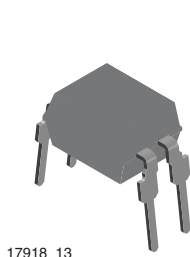
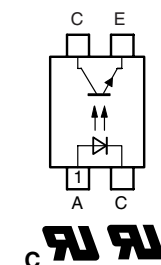


Optocoupler, Phototransistor Output



17918_13



17203-5

DESCRIPTION

In the K817P part each channel consists of a phototransistor optically coupled to a gallium arsenide infrared-emitting diode in a 4 pin (single) plastic dual inline package.

AGENCY APPROVALS

- UL1577, file no. E52744, double protection
- cUL CSA 22.2 bulletin 5A, double protection, E52744

FEATURES

- Endstackable to 2.54 mm (0.1") spacing
- DC isolation test voltage 5000 V_{RMS}
- Current transfer ratio (CTR) selected into groups
- Low temperature coefficient of CTR
- Wide ambient temperature range
- Available in single, dual and quad channel packages
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC


RoHS
COMPLIANT

APPLICATIONS

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

ORDER INFORMATION

PART	REMARKS
K817P	CTR 50 % to 600 %, DIP-4
K817P1	CTR 40 % to 80 %, DIP-4
K817P2	CTR 63 % to 125 %, DIP-4
K817P3	CTR 100 % to 200 %, DIP-4
K817P4	CTR 160 % to 320 %, DIP-4
K817P5	CTR 50 % to 150 %, DIP-4
K817P6	CTR 100 % to 300 %, DIP-4
K817P7	CTR 80 % to 160 %, DIP-4
K817P8	CTR 130 % to 260 %, DIP-4
K817P9	CTR 200 % to 400 %, DIP-4

ABSOLUTE MAXIMUM RATINGS ⁽¹⁾

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}	70	mW
Junction temperature		T _j	125	°C
OUTPUT				
Collector emitter voltage		V _{CEO}	70	V
Emitter collector voltage		V _{ECO}	7	V
Collector current		I _C	50	mA
Collector peak current	t _p /T = 0.5, t _p ≤ 10 ms	I _{CM}	100	mA
Power dissipation		P _{diss}	70	mW
Junction temperature		T _j	125	°C

ABSOLUTE MAXIMUM RATINGS (1)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
COUPLER				
AC isolation test voltage (RMS)	$t = 1 \text{ min}$	V_{ISO}	5000	V_{RMS}
Total power dissipation		P_{tot}	200	mW
Operating ambient temperature range		T_{amb}	- 40 to + 100	°C
Storage temperature range		T_{stg}	- 55 to + 125	°C
Soldering temperature (2)	2 mm from case, $t \leq 10 \text{ s}$	T_{sld}	260	°C

Notes

(1) $T_{\text{amb}} = 25 \text{ °C}$, unless otherwise specified.

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.

(2) Refer to wave profile for soldering conditions for through hole devices.

ELECTRICAL CHARACTERISTICS

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
INPUT						
Forward voltage	$I_F = 50 \text{ mA}$	V_F		1.25	1.6	V
Junction capacitance	$V_R = 0 \text{ V}$, $f = 1 \text{ MHz}$	C_j		50		pF
OUTPUT						
Collector emitter voltage	$I_C = 100 \text{ }\mu\text{A}$	V_{CEO}	70			V
Emitter collector voltage	$I_E = 100 \text{ }\mu\text{A}$	V_{ECO}	7			V
Collector dark current	$V_{\text{CE}} = 20 \text{ V}$, $I_F = 0$, $E = 0$	I_{CEO}			100	nA
COUPLER						
Collector emitter saturation voltage	$I_F = 10 \text{ mA}$, $I_C = 1 \text{ mA}$	V_{CEsat}			0.3	V
Cut-off frequency	$I_F = 10 \text{ mA}$, $V_{\text{CE}} = 5 \text{ V}$, $R_L = 100 \text{ }\Omega$	f_c		100		kHz
Coupling capacitance	$f = 1 \text{ MHz}$	C_k		0.6		pF

Note

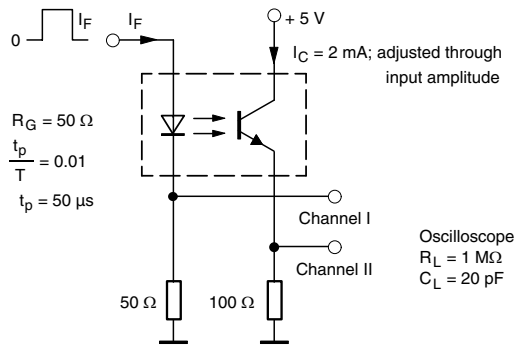
$T_{\text{amb}} = 25 \text{ °C}$, unless otherwise specified.

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	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
I_C/I_F	$V_{\text{CE}} = 5 \text{ V}$, $I_F = 5 \text{ mA}$	K817P	CTR	50		600	%
	$V_{\text{CE}} = 5 \text{ V}$, $I_F = 10 \text{ mA}$	K817P1	CTR	40		80	%
		K817P2	CTR	63		125	%
		K817P3	CTR	100		200	%
		K817P4	CTR	160		320	%
	$V_{\text{CE}} = 5 \text{ V}$, $I_F = 5 \text{ mA}$	K817P5	CTR	50		150	%
		K817P6	CTR	100		300	%
		K817P7	CTR	80		160	%
		K817P8	CTR	130		260	%
		K817P9	CTR	200		400	%

SWITCHING CHARACTERISTICS						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Delay time	$V_S = 5\text{ V}$, $I_C = 2\text{ mA}$, $R_L = 100\ \Omega$ (see figure 1)	t_d		3		μs
Rise time	$V_S = 5\text{ V}$, $I_C = 2\text{ mA}$, $R_L = 100\ \Omega$ (see figure 1)	t_r		3		μs
Fall time	$V_S = 5\text{ V}$, $I_C = 2\text{ mA}$, $R_L = 100\ \Omega$ (see figure 1)	t_f		4.7		μs
Storage time	$V_S = 5\text{ V}$, $I_C = 2\text{ mA}$, $R_L = 100\ \Omega$ (see figure 1)	t_s		0.3		μs
Turn-on time	$V_S = 5\text{ V}$, $I_C = 2\text{ mA}$, $R_L = 100\ \Omega$ (see figure 1)	t_{on}		6		μs
Turn-off time	$V_S = 5\text{ V}$, $I_C = 2\text{ mA}$, $R_L = 100\ \Omega$ (see figure 1)	t_{off}		5		μs
Turn-on time	$V_S = 5\text{ V}$, $I_F = 10\text{ mA}$, $R_L = 1\text{ k}\Omega$ (see figure 2)	t_{on}		9		μs
Turn-off time	$V_S = 5\text{ V}$, $I_F = 10\text{ mA}$, $R_L = 1\text{ k}\Omega$ (see figure 2)	t_{off}		18		μs



95 10804

Fig. 1 - Test Circuit, Non-Saturated Operation

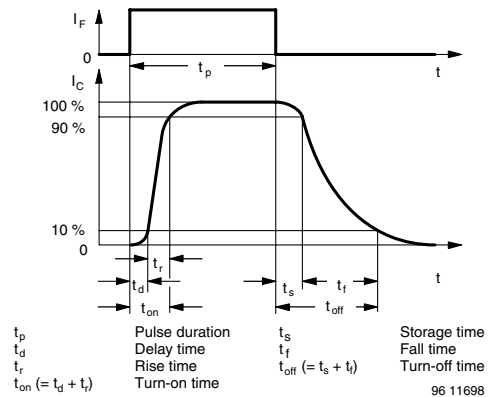
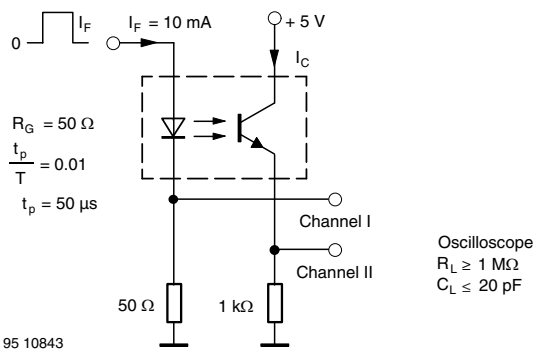


Fig. 3 - Switching Times



95 10843

Fig. 2 - Test Circuit, Saturated Operation

TYPICAL CHARACTERISTICS

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

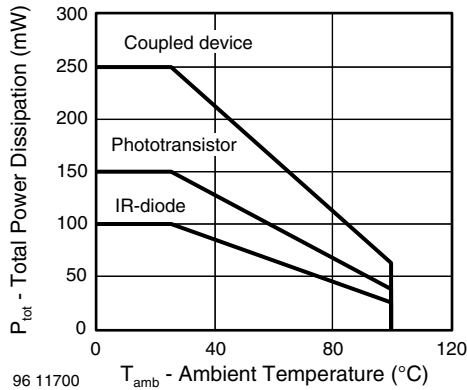


Fig. 4 - Total Power Dissipation vs. Ambient Temperature

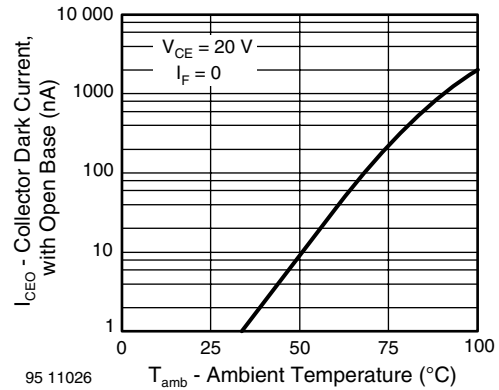


Fig. 7 - Collector Dark Current vs. Ambient Temperature

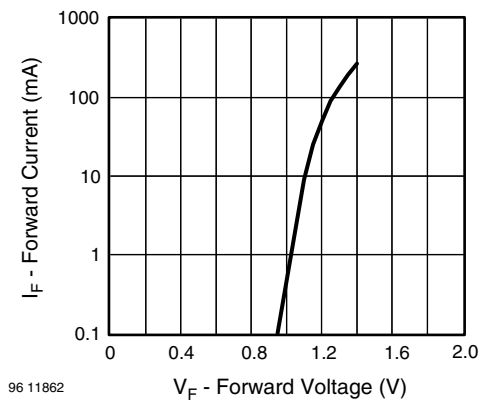


Fig. 5 - Forward Current vs. Forward Voltage

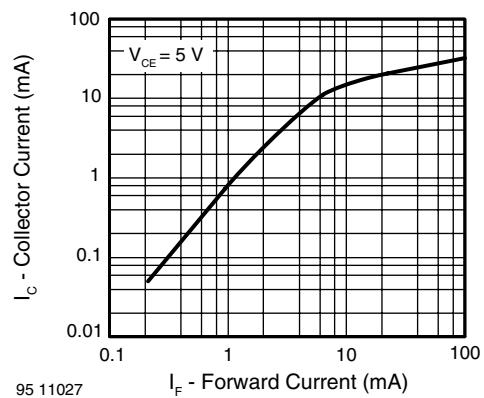


Fig. 8 - Collector Current vs. Forward Current

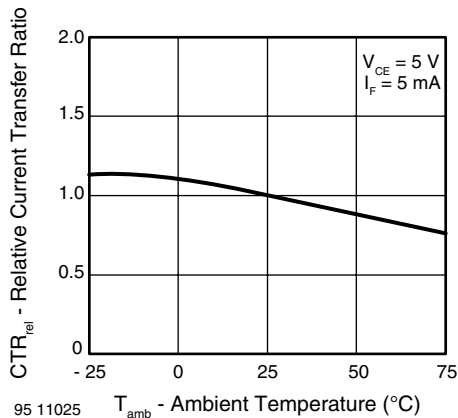


Fig. 6 - Relative Current Transfer Ratio vs. Ambient Temperature

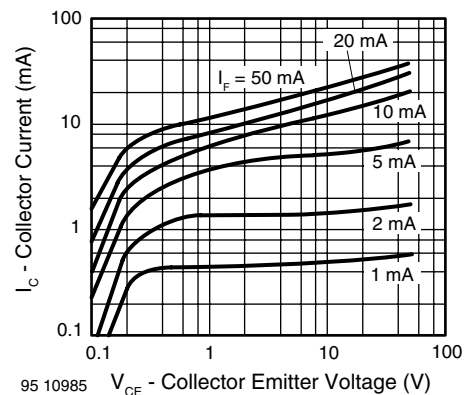


Fig. 9 - Collector Current vs. Collector Emitter Voltage

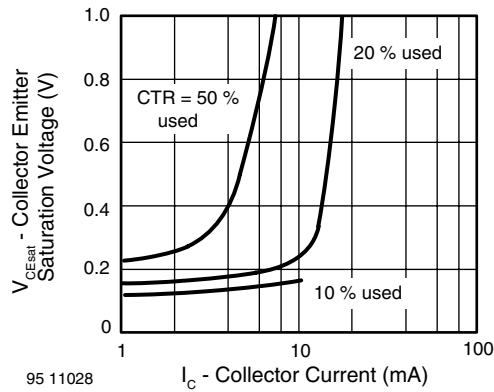


Fig. 10 - Collector Emitter Saturation Voltage vs. Collector Current

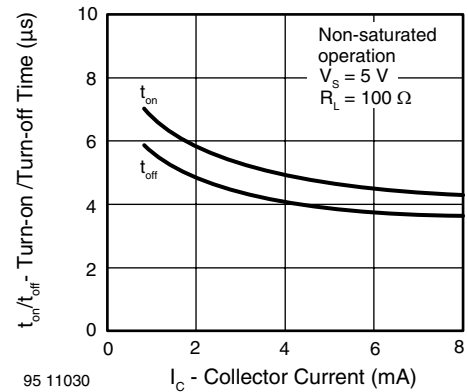


Fig. 13 - Turn-on/off Time vs. Collector Current

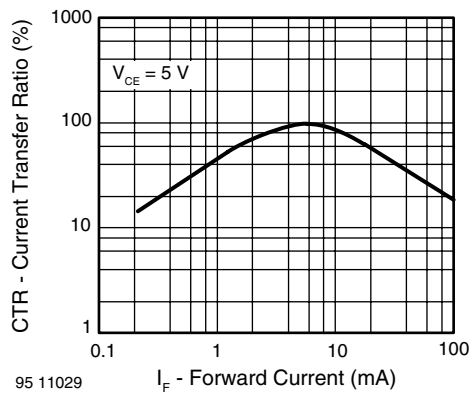


Fig. 11 - Current Transfer Ratio vs. Forward Current

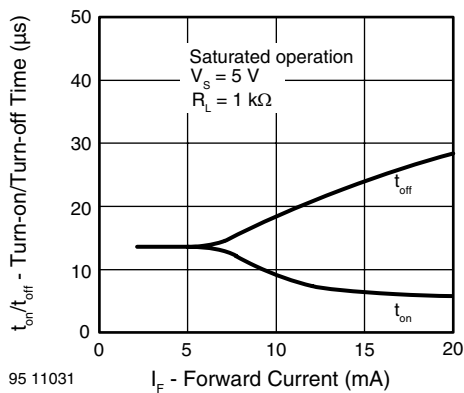


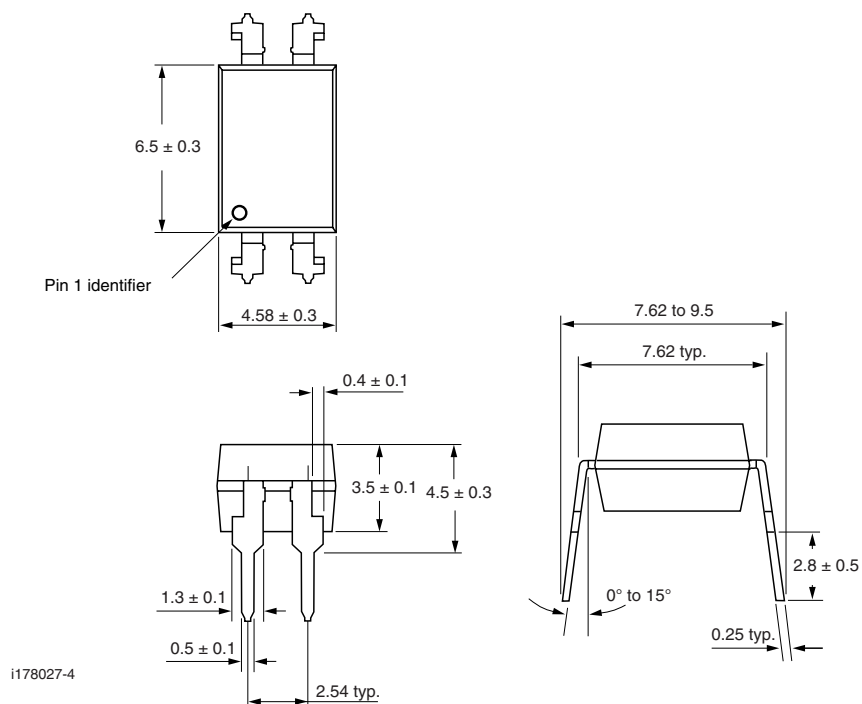
Fig. 12 - Turn-on/Off Time vs. Forward Current

K817P

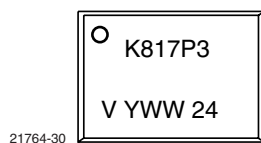
Vishay Semiconductors Optocoupler, Phototransistor Output



PACKAGE DIMENSIONS in millimeters



PACKAGE MARKING





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