

CNY 71

T-41-83

Optically Coupled Isolator

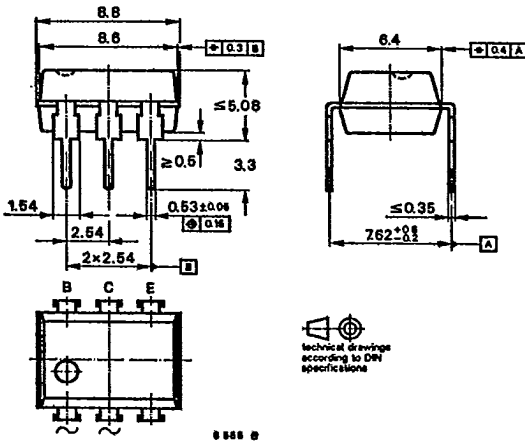
Construction: Emitter: Two antiparallel GaAs Infrared Emitting Diodes
Detector: Silicon NPN Epitaxial Planar Phototransistor

Applications: Galvanically separated circuits, non-interacting switches,
mains controlled switch with series resistance

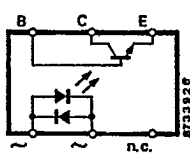
Features:

- AC input
- High isolation voltage
- Low coupling capacity
- High isolation resistance
- Built-in polarity protected input

Dimensions in mm



Pin connections



Plastic case
DIP 6
Weight ca. 0.7 g

Absolute maximum ratings

Emitter

Forward current	I_{FRMS}	60	mA
Forward surge current $t_p \leq 10 \mu s$	$\pm I_{FSM}$	3	A
Power dissipation $T_{amb} \leq 25 \text{ }^\circ\text{C}$	P_V	100	mW
Junction temperature	T_J	125	$^\circ\text{C}$

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Detector

Collector base voltage	V_{CBO}	50	V
Collector emitter voltage	V_{CEO}	32	V
Emitter collector voltage	V_{ECO}	7	V
Collector current	I_C	100	mA
Collector peak current			
$\frac{t_p}{T} = 0.5, t_p \leq 10 \text{ ms}$	I_{CM}	200	mA
Power dissipation			
$T_{amb} \leq 25^\circ\text{C}$	P_V	150	mW
Junction temperature	T_J	125	$^\circ\text{C}$

Coupled device

DC isolation test voltage	$V_{is}^{1)}$	5.3	kV
Total power dissipation			
$T_{amb} \leq 25^\circ\text{C}$	P_{tot}	250	mW
Ambient temperature range	T_{amb}	-55...+100	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55...+125	$^\circ\text{C}$
Soldering temperature			
2 mm from case, $t \leq 10 \text{ s}$	T_{sd}	260	$^\circ\text{C}$

Electrical characteristics

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

Min. Typ. Max.

Emitter

Forward voltage				
$I_F = 10 \text{ mA}$	V_F	1.25	1.6	V
Junction capacitance				
$V_R = 0, f = 1 \text{ MHz}$	C_J	50		pF

Detector

Collector base breakdown voltage				
$I_C = 100 \mu\text{A}$	$V_{(BR)CBO}$	50		V
Collector emitter breakdown voltage				
$I_C = 1 \text{ mA}$	$V_{(BR)CEO}$	32		V
Emitter collector breakdown voltage				
$I_E = 100 \mu\text{A}$	$V_{(BR)ECO}$	7		V
Collector dark current				
$V_{CE} = 10 \text{ V}, I_F = 0$	I_{CEO}		100	nA

Coupled Device

DC peak isolation test voltage				
$t = 2 \text{ s}$	$V_{is}^{1)}$	5.3		kV
Isolation resistance				
$V_{IO} = 1 \text{ kV}, 40\% \text{ relative humidity}$	$R_{is}^{1)}$		10^{12}	Ω
Collector current				
$V_{CE} = 10 \text{ V}, I_F = \pm 10 \text{ mA}$	I_C	2		mA
Current transfer ratio				
$V_{CE} = 10 \text{ V}, I_F \pm 10 \text{ mA}$	CTR	20		%

¹⁾ related to standard climate 23/50 DIN 50014

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		Min.	Typ.	Max.
CTR symmetry	$\frac{I_C/+I_F}{I_C/-I_F}$	0.33		3
Collector emitter saturation voltage	$I_F = \pm 10 \text{ mA}, I_C = 1 \text{ mA}$			0.3 V
Cut-off frequency	$I_F = 10 \text{ mA}, V_{CE} = 5 \text{ V}, R_L = 100 \Omega$		110	kHz
Coupling capacitance	$f = 1 \text{ MHz}$		0.3	pF
Switching characteristics				
$V_S = 10 \text{ V}, I_C = 2 \text{ mA}, R_L = 100 \Omega$, see Fig. 1				
Turn-on time	t_{on}		5	μs
Turn-off time	t_{off}		3	μs
$V_S = 5 \text{ V}, I_F = 10 \text{ mA}, R_L = 1 \text{ k}\Omega$, see Fig. 2				
Turn-on time	t_{on}		25	μs
Turn-off time	t_{off}		42.5	μs

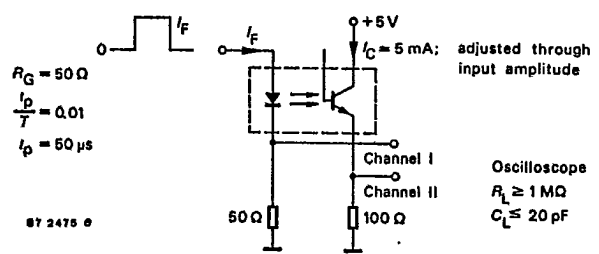


Fig. 1 Test circuit, non saturated operation

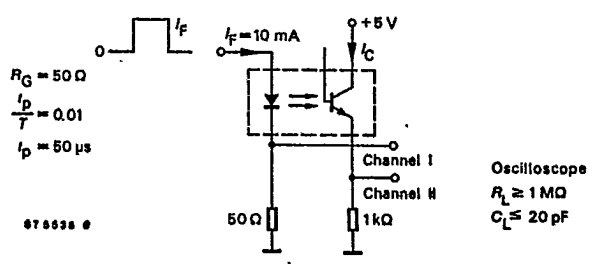
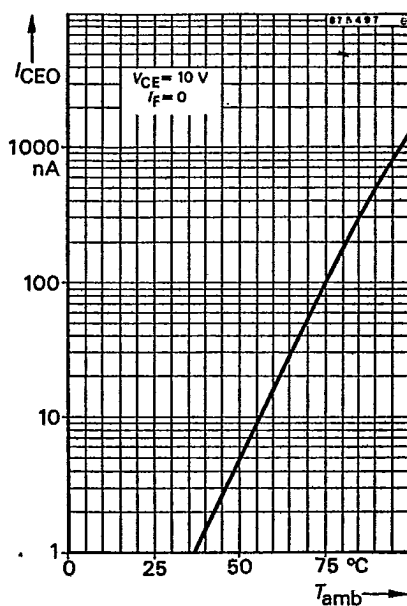
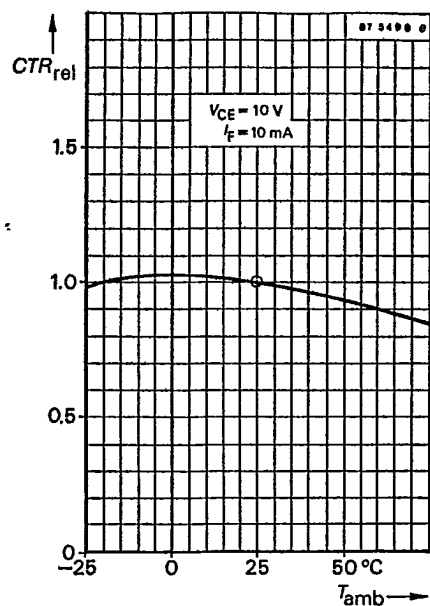
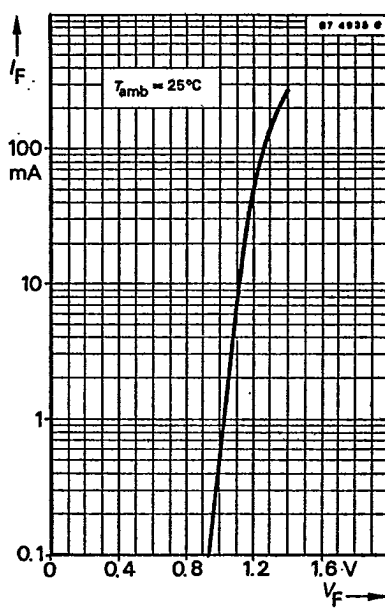
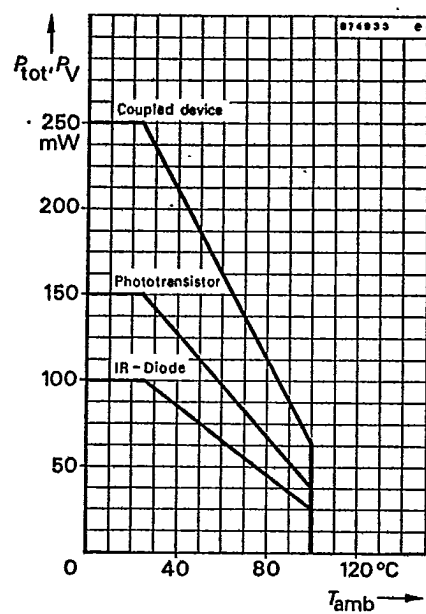


Fig. 2 Test circuit, saturated operation

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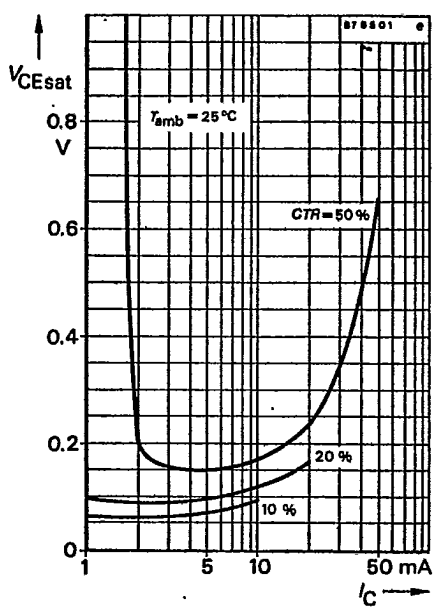
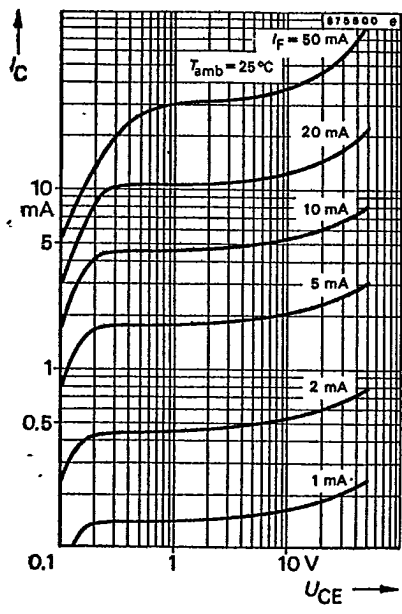
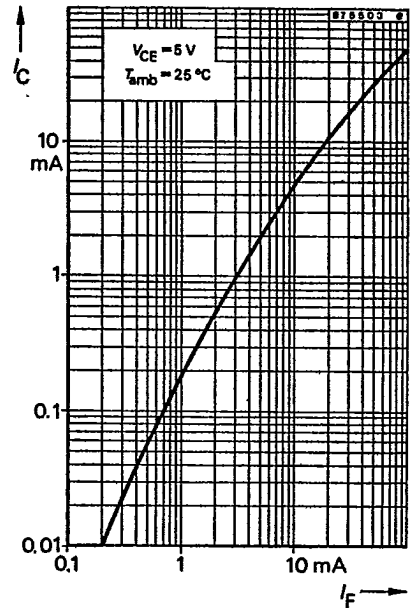
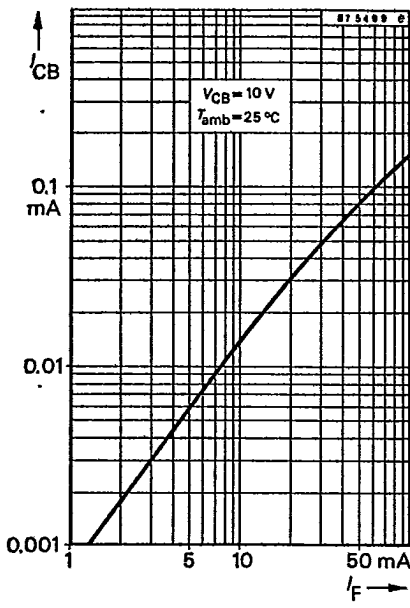
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