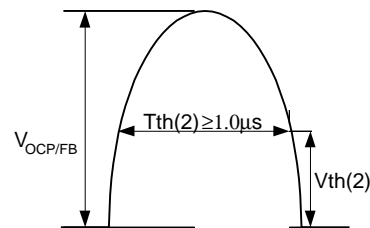# IRIS4015(K)

## Absolute Maximum Ratings

Absolute maximum ratings indicate sustained limits beyond which damage to the device may occur. All voltage parameters are absolute voltages referenced to terminals stated, all currents are defined positive into any lead. The thermal resistance and power dissipation ratings are measured under board mounted and still air conditions.

| Symbol | Definition | Terminals | Max. Ratings | Units | Note |
|---|---|---|---|---|---|
| $I_D$peak | Peak drain current | 3-1 | 21 | | Single pulse |
| $I_D$max | Maximum switching current | 3-1 | 8 | A | $V_{2-3}$ = 0.78V Ta=-20 - +125°C |
| $E_{AS}$ | Single pulse avalanche energy | 3-1 | 325 | mJ | single pulse $I_L$peak=5.7A |
| $V_{CC}$ | Power supply voltage | 4-3 | 35 | V | |
| $V_{TH}$ | OCP/FB terminal voltage | 5-2 | 6 | | |
| $P_{D1}$ | Power dissipation for MOSFET | 3-1 | 235 | W | With infinite heatsink |
| | | | 1.2 | | Without heatsink |
| $P_{D2}$ | Power dissipation for control part (MIC) | 4-2 | 0.8 | | Specified by $V_{IN}$ x $I_{IN}$ |
| Rth$_{JC}$ | Thermal resistance, junction to case | — | 0.53 | °C/W | |
| $T_J$ | Junction temperature | — | -40-125 | | |
| $T_S$ | Storage temperature | — | -40-125 | | |
| $T_f$ | Internal frame temperature in operation | — | -20-125 | °C | Refer to recommended operating temperature |
| $T_{OP}$ | Ambient operating temperature | — | -20-125 | | |
| $T_L$ | Lead temp. (soldering, 10 seconds) | — | 300 | | |

## Recommended Operating Conditions

Time for input of quasi resonant signals.

For the Quasi resonant signal inputted to the $V_{OCP/FB}$ terminal at the time of quasi resonant operation, the signal should be wider thant Tth(2)

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**IRIS4015(K)**

## Electrical Characteristics (for Control Part (MIC))

$V_{CC}$ = 18V, ($T_A$ = 25°C) unless otherwise specified.

| Symbol | Definition | Min. | Typ. | Max. | Units | Test Conditions |
|--------|-----------|------|------|------|-------|-----------------|
| $V_{CCUV+}$ | $V_{CC}$ supply undervoltage positive going threshold | 14.4 | 16 | 17.6 | V | |
| $V_{CCHYS}$ | $V_{CC}$ supply undervoltage lockout hysteresis | 5.4 | 6.0 | 6.6 | | |
| $I_{QCCUV}$ | UVLO mode quiescent current | — | — | 100 | µA | $V_{CC} < V_{CCUV-}$ |
| $I_{QCC}$ | Quiescent operating $V_{CC}$ supply current | — | — | 30 | mA | |
| $T_{OFF(MAX)}$ | Maximum OFF time | 40 | — | 60 | | |
| $T_{TH(2)}$ | Minimum input pulse width for quasi resonant signals | — | — | 1.0 | µsec | |
| $T_{OFF(MIN)}$ | Minimum OFF time | — | — | 1.5 | | |
| $V_{TH(1)}$ | OCP/FB terminal threshold voltage 1 | 0.68 | 0.73 | 0.78 | V | |
| $V_{TH(2)}$ | OCP/FB terminal threshold voltage 2 | 1.3 | 1.45 | 1.6 | | |
| $I_{OCP/FB}$ | OCP/FB terminal sink current | 1.1 | 1.35 | 1.7 | mA | |
| $V_{CC(OVP)}$ | $V_{CC}$ overvoltage protection limit | 20.5 | 22.5 | 24.5 | V | |
| $I_{IN(H)}$ | Latch circuit sustaining current | — | — | 400 | µA | |
| $V_{IN(LaOFF)}$ | Latch circuit reset voltage | 6.6 | — | 8.4 | V | |
| $T_{J(TSD)}$ | Thermal shutdown activation temperature | 140 | — | — | °C | |

## Electrical Characteristics (for MOSFET)
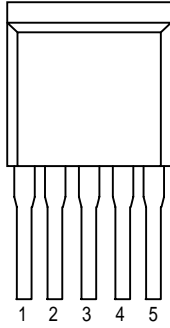
($T_A$ = 25°C) unless otherwise specified.

| Symbol | Definition | Min. | Typ. | Max. | Units | Test Conditions |
|--------|-----------|------|------|------|-------|-----------------|
| $V_{DSS}$ | Drain-to-source breakdown voltage | 650 | — | — | V | |
| $I_{DSS}$ | Drain leakage current | — | — | 25 | µA | Vds=650V, $V_{GS}$=0V |
| $R_{DS(ON)}$ | On-resistance | — | — | 0.97 | Ω | $V_{3-1}$=10V, $I_D$=8.8A |
| $t_r$ | Rise time (10% to 90%) | — | — | 310 | ns | |
| THj-C | Thermal resistance | — | — | 0.53 | °C/W | Between junction and case |

# IRIS4015(K)

## Block Diagram



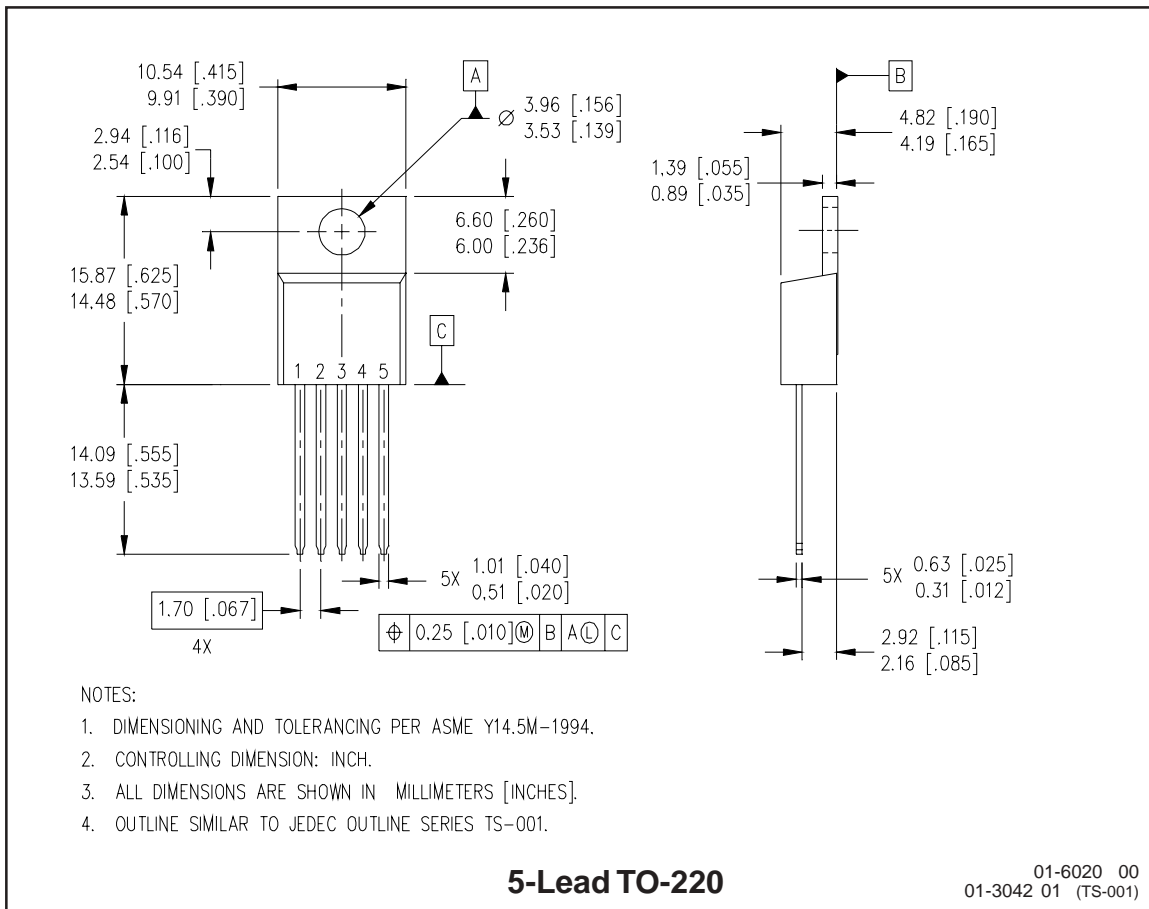| Lead Assignments | Pin # | Symbol | Description |
|---|---|---|---|
| | 1 | S | MOSFET Source terminal |
| | 2 | Ground | Ground terminal |
| | 3 | D | MOSFET Drain terminal |
| | 4 | Vcc | Control circuit supply voltage |
| | 5 | OCP/FB | Overcurrent detection, and Voltage mode control feedback signal |

## Other Functions
O.V.P. – Overvoltage Protection Circuit
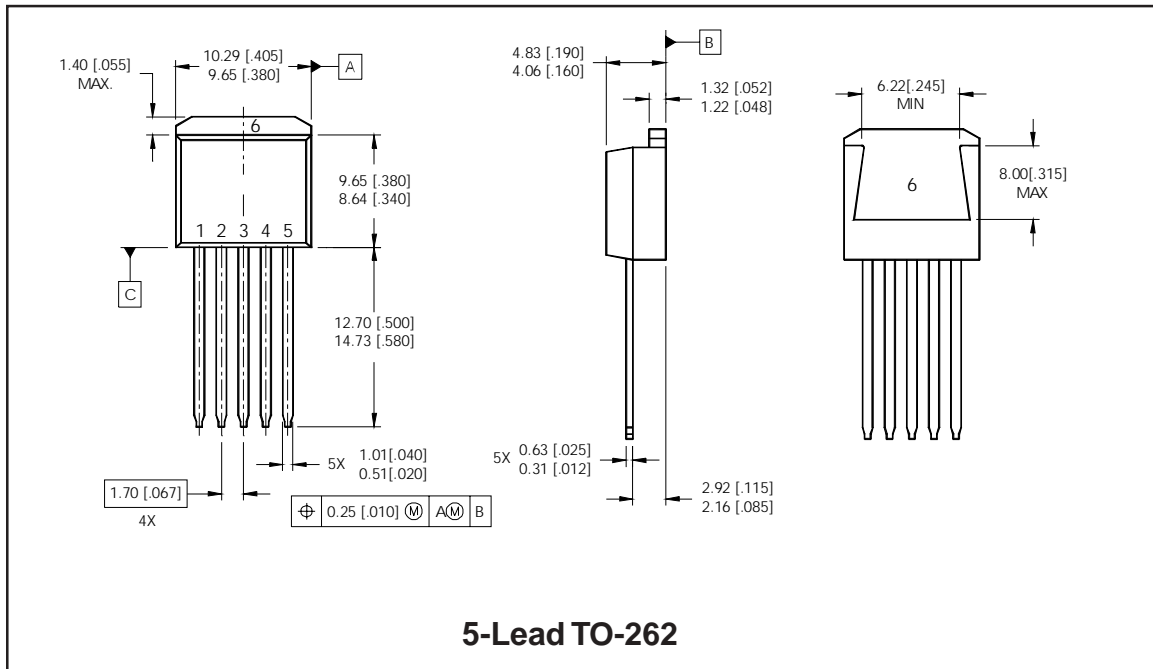T.S.D. – Thermal Shutdown Circuit

*5/4/2001*

**IRIS4015(K)**

## Case outline



10.54 [.415]
9.91 [.390]

A

Ø 3.96 [.156]
3.53 [.139]

2.94 [.116]
2.54 [.100]

6.60 [.260]
6.00 [.236]

15.87 [.625]
14.48 [.570]

C

1 2 3 4 5

14.09 [.555]
13.59 [.535]

5X 1.01 [.040]
0.51 [.020]

1.70 [.067]

4X

⊕ 0.25 [.010]Ⓜ B AⓁ C

B

4.82 [.190]
4.19 [.165]

1.39 [.055]
0.89 [.035]

5X 0.63 [.025]
0.31 [.012]

2.92 [.115]
2.16 [.085]

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M−1994.

2. CONTROLLING DIMENSION: INCH.

3. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].

4. OUTLINE SIMILAR TO JEDEC OUTLINE SERIES TS−001.

**5-Lead TO-220**

01-6020 00
01-3042 01 (TS-001)

## Case outline



**5-Lead TO-262**