



6-Pin DIP Zero-Cross Optoisolators Triac Driver Output (800 Volts Peak)

The MOC3081, MOC3082 and MOC3083 devices consist of gallium arsenide infrared emitting diodes optically coupled to monolithic silicon detectors performing the function of Zero Voltage Crossing bilateral triac drivers.

They are designed for use with a triac in the interface of logic systems to equipment powered from 240 Vac lines, such as solid-state relays, industrial controls, motors, solenoids and consumer appliances, etc.

- Simplifies Logic Control of 240 Vac Power
- Zero Voltage Crossing
- dv/dt of 1500 V/μs Typical, 600 V/μs Guaranteed
- **To order devices that are tested and marked per VDE 0884 requirements, the suffix "V" must be included at end of part number. VDE 0884 is a test option.**

Recommended for 240 Vac(rms) Applications:

- Solenoid/Valve Controls
- Lighting Controls
- Static Power Switches
- AC Motor Drives
- Temperature Controls
- E.M. Contactors
- AC Motor Starters
- Solid State Relays

MAXIMUM RATINGS

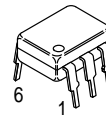
Rating	Symbol	Value	Unit
INPUT LED			
Reverse Voltage	V_R	6	Volts
Forward Current — Continuous	I_F	60	mA
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Negligible Power in Output Driver Derate above 25°C	P_D	120 1.41	mW mW/°C
OUTPUT DRIVER			
Off-State Output Terminal Voltage	V_{DRM}	800	Volts
Peak Repetitive Surge Current (PW = 100 μs, 120 pps)	I_{TSM}	1	A
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	150 1.76	mW mW/°C

TOTAL DEVICE

Isolation Surge Voltage ⁽¹⁾ (Peak ac Voltage, 60 Hz, 1 Second Duration)	V_{ISO}	7500	Vac(pk)
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	250 2.94	mW mW/°C
Junction Temperature Range	T_J	-40 to +100	°C
Ambient Operating Temperature Range	T_A	-40 to +85	°C
Storage Temperature Rang	T_{stg}	-40 to +150	°C
Soldering Temperature (10 s)	T_L	260	°C

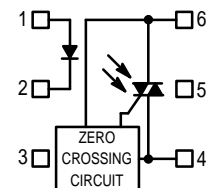
1. Isolation surge voltage, V_{ISO} , is an internal device dielectric breakdown rating. For this test, Pins 1 and 2 are common, and Pins 4, 5 and 6 are common.

MOC3081
MOC3082
MOC3083



STANDARD THRU HOLE

COUPLER SCHEMATIC



1. ANODE
2. CATHODE
3. NC
4. MAIN TERMINAL
5. SUBSTRATE
DO NOT CONNECT
6. MAIN TERMINAL

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
INPUT LED					
Reverse Leakage Current ($V_R = 6\text{ V}$)	I_R	—	0.05	100	μA
Forward Voltage ($I_F = 30\text{ mA}$)	V_F	—	1.3	1.5	Volts
OUTPUT DETECTOR ($I_F = 0$)					
Leakage with LED Off, Either Direction ($V_{\text{DRM}} = 800\text{ V}^{(1)}$)	I_{DRM1}	—	80	500	nA
Critical Rate of Rise of Off-State Voltage ⁽³⁾	dv/dt	600	1500	—	$\text{V}/\mu\text{s}$
COUPLED					
LED Trigger Current, Current Required to Latch Output (Main Terminal Voltage = $3\text{ V}^{(2)}$)	I_{FT}	—	—	15 10 5	mA
Peak On-State Voltage, Either Direction ($I_{\text{TM}} = 100\text{ mA}$, $I_F = \text{Rated } I_{\text{FT}}$)	V_{TM}	—	1.8	3	Volts
Holding Current, Either Direction	I_H	—	250	—	μA
Inhibit Voltage (MT1–MT2 Voltage above which device will not trigger) ($I_F = \text{Rated } I_{\text{FT}}$)	V_{INH}	—	5	20	Volts
Leakage in Inhibited State ($I_F = \text{Rated } I_{\text{FT}}$, $V_{\text{DRM}} = 800\text{ V}$, Off State)	I_{DRM2}	—	300	500	μA

1. Test voltage must be applied within dv/dt rating.
2. All devices are guaranteed to trigger at an I_F value less than or equal to max I_{FT} . Therefore, recommended operating I_F lies between max I_{FT} (15 mA for MOC3081, 10 mA for MOC3082, 5 mA for MOC3083) and absolute max I_F (60 mA).
3. This is static dv/dt . See Figure 7 for test circuit. Commutating dv/dt is a function of the load-driving thyristor(s) only.

TYPICAL CHARACTERISTICS

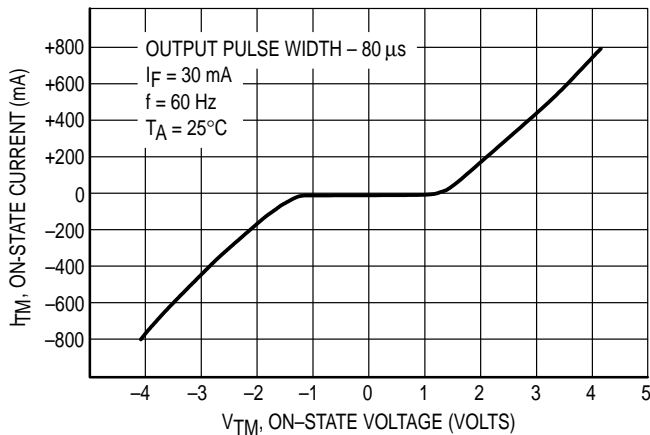


Figure 1. On-State Characteristics

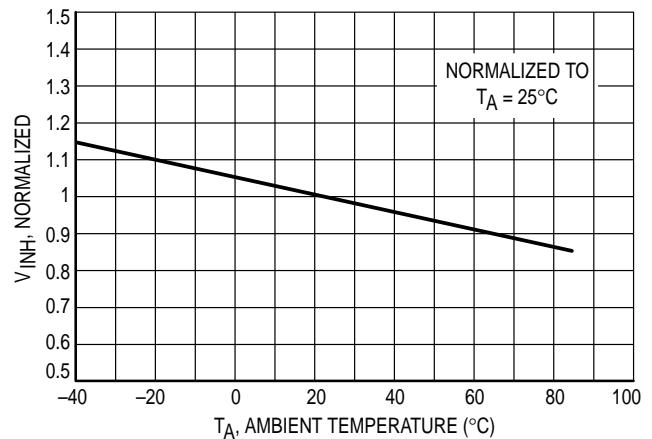


Figure 2. Inhibit Voltage versus Temperature

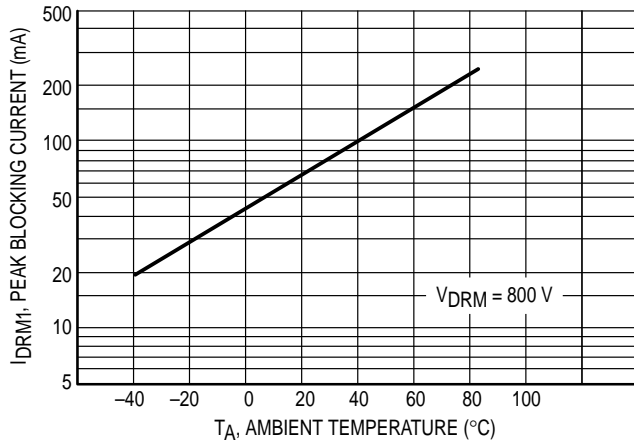


Figure 3. Leakage with LED Off versus Temperature

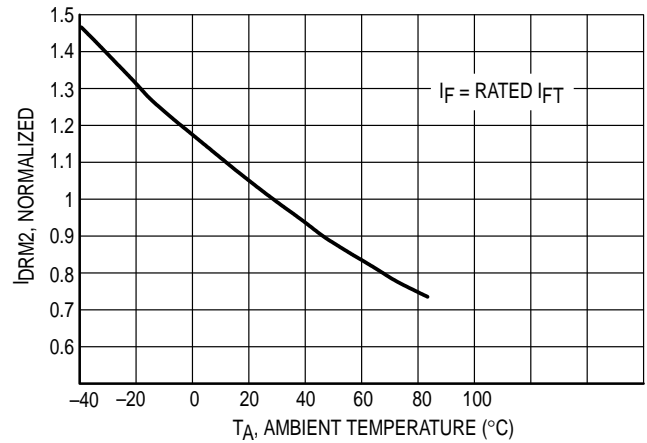


Figure 4. I_{DRM2}, Leakage in Inhibit State versus Temperature

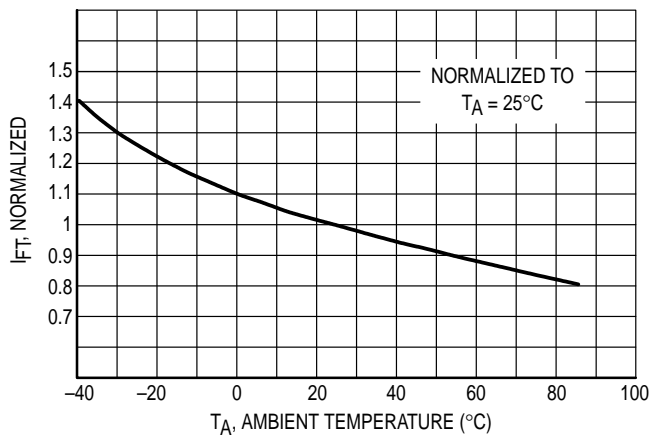


Figure 5. Trigger Current versus Temperature

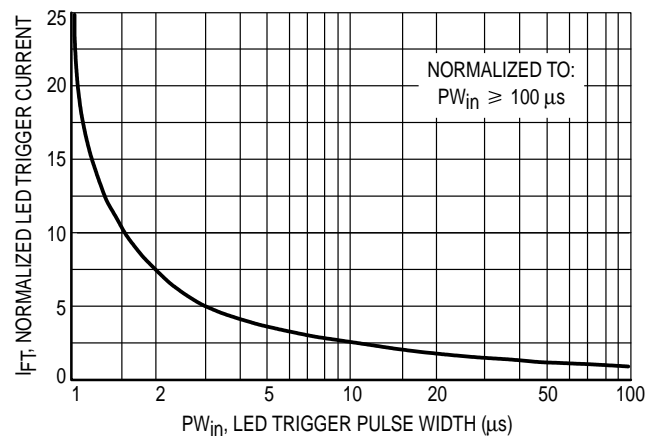


Figure 6. LED Current Required to Trigger versus LED Pulse Width

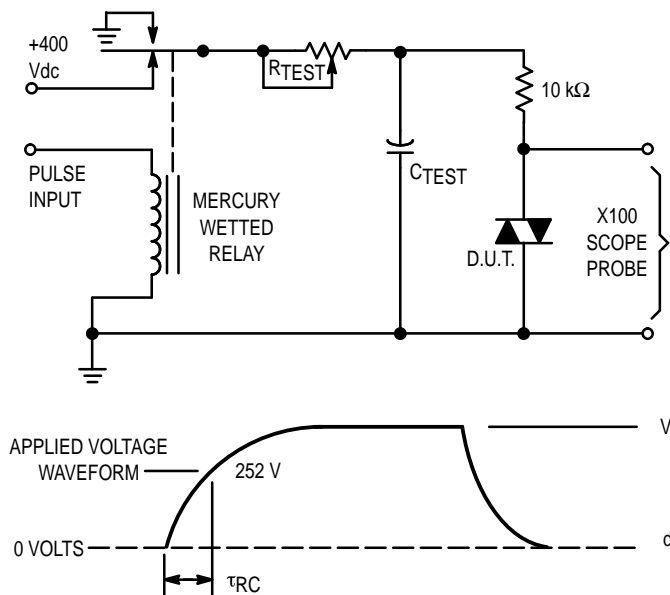
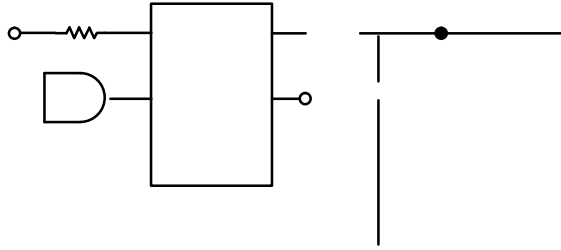
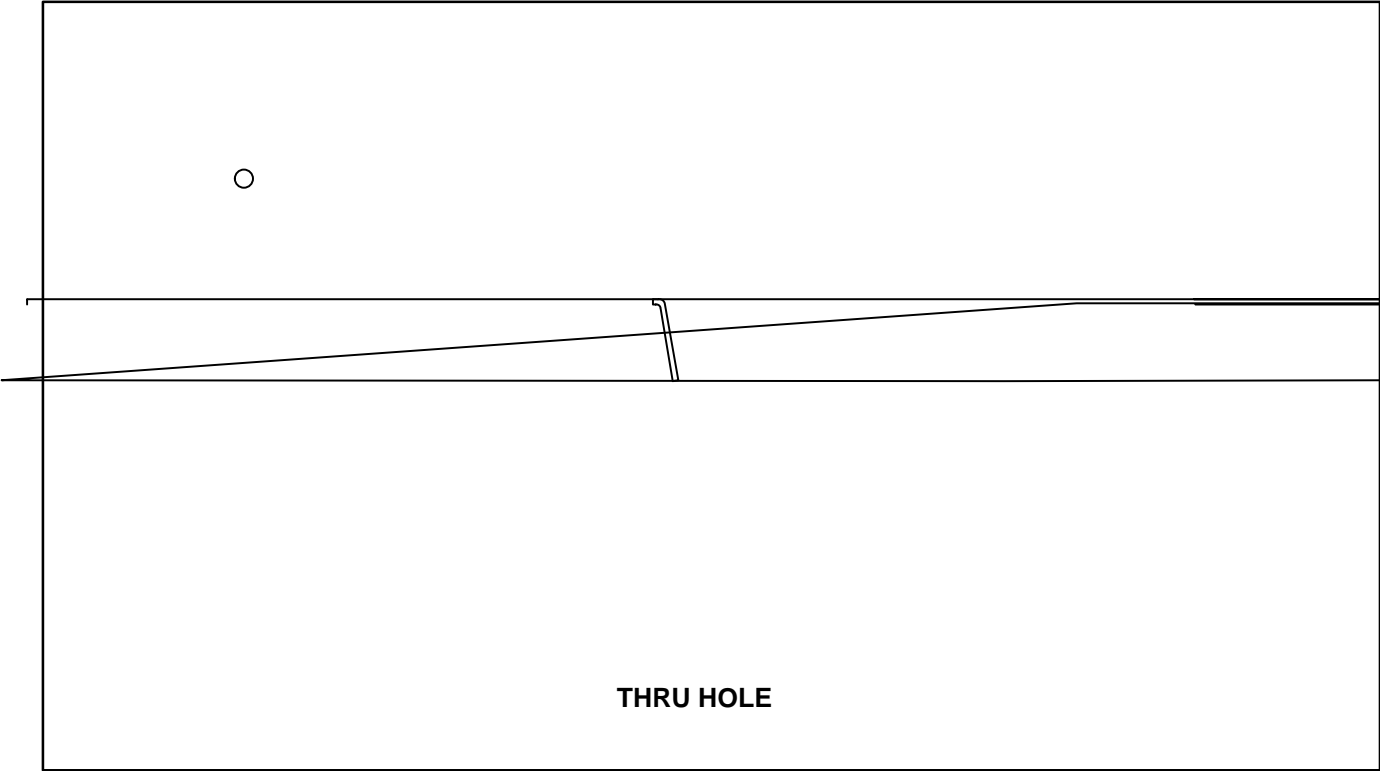


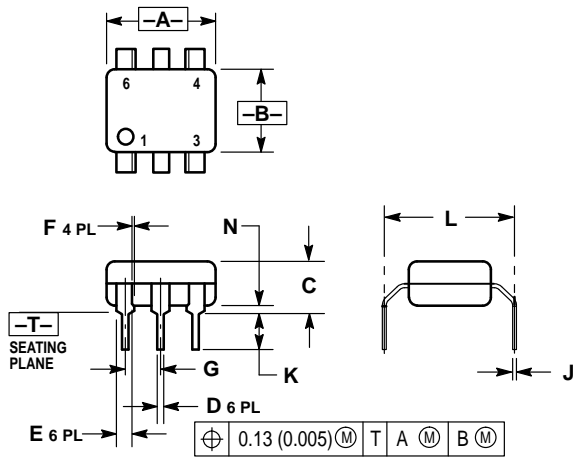
Figure 7. Static dv/dt Test Circuit

1. The mercury wetted relay provides a high speed repeated pulse to the D.U.T.
2. 100x scope probes are used, to allow high speeds and voltages.
3. The worst-case condition for static dv/dt is established by triggering the D.U.T. with a normal LED input current, then removing the current. The variable R_{TEST} allows the dv/dt to be gradually increased until the D.U.T. continues to trigger in response to the applied voltage pulse, even after the LED current has been removed. The dv/dt is then decreased until the D.U.T. stops triggering. τ_{RC} is measured at this point and recorded.



PACKAGE DIMENSIONS





NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.320	0.350	8.13	8.89
B	0.240	0.260	6.10	6.60
C	0.115	0.200	2.93	5.08
D	0.016	0.020	0.41	0.50
E	0.040	0.070	1.02	1.77
F	0.010	0.014	0.25	0.36
G	0.100 BSC		2.54 BSC	
J	0.008	0.012	0.21	0.30
K	0.100	0.150	2.54	3.81
L	0.400	0.425	10.16	10.80
N	0.015	0.040	0.38	1.02

0.4" LEAD SPACING

: : :

), 0 1 1) 2)
, .2 1 , 1
,) 12 1 0 , 2
2) 1 0)

1) ,) 1 1 2
2)) 1) 1

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MOC3081-M
6-Pin 800V Zero Crossing Triac Driver Output Coupler

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General description

The MOC3081, MOC3082 and MOC3083 devices consist of a gallium arsenide infrared emitting diodes optically coupled to a monolithic silicon detectors performing the functions of zero voltage crossing bilateral triac drivers.

They are designed for use with a triac in the interface of logic systems to equipment powered from 240 Vac lines, such as solid state relays, industrial controls, motors, solenoids and consumer appliances, etc. Simplifies logic control of 240 Vac power Zero voltage crossing dv/dt of 1500 V/μs typical, 600 V/μs guaranteed.

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Applications

Recommended for 115/240 Vac rms)

- Solenoid/Valve Controls
- Lighting controls
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- AC motor drives
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- E.M. contractors
- AC motor starters

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CR/0117 (424 K)	BABT	British Approvals Board of Telecommunications
102497 (1629 K)	VDE	VDE Pruf-und Zertifizierungsinstitut
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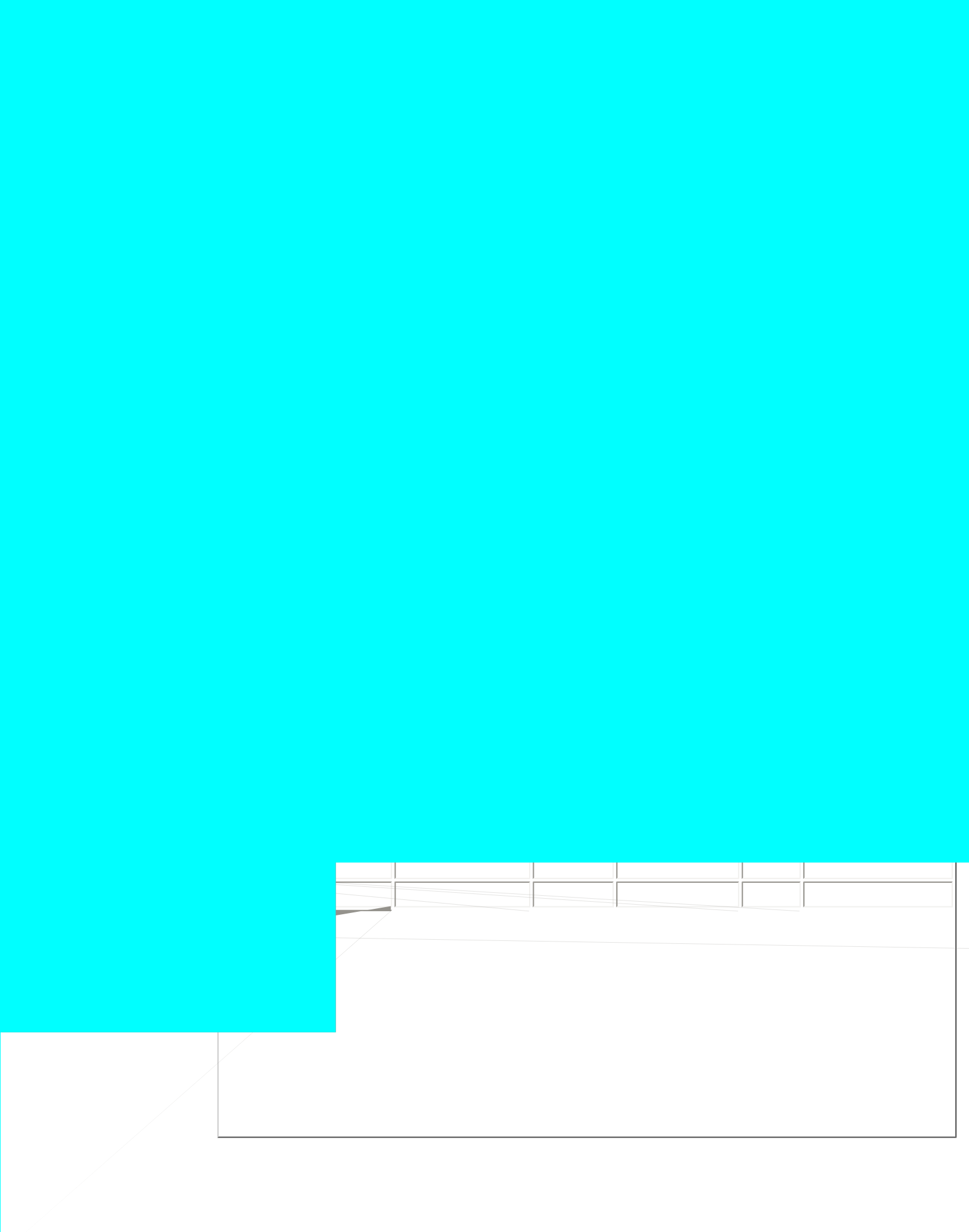
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