

### 1 Features:

- 7~200V wide operation voltage range
- Sink or source up to 100 mA constant current
- No programmable resistor in fixed current version,  $\pm 5\%$  current tolerance ( $T_j$  0~110°C)
- 20~40mA programmable output current (MIK3600W only)
- Current under thermal regulation when  $T_j > 110$  °C
- Available in green packages SOT-89, SOT-223, TO-252, TO-263 and TO-220

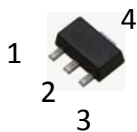
### 2 Applications:

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

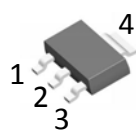
### 3 Pin Definitions

SOT-89	SOT-223	TO-252	TO-263	TO-220	Pin Descriptions
1	1	1	1	1	VA, Anode
2&4	2&4	4	4	2&4	VC, Cathode
3	3	3	3	3	N/C, No connection in fixed models
					$I_{SET}$ , Connect an external resistor to Cathode to set the output current (MIK3600W only)

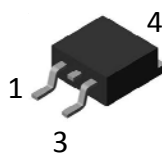
SOT-89



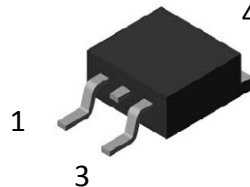
SOT-223



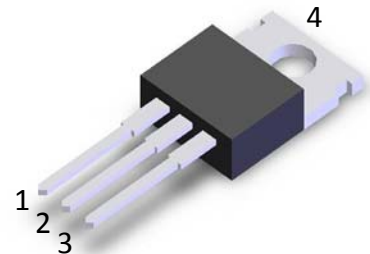
TO-252



TO-263



TO-220



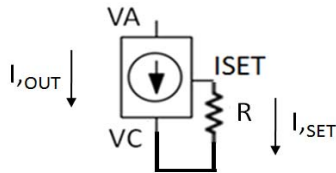
### 4 General Descriptions:

The MIK3600W series LED driver IC products are constant current regulators. They can be used as current sources or sinks to deliver a constant current within 7~200V wide input voltage range. Set at the factory, the current ratings of the fixed models range from 10 mA to 100 mA with  $\pm 5\%$  tolerance ( $T_j$  0~110°C) (except 20 mA and below rating  $\pm 10\%$  tolerance).

## High Voltage Constant Current Regulator

The MIK3600W is the adjustable model in the series. Its output current can be set between 20 mA to 40 mA by an external resistor connecting between I<sub>SET</sub> and VC.  $I_{OUT} = K \times (V_{ISET} / R)$ , as shown in FIG. 1, where K is the adjustable ratio; V<sub>ISET</sub> is the voltage of the I<sub>SET</sub> pin; and the R is the setting resistor value. A high precision, low temperature coefficient resistor is recommended for high accuracy applications.

FIG. 1



R(Kohm)	I <sub>OUT</sub> (mA)
15	40
20	30
30	20

The MIK3600W series is designed with LED applications in mind. Its thermal regulation function rolls off the output current when T<sub>j</sub> reaches 110 °C or above. This allows the driver IC to operate in elevated temperature environment at a reduced current level. If T<sub>j</sub> continues to rise to about 160 °C, the output current will eventually shut down to about 1 mA. With lower output current and lower power consumption, the driver IC reaches the equilibrium and protects LED lights from harmful temperature environment.

## 5 Product summary chart

Model	Voltage (V)	Current			Package				
		Rating (mA)	Fixed	Adj.	SOT-89	SOT-223	TO-252	TO-263	TO-220
MIK3600W	200	20~40		✓	✓	✓	✓	✓	✓
MIK36010W	200	10	✓		✓	✓	✓		
MIK3622W	200	20	✓		✓	✓	✓		
MIK36025W	200	25	✓			✓	✓		
MIK3623W	200	30	✓			✓	✓		
MIK3624W	200	40	✓				✓	✓	
MIK3605W	200	50	✓				✓	✓	
MIK3655W	200	55	✓				✓	✓	✓
MIK3626W	200	60	✓				✓	✓	✓
MIK3628W	200	80	✓				✓	✓	✓
MIK3609W	200	90	✓				✓	✓	✓
MIK3610W	200	100	✓				✓	✓	✓

### 6 Typical Applications

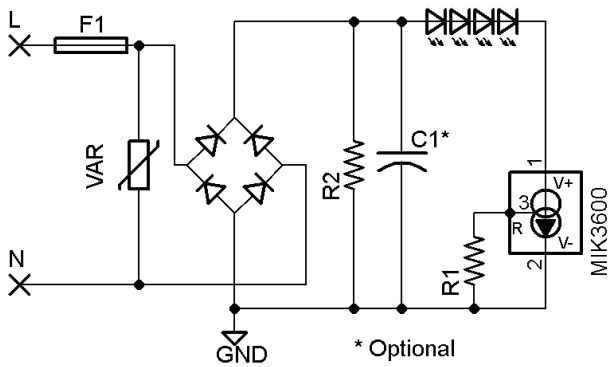


FIG. 2: MIK3600

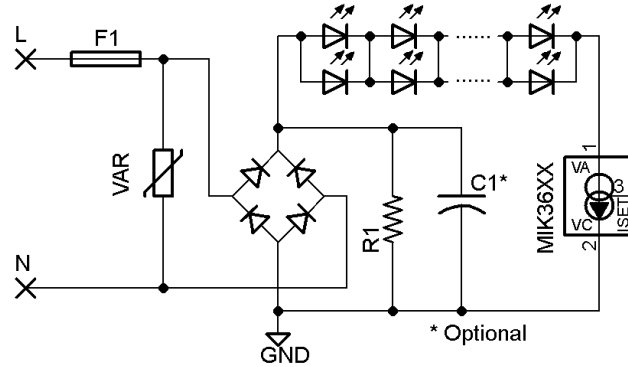


FIG. 3: MIK36xx drives 2 LED strings

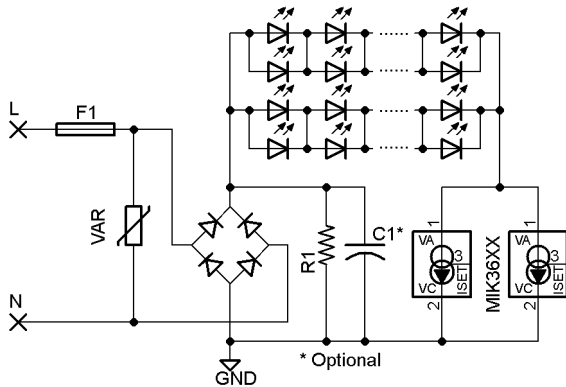


FIG. 4: Multiple MIK36xx's in parallel

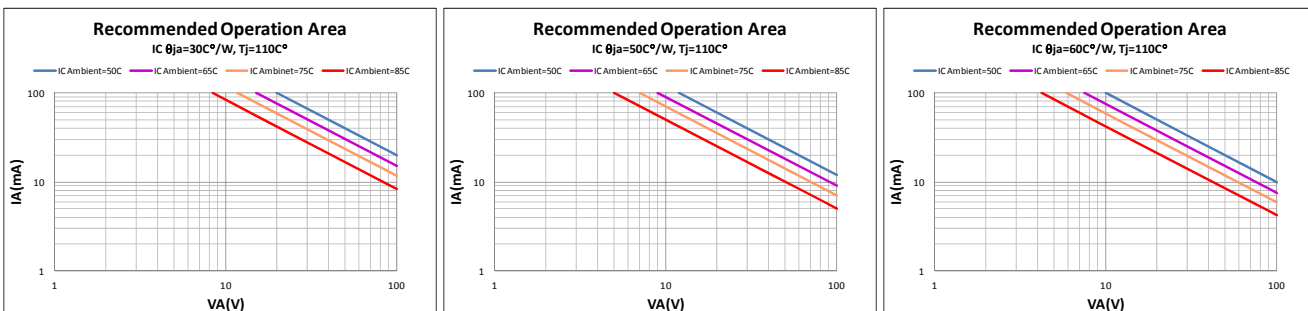


FIG. 5: Recommended operation area

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; TO-263/220  $\theta_{JC}$ : 3~5°C/Watt.

### 7 Absolute Maximum Ratings

Input voltage	200V
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 (SOT-89)
	60 °C / W (SOT-223)
	50 °C / W (TO-252)
	30 °C / W (TO-263)
	30 °C / W (TO-220)

### 8 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		200	V
Output Current (MIK36010W)	7V < V <sub>IN</sub> < 200V	I <sub>A</sub>	9	10	11	mA
Output Current (MIK3622W)	7V < V <sub>IN</sub> < 200V	I <sub>A</sub>	18	20	22	mA
Output Current (MIK36025W)	7V < V <sub>IN</sub> < 200V	I <sub>A</sub>	23.00	24.25	25.50	mA
Output Current (MIK3623W)	7V < V <sub>IN</sub> < 200V	I <sub>A</sub>	27.65	29.10	30.56	mA
Output Current (MIK3624W)	7V < V <sub>IN</sub> < 200V	I <sub>A</sub>	36.86	38.80	40.74	mA
Output Current (MIK3605W)	7V < V <sub>IN</sub> < 200V	I <sub>A</sub>	46.08	48.5	50.93	mA
Output Current (MIK3655W)	7V < V <sub>IN</sub> < 200V	I <sub>A</sub>	51.0	53.4	55.0	mA
Output Current (MIK3626W)	7V < V <sub>IN</sub> < 200V	I <sub>A</sub>	55	58	60	mA
Output Current (MIK3628W)	7V < V <sub>IN</sub> < 200V	I <sub>A</sub>	73.72	77.6	81.48	mA
Output Current (MIK3609W)	7V < V <sub>IN</sub> < 200V	I <sub>A</sub>	82.94	87.3	91.67	mA
Output Current (MIK3610W)	7V < V <sub>IN</sub> < 200V	I <sub>A</sub>	92.15	97.00	101.85	mA
Output Current Tolerance (25 mA and above)	0°C < T <sub>J</sub> < 110°C	I <sub>TOL</sub>	-5		+5	%
Output Current Tolerance (20 mA and below)	0°C < T <sub>J</sub> < 110°C	I <sub>TOL</sub>	-10		+10	%
Iset Pin Voltage (MIK3600W)	0°C < T <sub>J</sub> < 110°C	V <sub>ISET</sub>	1.05	1.10	1.15	V
ADJ Current (MIK3600W)	V <sub>IC</sub> =10V R=15KΩ	I <sub>A15K</sub>	38	40	42	mA
Current ADJ Ratio (MIK3625B)	V <sub>IC</sub> =10V R=30KΩ	I <sub>A30K</sub>	19	20	21	mA
ADJ Ratio (MIK3600W)	7V < V <sub>IC</sub> < 200V 20mA < I <sub>OUT</sub> < 40mA	K	500	550	600	
Thermal Regulation Onset Temperature	V <sub>IC</sub> =10V, I <sub>OUT</sub> =rated	T <sub>O</sub>		110		°C

**9 Typical Characteristics**



FIG. 6

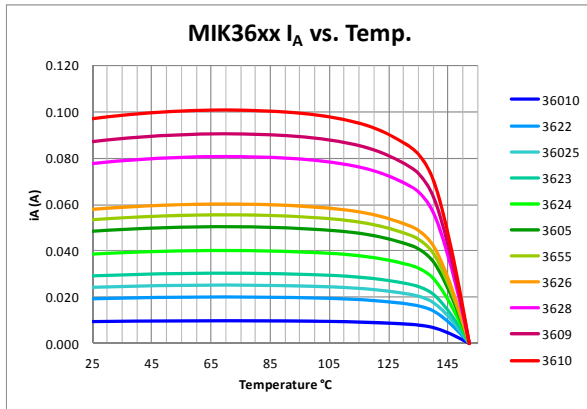


FIG. 7

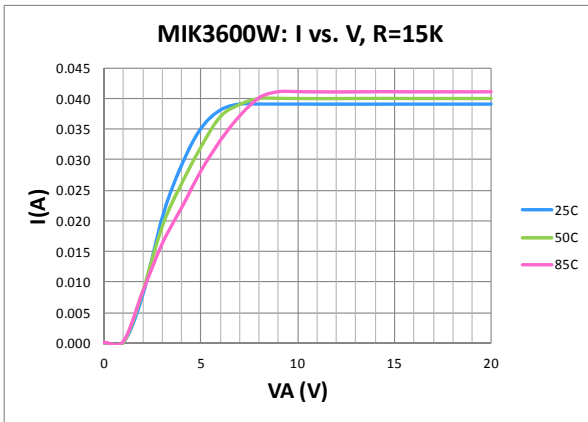


FIG. 8

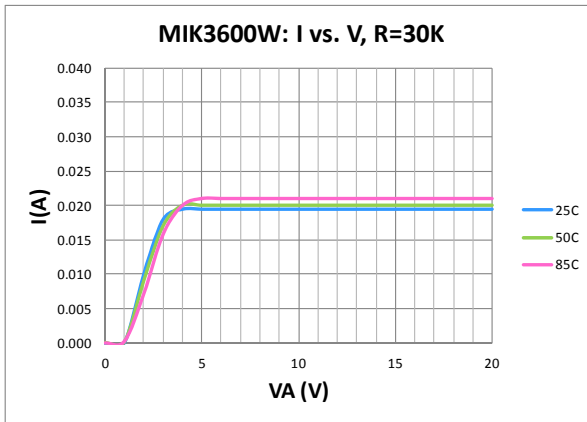


FIG. 9

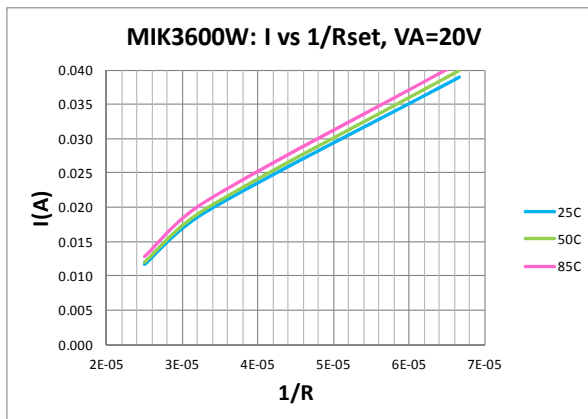


FIG. 10

### 10 Package Information

#### 10.1 SOT-89 Package Outline Drawing

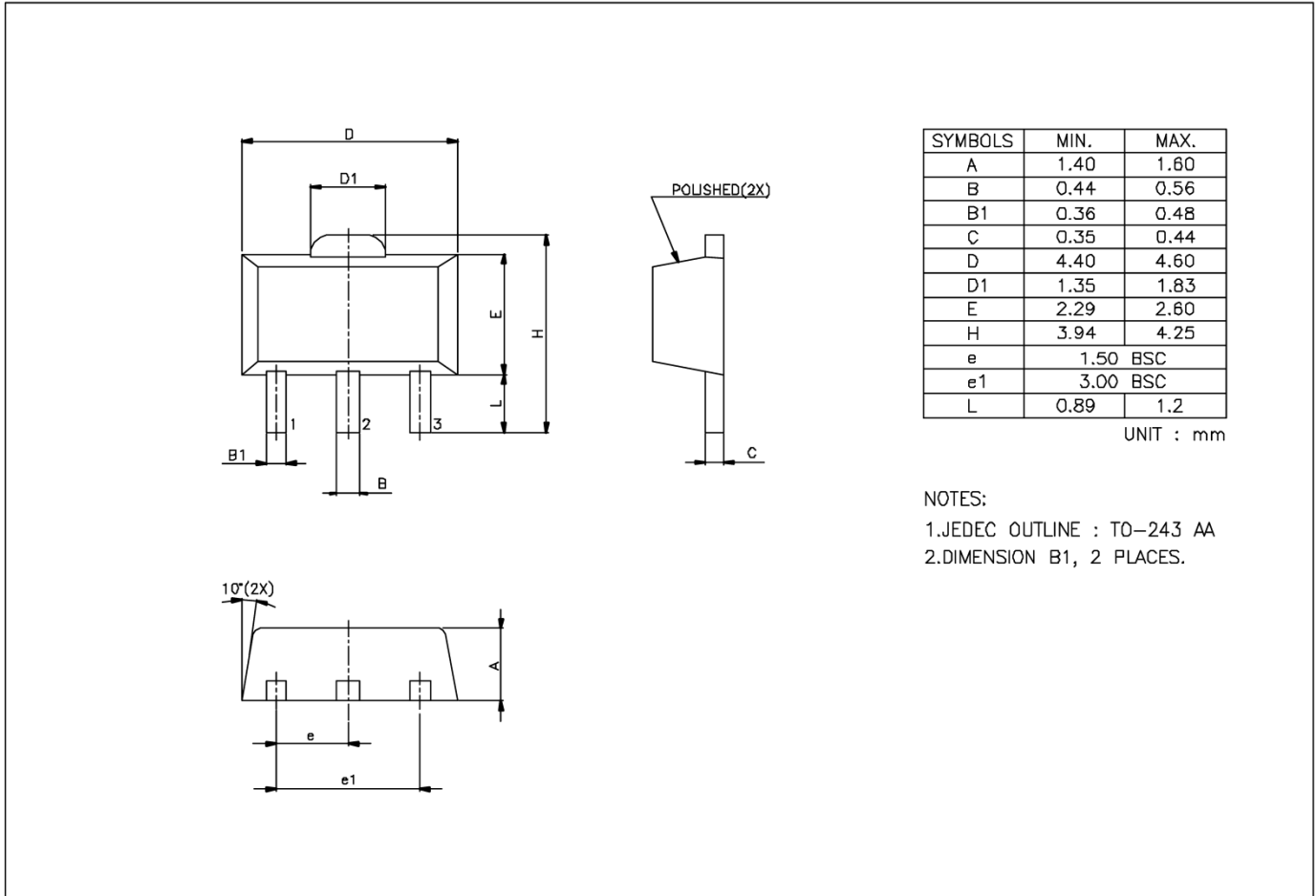


FIG. 11

**10.2 SOT-223 Package Outline Drawing**

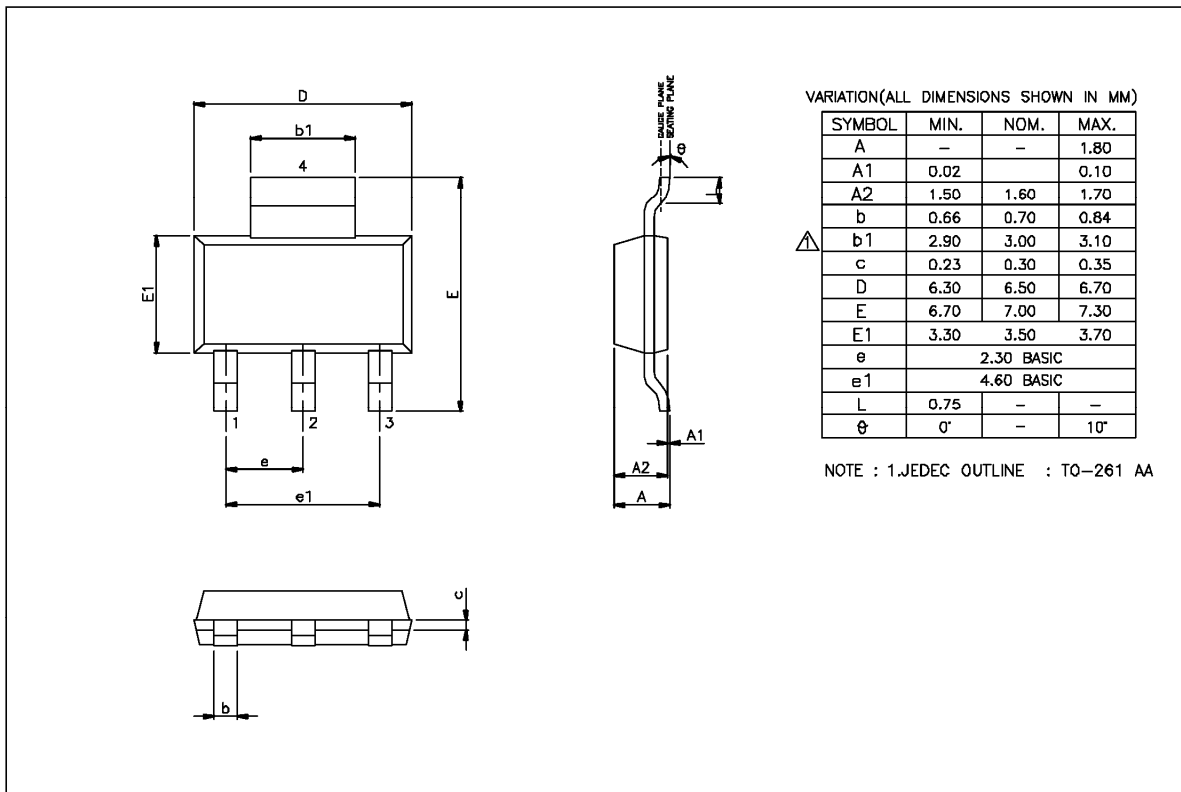
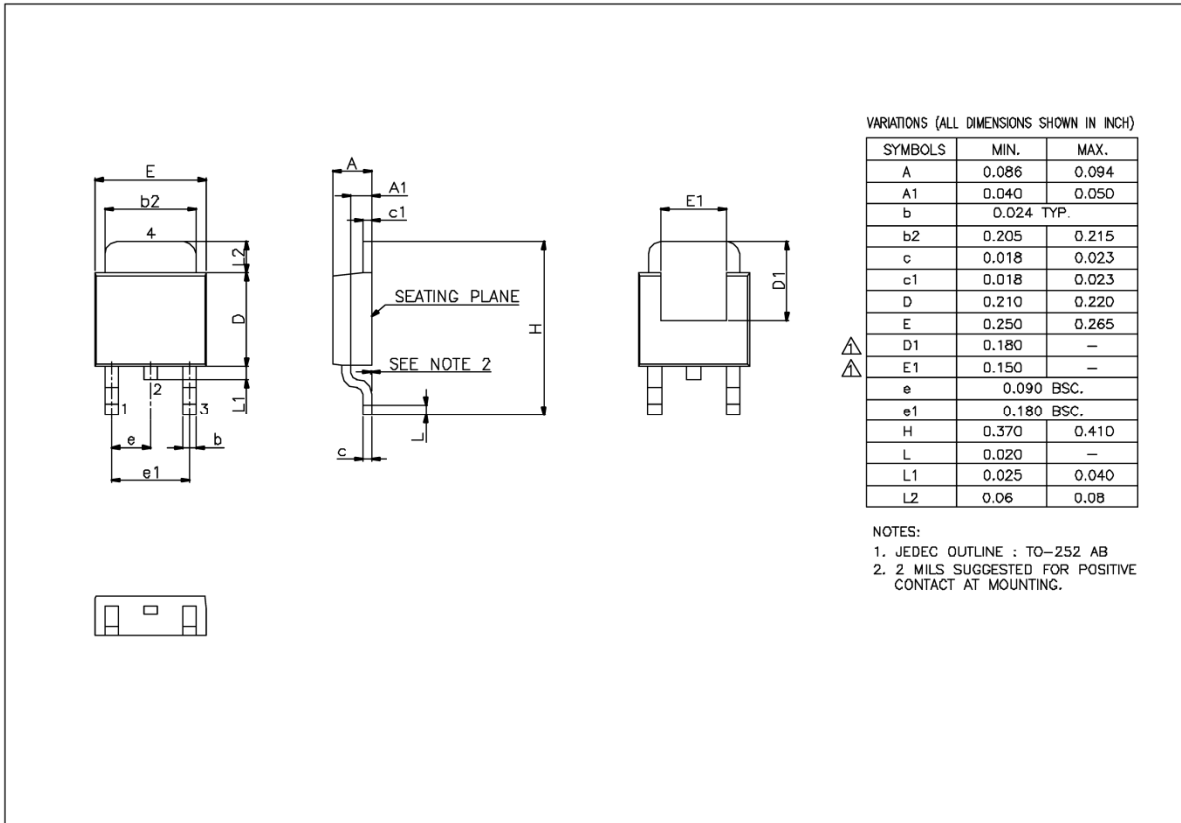


FIG. 12

**10.3 TO-252 Packaging Outline Drawing**



**FIG. 13**



**10.4 TO-263 Packaging Outline Drawing**

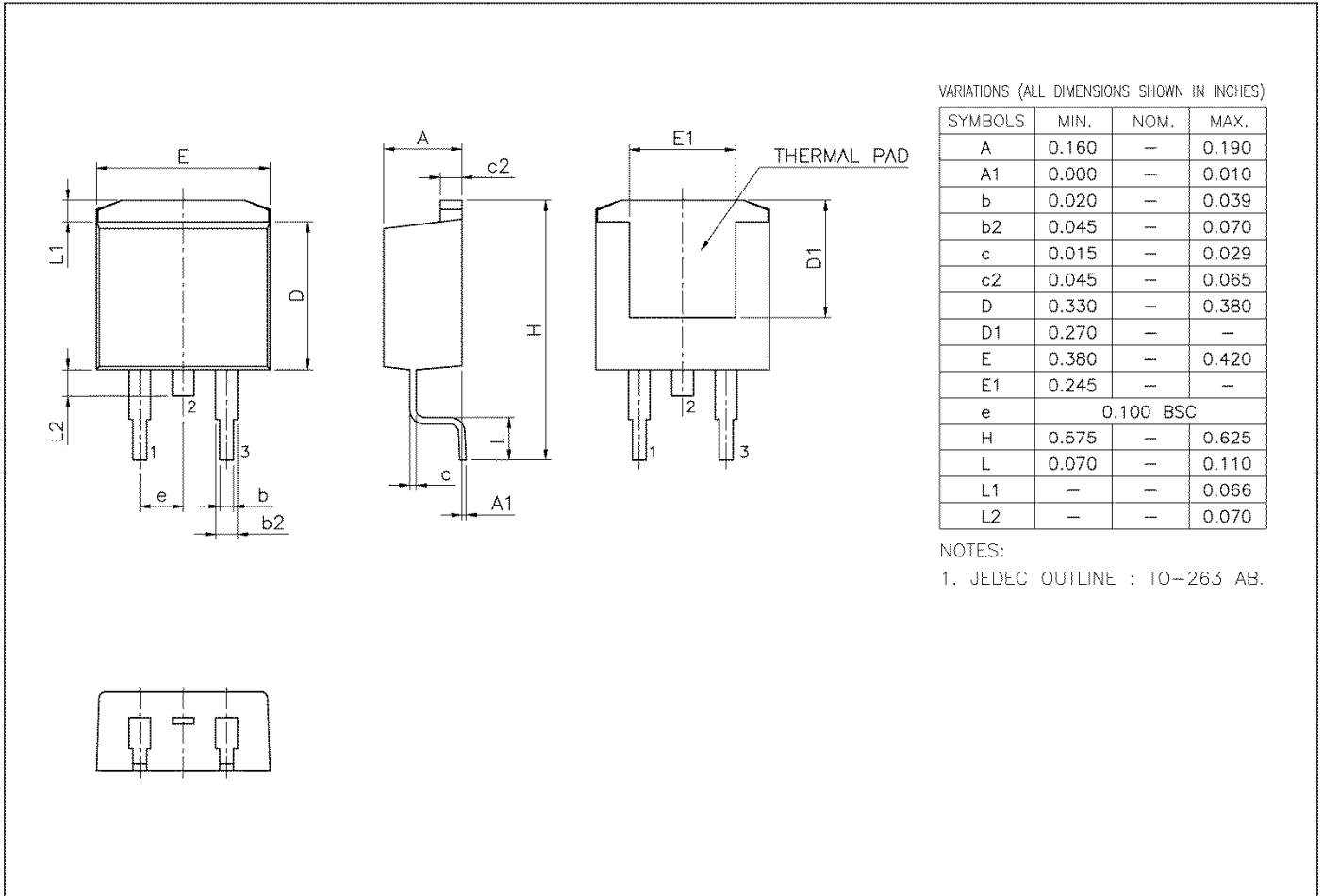


FIG. 14

### 10.5 TO-220 Packaging Outline Drawing

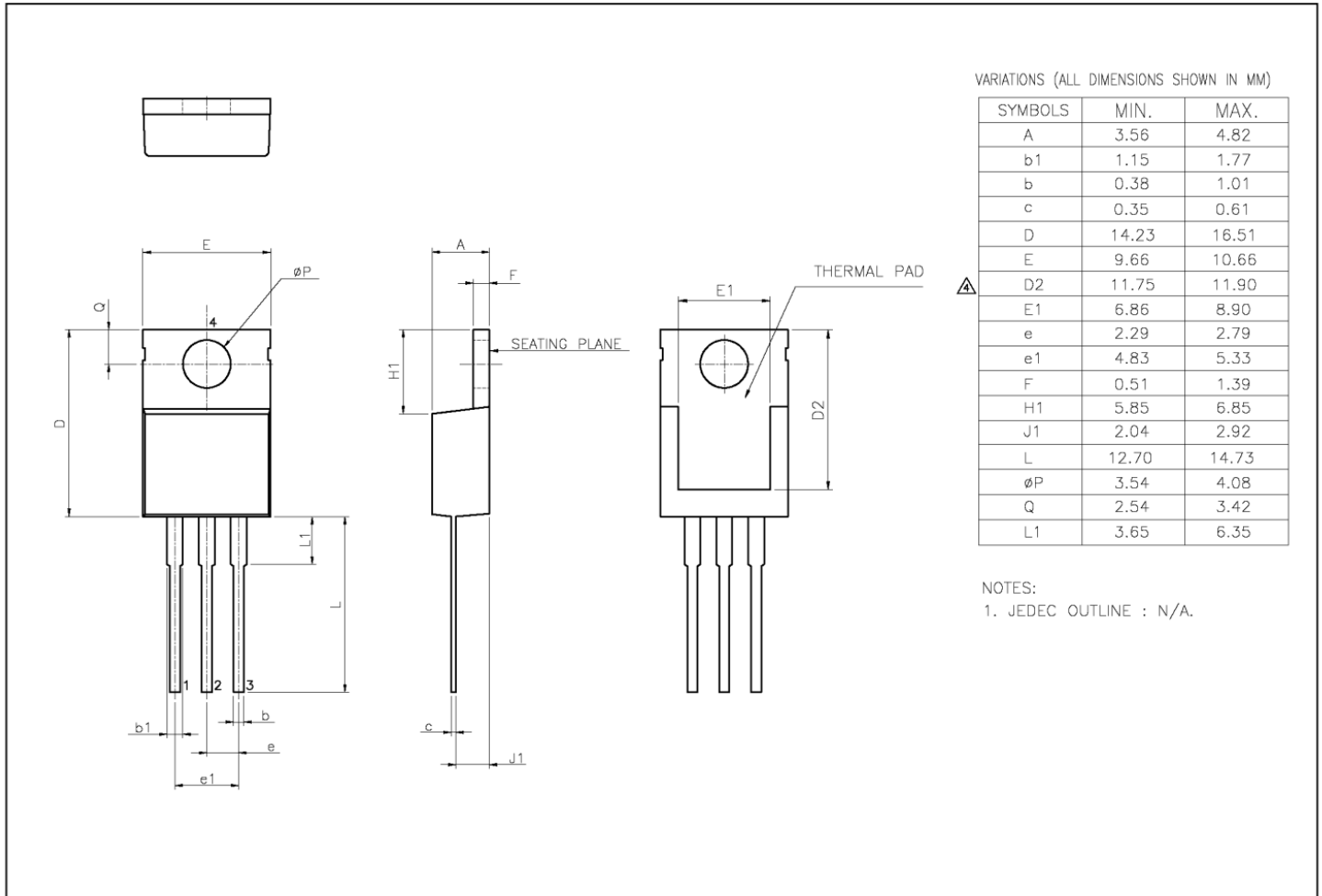
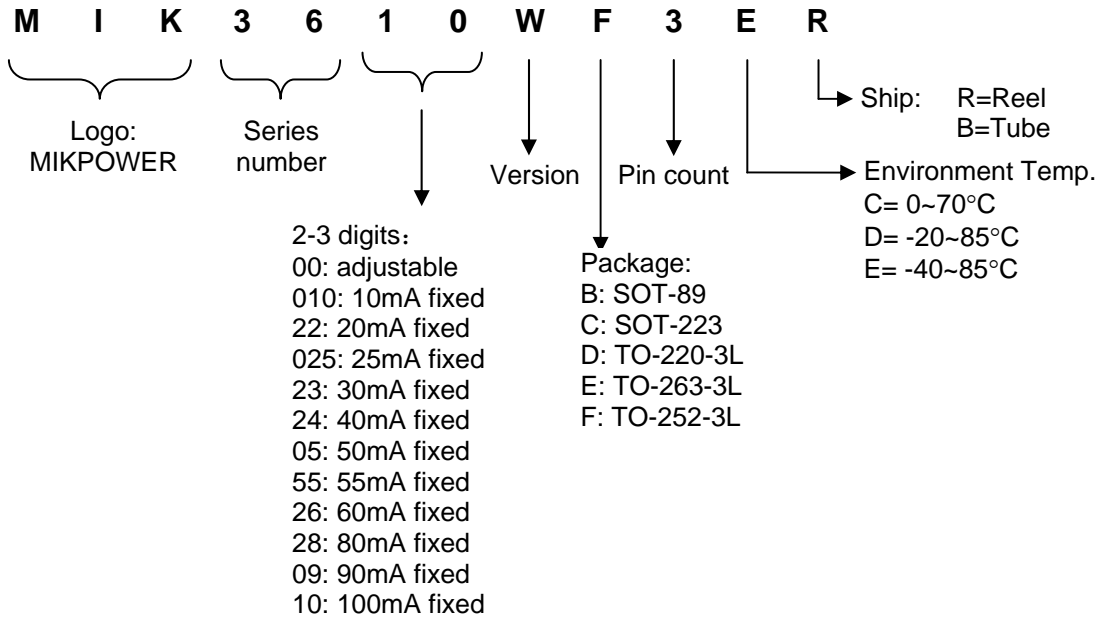


FIG. 15

### 11 Ordering Information:

Part Number	Descriptions	Packing and Shipping
MIK36010WB3ER	10 mA Fixed	Green SOT-89 Reel
MIK36010WC3ER	10 mA Fixed	Green SOT-223 Reel
MIK36010WF3ER	10 mA Fixed	Green TO-252 Reel
MIK3622WB3ER	20 mA Fixed	Green SOT-89 Reel
MIK3622WC3ER	20 mA Fixed	Green SOT-223 Reel
MIK3622WF3ER	20 mA Fixed	Green TO-252 Reel
MIK36025WC3ER	25 mA Fixed	Green SOT-223 Reel
MIK36025WF3ER	25 mA Fixed	Green TO-252 Reel
MIK3623WC3ER	30 mA Fixed	Green SOT-223 Reel
MIK3623WF3ER	30 mA Fixed	Green TO-252 Reel
MIK3624WF3ER	40 mA Fixed	Green TO-252 Reel
MIK3624WE3ER	40 mA Fixed	Green TO-263 Reel
MIK3605WF3ER	50 mA Fixed	Green TO-252 Reel
MIK3605WE3ER	50 mA Fixed	Green TO-263 Reel
MIK3655WF3ER	55 mA Fixed	Green TO-252 Reel
MIK3655WE3ER	55 mA Fixed	Green TO-263 Reel
MIK3655WD3EB	55 mA Fixed	Green TO-220 Tube
MIK3626WF3ER	60 mA Fixed	Green TO-252 Reel
MIK3626WE3ER	60 mA Fixed	Green TO-263 Reel
MIK3626WD3EB	60 mA Fixed	Green TO-220 Tube
MIK3628WF3ER	80 mA Fixed	Green TO-252 Reel
MIK3628WE3ER	80 mA Fixed	Green TO-263 Reel
MIK3628WD3EB	80 mA Fixed	Green TO-220 Tube
MIK3609WF3ER	90 mA Fixed	Green TO-252 Reel
MIK3609WE3ER	90 mA Fixed	Green TO-263 Reel
MIK3609WD3EB	90 mA Fixed	Green TO-220 Tube
MIK3610WF3ER	100 mA Fixed	Green TO-252 Reel
MIK3610WE3ER	100 mA Fixed	Green TO-263 Reel
MIK3610WD3EB	100 mA Fixed	Green TO-220 Tube
MIK3600WB3ER	20~40 mA Adjustable	Green SOT-89 Reel
MIK3600WC3ER	20~40 mA Adjustable	Green SOT-223 Reel
MIK3600WF3ER	20~40 mA Adjustable	Green TO-252 Reel
MIK3600WE3ER	20~40 mA Adjustable	Green TO-263 Reel
MIK3600WD3EB	20~40 mA Adjustable	Green TO-220 Tube

### APPENDIX A: PART NUMBER



### APPENDIX B: IC MARKING

