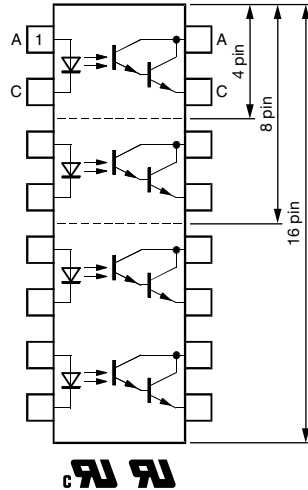
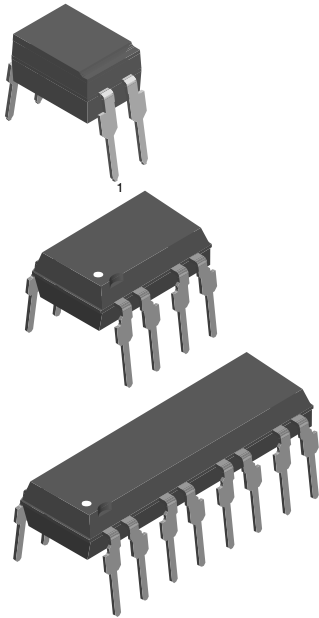


## Optocoupler, Photodarlington Output



### FEATURES

- Endstackable to 2.54 mm (0.1") spacing
- Isolation test voltage 5300 V<sub>RMS</sub>
- Low temperature coefficient of CTR
- Wide ambient temperature range
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?999912](http://www.vishay.com/doc?999912)



**RoHS**  
COMPLIANT

### APPLICATIONS

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

### AGENCY APPROVALS

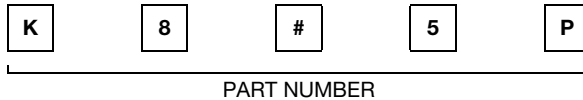
- UL1577, file no. E76222 system code C, double protection
- CSA 22.2 bulletin 5A, double protection
- CQC: GB8898-2001 (K815P only)

### DESCRIPTION

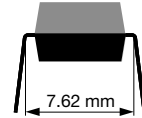
In the K815P, K825P, K845P parts, each channel consist of a photodarlington optically coupled to a gallium arsenide infrared-emitting diode in an 4 pin, 8 pin, and 16 pin plastic dual inline package.

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

### 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<sub>amb</sub> = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
<b>INPUT</b>				
Reverse voltage		V <sub>R</sub>	6	V
Forward current		I <sub>F</sub>	60	mA
Forward surge current	t <sub>p</sub> ≤ 10 μs	I <sub>FSM</sub>	1.5	A
Power dissipation		P <sub>diss</sub>	100	mW
Junction temperature		T <sub>j</sub>	125	°C

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

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
<b>OUTPUT</b>				
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	$^{\circ}\text{C}$
<b>COUPLER</b>				
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 <sup>(1)</sup>		$T_{sld}$	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.
- <sup>(1)</sup> 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
<b>INPUT</b>						
Forward voltage	$I_F = 20\text{ mA}$	$V_F$		1.2	1.4	V
Reverse current	$V_R = 6\text{ V}$	$I_R$			10	$\mu\text{A}$
<b>OUTPUT</b>						
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
<b>COUPLER</b>						
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		$\mu\text{s}$
Turn-off time	$V_{CE} = 2\text{ V}, I_C = 10\text{ mA}, R_L = 100\text{ }\Omega$ (see figure 1)	$t_{off}$		250		$\mu\text{s}$

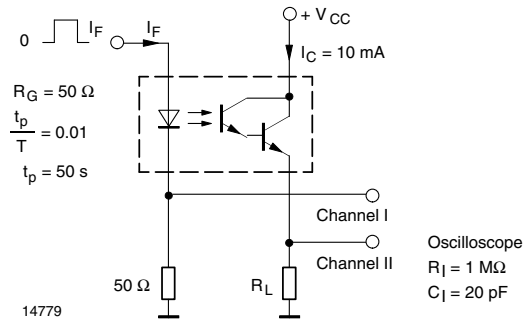


Fig. 1 - Test Circuit, Non-Saturated Operation

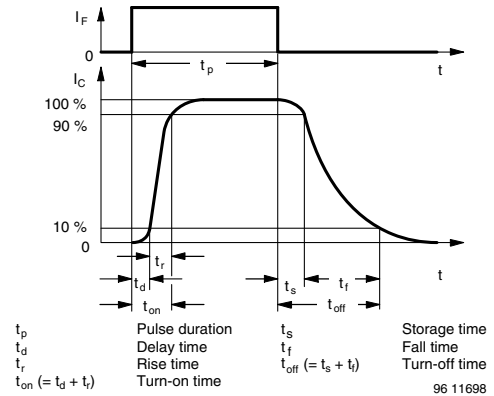


Fig. 2 - Switching Times

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

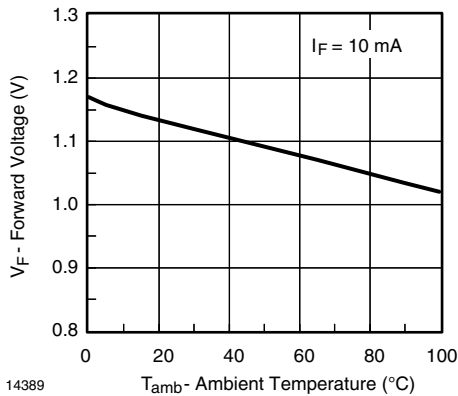


Fig. 3 - Forward Voltage vs. Ambient Temperature

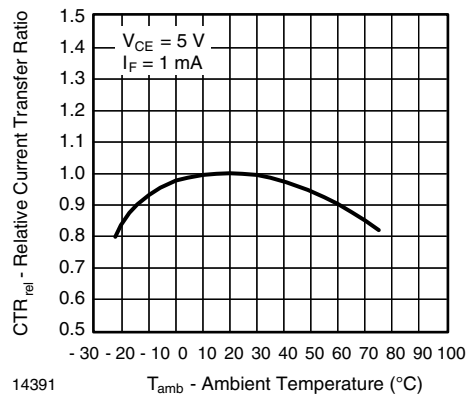


Fig. 5 - Relative Current Transfer Ratio vs. Ambient Temperature

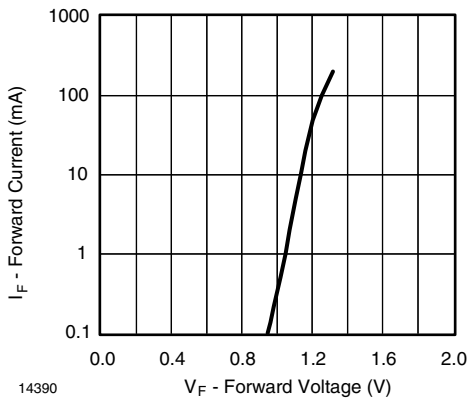


Fig. 4 - Forward Current vs. Forward Voltage

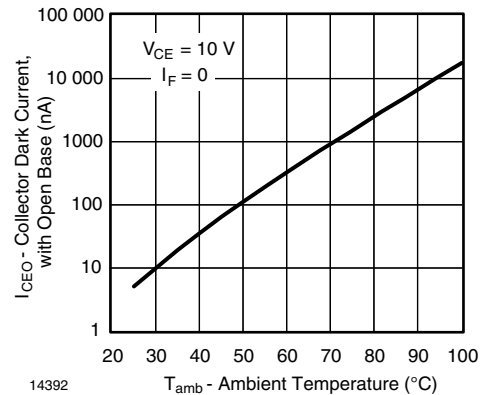


Fig. 6 - Collector Dark Current vs. Ambient Temperature

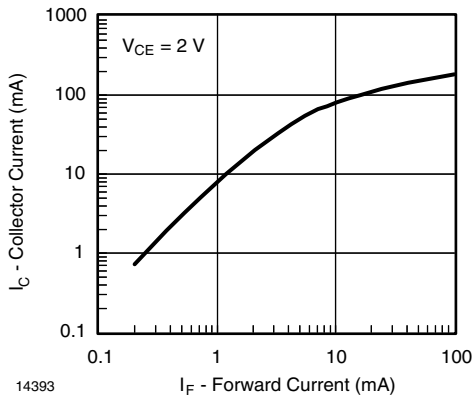


Fig. 7 - Collector Current vs. Forward Current

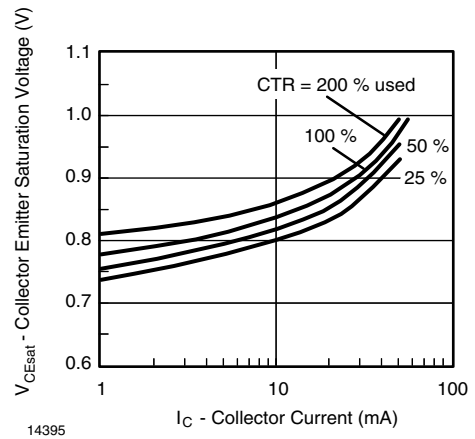


Fig. 9 - Collector Emitter Saturation Voltage vs. Collector Current

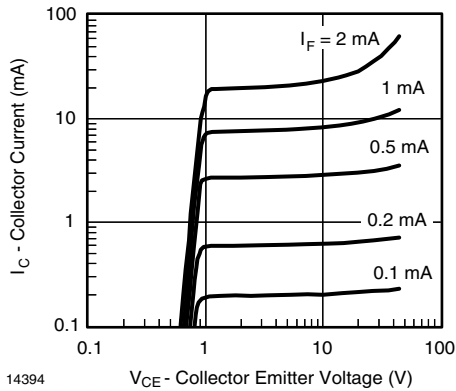


Fig. 8 - Collector Current vs. Collector Emitter Voltage

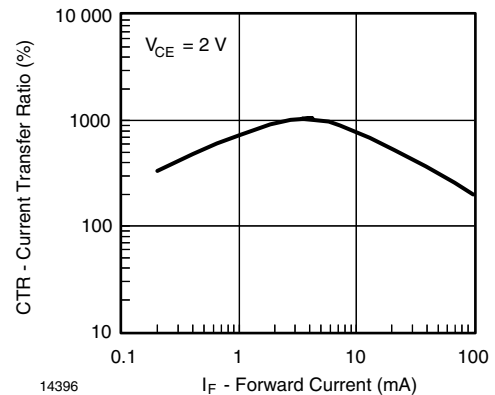
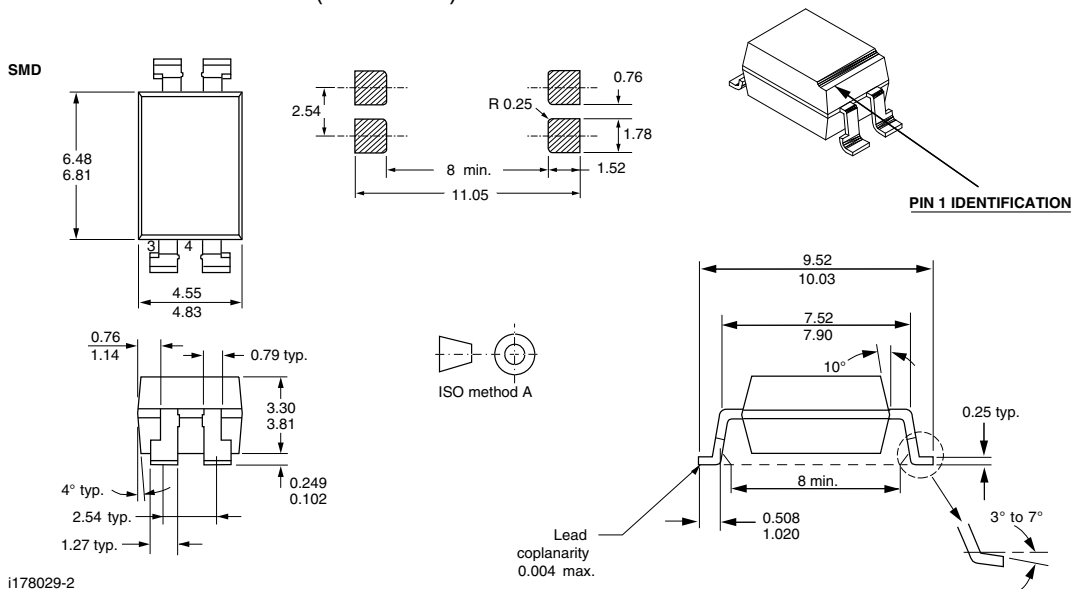
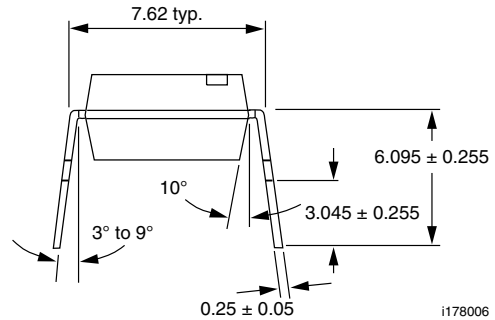
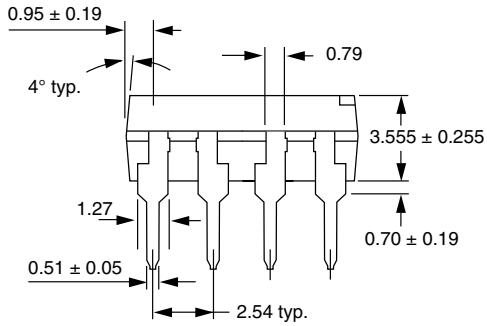
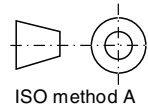
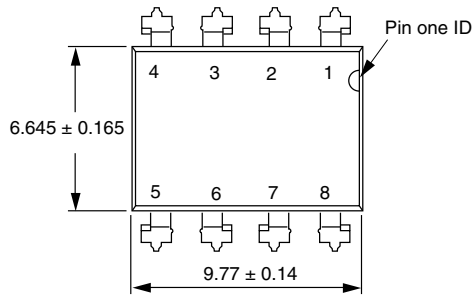


Fig. 10 - Current Transfer Ratio vs. Forward Current

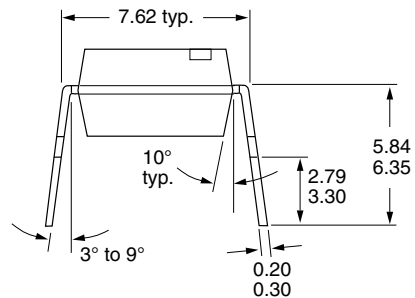
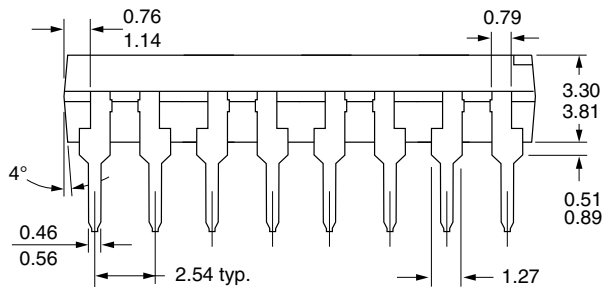
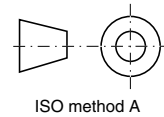
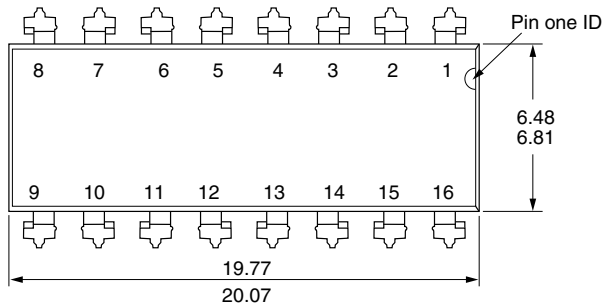
## PACKAGE DIMENSIONS in inches (millimeters)



i178029-2

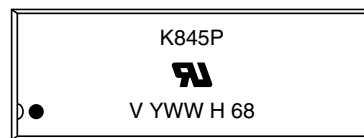
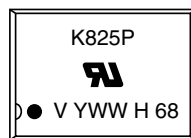
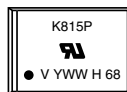


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## PACKAGE MARKING





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