

### 1 Features:

- 7~500V wide operation voltage range
- Sink or source up to 60 mA constant current
- No programmable resistor
- $\pm 5\%$  current tolerance ( $T_j$  0~110°C)
- Current under thermal regulation when  $T_j > 110$  °C
- Available in green packages SOT-89, eSOP-8 and TO-252

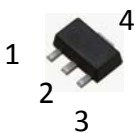
### 2 Applications:

- AC LED lighting
- General LED lighting
- Decorative LED lighting
- Display Signage lighting

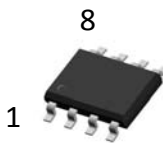
### 3 Pin Definitions

SOT-89	eSOP-8	TO-252	Pin Descriptions
1	1	1	VA, Anode
2&4	8	4	VC, Cathode
3	2,3,4,5,6,7	3	N/C, No connection in fixed models

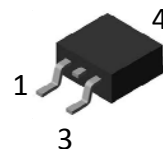
**SOT-89**



**eSOP-8**



**TO-252**



### 4 General Descriptions:

The MG3100 series LED driver IC products are high voltage, constant current, linear regulators. They can be used as current sources or sinks to deliver a constant current within 7~500V input voltage range. Set at the factory, the current ratings range from 10 mA to 60 mA with  $\pm 5\%$  tolerance ( $T_j$  0~110°C).

The MG3100W series is designed for LED general lighting applications in low to mid wattage. Its thermal regulation function rolls off the output current when  $T_j$  reaches 110 °C or above. This allows the driver IC to operate in elevated temperature environment at a reduced current level. If  $T_j$  continues to rise to about 160 °C, the output current will eventually reduce to about 1~2mA. With lower output current and lower power consumption, the driver IC reaches equilibrium therefore protects the LED light from harmful high temperature environment.

### 5 Product summary chart

Model	Voltage (V)	Current	Package		
		Rating (mA)	SOT89-3L	eSOP-8	TO252-3L
MG3110	500	10	✓	✓	
MG3115	500	15	✓	✓	
MG3120	500	20	✓	✓	
MG3130	500	30		✓	✓
MG3140	500	40			✓
MG3150	500	50			✓
MG3160	500	60			✓

### 6 Typical Applications

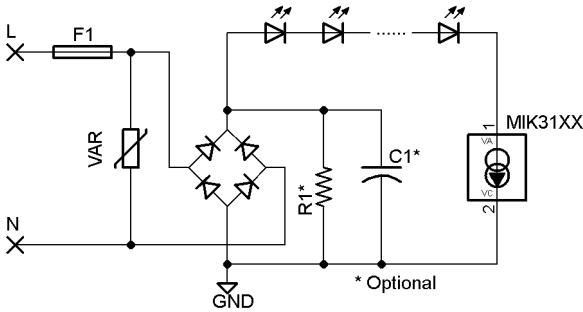


FIG. 1: MG31xx Typical Application

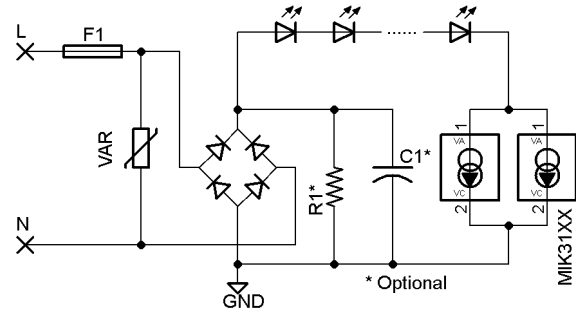


FIG. 2: Multiple MG31xx's in Parallel

### 7 Recommended Operation Area

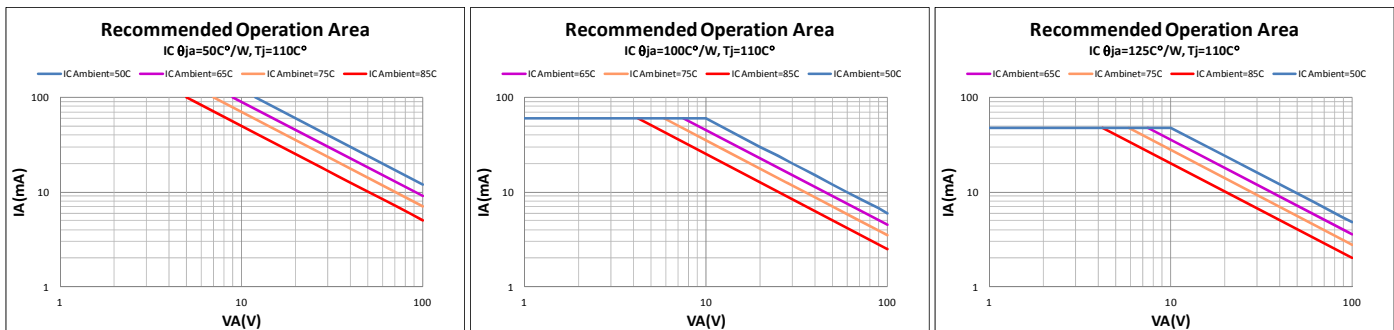


FIG. 3: Recommended operation area

Note: When  $T_j < 110^\circ\text{C}$ , equation (1):  $T_j = T_A + P_{IC} \times \theta_{JA}$  can be used to calculate max. operating voltage and current.  $P_{IC}$  = Heat dissipation on IC. Also, equation (2):  $T_j = T_C + P_{IC} \times \theta_{JC}$  can be used to do similar calculations, where  $T_C$  is the temperature of the IC thermal pad. TO-252  $\theta_{JC}$ : 5~10°C/Watt.

### 8 Absolute Maximum Ratings

Input voltage	500V
Power consumption	2W (TO252)
Operating Ambient Temperature Range	-40 °C ~ 125°C
Junction Temperature	150 °C
Storage Temperature	-65 °C ~ 150 °C
Lead Temperature	260 °C
Theta JA	125 °C / W (SOT89-3L) 100 °C / W (eSOP-8) 50 °C / W (TO252-3L)

### 9 Electrical Specifications

T<sub>A</sub>=25°C, unless otherwise specified.

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Operating Voltage		V <sub>IN</sub>	7.0		500	V
Output Current (MG3110)	0°C < T <sub>J</sub> < 110°C 7V < V <sub>IN</sub> < 200V	I <sub>A</sub>	9.0	10	11.0	mA
Output Current (MG3120)		I <sub>A</sub>	19.0	20	210	mA
Output Current (MG3130)		I <sub>A</sub>	28.5	30	31.5	mA
Output Current (MG3140)		I <sub>A</sub>	38.0	40	42.0	mA
Output Current (MG3150)		I <sub>A</sub>	47.5	50	52.5	mA
Output Current (MG3160)		I <sub>A</sub>	57.0	60	63.0	mA
Thermal Regulation Onset Temperature	V <sub>IC</sub> =20V, I <sub>OUT</sub> =rated	T <sub>O</sub>		110		°C

### 10 Typical Characteristics

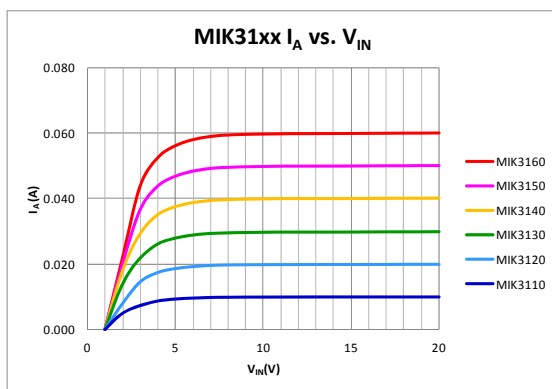


FIG. 4

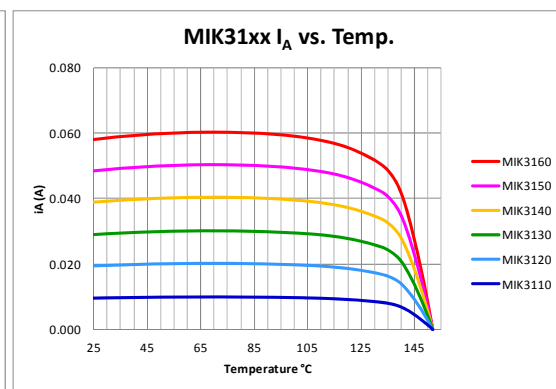


FIG. 5

### 11 Package Information

#### 11.1 SOT-89 Package Outline Drawing

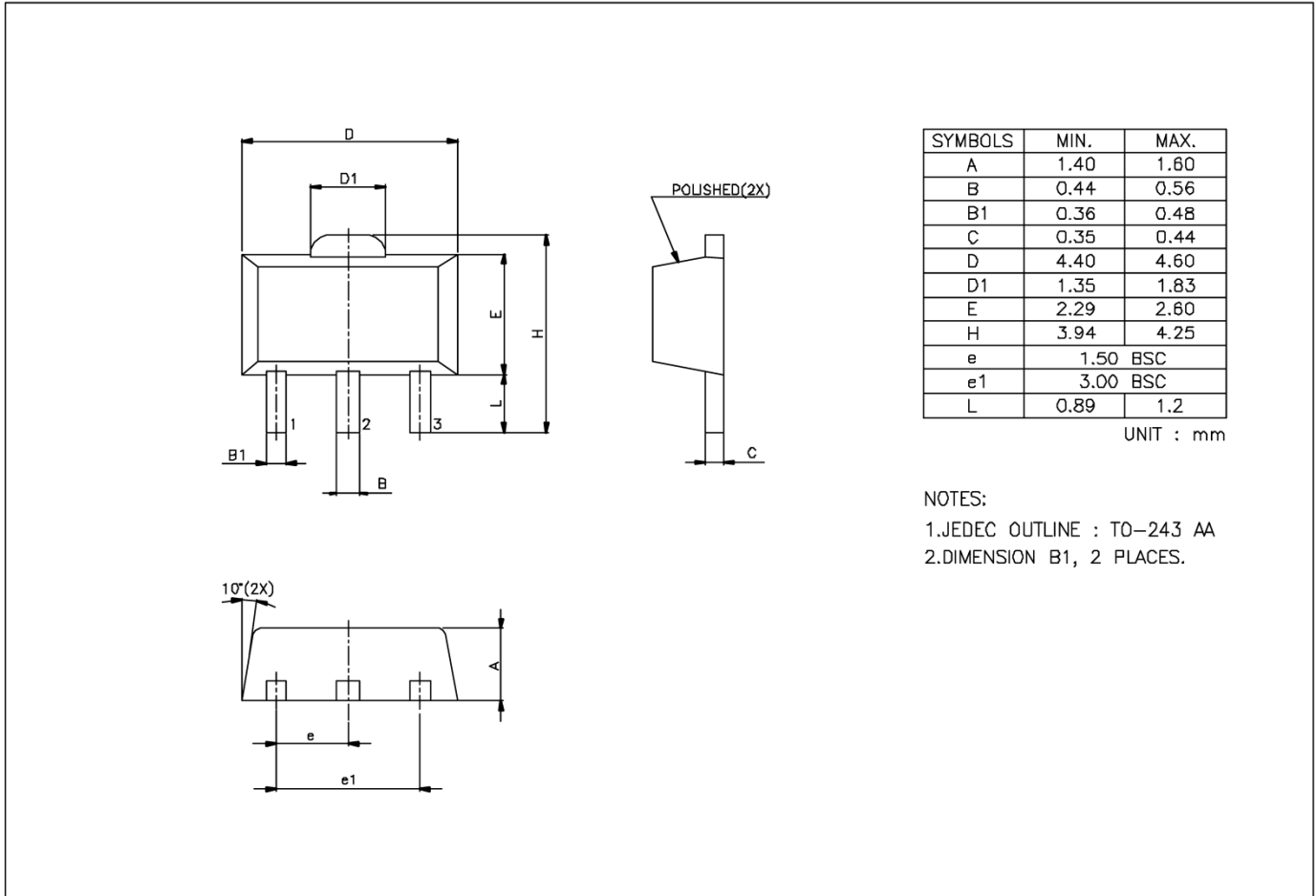
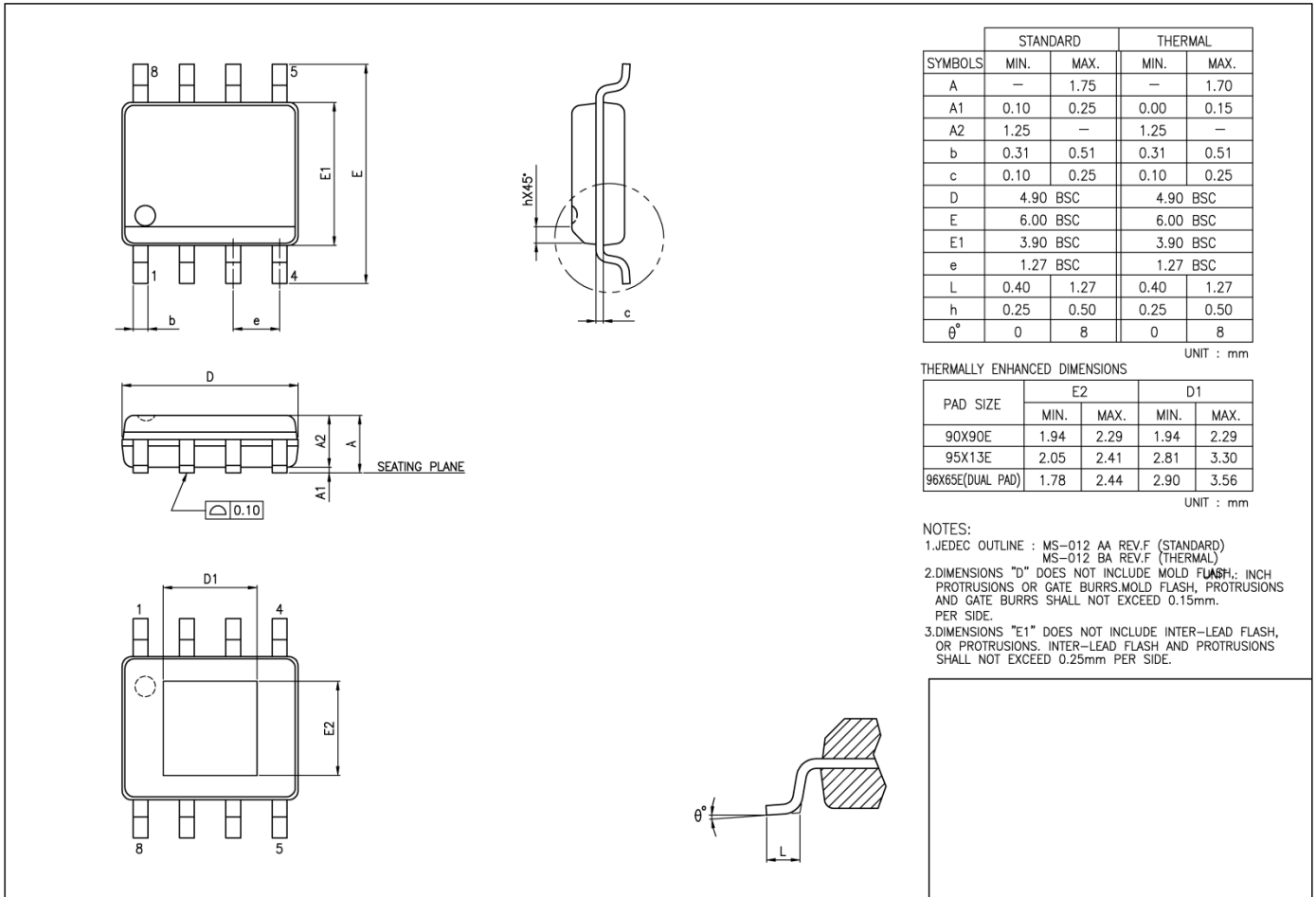


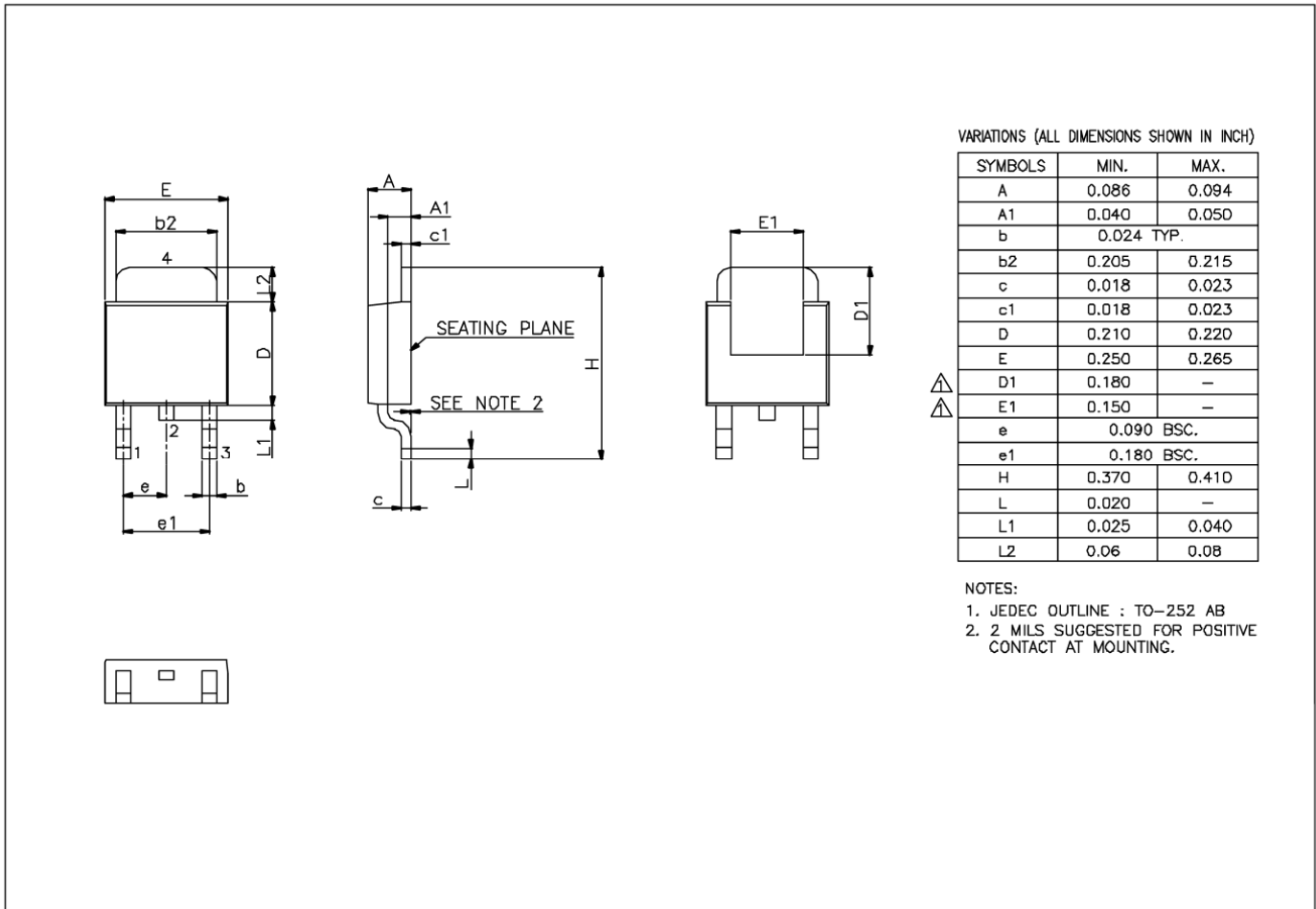
FIG. 6

**11.2 eSOP-8 Package Outline Drawing**



**FIG. 7**

**11.3 TO-252 Packaging Outline Drawing**

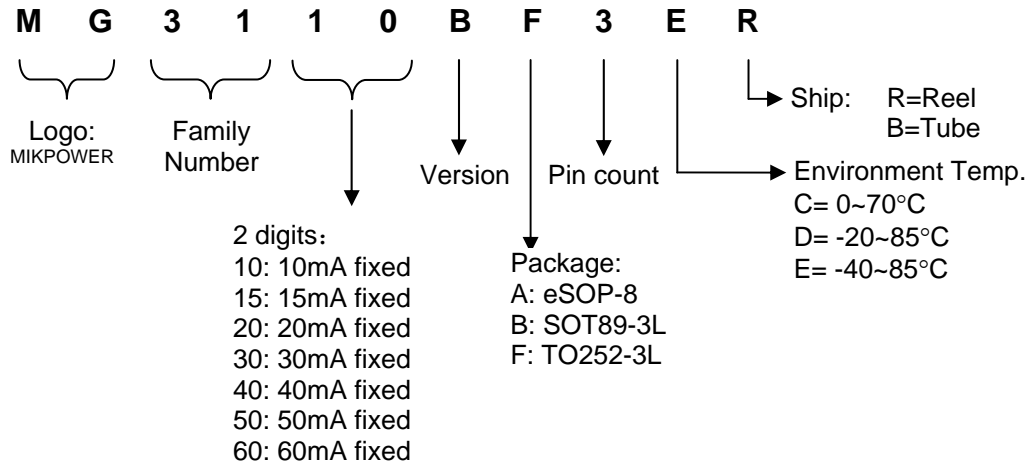


**FIG. 8**

**12 Ordering Information:**

<b>Part Number</b>	<b>Descriptions</b>	<b>Packing and Shipping</b>
MG3110BA8ER	10 mA Fixed	Green eSOP-8 Reel
MG3110BB3ER	10 mA Fixed	Green SOT89-3L Reel
MG3115BA8ER	15 mA Fixed	Green eSOP-8 Reel
MG3115BB3ER	15 mA Fixed	Green SOT89-3L Reel
MG3120BA8ER	20 mA Fixed	Green eSOP-8 Reel
MG3120BB3ER	20 mA Fixed	Green SOT89-3L Reel
MG3130BA8ER	30 mA Fixed	Green eSOP-8 Reel
MG3130BF3ER	30 mA Fixed	Green TO252-3L Reel
MG3140BF8ER	40 mA Fixed	Green TO252-3L Reel
MG3150BF3ER	50 mA Fixed	Green TO252-3L Reel
MG3160BF3ER	60 mA Fixed	Green TO252-3L Reel

### APPENDIX A: PART NUMBER



### APPENDIX B: IC MARKING

