



# LIC01 Series

Application Specific Discretes  
A.S.D.™

## LIGHT IGNITION CIRCUIT

### FEATURES

- HIGH VOLTAGE BREAKOVER DIODE:  
 $V_{BO \text{ MIN}} = 195 \text{ or } 215 \text{ V}$
- HIGH HOLDING CURRENT STRUCTURE :  
 $I_H > 50 \text{ mA}$
- HIGH PEAK CURRENT PULSE CAPABILITY :  
 $I_{TRM} = 50 \text{ A}$
- DIRECT OPERATION ON 220/240 VAC MAINS CIRCUITS

### BENEFITS

- SPACE SAVING THANKS TO MONOLITHIC FUNCTION INTEGRATION
- HIGH RELIABILITY WITH PLANAR TECHNOLOGY

### DESCRIPTION

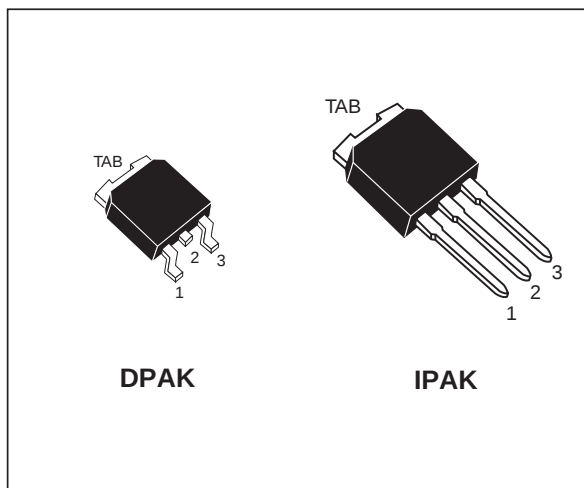
The LIC01 has been especially designed for high voltage pulse generation circuits such as light ignitors for :

- . High pressure sodium lamp
- . Lamp flashing circuit
- . Metal Halid lamp

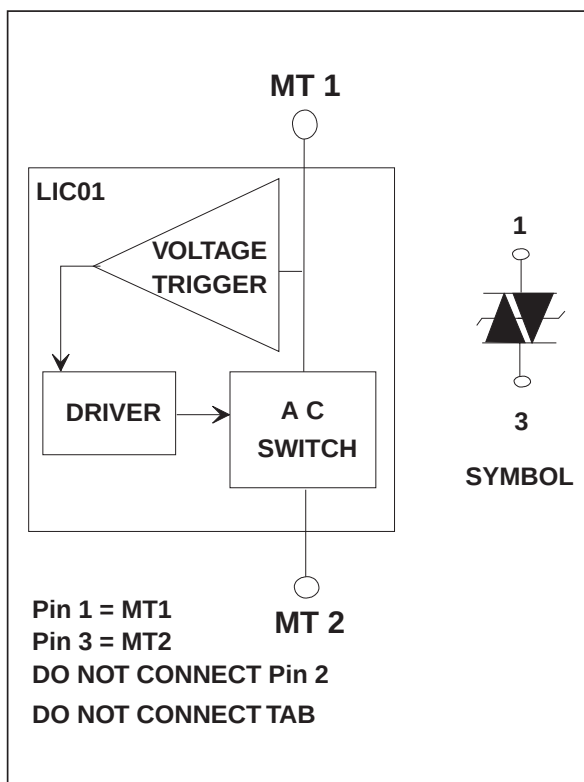
It uses a high performance planar diffused technology device suitable for high surge current operation in rugged environmental conditions.

When the voltage across the device reaches the breakover voltage, it decreases from an off-state to low voltage on-state condition. When the current through the circuit drops below the holding current  $I_H$ , the device comes back to the off-state.

| DEVICE TYPE | BREAKDOWN VOLTAGE RANGE                                                  |
|-------------|--------------------------------------------------------------------------|
| LIC01-195   | $V_{BO \text{ min: } 195\text{V}}$<br>$V_{BO \text{ max: } 230\text{V}}$ |
| LIC01-215   | $V_{BO \text{ min: } 215\text{V}}$<br>$V_{BO \text{ max: } 255\text{V}}$ |



### FUNCTIONAL DIAGRAM

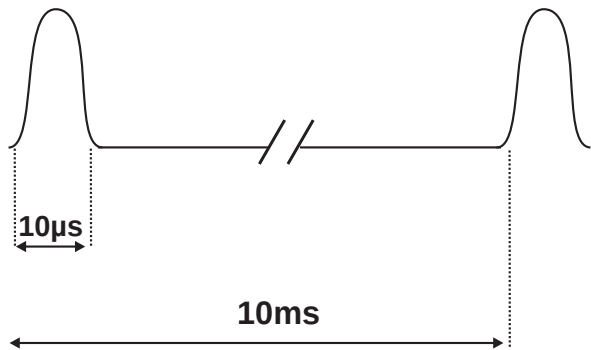


# LIC01 Series

## ABSOLUTE RATINGS (limiting values)

| Symbol              | Parameter                                         |                             | Value         | Unit        |
|---------------------|---------------------------------------------------|-----------------------------|---------------|-------------|
| $I_{TRM}$           | Repetitive surge peak on state current            | $t_p = 10\mu s$<br>(note 1) | $\pm 50$      | A           |
| $I_{T(RMS)}$        | RMS on state current                              | $T_{amb} = 90^{\circ}C$     | 1.2           | A           |
| $di/dt$             | Critical rate of rise on state current            |                             | 80            | A/ $\mu s$  |
| $V_{DRM} / V_{RRM}$ | Repetitive peak off state voltage                 | $T_j = 125^{\circ}C$        | 180           | V           |
| $T_{stg}$           | Storage junction temperature range                |                             | - 40 to + 125 | $^{\circ}C$ |
| $T_j$               | Operating junction temperature range              |                             | -20 to 125    | $^{\circ}C$ |
| $T_L$               | Maximum lead temperature for soldering during 10s |                             | 260           | $^{\circ}C$ |

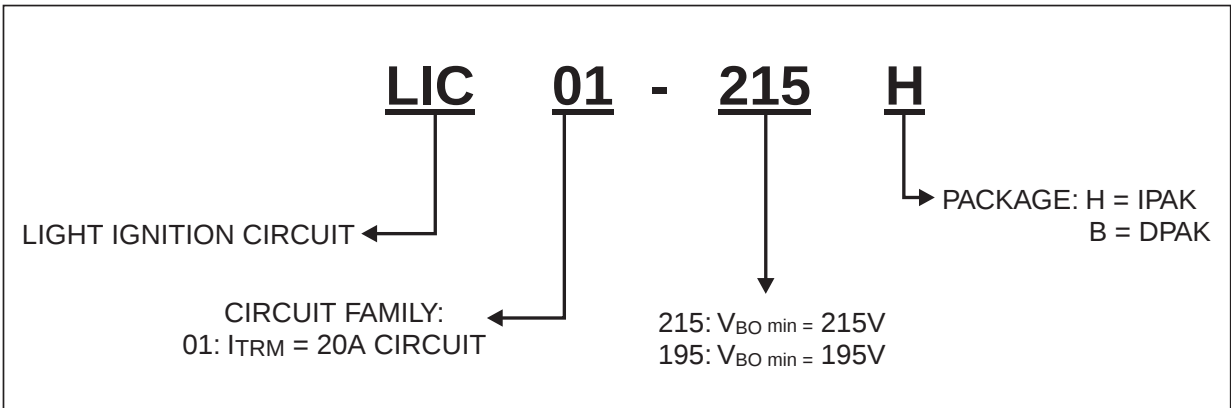
**Note 1 :** Test current waveform



## THERMAL RESISTANCE

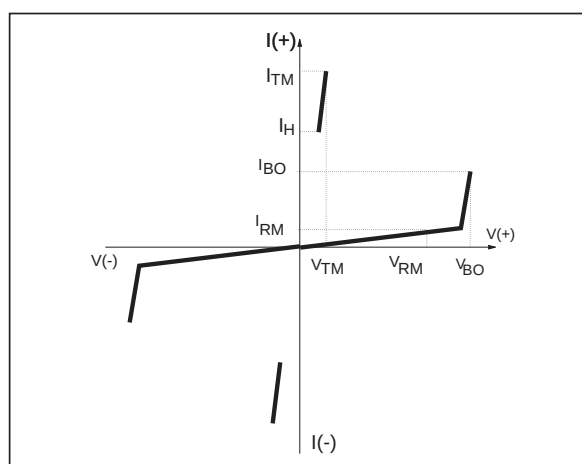
| Symbol        | Parameter           | Value | Unit          |
|---------------|---------------------|-------|---------------|
| $R_{th(j-a)}$ | Junction to ambient | 100   | $^{\circ}C/W$ |
| $R_{th(j-c)}$ | Junction to case    | 3.5   | $^{\circ}C/W$ |

## ORDERING INFORMATION



## ELECTRICAL CHARACTERISTICS

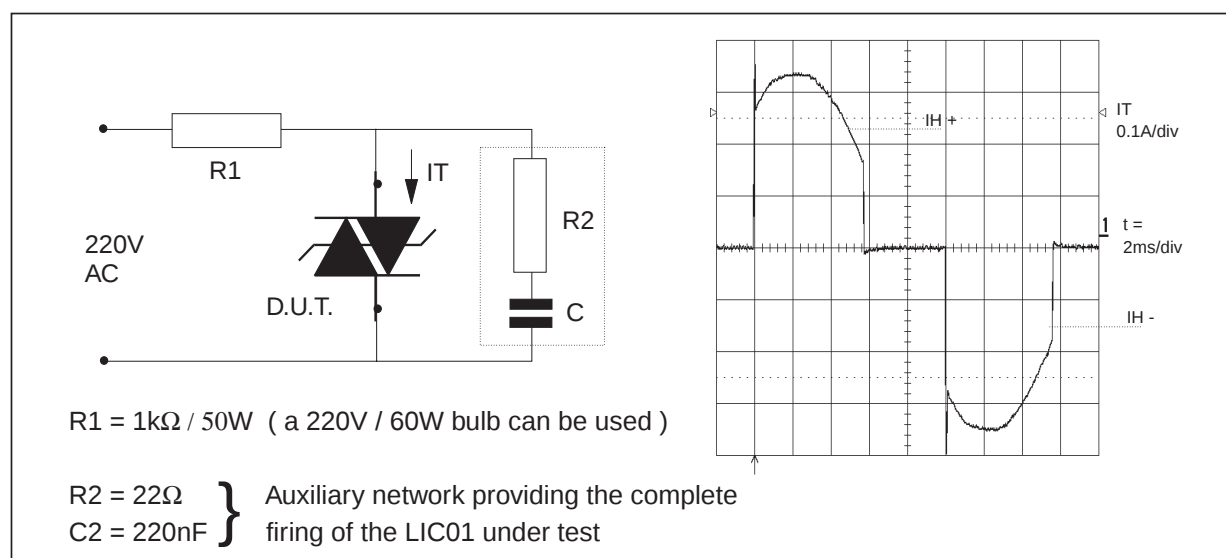
| Symbol   | Parameters        |
|----------|-------------------|
| $V_{RM}$ | Stand-off voltage |
| $V_{TM}$ | On-state voltage  |
| $V_{BO}$ | Breakover voltage |
| $I_{TM}$ | On-state current  |
| $I_H$    | Holding current   |
| $I_{BO}$ | Breakover current |
| $I_{RM}$ | Leakage current   |



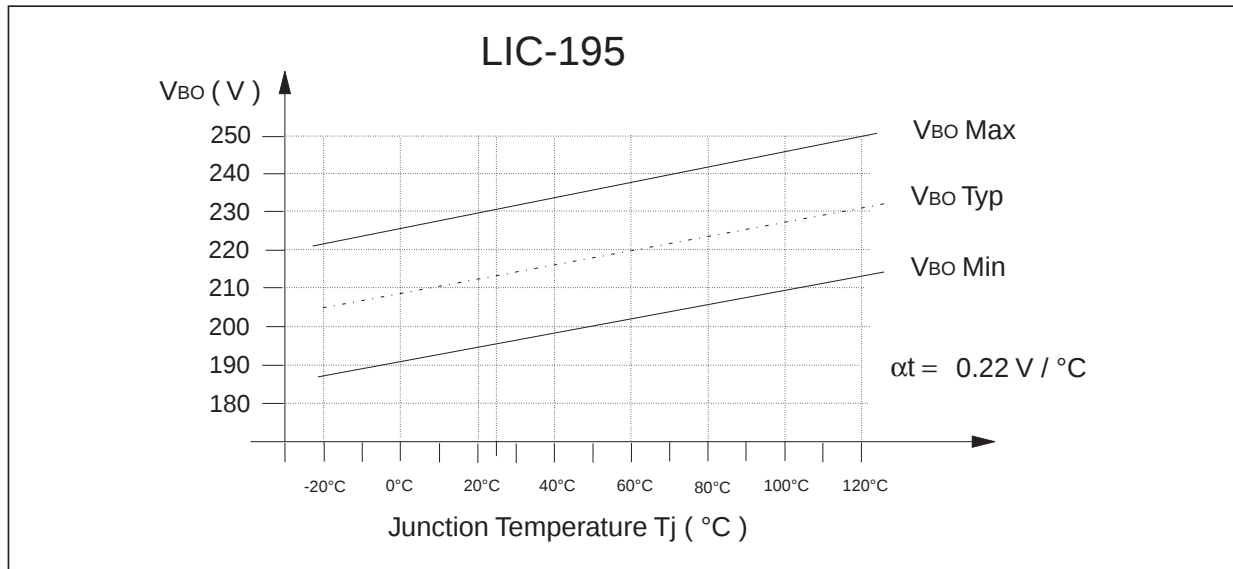
## ELECTRICAL PARAMETERS

| Symbol          | Test conditions                       |           |                        |     | Value | Unit |
|-----------------|---------------------------------------|-----------|------------------------|-----|-------|------|
| I <sub>RM</sub> | V <sub>D</sub> = V <sub>RM</sub> 180V |           | T <sub>j</sub> = 25°C  | MAX | 5     | μA   |
|                 |                                       |           | T <sub>j</sub> = 125°C | MAX | 50    | μA   |
| V <sub>BO</sub> | I <sub>BO</sub>                       | LIC01-195 | T <sub>j</sub> = 25°C  | MIN | 195   | V    |
|                 |                                       |           |                        | MAX | 230   |      |
|                 |                                       | LIC01-215 | T <sub>j</sub> = 25°C  | MIN | 215   | V    |
|                 |                                       |           |                        | MAX | 255   |      |
| I <sub>BO</sub> | V <sub>BO</sub> max.                  |           | T <sub>j</sub> = 25°C  | TYP | 200   | μA   |
|                 |                                       |           |                        | MAX | 500   |      |
| I <sub>H</sub>  | I <sub>T</sub> = 350mA                |           | T <sub>j</sub> = 25°C  | MIN | 50    | mA   |
| V <sub>TM</sub> | I <sub>TM</sub> = 1A                  |           | T <sub>j</sub> = 25°C  | MAX | 5     | V    |

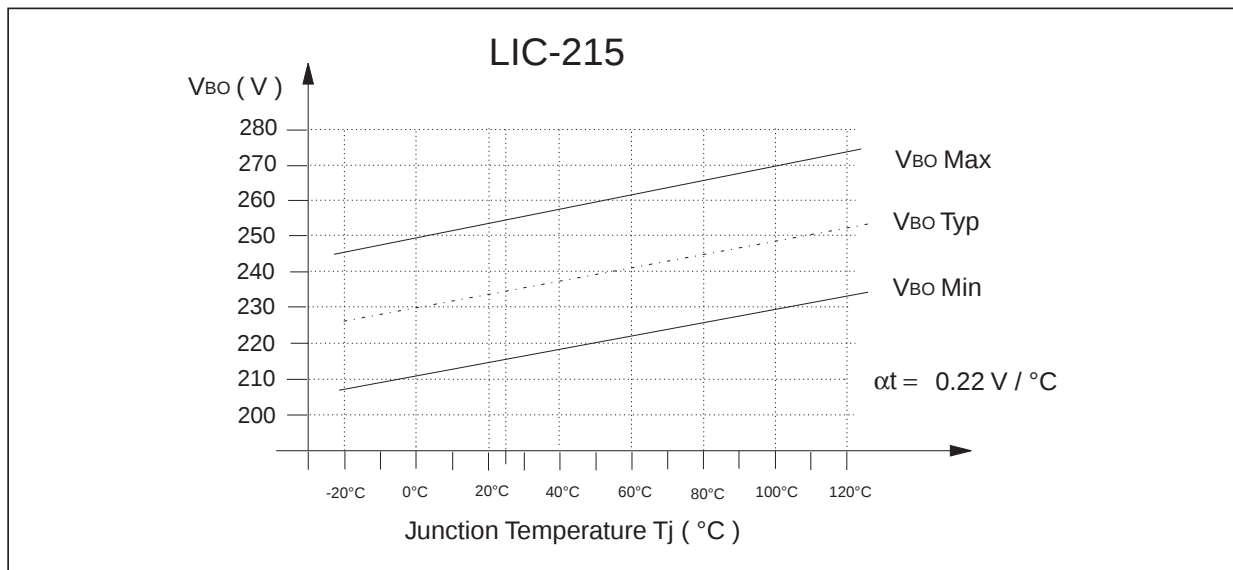
## HOLDING CURRENT TEST CIRCUIT



VARIATION OF  $V_{BO}$  VERSUS JUNCTION TEMPERATURE

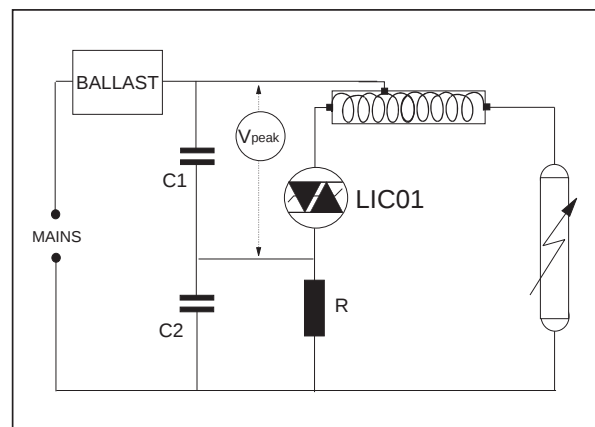


VARIATION OF  $V_{BO}$  VERSUS JUNCTION TEMPERATURE

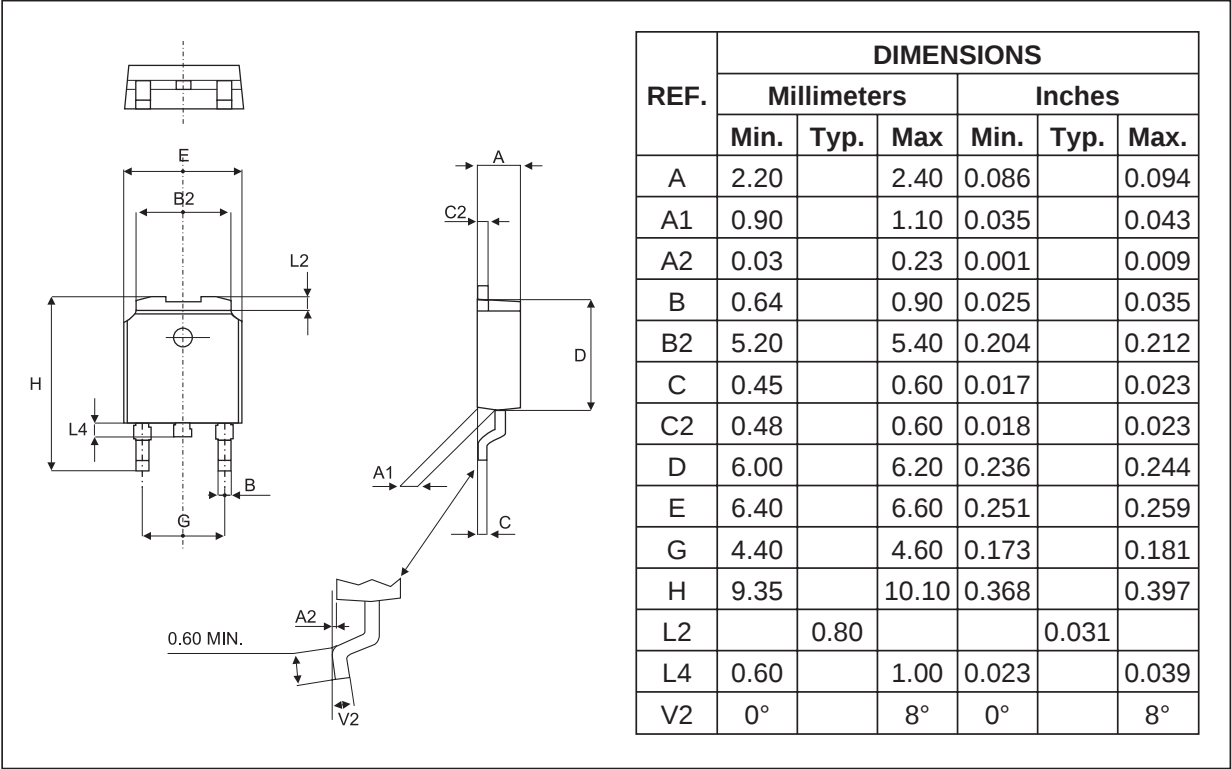


TYPICAL APPLICATION

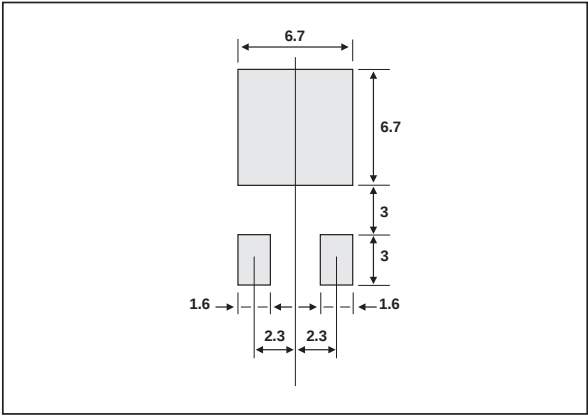
When the peak voltage across C1 reaches the break over voltage  $V_{BO}$  of the LIC01, this device turns on and produces a pulse of current through the primary of the transformer. In turn, the transformer generates high voltage pulses across the lamp.



PACKAGE MECHANICAL DATA  
DPAK (Plastic)



FOOT PRINT DIMENSIONS (in millimeters)



## LIC01 Series

### PACKAGE MECHANICAL DATA IPAK (Plastic)

| REF. | DIMENSIONS  |      |      |        |       |       |
|------|-------------|------|------|--------|-------|-------|
|      | Millimeters |      |      | Inches |       |       |
|      | Min.        | Typ. | Max. | Min.   | Typ.  | Max.  |
| A    | 2.2         |      | 2.4  | 0.086  |       | 0.094 |
| A1   | 0.9         |      | 1.1  | 0.035  |       | 0.043 |
| A3   | 0.7         |      | 1.3  | 0.027  |       | 0.051 |
| B    | 0.64        |      | 0.9  | 0.025  |       | 0.035 |
| B2   | 5.2         |      | 5.4  | 0.204  |       | 0.212 |
| B3   |             |      | 0.85 |        |       | 0.033 |
| B5   |             | 0.3  |      |        | 0.035 |       |
| B6   |             |      | 0.95 |        |       | 0.037 |
| C    | 0.45        |      | 0.6  | 0.017  |       | 0.023 |
| C2   | 0.48        |      | 0.6  | 0.019  |       | 0.023 |
| D    | 6           |      | 6.2  | 0.236  |       | 0.244 |
| E    | 6.4         |      | 6.6  | 0.252  |       | 0.260 |
| G    | 4.4         |      | 4.6  | 0.173  |       | 0.181 |
| H    | 15.9        |      | 16.3 | 0.626  |       | 0.641 |
| L    | 9           |      | 9.4  | 0.354  |       | 0.370 |
| L1   | 0.8         |      | 1.2  | 0.031  |       | 0.047 |
| L2   |             | 0.8  | 1    |        | 0.031 | 0.039 |
| V1   |             | 10°  |      |        | 10°   |       |

### OTHER INFORMATION

| Type       | Marking    | Package | Weight | Base qty | Delivery mode |
|------------|------------|---------|--------|----------|---------------|
| LIC01-xxxH | LIC01-xxxH | IPAK    | 0.4 g  | 75       | Tube          |
| LIC01-xxxB | LIC01-xxxB | DPAK    | 0.3 g  | 75       | Tube          |

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