

**700mA LED PROTECTOR**
**DESCRIPTION**

The A720 is a two terminal LED protector with low dropout voltage rated for 700mA bypass current. Low operation current at monitoring mode and high bypass current capability at triggered mode. Build-in reverse diode for bypass reversed supply voltage.

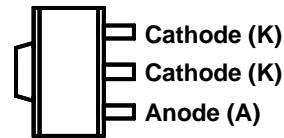
The A720 is designed for parallel connection with high power LED. It bypasses LED driving current when LED at open circuit condition. It also bypasses LED driving current at reverse connected driving current to LED.

**FEATURES**

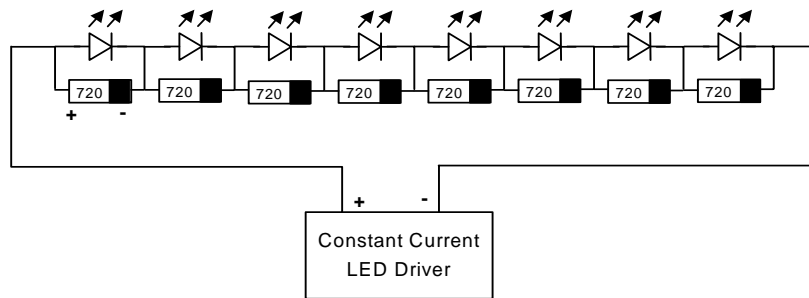
- **5V Protection Trigger Voltage**
- **700mA Bypass Current Capability**
- **1.6V Bypass Dropout Voltage at 700mA**
- **700mA Reverse Current Capability**
- **8KV ESD Protection**
- **SOT-89 Package Available.**

**APPLICATIONS**

- LED Lighting
- High Power LED Protection

**PACKAGE PIN OUT**


**SOT-89**  
(Top View)

**TYPICAL APPLICATION**

**ORDER INFORMATION**

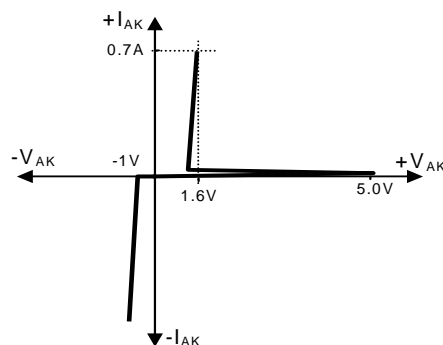
$T_A$ (°C)	<b>N</b>	<b>SOT-89</b>
		<b>3-pin</b>
<b>-40 to 85</b>		<b>A720NFT</b>
Note: 1. All surface-mount packages are available in Tape & Reel. Append the letter "T" to part number (i.e. A720NFT). 2. The letter "F" is marked for Lead Free process.		

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**ABSOLUTE MAXIMUM RATINGS** (Note)

Input Voltage, $V_{AK}$	40V
Maximum Operating Junction Temperature, $T_J$	150°C
Storage Temperature Range	-65°C to 150°C
Lead Temperature (soldering, 10 seconds)	260°C

Note: Exceeding these ratings could cause damage to the device. All voltages are with respect to Ground. Currents are positive into, negative out of the specified terminal.

**I-V CURVE**

**RECOMMENDED OPERATING CONDITIONS**

Parameter	Symbol	Min.	Typ.	Max.	Units
Input Voltage	$V_{AK}$			38	V
Bypass Current (with adequate heat sinking)	$I_{BP}$			700	mA
Reverse Current	$I_R$			700	mA
Operating ambient temperature range	$T_A$	-40		85	°C
Operating junction temperature	$T_J$			125	°C

**ELECTRICAL CHARACTERISTICS**

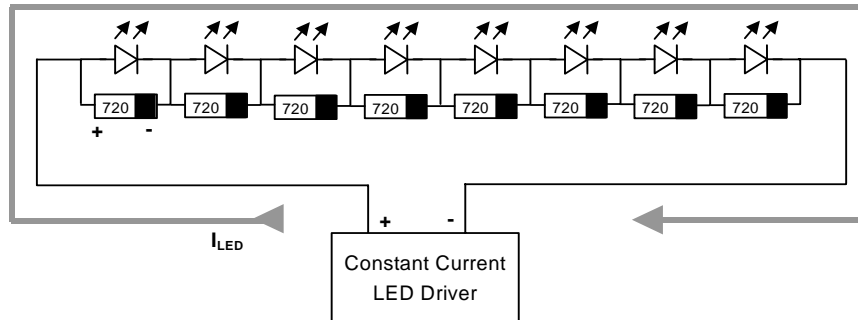
Unless otherwise specified,  $T_A=25^\circ\text{C}$ , and are for DC characteristics only. (Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperature.)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Trigger Voltage	$V_{TR}$		4.65	4.9	5.15	V
Drop-out Voltage	$V_{DO}$	$I_{AK} = 700\text{mA}$		1.6	1.8	V
Reverse Drop-out Voltage	$V_{RDO}$	$I_R = 700\text{mA}$		1.6	1.8	V
Monitoring Current	$I_{MAC}$	$V_{AK} = 3.5\text{V}$		100	150	uA
Break-over Current	$I_{BAC}$				20	mA
Trigger Delay Time	$t_D$	$I_{AK} = 500\text{mA}$		300		nS

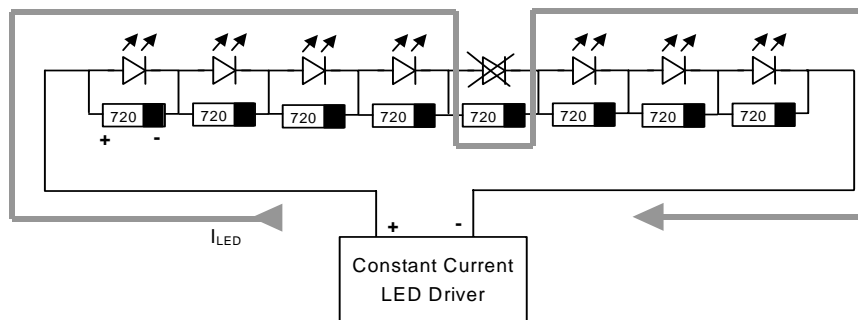
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**APPLICATION INFORMATION**
**Monitoring Mode:**

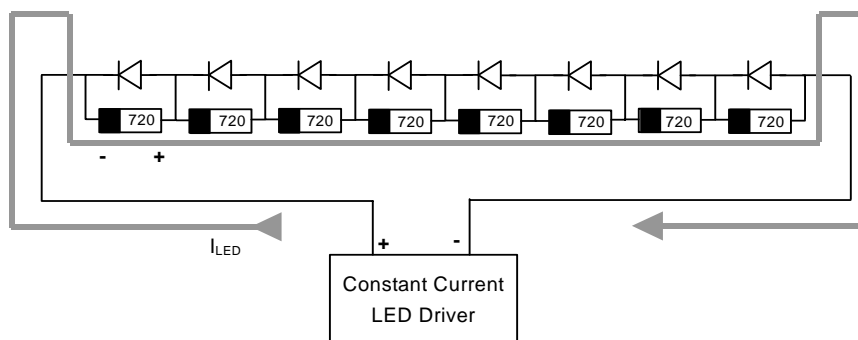
The forward voltage drop ( $V_F$ ) of all LEDs should be less than 4V, which is lower than A720 trigger voltage 5.0V. All A720 at monitoring mode would only sink  $\sim 100\mu\text{A}$  current from the system.


**Triggered Mode:**

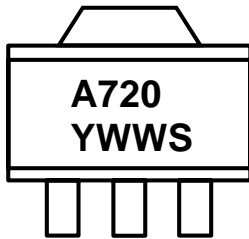
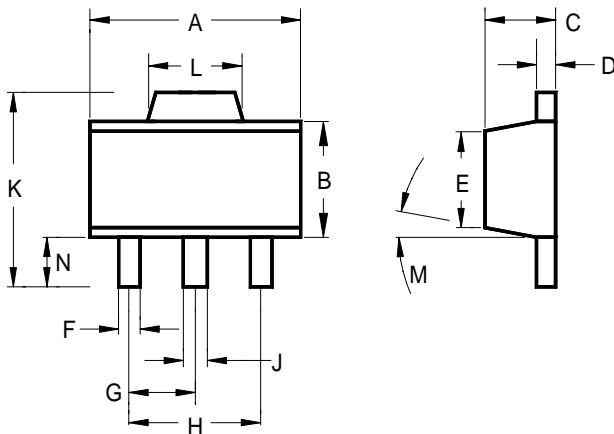
Any LED may become open circuit because of LED damage or wiring problem. When it happens, the voltage drop across adjacent A720 starts to increase, and then A720 will be triggered when the voltage drop reaches 5V. The dropout voltage on A720 will be around 1.6V when conducting 700mA and the LED current  $I_{LED}$  will be bypassed to next LED. All LEDs will work well except the abnormal LED bypassed.


**Reverse Mode:**

When the LED string was reversed connected to the driver, the A720 build-in reverse protection diode was turned-on to bypass the current. Such that the reverse voltage on LEDs was reduced to prevent LED damage.



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**PACKAGE**
**Top Marking for SOT-89**

**Y : Year Code**
**WW : Week Code**
**S : Assembly Code**
**3-Pin Surface Mount SOT-89**


	INCHES			MILLIMETERS		
	MIN	TYP	MAX	MIN	TYP	MAX
A	0.173	-	0.181	4.39	-	4.59
B	0.090	-	0.102	2.28	-	2.59
C	0.055	-	0.063	1.39	-	1.60
D	0.015	-	0.017	0.38	-	0.43
E	0.084	-	0.090	2.13	-	2.28
F	0.016	-	0.019	0.33	-	0.48
G	0.059 BSC			1.49 BSC		
H	0.118 BSC			2.99 BSC		
J	0.018	-	0.022	0.45	-	0.55
K	0.155	-	0.167	3.94	-	4.24
L	0.067	-	0.072	1.70	-	1.82
M	0°	-	8°	0°	-	8°
N	0.035	-	0.047	0.89	-	1.19

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**IMPORTANT NOTICE**

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