

PHOTO TRIAC COUPLER

MT30310, MT30320, MT30330

APPLICATIONS

- OFFICE MACHINERY
- HOUSEHOLD APPLIANCES
- TRIAC DRIVER
- SOLID STATE RELAY
- TELECOMMUNICATIONS
- FACSIMILE
- LAMP & RELAY DRIVE CIRCUIT

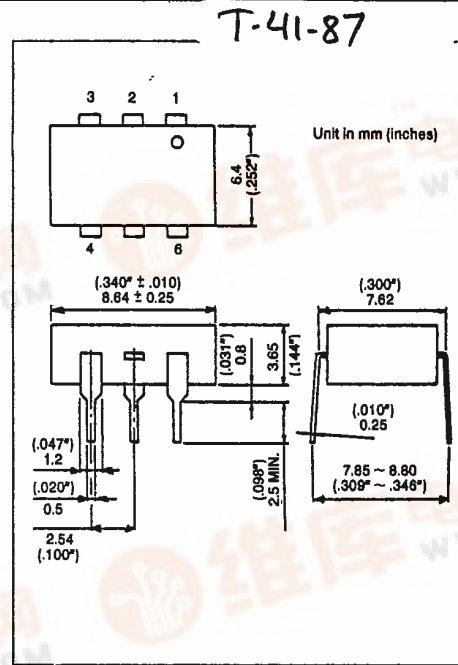
The MARKTECH MT30310, MT30320 and MT30330 consist of a zero voltage crossing turn on photo-triac optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package.

FEATURES

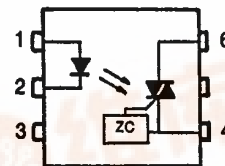
- Peak Off-State Voltage : 250V Min.
- Trigger LED Current : 15mA Max. (MT30310)
10mA Max. (MT30320)
5mA Max. (MT30330)
- On-State Current : 100mA Max.
- Isolation Voltage : 5000V_{rms} Min.
- Guaranteed Requirements of IEC380/VDE0806.
- Climatic Test Class : 55/150/21
- Isolation Creepage Path : 8.0mm Min.
- Isolation Clearance : 7.3mm Min.
- Isolation Operating Voltage : 500V_{ac} or 600V_{dc} for Isolation Group C. *1
- Creeping Current Resistance : Group I *2

*1 : According to VDE0110, table 4

*2 : According to VDE0110, table 3



PIN CONFIGURATIONS (TOP VIEW)



- 1: ANODE
- 2: CATHODE
- 3: NC
- 4: TERMINAL 1
- 6: TERMINAL 2

PHOTO TRIAC COUPLER

T-41-87

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

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I_F	50	mA
	Forward Current Derating ($T_a \geq 53^\circ\text{C}$)	$\Delta I_F/^\circ\text{C}$	-0.7	mA/ $^\circ\text{C}$
	Peak Forward Current (100 μs pulse, 100pps)	I_{FP}	1	A
	Power Dissipation	P_D	100	mW
	Power Dissipation Derating ($T_a \geq 25^\circ\text{C}$)	$\Delta P_D/^\circ\text{C}$	-1.0	mW/ $^\circ\text{C}$
	Reverse Voltage	V_R	5	V
	Junction Temperature	T_J	125	$^\circ\text{C}$
DETECTOR	Off-State Output Terminal Voltage	V_{DRM}	250	V
	On-State RMS Current	$I_T(\text{RMS})$	100	mA
			50	
	On-State Current Derating ($T_a \geq 25^\circ\text{C}$)	$\Delta I_T/^\circ\text{C}$	-1.1	mA/ $^\circ\text{C}$
	Peak On-State Current (100 μs pulse, 120pps)	I_{TP}	2	A
	Peak Nonrepetitive Surge Current ($P_W=10\text{ms}$, DC~10%)	I_{TSM}	1.2	A
	Power Dissipation	P_D	300	mW
	Power Dissipation Derating ($T_a \geq 25^\circ\text{C}$)	$\Delta P_D/^\circ\text{C}$	-4.0	mW/ $^\circ\text{C}$
	Junction Temperature	T_J	100	$^\circ\text{C}$
	Storage Temperature Range	T_{stg}	-55 ~ 150	$^\circ\text{C}$
Operating Temperature Range		T_{opr}	-40 ~ 100	$^\circ\text{C}$
Lead Soldering Temperature (10 sec.)		T_{sold}	260	$^\circ\text{C}$
Total Package Power Dissipation		P_T	330	mW
Total Package Power Dissipation Derating ($T_a \geq 25^\circ\text{C}$)		$\Delta P_T/^\circ\text{C}$	-4.4	mW/ $^\circ\text{C}$
Isolation Voltage (AC, 1 min., RH $\leq$ 60%)		BV_S	5000	V_{rms}

PHOTO TRIAC COUPLER

T-41-87

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta=25°C)

	CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	$I_F=10\text{mA}$	1.0	1.15	1.3	V
	Reverse Current	I_R	$V_R=5\text{V}$	—	—	10	μA
	Capacitance	C_T	$V=0, f=1\text{MHz}$	—	10	—	pF
DETECTOR	Peak Off-State Current	I_{DRM}	$V_{DRM}=250\text{V}$	—	10	100	nA
	Peak On-State Voltage	V_{TM}	$I_{TM}=100\text{mA}$	—	1.7	3.0	V
	Holding Current	I_H	—	—	0.2	—	mA
	Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{in}=120V_{rms}, Ta=85^\circ\text{C}$ (Fig. 1)	200	500	—	$V/\mu\text{s}$
	Critical Rate of Rise of Commutating Voltage	$dv/dt(c)$	$V_{in}=30V_{rms}, I_T=15\text{mA}$ (Fig. 1)	—	0.2	—	$V/\mu\text{s}$

COUPLED ELECTRICAL CHARACTERISTICS (Ta=25°C)

	CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	MT30310	I_{FT}	$V_T=3\text{V}$	—	—	15	mA
	MT30320			—	5	10	
	MT30330			—	—	5	
Inhibit Voltage		V_{IH}	$I_F=\text{Rated } I_{FT}$	—	—	40	V
Leakage in Inhibited State		I_{IH}	$I_F=\text{Rated } I_{FT}, V_T=\text{Rated } V_{DRM}$	—	100	300	μA
Capacitance Input to Output		C_S	$V_S=0, f=1\text{MHz}$	—	0.8	—	pF
Isolation Resistance		R_S	$V_S=500\text{V}$	5×10^{10}	10^{14}	—	Ω
Isolation Voltage		BV_S	AC, 1 minute	5000	—	—	V_{rms}
			AC, 1 second	—	10000	—	
			DC, 1 minute	—	10000	—	V_{dc}

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{AC}	—	—	120	V_{ac}
Forward Current	I_F^*	15	20	25	mA
Peak On-State Current	I_{TP}	—	—	1	A
Operating Temperature	T_{opr}	-25	—	85	$^\circ\text{C}$

*In the case of MT30320

Fig. 1 dv/dt TEST CIRCUIT

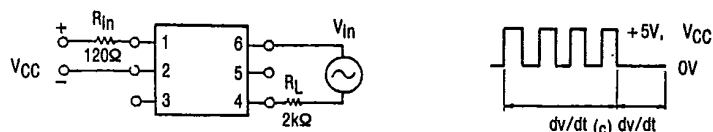


PHOTO TRIAC COUPLER

T-41-87

