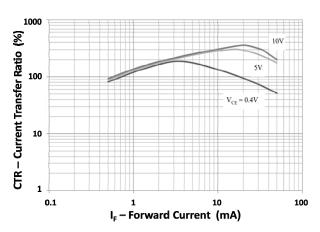


Fig 9 Current Transfer Ratio vs Forward Current

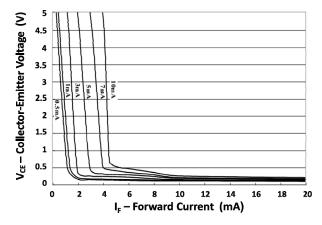


Fig 11 Collector-Emitter Voltage vs Forward Current

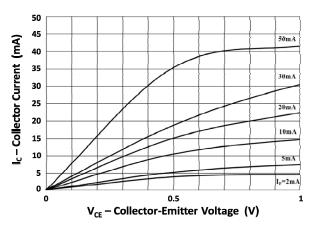


Fig 8 Collector Current vs Collector-Emitter Voltage (2)

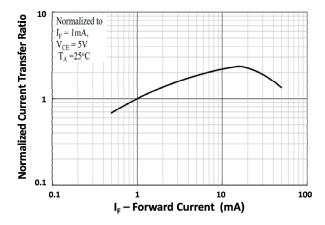


Fig 10 Normalized Current Transfer Ratio vs Forward Current

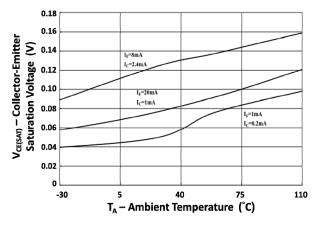


Fig 12 Collector-Emitter Saturation Voltage vs Ambient Temperature



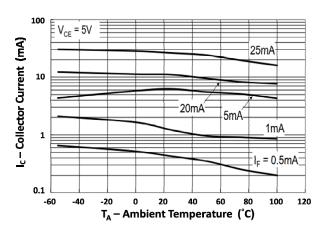


Fig 13 Collector Current vs Ambient Temperature

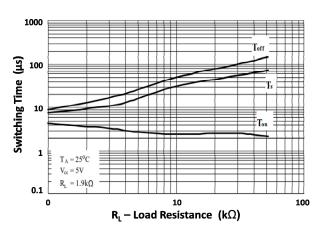


Fig 15 Switching Time vs Load Resistance

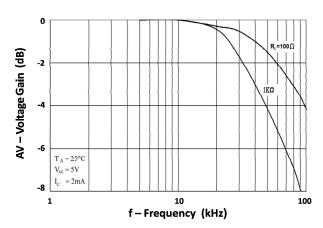


Fig 17 Frequency Response

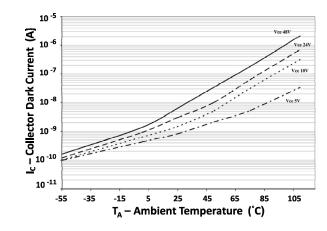


Fig 14 Collector Dark Current vs Ambient Temperature

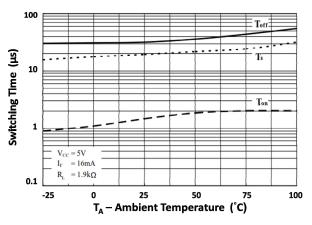
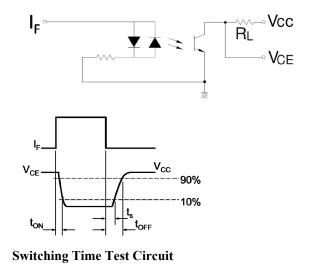


Fig 16 Switching Time vs Ambient Temperature

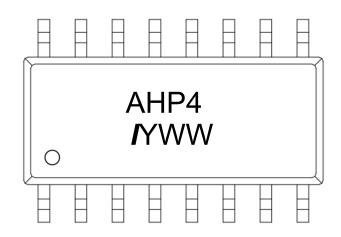




ORDER INFORMATION

IS280-4				
After PN	PN	Description	Packing quantity	
None	IS280-4	Surface Mount Tape & Reel	2000 pcs per reel	

DEVICE MARKING



AHP4 denotes IS280-4

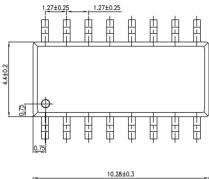
I denotes Isocom

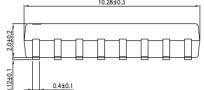
Y denotes 1 digit Year code

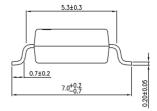
WW denotes 2 digit Week code



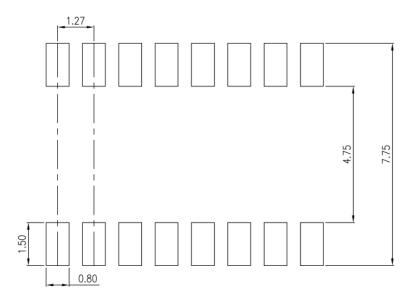
PACKAGE DIMENSIONS (mm)





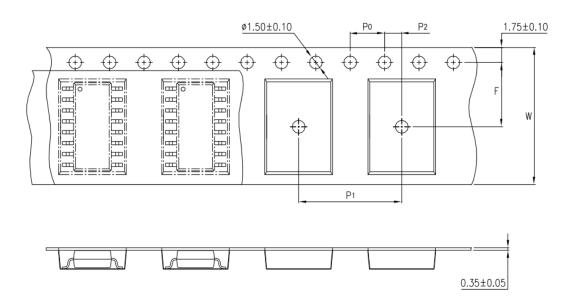


RECOMMENDED SOLDER PAD LAYOUT (mm)





TAPE AND REEL PACKAGING

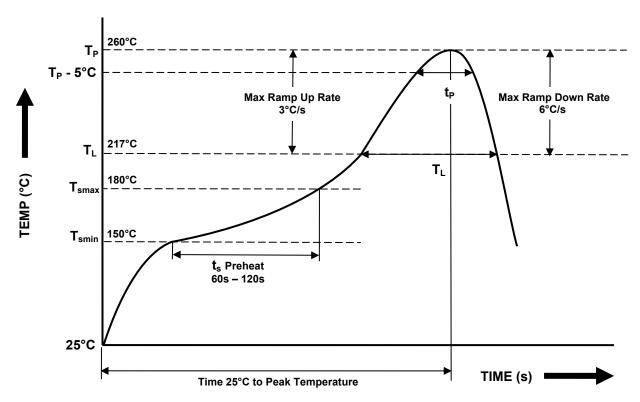


Description	Dimension	mm (inch)
Tape Width	W	16 ± 0.3 (0.63)
Pitch of Sprocket Holes	P0	4 ± 0.1 (0.15)
Distance of Occupants and	F	7.5 ± 0.1 (0.295)
Distance of Compartment	P2	2 ± 0.1 (0.79)
Distance of Compartment to Compartment	P1	12 ± 0.1 (0.472)



IR REFLOW SOLDERING TEMPERATURE PROFILE

One Time Reflow Soldering is Recommended. Do not immerse device body in solder paste.



Profile Details	Conditions
Preheat - Min Temperature (T _{SMIN}) - Max Temperature (T _{SMAX}) - Time T _{SMIN} to T _{SMAX} (t _s)	150°C 180°C 60s - 120s
$ \begin{array}{l} \textbf{Soldering Zone} \\ - \text{ Peak Temperature } (T_P) \\ - \text{ Liquidous Temperature } (T_L) \\ - \text{ Time within 5°C of Actual Peak Temperature } (T_P - 5°C) \\ - \text{ Time maintained above } T_L \ (t_L) \\ - \text{ Ramp Up Rate } (T_L \text{ to } T_P) \\ - \text{ Ramp Down Rate } (T_P \text{ to } T_L) \\ \end{array} $	260°C 217°C 20s 60s 3°C/s max 3 - 6°C/s
Average Ramp Up Rate (T _{smax} to T _P)	3°C/s max
Time 25°C to Peak Temperature	8 minutes max



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