

Optoelectronic Interrupter with Schmitt-Trigger Output Logic

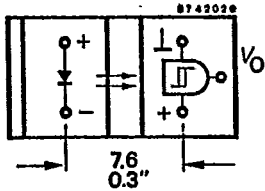
Construction: Emitter: GaAs IR Emitting Diode
Detector: Integrated Optoelectronic Circuit

Applications: Contactless optoelectronic switching and monitoring

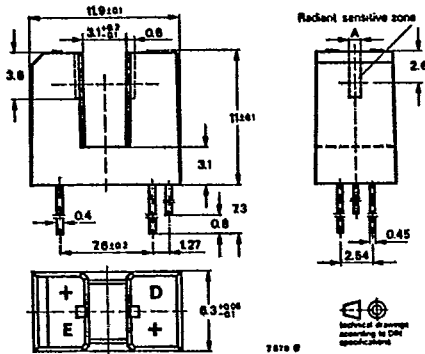
Features:

- Output: active "HIGH"
- Buffer- open collector
- TTL compatible
- Small dimensions
- Case plastic polycarbonate- protected against ambient light
- No adjustment
- Four package variations
- Two aperture variations

Pin connections



Dimensions in mm



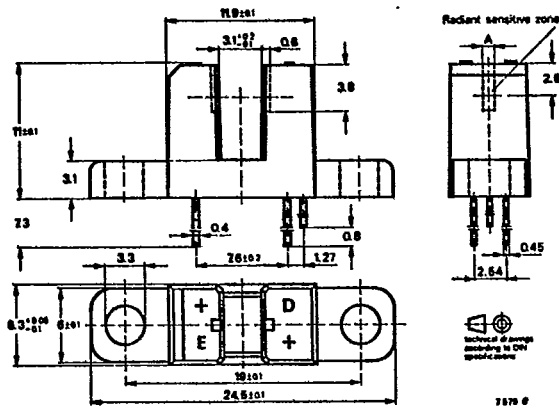
For printed board construction:
 TCSS 111. with aperture
 1.00 mm (0.04")
 TCSS 121. with aperture
 0.50 mm (0.02")
 Weight max. 0.9 g

Note: Fourth number of type designation: I_{FT} group

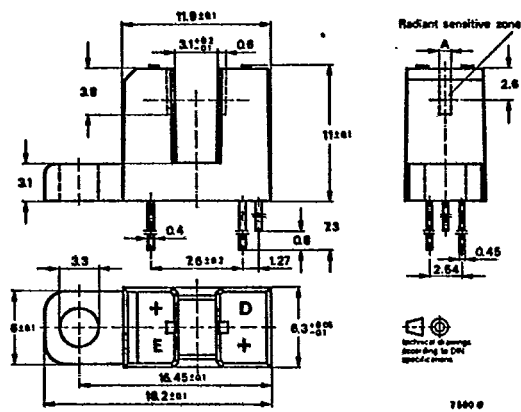
T1.2/1189.1285 E2

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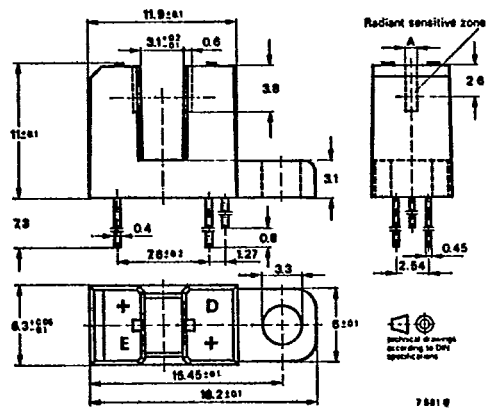
TCSS 111. up to TCSS 421.



With mounting flange on both sides:
 TCSS 211. with aperture 1.00 mm (0.04")
 TCSS 221. with aperture 0.50 mm (0.02")
 Weight max. 1.0 g



With mounting flange on emitter side:
 TCSS 311. with aperture 1.00 mm (0.04")
 TCSS 321. with aperture 0.50 mm (0.02")
 Weight max. 0.95 g



With mounting flange on detector side:
 TCSS 411. with aperture 1.00 mm (0.04")
 TCSS 421. with aperture 0.50 mm (0.02")
 Weight max. 0.95 g

Note: Fourth number type designation: /_{F_T} group

TCSS 111. up to TCSS 421.

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Absolute maximum ratings

Emitter

Reverse voltage	V_R	6	V
Forward current	I_F	60	mA
Forward surge current $t_p \leq 10 \mu s$	I_{FSM}	3	A
Power dissipation $T_{amb} \leq 25^\circ C$	P_V	100	mW
Junction temperature	T_J	100	$^\circ C$

Detector

Supply voltages	V_{S1}	6.5	V
	V_{S2}	18	V
Output current	I_O	20	mA
Power dissipation $T_{amb} \leq 25^\circ C$	P_V	250	mW
Junction temperature	T_J	100	$^\circ C$

Coupled device

Total power dissipation $T_{amb} \leq 25^\circ C$	P_{tot}	350	mW
Ambient temperature range	T_{amb}	-25...+85	$^\circ C$
Storage temperature range	T_{stg}	-40...+100	$^\circ C$
Soldering temperature 2 mm from case, $t \leq 5$ s	T_{sd}	260	$^\circ C$

Electrical characteristics

 $T_{amb} = 25^\circ C$

Min. Typ. Max.

Emitter

Forward voltage $I_F = 50$ mA	V_F	1.25	1.6	V
Breakdown voltage $I_R = 100 \mu A$	$V_{(BR)}$	6		V
Junction capacitance $V_R = 0, f = 1$ MHz	C_j	50		pF

Detector

Supply voltage ranges	V_{S1}	4.75	5.25	V
	V_{S2}	4	16	V

Coupled device

Supply current $V_O = V_{OH}, I_F \geq I_{TF}$	I_{S1}	12		mA
$I_F = 0$	I_{S1}	16		mA

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TCSS 111. up to TCSS 421.

	Min.	Typ.	Max.	
Output current $V_{S2} = 16\text{ V}, I_F \geq I_{FT}$			100	μA
Input threshold current				
	TCSS 1110...TCSS 4110	10	20	mA
	TCSS 1211...TCSS 4211	15	30	mA
Hysteresis $R_L = 270\ \Omega$				
		20		%
Output voltage $I_{OL} = 1.2\text{ mA}, I_F = 0$				
		0.3	0.4	V
Switching frequency $I_F \geq I_{FT}, R_L = 270\ \Omega$		400		kHz
Switching characteristics				
$V_{S1} = V_{S2} = 5\text{ V}, I_F = 3 \times I_{FT}, R_L = 270\ \Omega,$ see test circuit				
Rise time		30		ns
Turn on time		0.5		μs
Fall time		10		ns
Turn off time		1.8		μs

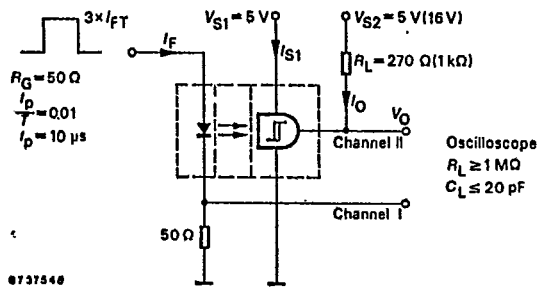


Fig. 1 Test circuit

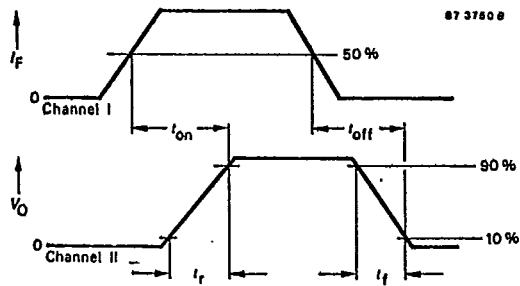


Fig. 2 Pulse diagram

TCSS 111. up to TCSS 421.

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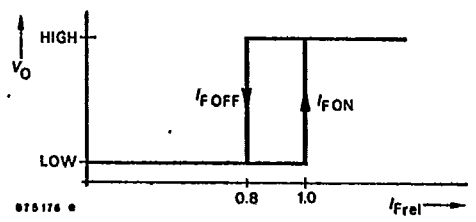
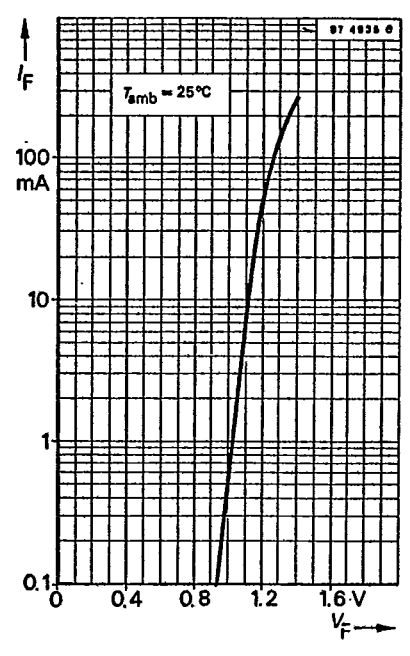
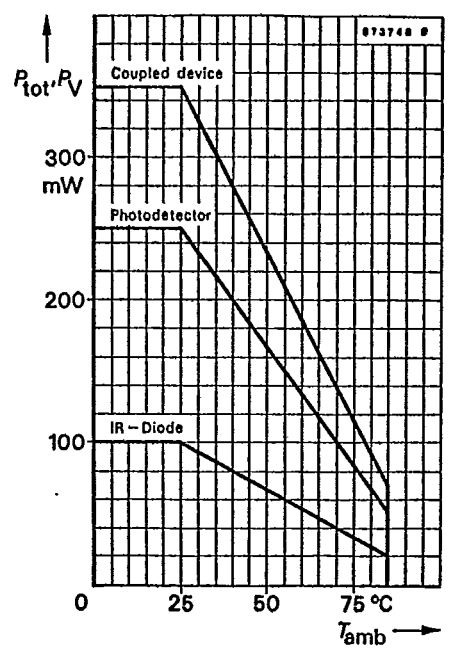


Fig. 3 Hysteresis



TCSS 111. up to TCSS 421.

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