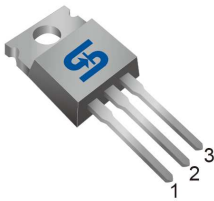


### TO-220



#### Pin Definition:

1. Gate
2. Drain
3. Source

### PRODUCT SUMMARY

| $V_{DS}$ (V) | $R_{DS(on)}$ (m $\Omega$ ) | $I_D$ (A) |
|--------------|----------------------------|-----------|
| 75           | 4.2 @ $V_{GS}=10V$         | 190       |

### Features

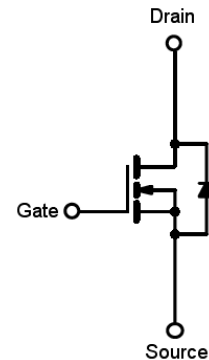
- Advanced Trench Technology
- Low  $R_{DS(on)}$  4.2m $\Omega$  (Max.)
- Low gate charge typical @ 160nC (Typ.)
- Low  $C_{rss}$  typical @ 300pF (Typ.)

### Ordering Information

| Part No.        | Package | Packing      |
|-----------------|---------|--------------|
| TSM190N08CZ C0G | TO-220  | 50pcs / Tube |

Note: "G" denote for Halogen Free Product.

### Block Diagram



N-Channel MOSFET

### Absolute Maximum Rating ( $T_a = 25^\circ C$ unless otherwise noted)

| Parameter                            | Symbol           | Limit            | Unit       |   |
|--------------------------------------|------------------|------------------|------------|---|
| Drain-Source Voltage                 | $V_{DS}$         | 75               | V          |   |
| Gate-Source Voltage                  | $V_{GS}$         | $\pm 20$         | V          |   |
| Continuous Drain Current             | $I_D$            | $T_C=25^\circ C$ | 190        | A |
|                                      |                  | $T_C=70^\circ C$ | 150        |   |
|                                      |                  | $T_A=25^\circ C$ | 17         |   |
|                                      |                  | $T_A=70^\circ C$ | 14         |   |
| Drain Current-Pulsed Note 1          | $I_{DM}$         | 600              | A          |   |
| Avalanche Current, L=0.3mH           | $I_{AS}, I_{AR}$ | 113              | A          |   |
| Avalanche Energy, L=0.3mH            | $E_{AS}, E_{AR}$ | 1900             | mJ         |   |
| Maximum Power Dissipation            | $P_D$            | $T_C=25^\circ C$ | 250        | W |
|                                      |                  | $T_C=70^\circ C$ | 160        |   |
|                                      |                  | $T_A=25^\circ C$ | 2          |   |
|                                      |                  | $T_A=70^\circ C$ | 1.3        |   |
| Storage Temperature Range            | $T_{STG}$        | -55 to +150      | $^\circ C$ |   |
| Operating Junction Temperature Range | $T_J$            | -55 to +150      | $^\circ C$ |   |

\* Limited by maximum junction temperature

### Thermal Performance

| Parameter                                | Symbol            | Limit | Unit         |
|--|-------------------|-------|--------------|
| Thermal Resistance - Junction to Case    | $R_{\theta_{JC}}$ | 0.5   | $^\circ C/W$ |
| Thermal Resistance - Junction to Ambient | $R_{\theta_{JA}}$ | 62.5  | $^\circ C/W$ |

Notes: Surface mounted on FR4 board  $t \leq 10sec$

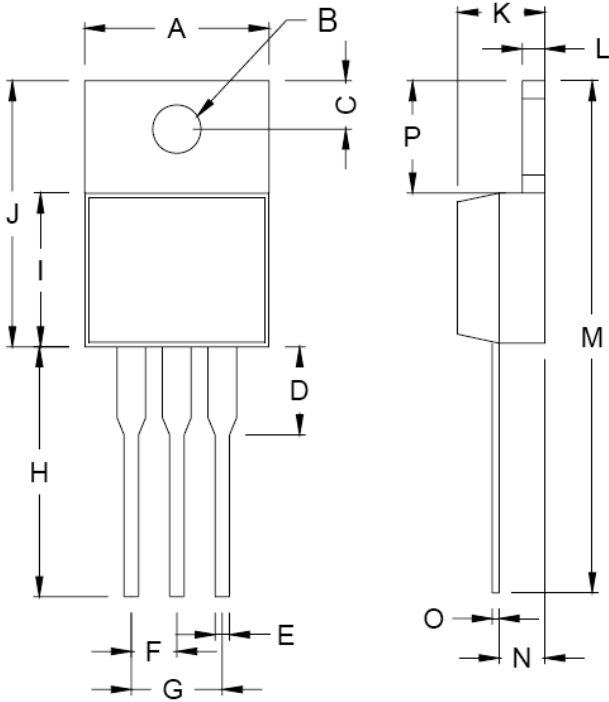
### Electrical Specifications (Ta = 25°C unless otherwise noted)

| Parameter  | Conditions  | Symbol       | Min | Typ  | Max  | Unit |
|--|---|--------------|-----|------|------|------|
| <b>Static</b>  |   |              |     |      |      |      |
| Drain-Source Breakdown Voltage                               | $V_{GS} = 0V, I_D = 250\mu A$                       | $BV_{DSS}$   | 75  | --   | --   | V    |
| Drain-Source On-State Resistance                             | $V_{GS} = 10V, I_D = 90A$                           | $R_{DS(ON)}$ | --  | 3.4  | 4.2  | mΩ   |
| Gate Threshold Voltage                                       | $V_{DS} = V_{GS}, I_D = 250\mu A$                   | $V_{GS(TH)}$ | 2   | 3    | 4    | V    |
| Zero Gate Voltage Drain Current                              | $V_{DS} = 75V, V_{GS} = 0V$                         | $I_{DSS}$    | --  | --   | 1    | μA   |
| Gate Body Leakage  | $V_{GS} = \pm 25V, V_{DS} = 0V$                     | $I_{GSS}$    | --  | --   | ±100 | nA   |
| <b>Dynamic</b>   |   |              |     |      |      |      |
| Total Gate Charge  | $V_{DS} = 30V, I_D = 90A,$<br>$V_{GS} = 10V$        | $Q_g$        | --  | 160  | --   | nC   |
| Gate-Source Charge   |   | $Q_{gs}$     | --  | 35   | --   |      |
| Gate-Drain Charge  |   | $Q_{gd}$     | --  | 40   | --   |      |
| Input Capacitance  | $V_{DS} = 30V, V_{GS} = 0V,$<br>$f = 1.0MHz$        | $C_{iss}$    | --  | 8600 | --   | pF   |
| Output Capacitance   |   | $C_{oss}$    | --  | 780  | --   |      |
| Reverse Transfer Capacitance                                 |   | $C_{rss}$    | --  | 300  | --   |      |
| <b>Switching</b>   |   |              |     |      |      |      |
| Turn-On Delay Time   | $V_{GS} = 10V, V_{DS} = 30V,$<br>$R_G = 3.3\Omega$  | $t_{d(on)}$  | --  | 25   | --   | nS   |
| Turn-On Rise Time  |   | $t_r$        | --  | 40   | --   |      |
| Turn-Off Delay Time  |   | $t_{d(off)}$ | --  | 85   | --   |      |
| Turn-Off Fall Time   |   | $t_f$        | --  | 45   | --   |      |
| <b>Drain-Source Diode Characteristics and Maximum Rating</b> |   |              |     |      |      |      |
| Drain-Source Diode Forward Voltage                           | $V_{GS}=0V, I_S=90A$                                | $V_{SD}$     | -   | 0.8  | 1.3  | V    |
| Reverse Recovery Time  | $I_S = 90A, T_J=25^\circ C$<br>$di/dt = 100A/\mu s$ | $t_{fr}$     |     | 70   |      | nS   |
| Reverse Recovery Charge                                      |   | $Q_{fr}$     |     | 115  |      | nC   |

#### Notes:

1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
2.  $R_{\theta JA}$  is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins.  $R_{\theta JC}$  is guaranteed by design while  $R_{\theta CA}$  is determined by the user's board design.  $R_{\theta JA}$  shown below for single device operation on FR-4 in still air

### TO-220 Mechanical Drawing



| TO-220 DIMENSION |             |        |        |       |
|------------------|-------------|--------|--------|-------|
| DIM              | MILLIMETERS |        | INCHES |       |
|                  | MIN         | MAX    | MIN    | MAX   |
| A                | 10.000      | 10.500 | 0.394  | 0.413 |
| B                | 3.740       | 3.910  | 0.147  | 0.154 |
| C                | 2.440       | 2.940  | 0.096  | 0.116 |
| D                | -           | 6.350  | -      | 0.250 |
| E                | 0.381       | 1.106  | 0.015  | 0.040 |
| F                | 2.345       | 2.715  | 0.092  | 0.058 |
| G                | 4.690       | 5.430  | 0.092  | 0.107 |
| H                | 12.700      | 14.732 | 0.500  | 0.581 |
| J                | 14.224      | 16.510 | 0.560  | 0.650 |
| K                | 3.556       | 4.826  | 0.140  | 0.190 |
| L                | 0.508       | 1.397  | 0.020  | 0.055 |
| M                | 27.700      | 29.620 | 1.060  | 1.230 |
| N                | 2.032       | 2.921  | 0.080  | 0.115 |
| O                | 0.255       | 0.610  | 0.010  | 0.024 |
| P                | 5.842       | 6.858  | 0.230  | 0.270 |

### Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: [org@lifeelectronics.ru](mailto:org@lifeelectronics.ru)