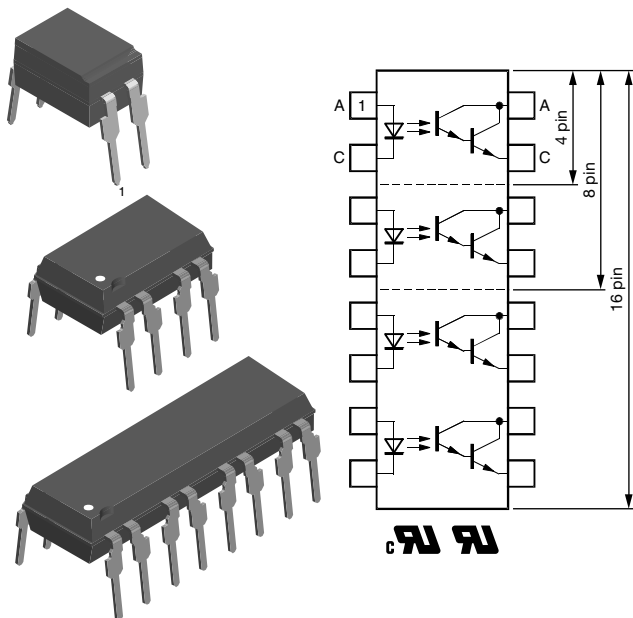


Optocoupler, Photodarlington Output



DESCRIPTION

In the K815P, K825P, K845P parts, each channel consist of a photodarlington optically coupled to a gallium arsenide infrared-emitting diode in an 4 pin, 8 pin, and 16 pin plastic dual inline package.

The elements are mounted on one leadframe providing a fixed distance between input and output for highest safety requirements.

FEATURES

- Endstackable to 2.54 mm (0.1") spacing
- Isolation test voltage 5300 V_{RMS}
- Low temperature coefficient of CTR
- Wide ambient temperature range
- Material categorization: For definitions of compliance please see www.vishay.com/doc?999912



RoHS
COMPLIANT

APPLICATIONS

- Programmable logic controllers
- Modems
- Answering machines
- General applications

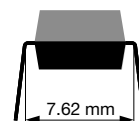
AGENCY APPROVALS

- UL1577, file no. E76222 system code C, double protection
- CSA 22.2 bulletin 5A, double protection
- CQC: GB8898-2001 (K815P only)

ORDERING INFORMATION



DIP-4/DIP-8/DIP-16



AGENCY CERTIFIED/PACKAGE	CTR (%)
UL, cUL	> 600
DIP-4 (CQC)	K815P
DIP-8	K825P
DIP-16	K845P

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
INPUT				
Reverse voltage		V _R	6	V
Forward current		I _F	60	mA
Forward surge current	t _p ≤ 10 μs	I _{FSM}	1.5	A
Power dissipation		P _{diss}	100	mW
Junction temperature		T _j	125	°C

**ABSOLUTE MAXIMUM RATINGS** ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
OUTPUT				
Collector emitter voltage		V_{CEO}	35	V
Emitter collector voltage		V_{ECO}	7	V
Collector current		I_C	80	mA
Collector peak current	$t_p/T = 0.5, t_p \leq 10\text{ ms}$	I_{CM}	100	mA
Power dissipation		P_{diss}	150	mW
Junction temperature		T_j	125	$^{\circ}\text{C}$
COUPLER				
AC isolation test voltage (RMS)	$t = 1\text{ min}, f = 50\text{ Hz}$	V_{ISO}	5	kV
Total power dissipation		P_{tot}	250	mW
Operating ambient temperature		T_{amb}	- 40 to + 100	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	- 55 to + 125	$^{\circ}\text{C}$
Soldering temperature ⁽¹⁾		T_{sld}	260	$^{\circ}\text{C}$

Notes

- Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of this document. Exposure to absolute maximum ratings for extended periods of the time can adversely affect reliability.
- ⁽¹⁾ Refer to wave profile for soldering conditions for through hole devices.

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
INPUT						
Forward voltage	$I_F = 20\text{ mA}$	V_F		1.2	1.4	V
Reverse current	$V_R = 6\text{ V}$	I_R			10	μA
OUTPUT						
Collector emitter voltage	$I_C = 100\text{ }\mu\text{A}$	V_{CEO}	35			V
Emitter collector voltage	$I_E = 100\text{ }\mu\text{A}$	V_{CEO}	7			V
Collector dark current	$V_{CE} = 10\text{ V}, I_F = 0\text{ A}, E = 0$	I_{CEO}			100	nA
COUPLER						
Collector emitter saturation voltage	$I_C = 5\text{ mA}, I_F = 20\text{ mA}$	V_{CEsat}			0.1	V
Cut-off frequency	$I_F = 10\text{ mA}, V_{CE} = 5\text{ V}, R_L = 100\text{ }\Omega$	f_c		10		kHz
Coupling capacitance	$f = 1\text{ MHz}$	C_k		0.3		pF

Note

- Minimum and maximum values are testing requirements. Typical values are characteristics of the device and are the result of engineering evaluation. Typical values are for information only and are not part of the testing requirements.

CURRENT TRANSFER RATIO

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
I_C/I_F	$I_F = 1\text{ mA}, V_{CE} = 2\text{ V}$	CTR	600	800		%

SWITCHING CHARACTERISTICS

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Rise time	$V_{CE} = 2\text{ V}, I_C = 10\text{ mA}, R_L = 100\text{ }\Omega$ (see figure 1)	t_r		300		μs
Turn-off time	$V_{CE} = 2\text{ V}, I_C = 10\text{ mA}, R_L = 100\text{ }\Omega$ (see figure 1)	t_{off}		250		μs

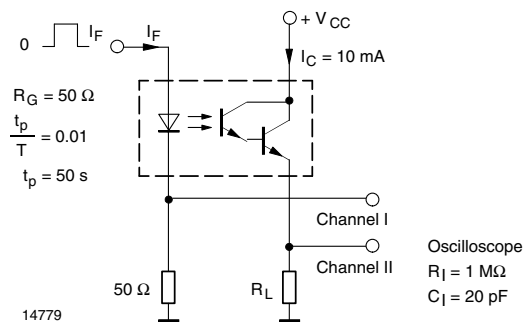


Fig. 1 - Test Circuit, Non-Saturated Operation

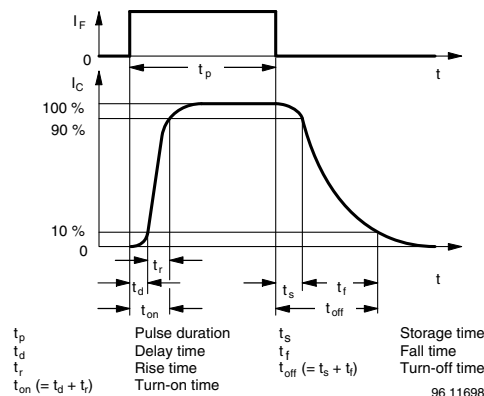


Fig. 2 - Switching Times

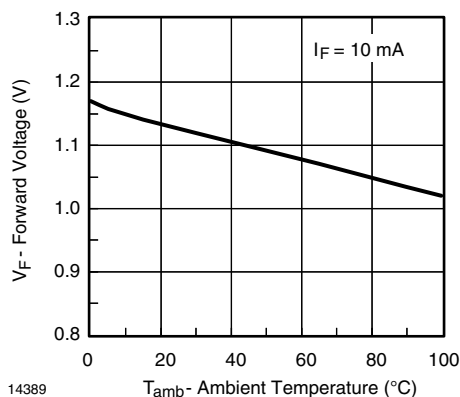
TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 3 - Forward Voltage vs. Ambient Temperature

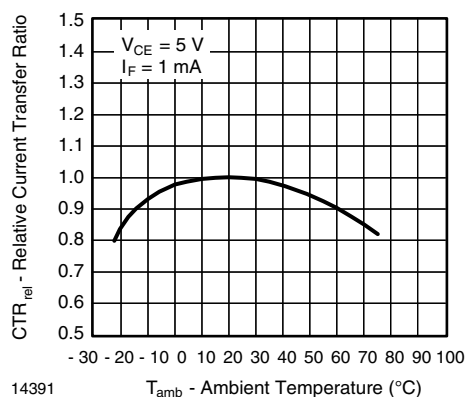


Fig. 5 - Relative Current Transfer Ratio vs. Ambient Temperature

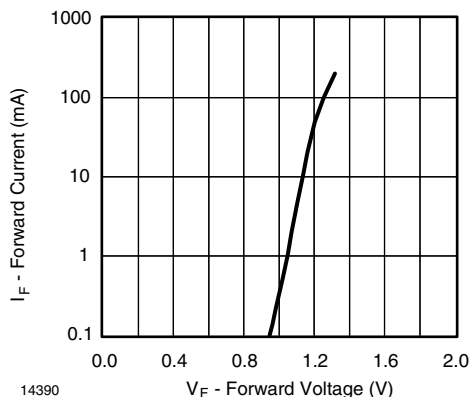


Fig. 4 - Forward Current vs. Forward Voltage

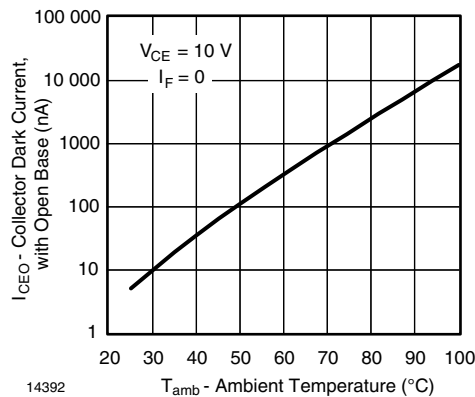


Fig. 6 - Collector Dark Current vs. Ambient Temperature

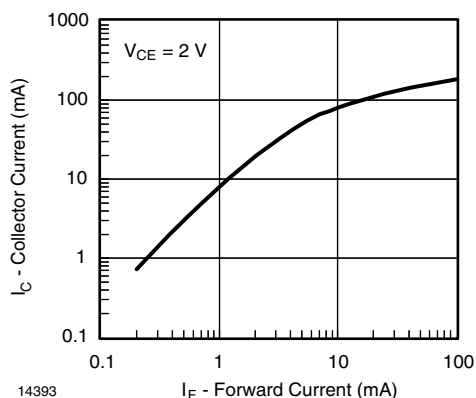


Fig. 7 - Collector Current vs. Forward Current

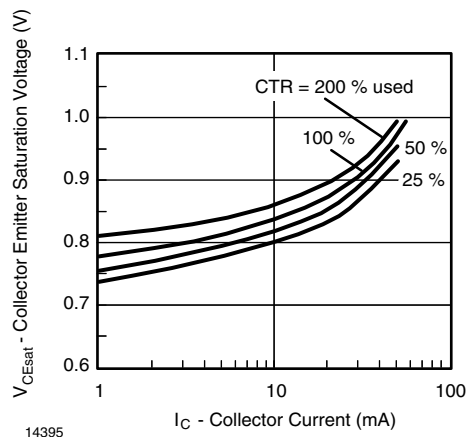


Fig. 9 - Collector Emitter Saturation Voltage vs. Collector Current

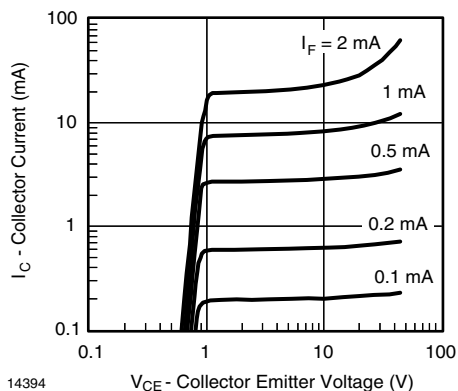


Fig. 8 - Collector Current vs. Collector Emitter Voltage

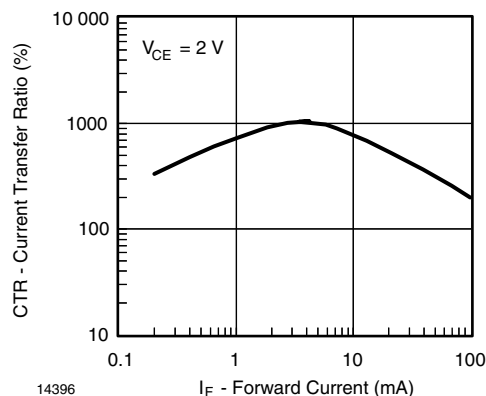
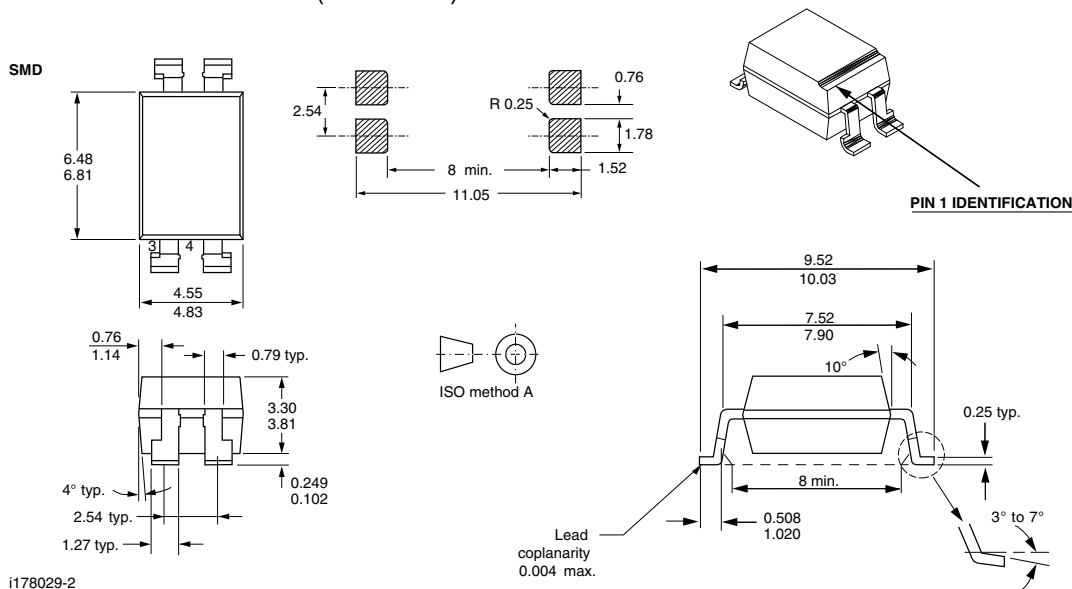
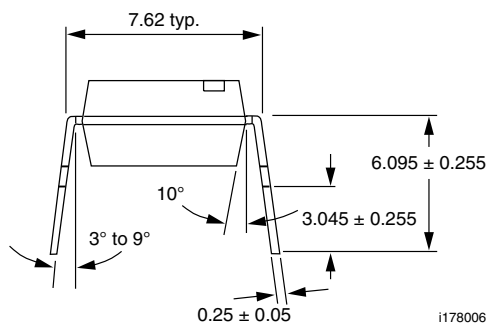
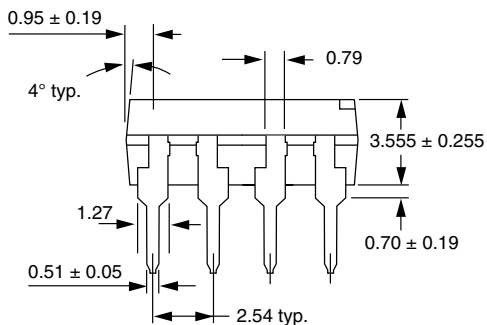
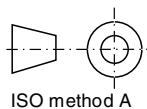
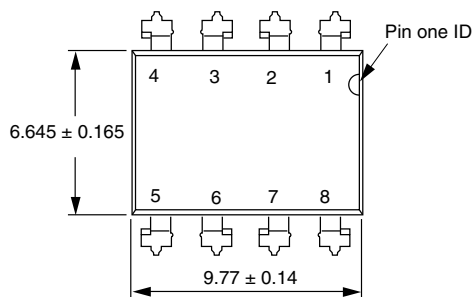


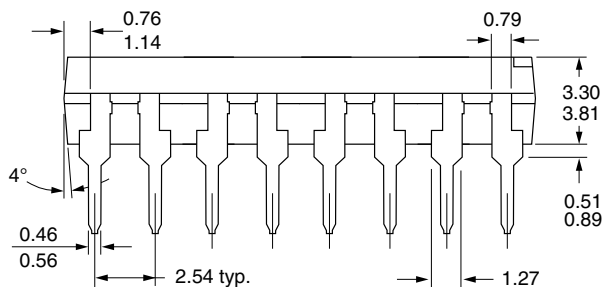
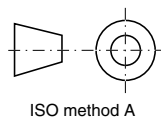
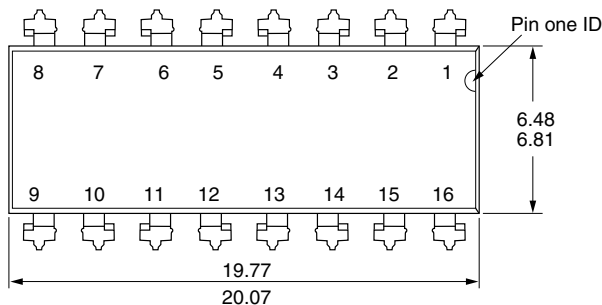
Fig. 10 - Current Transfer Ratio vs. Forward Current

PACKAGE DIMENSIONS in inches (millimeters)

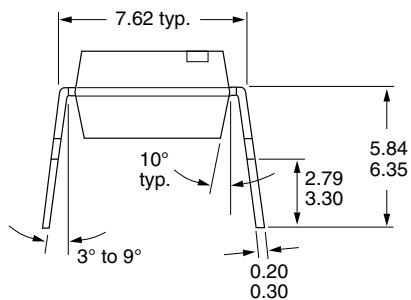




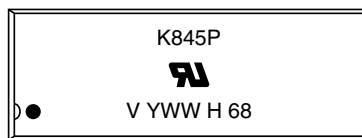
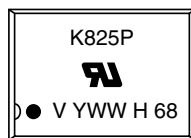
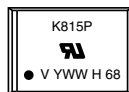
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PACKAGE MARKING





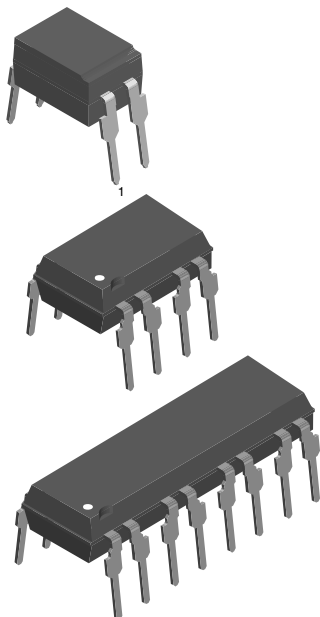
Footprint and Schematic Information for K815P, K825P, K845P

The footprint and schematic symbols for the following parts can be accessed using the associated links. They are available in Eagle, Altium, KiCad, OrCAD / Allegro, Pulsonix, and PADS.

Note that the 3D models for these parts can be found on the Vishay product page.

PART NUMBER	FOOTPRINT / SCHEMATIC
K815P	www.snapeda.com/parts/K815P/Vishay/view-part
K825P	www.snapeda.com/parts/K825P/Vishay/view-part
K845P	www.snapeda.com/parts/K845P/Vishay/view-part

For technical issues and product support, please contact optocoupleranswers@vishay.com.





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