

# REFLECTIVE SWITCH T-41-73

## MTRS9070, MTRS9070(LB) INFRARED LED+ PHOTO DARLINGTON

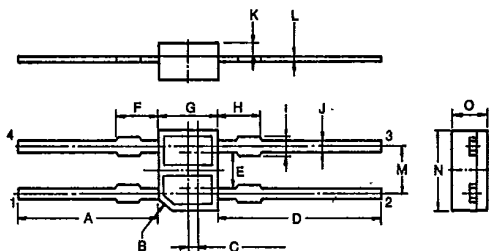
### APPLICATIONS

- SENSOR FOR AUDIO, VIDEO, FILM AND DISCS

### FEATURES

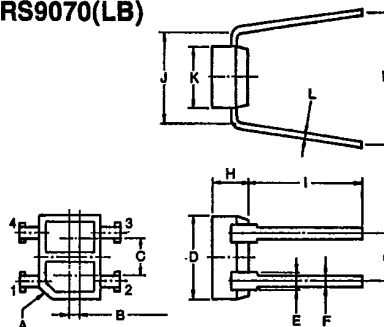
- Detects start/finish/location on reel for audio and VCR tapes.
- Index for floppy disc drives.
- Detects "write protect" on floppy disc (also disc in drive).
- Detects optically encoded information on film.
- Super-miniature package (2.6x3.4x1.5mm).
- High sensitivity:  $I_C=3mA$  typ.

MTRS9070



SYMBOL	INCHES	MM
A	$0.276 \pm 0.020$	$7.0 \pm 0.5$
B	0.002	0.05
C	0.018	0.45
D	$0.276 \pm 0.020$	$7.0 \pm 0.5$
E	0.063	1.6
F	$0.071 \pm 0.008$	$1.8 \pm 0.2$
G	$0.102 \pm 0.008$	$2.6 \pm 0.2$
H	$0.071 \pm 0.008$	$1.8 \pm 0.2$
I	$0.028 \pm 0.008$	$0.7 \pm 0.2$
J	$0.020 \pm 0.008$	$0.5 \pm 0.2$
K	$0.020 \pm 0.004$	$0.5 \pm 0.1$
L	$0.008 \pm 0.004$	$0.2 \pm 0.1$
M	0.079	2.0
N	$0.134 \pm 0.008$	$3.4 \pm 0.2$
O	$0.059 \pm 0.008$	$1.5 \pm 0.2$

MTRS9070(LB)



SYMBOL	INCHES	MM
A	0.020	0.5
B	0.018	0.45
C	0.063	1.6
D	$0.134 \pm 0.020$	$3.4 \pm 0.5$
E	$0.028 \pm 0.008$	$0.7 \pm 0.2$
F	$0.157 \pm 0.020 \pm 0.008$	$4.0 \pm 0.5 \pm 0.2$
G	0.079	2.0
H	$0.059 \pm 0.008$	$1.5 \pm 0.2$
I	$0.220 \pm 0.024$	$5.6 \pm 0.6$
J	$0.157 \pm 0.010$	$4.0 \pm 0.25$
K	$0.102 \pm 0.020$	$2.6 \pm 0.5$
L	$0.008 \pm 0.004$	$0.2 \pm 0.1$
M	$0.148 \sim 0.287$	$3.75 \sim 7.3$

# REFLECTIVE SWITCH

## MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

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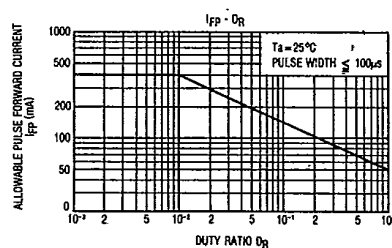
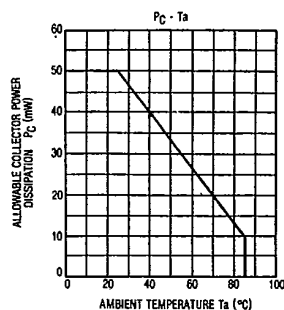
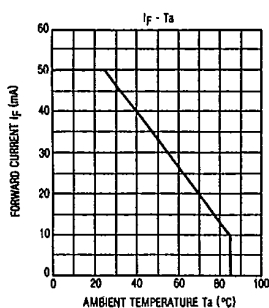
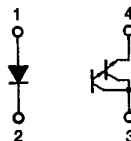
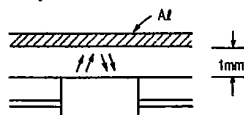
	CHARACTERISTIC	SYMBOL	RATING	UNIT
A	Forward Current	$I_F$	50	mA
	Pulse Forward Current (Note 1)	$I_{FP}$	400	mA
	Reverse Voltage	$V_R$	5	V
B	Collector-Emitter Voltage	$V_{CEO}$	30	V
	Emitter-Collector Voltage	$V_{ECO}$	5	V
	Collector Power Dissipation	$P_C$	50	mW
	Collector Current	$I_C$	20	mA
	Operating Temperature Range	$T_{opr}$	$-20 \sim 85$	$^\circ\text{C}$
	Storage Temperature Range	$T_{stg}$	$-30 \sim 100$	$^\circ\text{C}$

Note 1: Pulse width 100 $\mu\text{sec}$ ; 100Hz

## OPTO-ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

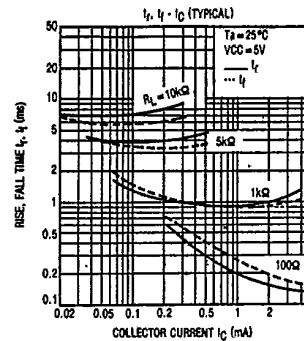
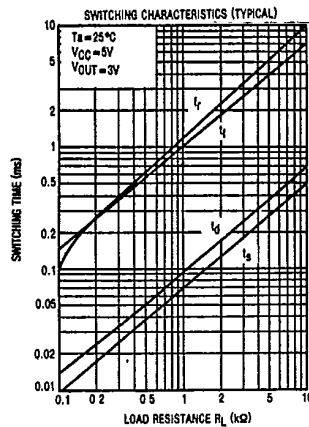
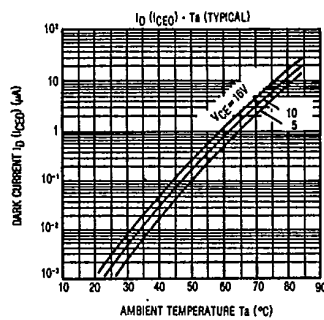
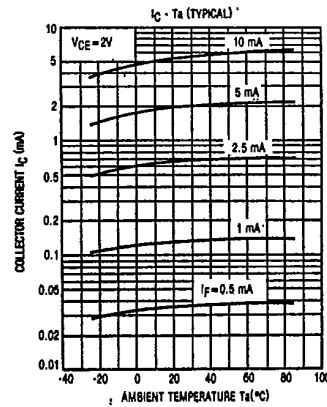
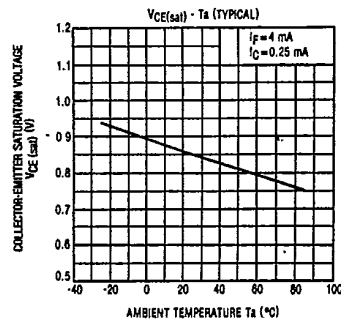
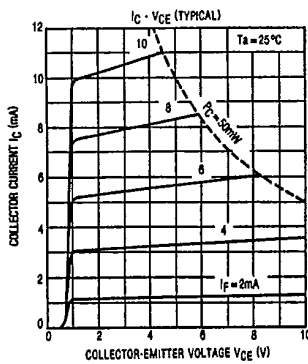
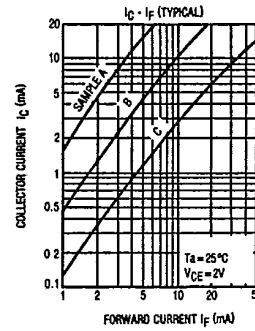
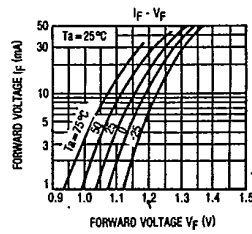
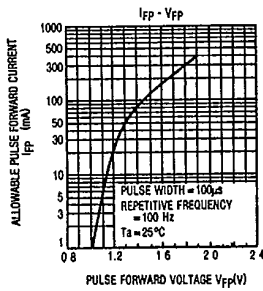
	CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
A	Forward Voltage	$V_F$	$I_F = 10\text{mA}$	1.00	1.15	1.30	V
	Reverse Current	$I_R$	$V_R = 5\text{V}$	—	—	10	$\mu\text{A}$
	Terminal Between Capacitance	$C_T$	$V=0, f=1\text{MHz}$	—	30	—	pF
B	Collector Dark Current	$I_D(I_{CEO})$	$V_{CE} = 15\text{V}, I_F = 0$	—	—	0.25	$\mu\text{A}$
	Terminal Between Capacitance	$C_T$	$V=0, f=1\text{MHz}$	—	7	—	pF
	Collector Current	$I_C$	$V_{CE} = 2\text{V}, I_F = 4\text{mA}$	0.5	3	15	mA
C	Leakage Current	$I_{LEAK}$	$V_{CE} = 2\text{V}, I_F = 4\text{mA}$	—	—	0.25	$\mu\text{A}$
	Collector-Emitter Saturation	$V_{CE(sat)}$	$I_F = 4\text{mA}, I_C = 0.25\text{mA}$	—	0.85	1.2	V
	Rise Time	$t_r$	$V_{CC} = 5\text{V}, I_C = 10\text{mA}$	—	100	—	$\mu\text{s}$
	Fall Time	$t_f$	$R_L = 100\Omega$	—	100	—	$\mu\text{s}$

A - EMITTER B - DETECTOR C - COUPLED



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marktech 120 Broadway • Menands, New York 12204 • (518) 436-5865 • FAX: (518) 436-5877

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