



TCST 1000 up to TCST 4001

T-41-73

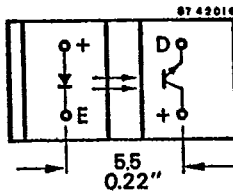
Optoelectronic Interrupter without Aperture

Construction: Emitter: GaAs-IR Emitting Diode
 Detector: Silicon NPN Epitaxial Planar-Phototransistor
Applications: Contactless optoelectronic switch, control and counter

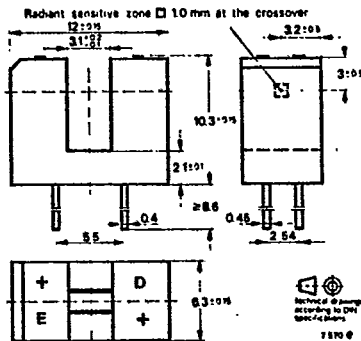
Features:

- Compact construction
- No setting efforts
- CTR selected in groups (regarding fourth number of type designation)
- 4 case variations
- Polycarbonate case protected against ambient light

Pin connections



Dimensions in mm



For printed board construction:

TCST 1000
 TCST 1001

Weight max. 0.9 g

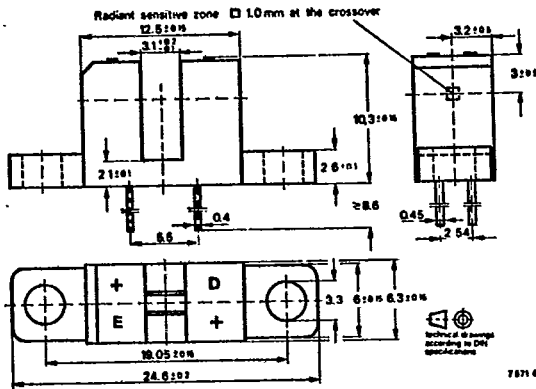
Note: Fourth number of type designation: CTR group

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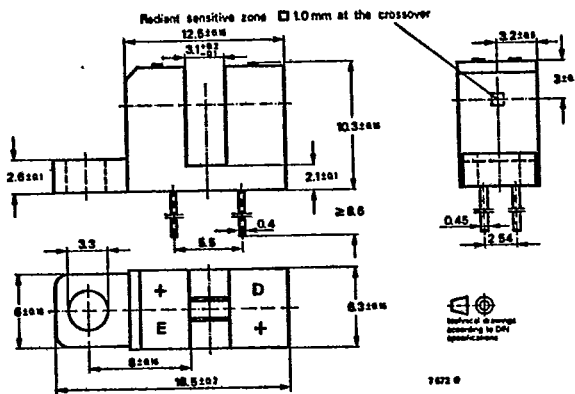
Not for new developments - replaced through TCST110, up to TCST 430.

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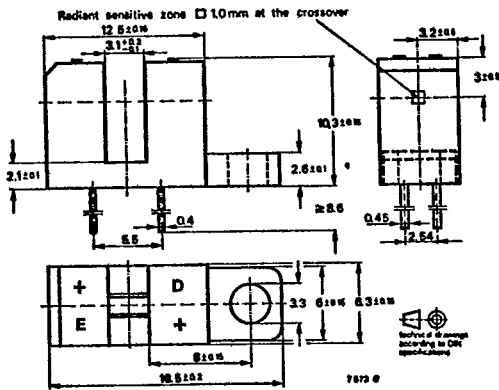
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With mounting flange
on both sides:
TCST 2000
TCST 2001
Weight max. 1.0 g



With flange on emitter side:
TCST 3000
TCST 3001
Weight max. 0.95 g



With flange on detector side:
TCST 4000
TCST 4001
Weight max. 0.95 g

Note: Fourth number of type designation CTR group

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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

Collector-emitter voltage	V_{CEO}	70	V
Emitter-collector voltage	V_{ECO}	7	V
Collector current	I_C	100	mA
Collector peak current $\frac{t_p}{T} = 0.5, t_p \leq 10 ms$	I_{CM}	200	mA
Power dissipation $T_{amb} \leq 25^\circ C$	P_V	150	mW
Junction temperature	T_j	100	$^\circ C$

Coupled device

Total power dissipation $T_{amb} \leq 25^\circ C$	P_{tot}	250	mW
Ambient temperature range	T_{amb}	-55...+85	$^\circ C$
Storage temperature range	T_{stg}	-55...+100	$^\circ C$
Soldering temperature, maximal 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 $I_F = 60 mA$	V_F	1.25	1.5	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

Collector-emitter breakdown voltage $I_C = 1 mA$	$V_{(BR)CEO}$	70		V
Emitter-collector breakdown voltage $I_E = 10 \mu A$	$V_{(BR)ECO}$	7		V
Collector dark current $V_{CE} = 25 V, I_F = 0, E = 0$	I_{CEO}		100	nA

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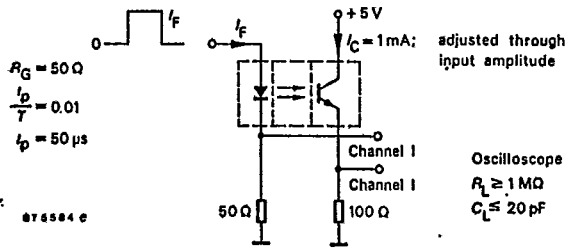
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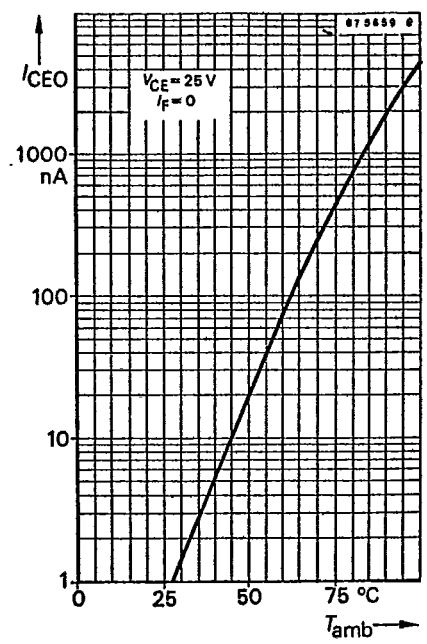
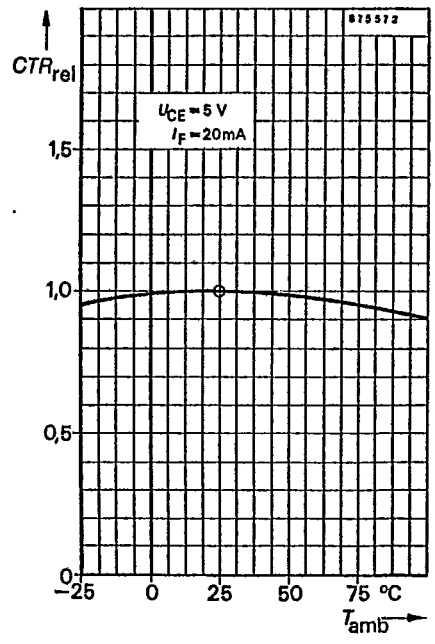
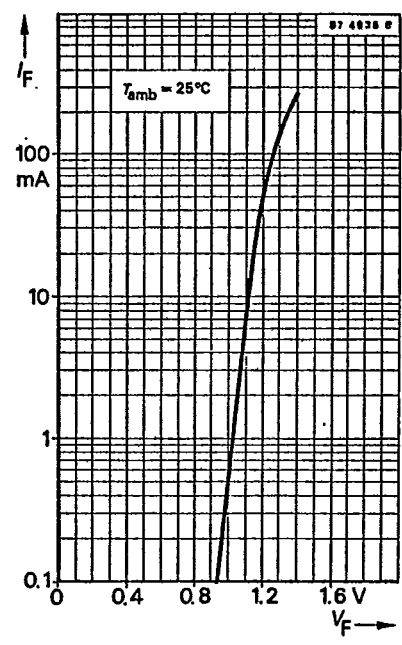
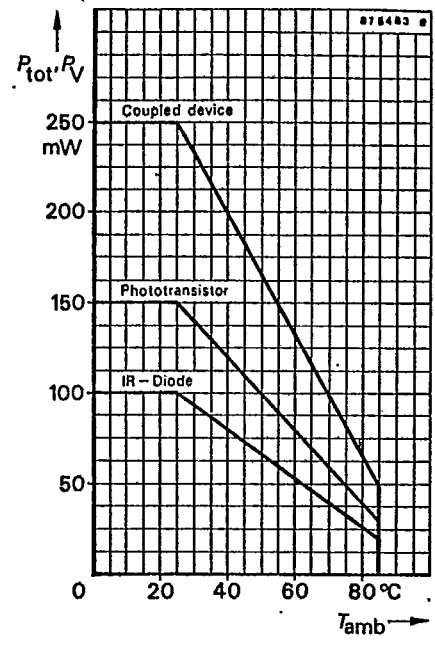
Coupled device		Min.	Typ.	Max.
Current transfer ratio				
$V_{CE} = 5\text{ V}, I_F = 20\text{ mA}$				
TCST 1000, TCST 2000, TCST 3000, TCST 4000	CTR	1.25	2.5	%
TCST 1001, TCST 2001, TCST 3001, TCST 4001	CTR	2.5	5	%
Collector current				
$V_{CE} = 5\text{ V}, I_F = 20\text{ mA}$				
TCST 1000, TCST 2000, TCST 3000, TCST 4000	I_C	0.25	0.5	mA
TCST 1001, TCST 2001, TCST 3001, TCST 4001	I_C	0.5	1	mA
Collector-emitter saturation voltage				
$I_F = 20\text{ mA}, I_C = 25\text{ }\mu\text{A}$				
	V_{CEsat}		0.4	V
Resolution, path of the shutter crossing the radiant sensitive zone				
$I_{Crel} = 10/90\%$				
	s		0.6	mm
Switching characteristics				
$V_S = 5\text{ V}, I_C = 1\text{ mA}, R_L = 100\text{ }\Omega$				
Turn-on time	t_{on}		15	μs
Turn-off time	t_{off}		10	μs



Test circuit

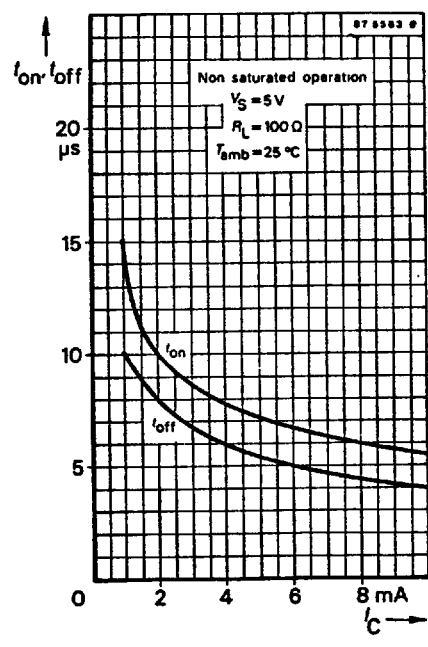
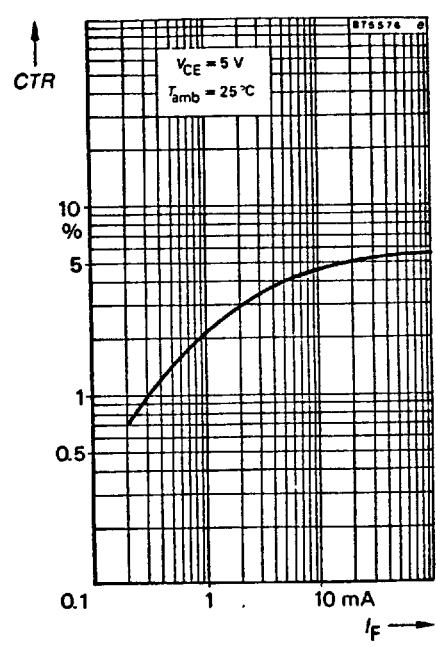
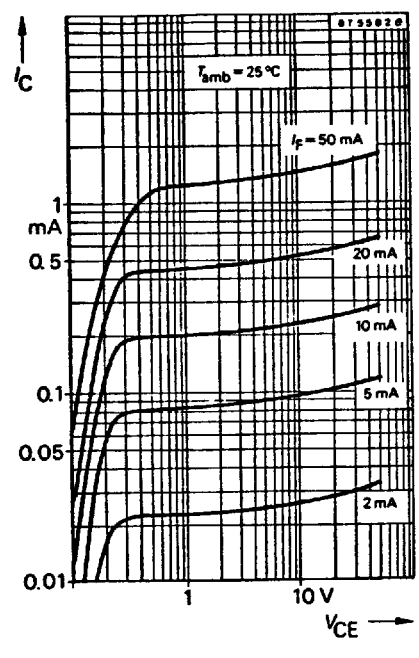
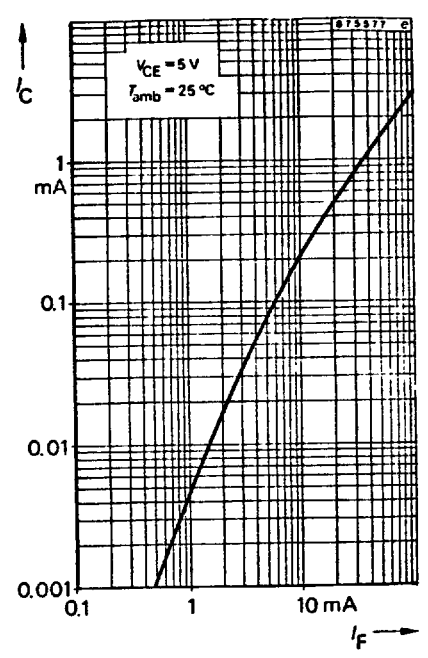
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