

1 Features:

- 7~200V operating range
- Up to 90mA driving current
- Fixed current, no setting resistor necessary
- $\pm 5\%$ accuracy (when T_j 0~110°C)
- Thermal regulation when $T_j > 110^\circ\text{C}$
- eSOP-8, TO-252, TO-263 Green package

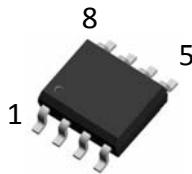
2 Applications:

- Motion sensing LED lights
- Dimmable LED lights
- Decorative LED Lights
- Light sensing signage light source

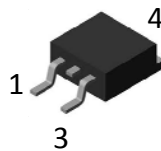
3 Pin Definitions:

eSOP-8	TO-252	TO-263	Pin Descriptions
5,6,7	1	1	VA, Anode
1	4	4	VC, Cathode
8	3	3	PWM input

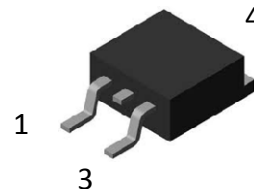
eSOP-8



TO-252



TO-263



4 General Descriptions:

MIK3400W series is a family of high voltage constant current linear regulators specifically designed for LED lighting applications. MIK3400W series generates steady output current under 7~200V input voltages, much wider than those of typical low voltage linear current regulators. Its output current is set in factory at 30 mA, 60 mA or 90mA. MIK3400W maintains a $\pm 5\%$ high accuracy and stability within a wide operating temperature range from 0 to 110 °C.

MIK3400W series is capable of light dimming by accepting an external 5V PWM signal up to 10 KHz. The same dimming pin can also be used as a small current switch to turn on/off of the LED current.

The MIK3600W series is designed with LED applications in mind. Its thermal regulation function rolls off the output current quickly when T_j reaches 110 °C or above. This allows the driver IC to operate in elevated temperature environment and/or under excessive input voltage at a reduced current level. With lower output current and lower power consumption, the driver IC reaches the equilibrium and protects LED lights from harmful operation conditions. If T_j continues to rise to about 160 °C, the output current will eventually shut down to below 1 mA to avoid potential damages. When T_j goes back below 110°C, the output current restores to its rated value. Refer to Fig. 5 for recommended derating charts.

5 Product Summary

Order Number	Max. Voltage (V)	Current			Package (Green)			Reeling
		Rating (mA)	Fixed	EN/PWM	eSOP-8	TO-252	TO-263	
MIK3430WA8ER	200	30	✓	✓	✓			2500/Reel
MIK3430WF3ER	200	30	✓	✓		✓		2500/Reel
MIK3460WF3ER	200	60	✓	✓		✓		2500/Reel
MIK3460WE3ER	200	60	✓	✓			✓	2500/Reel
MIK3490WF3ER	200	90	✓	✓		✓		2500/Reel
MIK3490WE3ER	200	90	✓	✓			✓	2500/Reel

6 Applications

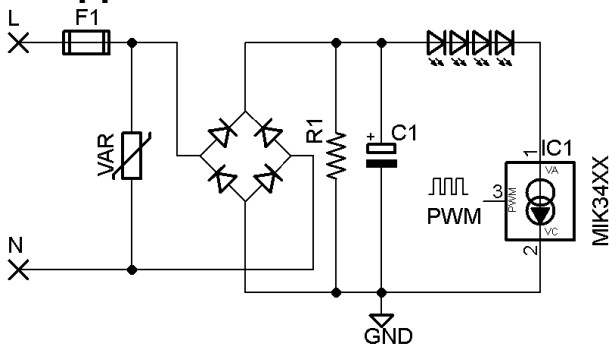


Fig 1: MIK34xx with PWM input

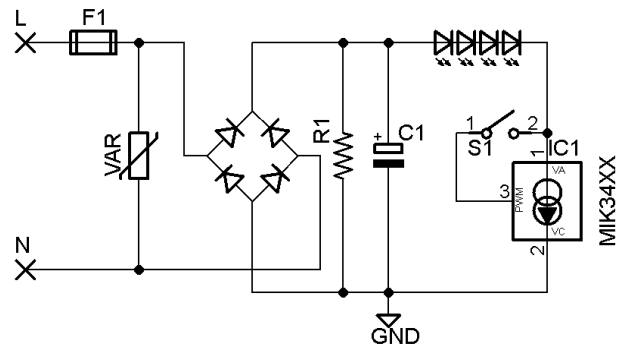


Fig 2: MIK34xx PWM as a Switch

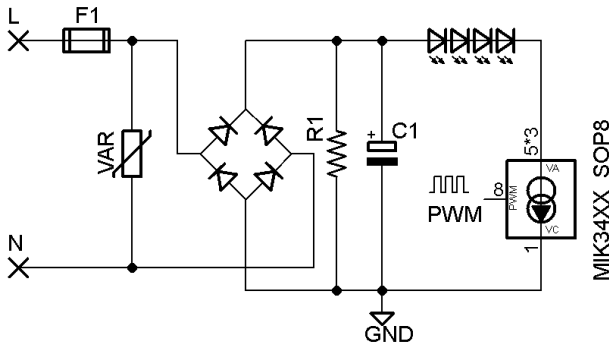


Fig 3: MIK34XX eSOP8 PWM

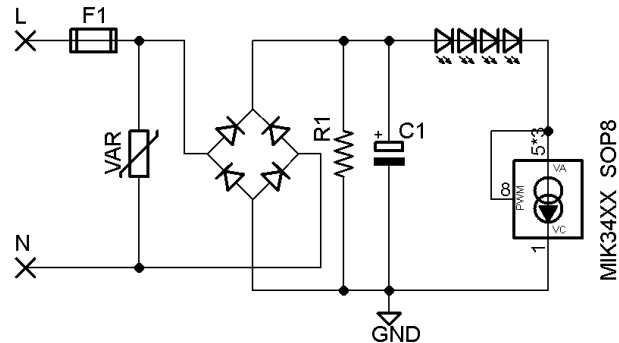


Fig 4: MIK34XX eSOP8 as a Current Regulator

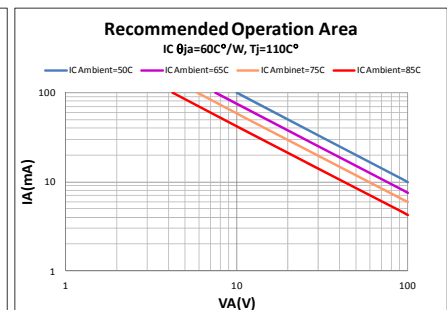
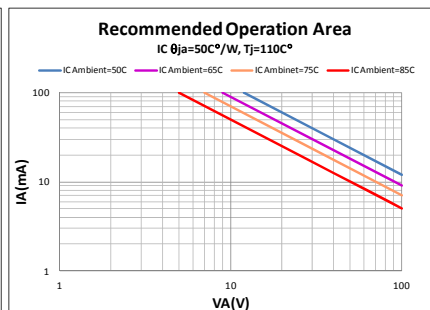
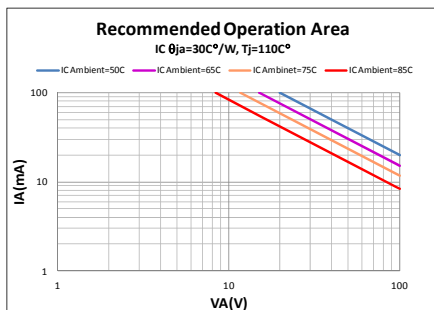


Fig. 5: Recommended Operation Area

PWM Dimming, High Voltage LED Driver

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. eSOP 的 θ_{JC} 为 $10\sim 15^\circ\text{C/Watt}$, TO-252 的 θ_{JC} 为 $5\sim 10^\circ\text{C/Watt}$, TO-263/220 的 θ_{JC} 为 $3\sim 5^\circ\text{C/Watt}$.

7 Absolute Maximum Ratings

Input Voltage	200V	θ_{JA} *IC solder pad size 2cm^2	100 °C / W (eSOP-8) 60 °C / W (TO-252) 30 °C / W (TO-263)
Operating Ambient Temperature Range	-40 °C ~ 125 °C		
Junction Temperature	150 °C		
Storage Temperature	-65 °C ~ 150 °C		
Lead Temperature	260 °C		

8 Electrical Specifications

$T_A=25^\circ\text{C}$, unless otherwise specified.

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Operating Voltage		V_{IN}	7		200	V
Output Current (MIK3430)	$7\text{V} < V_{IC} < 200\text{V}$	I_A	28.5	30	31.5	mA
Output Current (MIK3460)	$7\text{V} < V_{IC} < 200\text{V}$	I_A	57	60	63	mA
Output Current (MIK3490)	$7\text{V} < V_{IC} < 200\text{V}$	I_A	82.9	87.3	91.6	mA
Output Current Tolerance	$0^\circ\text{C} < T_j < 110^\circ\text{C}$	I_{TOL}	-5		+5	%
Quiescent Current	$7\text{V} < V_{IC} < 200\text{V}$ PWM pin open	I_q		0.5		mA
Thermal Regulation Onset Temperature	$V_{IN}=10\text{V}$, $I_{OUT}=\text{Typical}$	T_O		110		°C
$\overline{\text{EN}}/\text{PWM}$						
$\overline{\text{EN}}/\text{PWM}$ Voltage, Input Low	Reference to Vc	V_{IL}			0.4	V
$\overline{\text{EN}}/\text{PWM}$ Voltage, Input High	Reference to Vc	V_{IH}	5			V
$\overline{\text{EN}}/\text{PWM}$ Pull Up Current	$7\text{V} < V_{IC} < 200\text{V}$	I_{PU}	1		2	mA
$\overline{\text{EN}}/\text{PWM}$ Pull Down Current	$7\text{V} < V_{IC} < 200\text{V}$	I_{PD}			1	μA
PWM Frequency		PWM_{FRQ}			20	KHz
$\overline{\text{EN}}/\text{PWM}$, Min Pulse Width	PWM PIN LOW	$T_{\overline{\text{EN}}}$	3			μs
Turn on delay, $\overline{\text{EN}}$ to Out		t_{dON}		3		μs
Turn off delay, $\overline{\text{EN}}$ to Out		t_{dOFF}		24		ns
Current rise time, $\overline{\text{EN}}$ to Out		t_{RISE}		3.7		μs
Current fall time, $\overline{\text{EN}}$ to Out		t_{FALL}		120		ns

9 Typical Characteristics

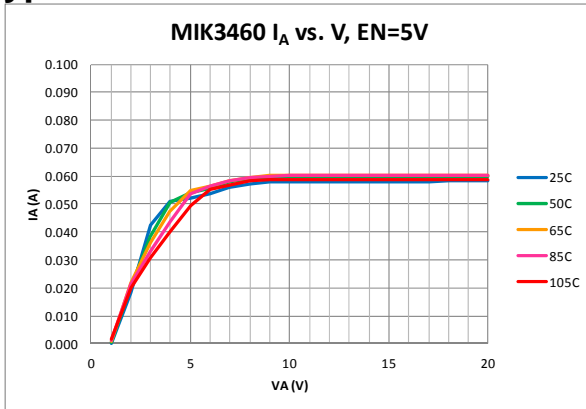


Fig. 6

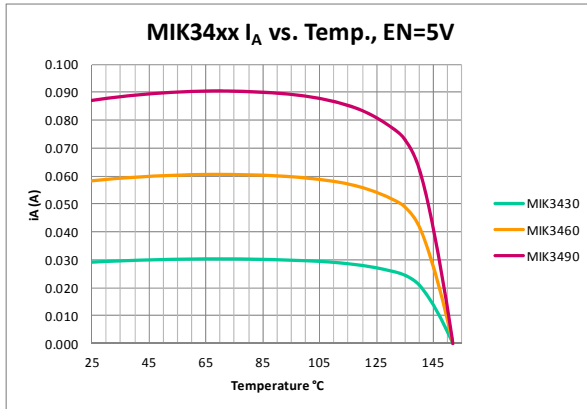


Fig. 7

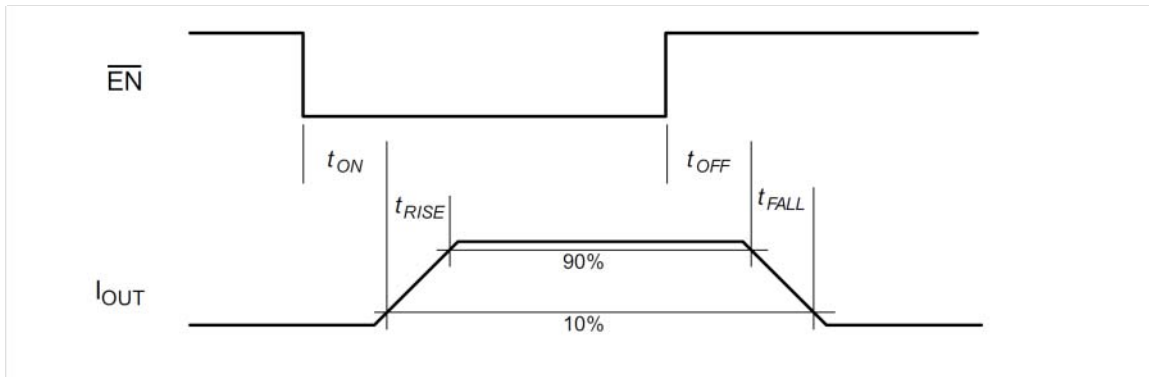


Fig 8: EN/PWM Timing



Fig. 9: PWM vs. Current

10 封装

10.1 eSOP-8 封装尺寸图

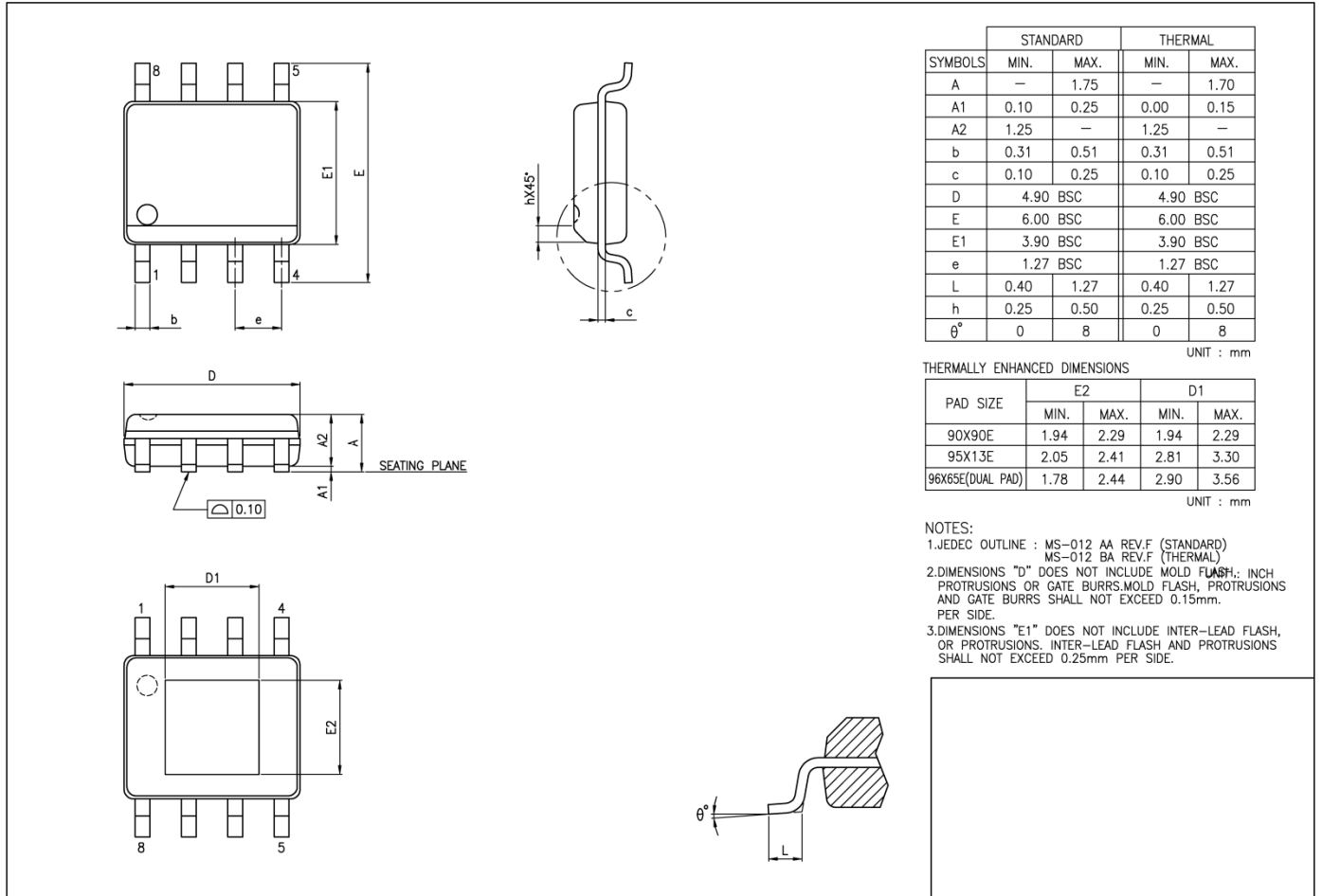


Fig. 10

10.2 TO-252 封装尺寸图

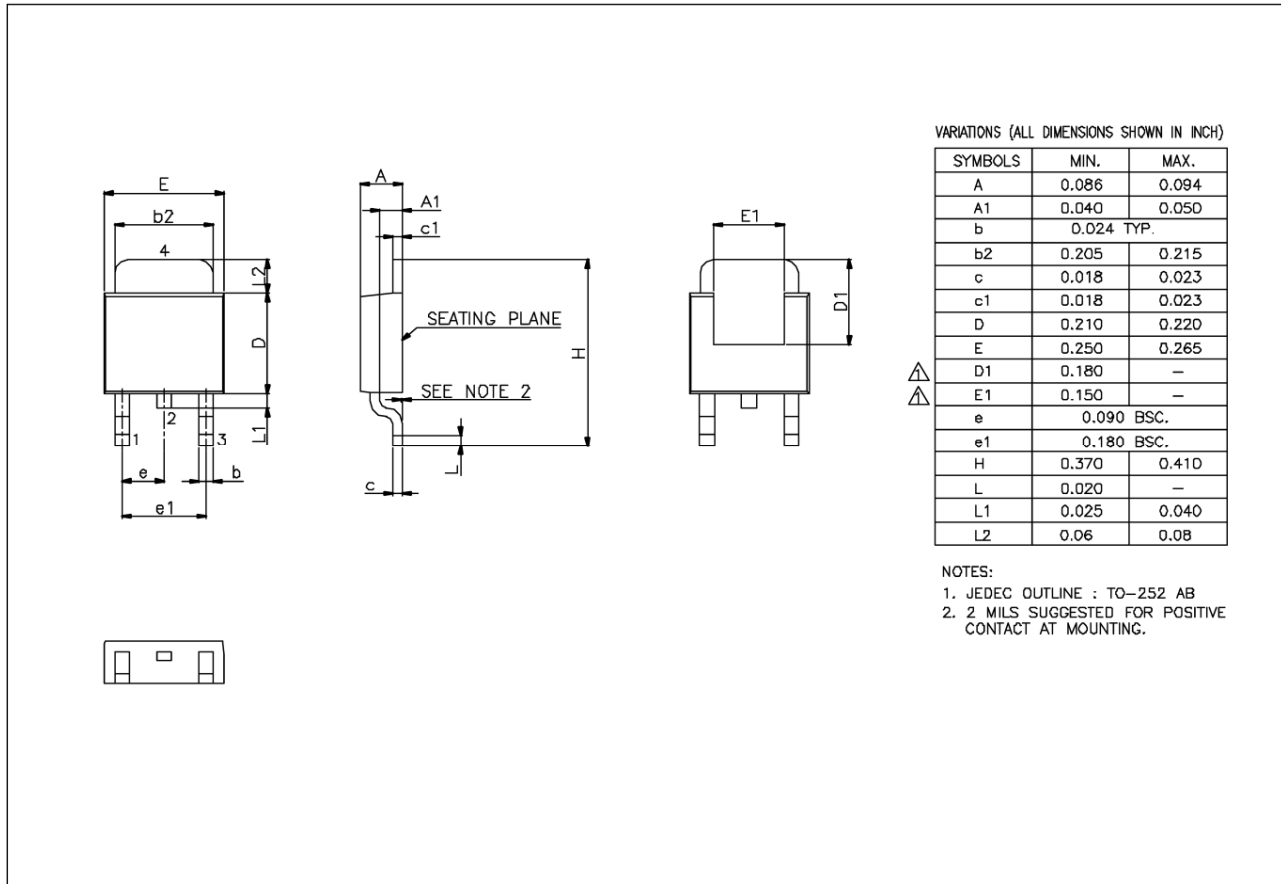


Fig. 11

10.3 TO-263 封装尺寸图

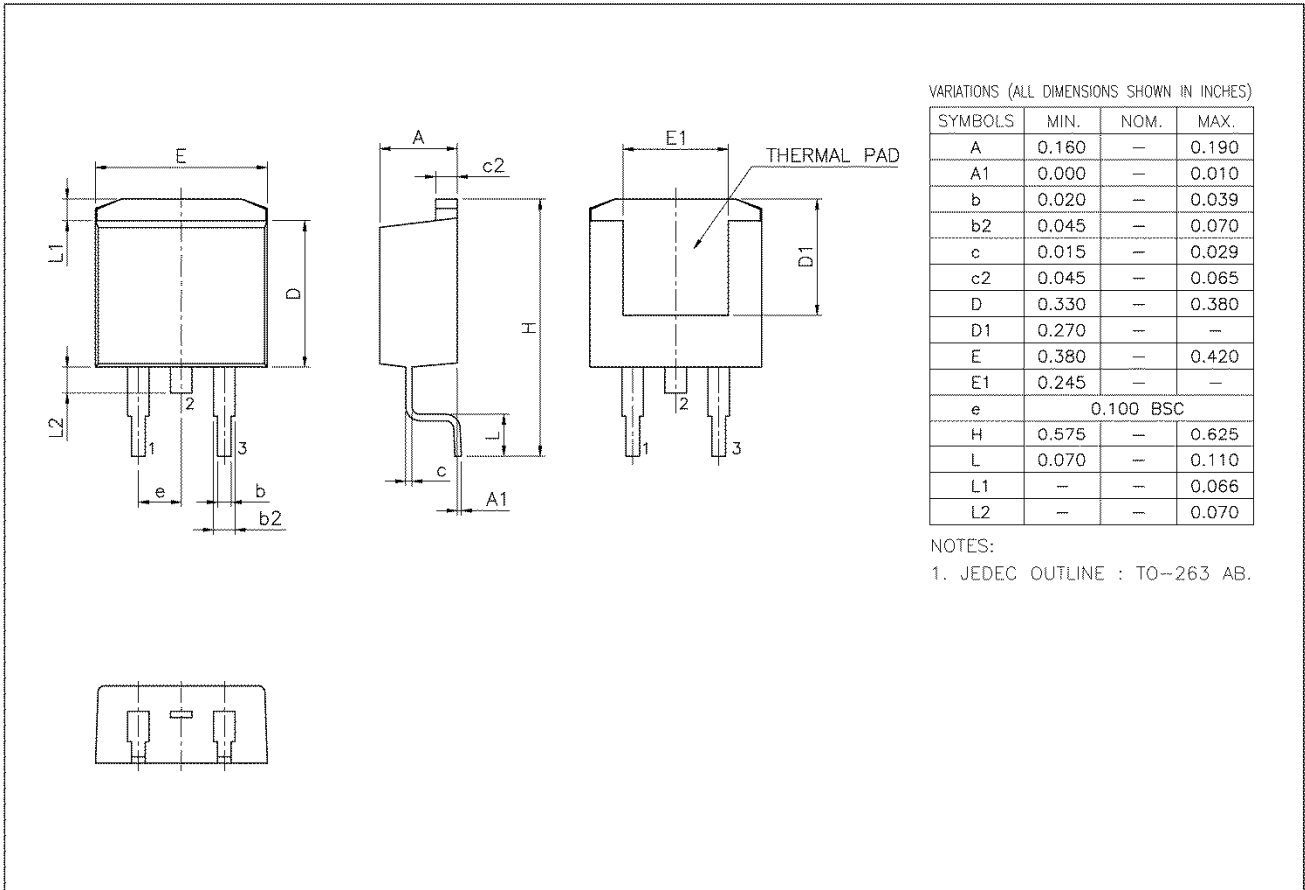
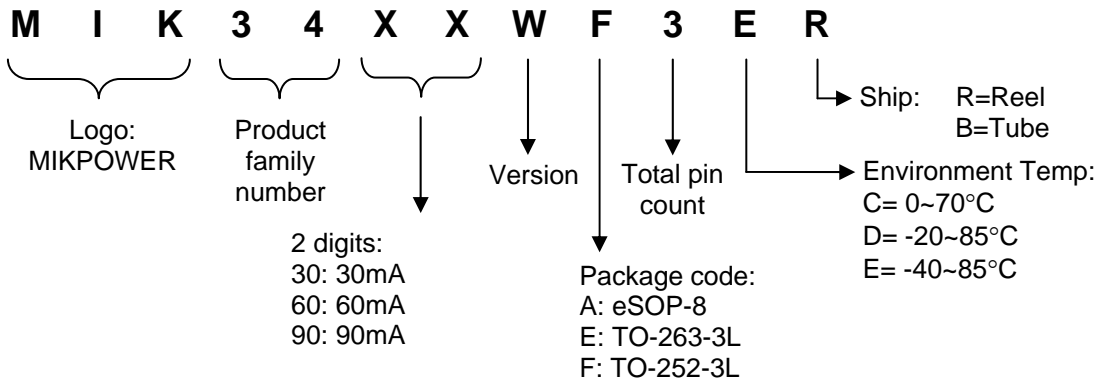


Fig. 12

APPENDIX A: PART NUMBER



APPENDIX B: IC MARKING

