

MOS FET Relays

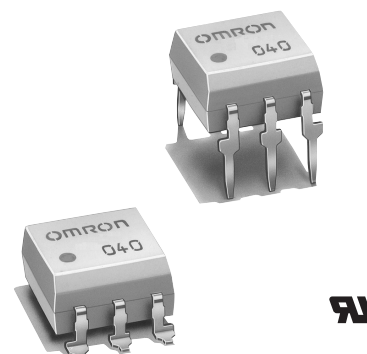
G3VM-353B/B1/E/E1

Analog-switching MOS FET Relay with SPST-NC Contact. General-purpose Models Added.

- Switches minute AC and DC analog signals.
- General-purpose models (with high ON resistance) added.
- RoHS compliant

■ Application Examples

- Electronic automatic exchange systems
- Security systems
- Datacom (modem) systems
- FA systems and Measurement devices



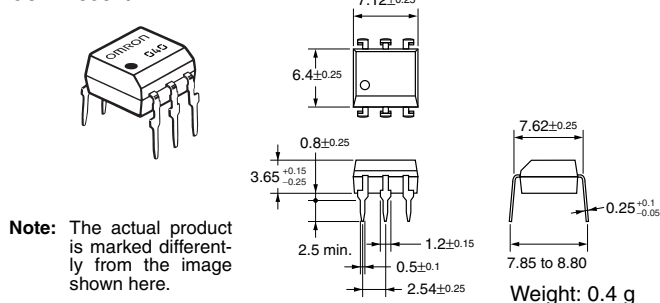
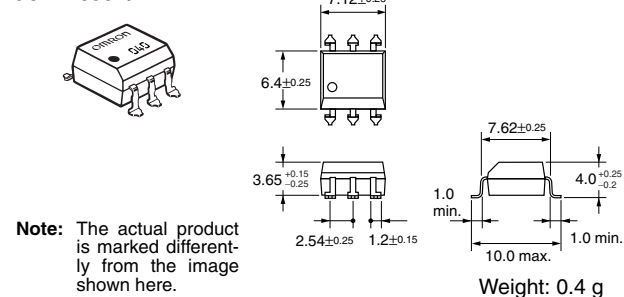
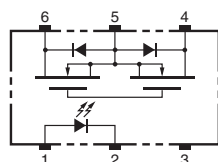
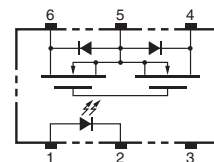
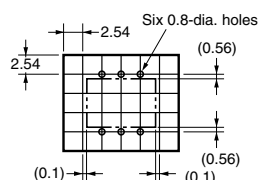
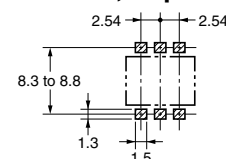
Note: The actual product is marked differently from the image shown here.

■ List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NC	PCB terminals	350 VAC	G3VM-353B	50	---
	Surface-mounting terminals		G3VM-353B1		
			G3VM-353E		
			G3VM-353E1		
			G3VM-353E(TR)	---	1,500
			G3VM-353E1(TR)		

■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-353B/B1**G3VM-353E/E1****■ Terminal Arrangement/Internal Connections (Top View)****G3VM-353B/B1****G3VM-353E/E1****■ PCB Dimensions (Bottom View)****G3VM-353B/B1****■ Actual Mounting Pad Dimensions (Recommended Value, Top View)****G3VM-353E/E1**

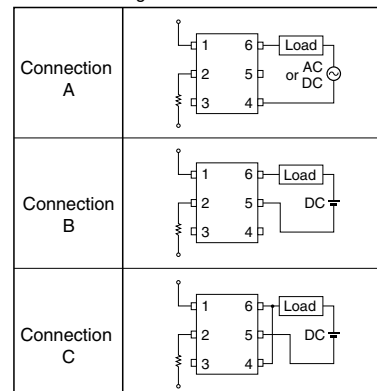
■ Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA	
	Repetitive peak LED forward current	I_{FP}	1	A	100 μ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	$T_a \geq 25^\circ\text{C}$
	LED reverse voltage	V_R	5	V	
	Connection temperature	T_j	125	°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	350	V	
	Continuous load current (AC peak/DC)	Connection A I_O	150 (100)	mA	
		Connection B	150 (100)		
		Connection C	300 (200)		
	ON current reduction rate	Connection A $\Delta I_{ON}/^\circ\text{C}$	-1.5 (-1)	mA/°C	$T_a \geq 25^\circ\text{C}$
		Connection B	-1.5 (-1)		
		Connection C	-3.0 (-2)		
	Connection temperature	T_j	125	°C	
Dielectric strength between input and output (See note 1.)		V_{I-O}	2,500	V_{rms}	AC for 1 min
Operating temperature		T_a	-40 to +85	°C	With no icing or condensation
Storage temperature		T_{stg}	-55 to +125	°C	With no icing or condensation
Soldering temperature (10 s)		---	260	°C	10 s

Values in parentheses are for the G3VM-353B1/E1.

Note: 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

Connection Diagram



■ Electrical Characteristics (Ta = 25°C)

Item		Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions
Input	LED forward voltage	V_F	1.0	1.15	1.3	V	$I_F = 10 \text{ mA}$
	Reverse current	I_R	---	---	10	μA	$V_R = 5 \text{ V}$
	Capacity between terminals	C_T	---	30	---	pF	$V = 0, f = 1 \text{ MHz}$
	Trigger LED forward current	I_{FT}	---	1	3	mA	$I_{OFF} = 10 \mu\text{A}$
Output	Maximum resistance with output ON	Connection A R_{ON}	---	15 (27)	25 (50)	Ω	$I_O = 150 \text{ mA (100 mA)}$
		Connection B	---	8 (20)	14 (43)	Ω	$I_O = 150 \text{ mA (100 mA)}$
		Connection C	---	4 (10)	7 (---)	Ω	$I_O = 300 \text{ mA (200 mA)}$
	Current leakage when the relay is open	I_{LEAK}	---	0.0105 (0.003)	1.0	μA	$I_F = 5 \text{ mA}, V_{OFF} = 350 \text{ V}$
	Capacity between terminals A Connection	C_{OFF}	---	85 (30)	---	pF	$V = 0, f = 1 \text{ MHz}, I_F = 5 \text{ mA}$
Capacity between I/O terminals		C_{I-O}	---	0.8	---	pF	$f = 1 \text{ MHz}, V_s = 0 \text{ V}$
Insulation resistance		R_{I-O}	1,000	---	---	$M\Omega$	$V_{I-O} = 500 \text{ VDC}, R_{OH} \leq 60\%$
Turn-ON time		t_{ON}	---	0.1 (0.25)	1.0 (0.5)	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega, V_{DD} = 20 \text{ V (See note 2.)}$
Turn-OFF time		t_{OFF}	---	1.0 (0.5)	3.0 (1)	ms	

Values in parentheses are for the G3VM-353B1/E1.

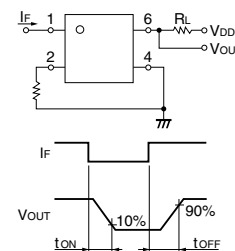
■ Recommended Operating Conditions

Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	---	---	280	V
Operating LED forward current	I_F	5	---	25	mA
Continuous load current (AC peak/DC)	I_O	---	---	150 (100)	mA
Operating temperature	T_a	-20	---	65	°C

Values in parentheses are for the G3VM-353B1/E1

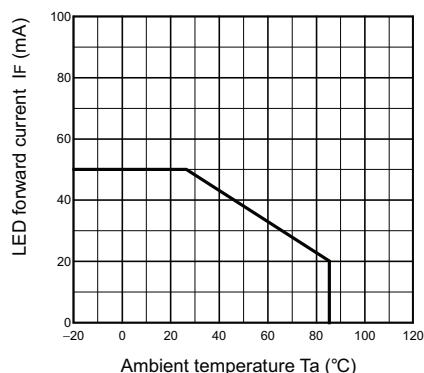
Note: 2. Turn-ON and Turn-OFF Times



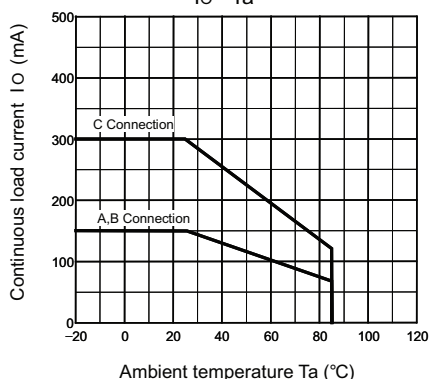
Engineering Data

G3VM-353B/E

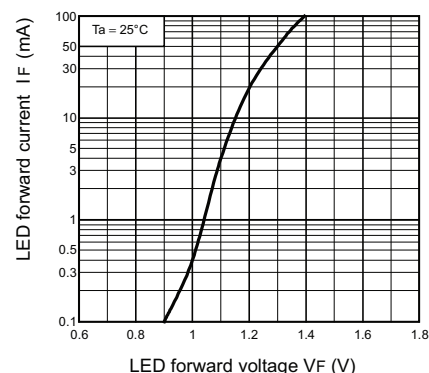
LED forward current vs.
Ambient temperature
 $I_F - T_a$



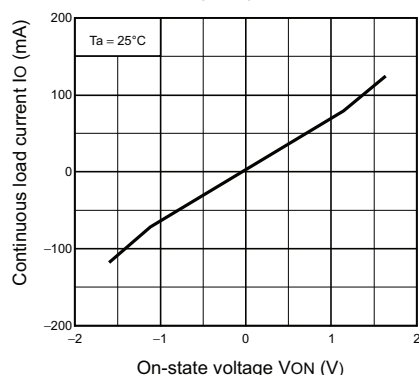
Continuous load current vs.
Ambient temperature
 $I_O - T_a$



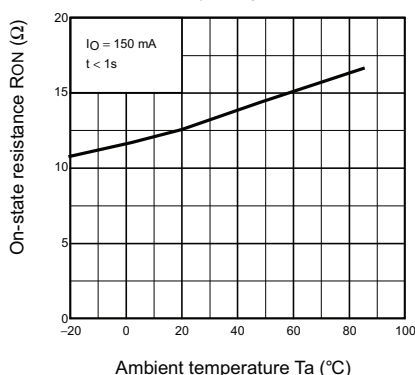
LED forward current vs.
LED forward voltage
 $I_F - V_F$



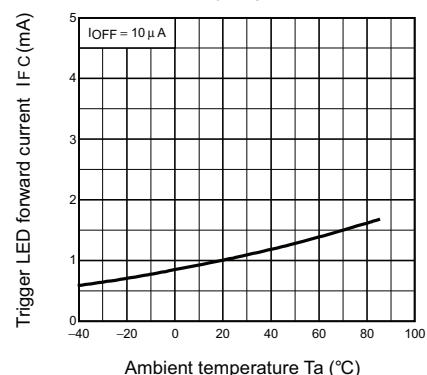
Continuous load current vs.
On-state voltage
 $I_O - V_{ON}$



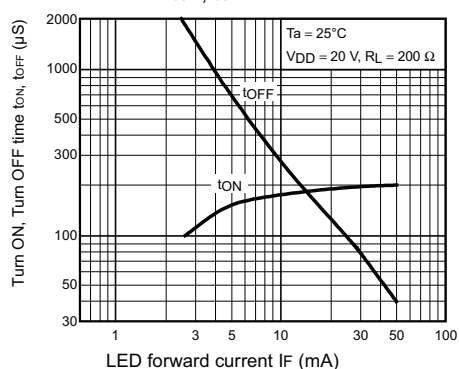
On-state resistance vs.
Ambient temperature
 $R_{ON} - T_a$



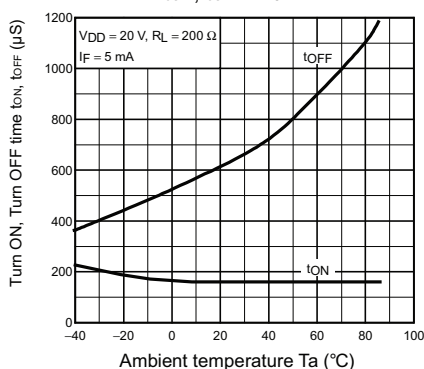
Trigger LED forward current vs.
Ambient temperature
 $I_{FC} - T_a$



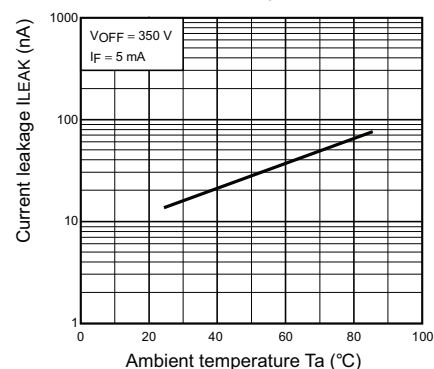
Turn ON, Turn OFF time vs.
LED forward current
 $t_{ON}, t_{OFF} - I_F$



Turn ON, Turn OFF time vs.
Ambient temperature
 $t_{ON}, t_{OFF} - T_a$



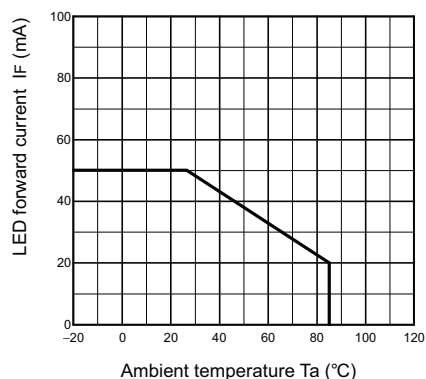
Current leakage vs.
Ambient temperature
 $I_{LEAK} - T_a$



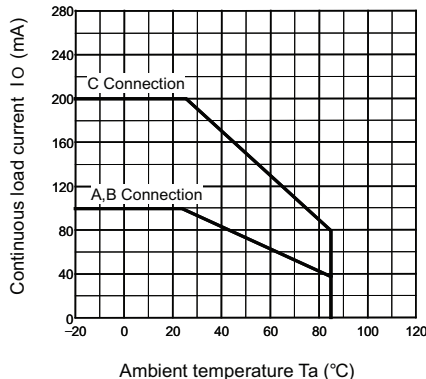
Engineering Data

G3VM-353B1/E1

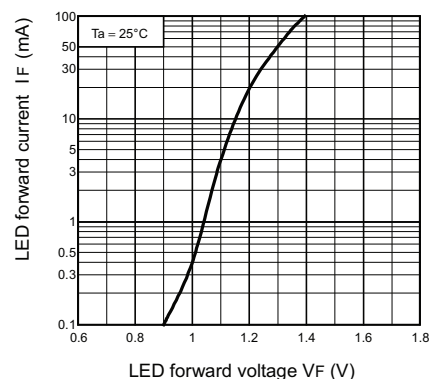
LED forward current vs. Ambient temperature
IF - Ta



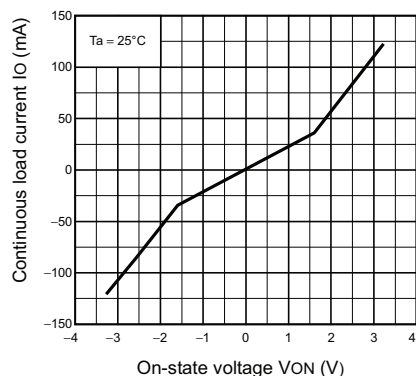
Continuous load current vs. Ambient temperature
IO - Ta



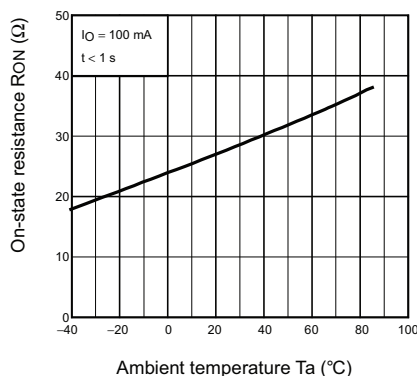
LED forward current vs. LED forward voltage
IF - VF



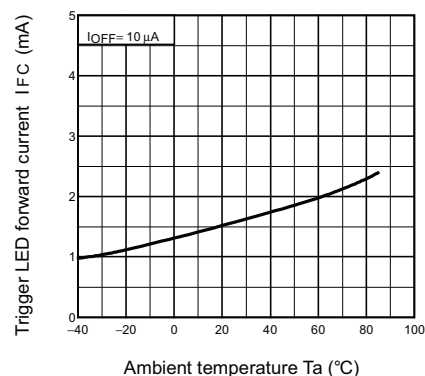
Continuous load current vs. On-state voltage
IO - VON



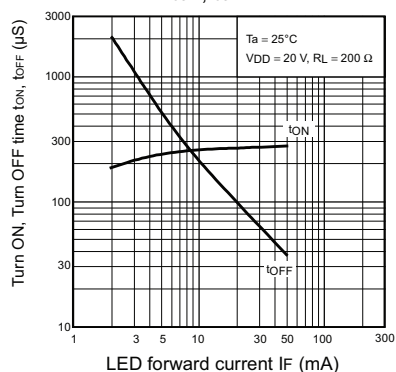
On-state resistance vs. Ambient temperature
RON - Ta



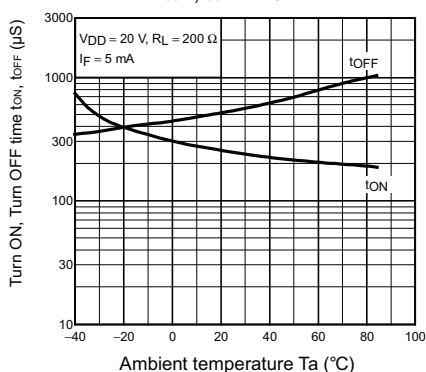
Trigger LED forward current vs. Ambient temperature
IFC - Ta



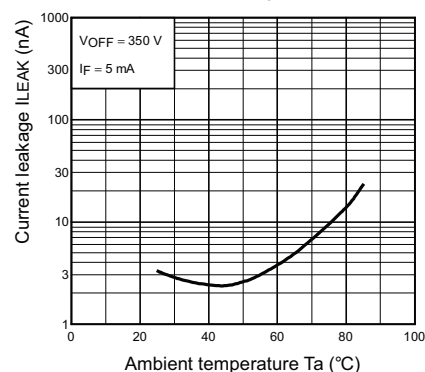
Turn ON, Turn OFF time vs. LED forward current
tON, tOFF - IF

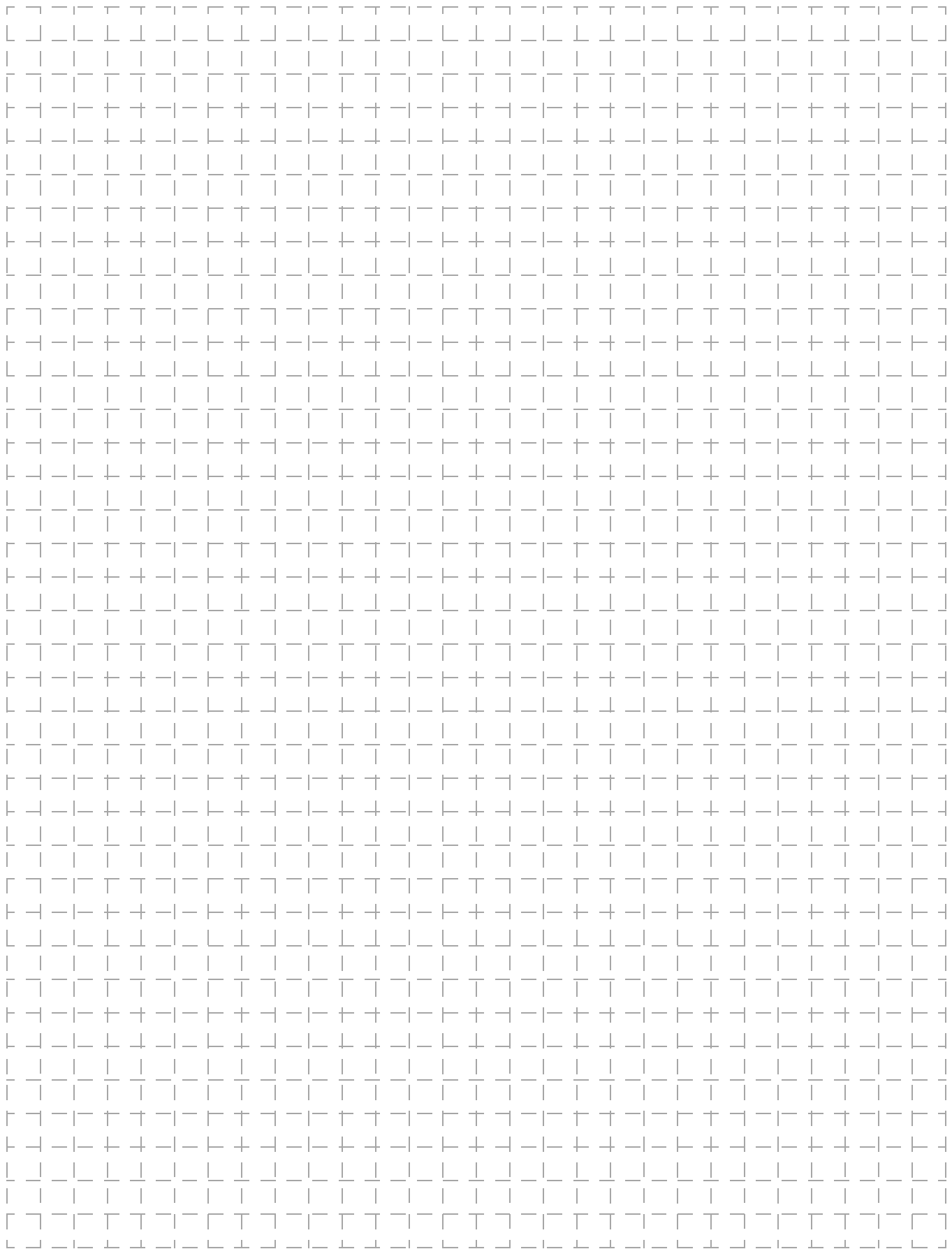


Turn ON, Turn OFF time vs. Ambient temperature
tON, tOFF - Ta



Current leakage vs. Ambient temperature
I LEAK - Ta





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