

Hi-V Grade  $\geq 600V$ 

# 38 Series 600V·1a/2a

AEC-Q101 / Hi-Temp (105°C) Available

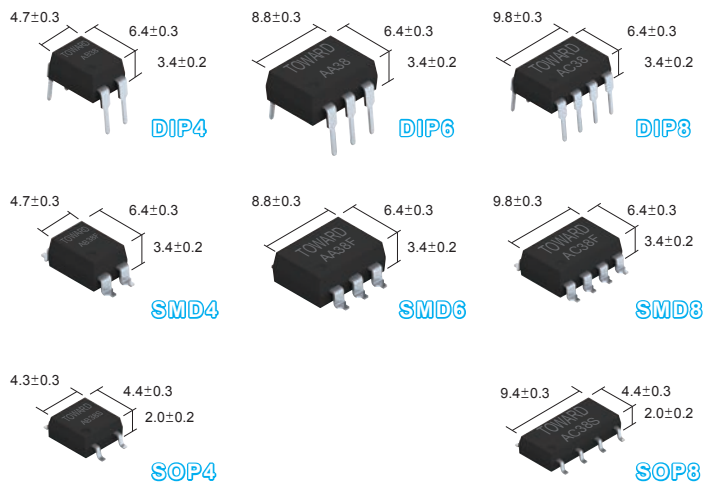


## Features

- Contact Form 1a / 2a
- Load Voltage 600V
- Operation LED Current 3.0mA
- Load Current 80mA
- On-Resistance 40Ω
- Output Capacitance 47pF
- Low Off-State Leakage Current 1.0μA

## Application

- Modem
- Telephone Equipment
- Security Equipment
- Sensing Equipment
- Automatic Test Equipment
- I/O Modules
- Electric Vehicle

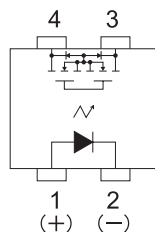


PART NO	PACKAGE	PACKING
AB38	DIP-4	Tube 90pcs
AA38	DIP-6	Tube 50pcs
AC38	DIP-8	Tube 45pcs
AB38F	SMD-4	Tube 90pcs
AA38F	SMD-6	Tube 50pcs
AC38F	SMD-8	Tube 45pcs
AB38S	SOP-4	Tube 100pcs
AC38S	SOP-8	Tube 50pcs
AB38F-R1	SMD-4	Reel 1000pcs
AA38F-R1	SMD-6	
AC38F-R1	SMD-8	
AB38S-R1	SOP-4	
AC38S-R1	SOP-8	

\* Package &amp; PCB Layout Design, See Page 134

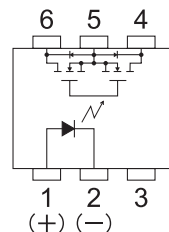
## Terminal Identification

### AB38(F)(S)



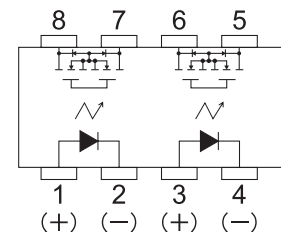
- 1: Anode (LED)  
2: Cathode (LED)  
3,4: Drain (MOS FET)

### AA38(F)



- 1: Anode (LED)  
2: Cathode (LED)  
3: NC  
4,6: Drain (MOS FET)  
5: Source (MOS FET)

### AC38(F)(S)



- 1,3: Anode (LED)  
2,4: Cathode (LED)  
5,6,7,8: Drain (MOS FET)

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## Absolute Maximum Ratings 絕對最大定格 (Ambient Temperature 周圍溫度 : 25°C )

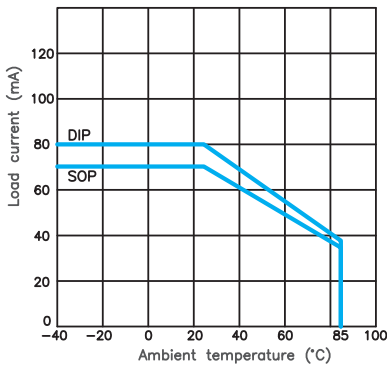
Item		Symbol	Value				
			AB38S	AC38S	AB38(F)	AC38(F)	AA38(F)
Outline Package			1CH	2CH	1CH	2CH	1CH
Input 輸入	Continuous LED Current 連續 LED 電流	$I_F$	50mA				
	Peak LED Current LED 峰值電流 (f=100 Hz,Duty=1%)	$I_{FP}$	500mA				
	LED Reverse Voltage 逆向 LED 電壓	$V_R$	5V				
	Input Power Dissipation 輸入損耗	$P_{IN}$	75mW				
Output 輸出	Load Voltage 負荷電壓	$V_L$	600V (AC peak or DC)				
	Load Current 負荷電流 (mA)	$I_L$	70	60	80	70	80
	Peak Load Current 峰值負荷電流 (1ms,1 shot) (mA)	$I_{PEAK}$	200	200	200	200	200
	Output Power Dissipation 輸出損耗 (mW)	$P_{OUT}$	300	450	450	600	450
Total Power Dissipation 全損耗 (mW)		$P_T$	350	500	500	650	500
I/O Breakdown Voltage 入 / 出力間絕緣電壓 (Vrms)		$V_{I/O}$	1500	1500	3750	3750	3750
I/O Breakdown Voltage 入 / 出力間絕緣電壓 (Suffix-H) (Vrms)		$V_{I/O}$	3750	3750	5000	5000	5000
Operating Temperature 使用時溫度		$T_{OPR}$	-40°C ~ +85°C				
Storage Temperature 保存溫度		$T_{STG}$	-40°C ~ +100°C				

## Electrical Specifications 電性規格 (Ambient Temperature 周圍溫度 : 25°C )

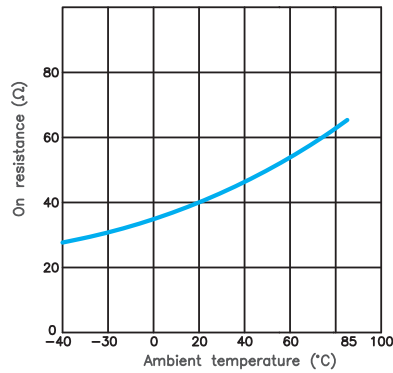
Item		Symbol	MIN.	TYP.	MAX.	Units	Conditions
Input 輸入	LED Forward Voltage LED 順向電壓	$V_F$	1.0	1.17	1.5	V	$I_F=10mA$
	Operation LED Current LED 動作電流	$I_{F ON}$		1.0	3.0	mA	
	Recovery LED Voltage LED 復位電壓	$V_{F OFF}$	0.5	1.0		V	
Output 輸出	On-Resistance 導通電阻 Drain to Drain	$R_{ON}$		40	60	$\Omega$	$I_F=5mA, I_L=Rating$ Time to flow is within 1sec.
	Off-State Leakage Current 開路狀態漏電流	$I_{LEAK}$			1.0	$\mu A$	$V_L=200V$
	Output Capacitance 輸出端容量	$C_{OUT}$		47		pF	$V_L=0V, f=1MHz$
Transmission 傳達	Turn-On Time 動作時間	$T_{ON}$		0.2	0.5	ms	$I_F=5mA$ $I_L=Rating$ (for SOP type)
	Turn-Off Time 復位時間	$T_{OFF}$		0.05	0.2	ms	
	Turn-On Time 動作時間	$T_{ON}$		0.1	1.0	ms	$I_F=10mA$ $I_L=Rating$ (for DIP/SMD type)
	Turn-Off Time 復位時間	$T_{OFF}$		0.05	0.5	ms	
Coupled 結合	I/O Insulation Resistance 輸入 / 出間絕緣阻抗	$R_{I/O}$	$10^9$			$\Omega$	
	I/O Capacitance 輸入 / 力端靜電容量	$C_{I/O}$		1.3		pF	$f=1MHz$

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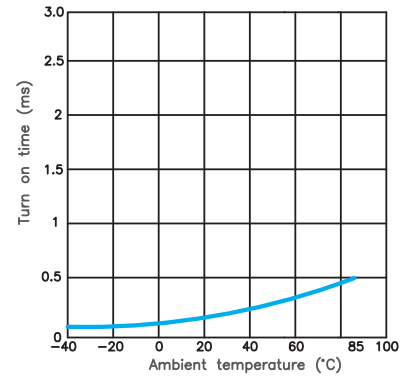
Load current Vs. Ambient temperature



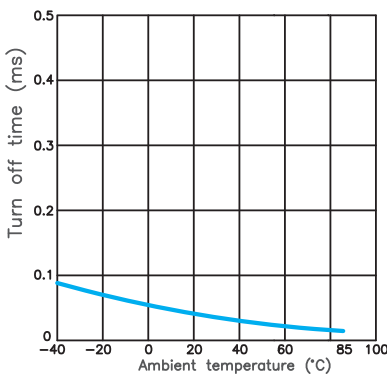
On resistance Vs. Ambient temperature



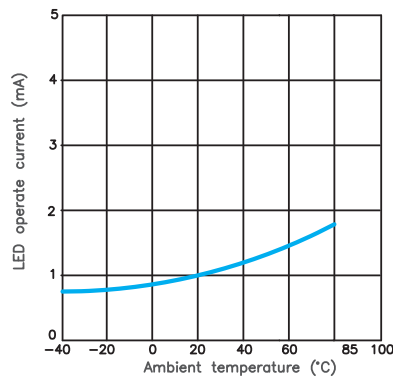
Turn on time Vs. Ambient temperature



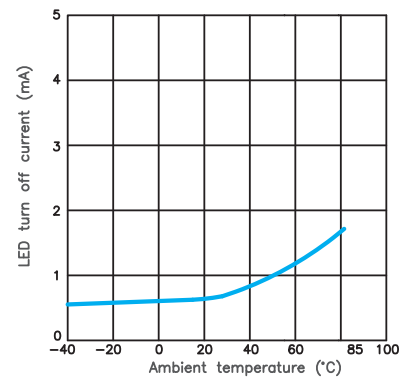
Turn off time Vs. Ambient temperature



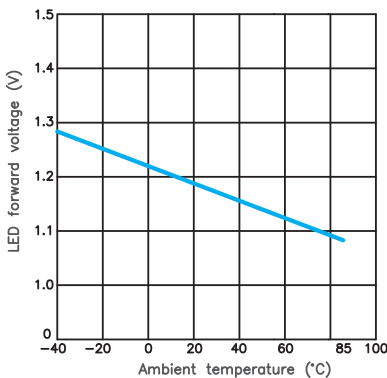
LED operate current Vs. Ambient temperature



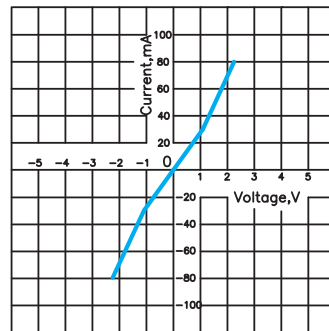
LED Turn off current Vs. Ambient temperature



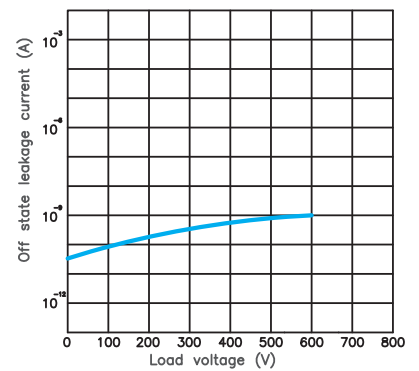
LED forward voltage Vs. Ambient temperature



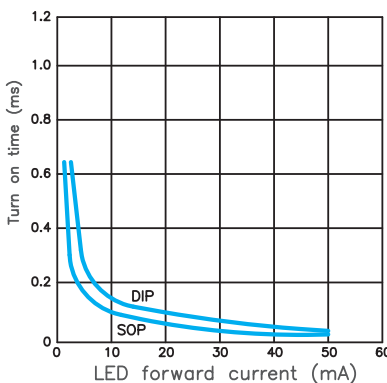
Voltage Vs. current characteristics of output at MOS portion



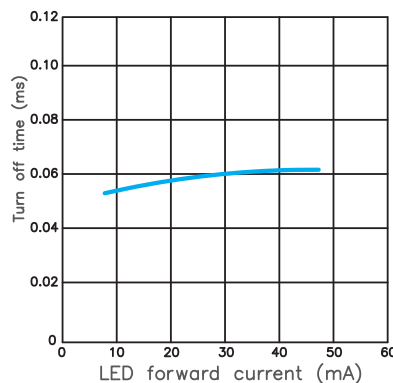
Off state leakage current



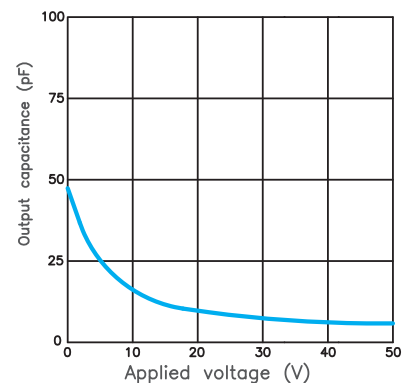
LED forward current Vs. turn on time characteristics




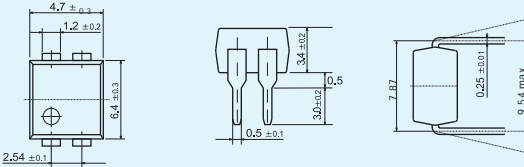
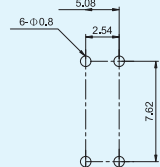

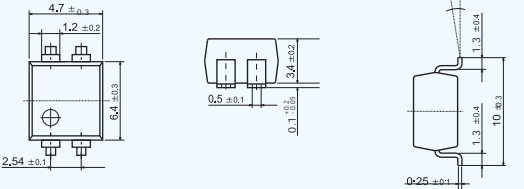
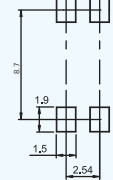

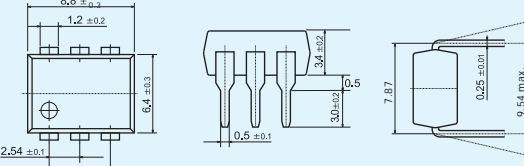
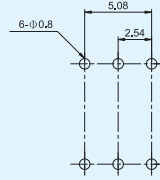

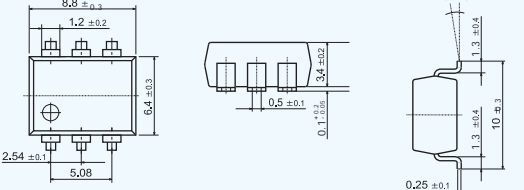
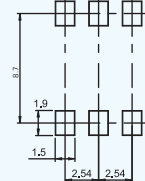

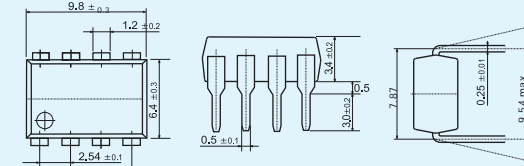
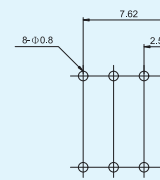

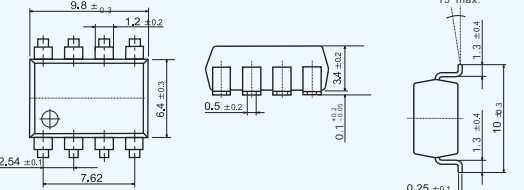
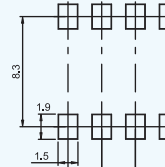
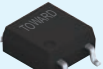
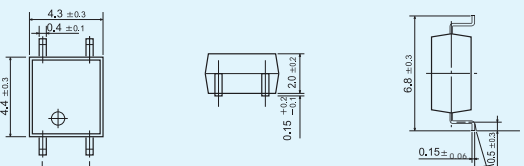
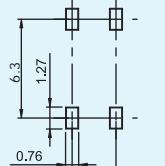

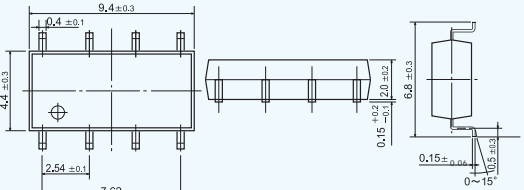
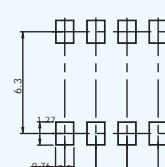
LED forward current Vs. turn off time characteristics



Applied voltage Vs. output capacitance characteristics



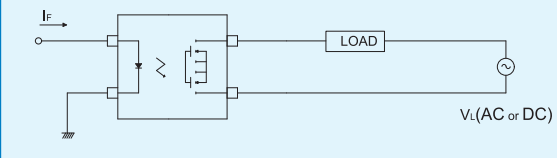
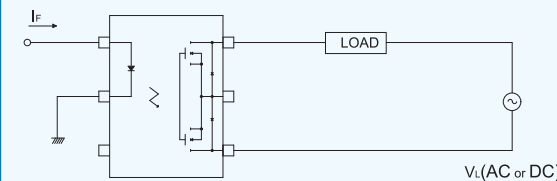
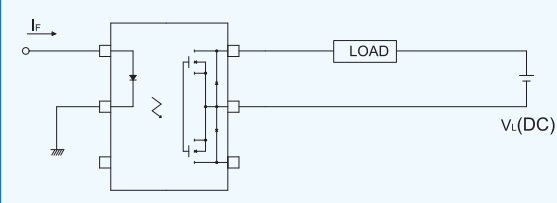
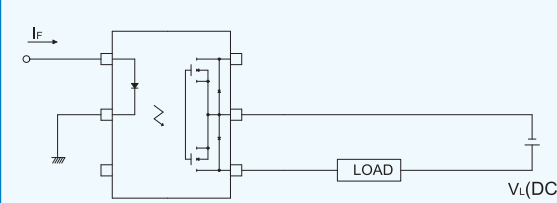
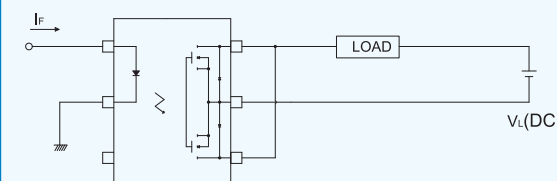
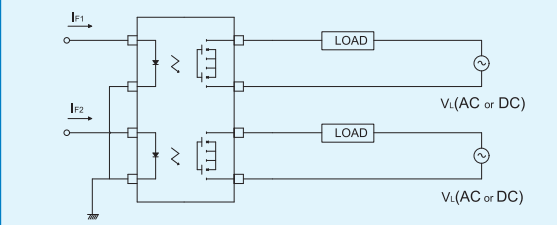
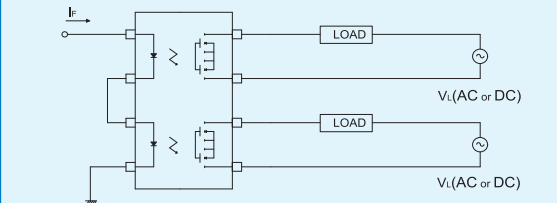
Package & PC Board Pattern

Package 包裝	Dimensions 外型尺寸圖	PC Board pattern PC 板加工圖
 <p>DIP4</p>		 <p>(Bottom View)</p>
 <p>SMD4</p>		 <p>(Top View)</p>
 <p>DIP6</p>		 <p>(Bottom View)</p>
 <p>SMD6</p>		 <p>(Top View)</p>
 <p>DIP8</p>		 <p>(Bottom View)</p>
 <p>SMD8</p>		 <p>(Top View)</p>
 <p>SOP4</p>		 <p>(Top View)</p>
 <p>SOP8</p>		 <p>(Top View)</p>

Packing Specifications

Package Type 包裝類型	Tape shape & dimensions 形狀和尺寸	Reel shape & dimensions 圈帶形狀和尺寸	Quantity 數量
4 Pin SOP			1000 pcs
8 Pin SOP			1000 pcs
4 Pin SMD			1000 pcs
6 Pin SMD			1000 pcs
8 Pin SMD			1000 pcs

Load Connecting Method

Type 類型	Load 負荷	Connection 接續方法	Feature 特長
4 pin	AC or DC		Control bi-directional signal 可控制雙向信號
6 pin	A		Control bi-directional signal 可控制雙向信號
	B		On-Resistance is 1/2 of A-connection 導通電阻值是 A 接法的 1/2 2-Make-contacts (Source Common)
			
C		On-Resistance is 1/2 of B-connection 導通電阻值是 B 接法的 1/2	
8 pin	AC or DC		2 input and 2 output 2 入力和 2 出力回路
			1 input and 2 output 1 入力和 2 出力回路