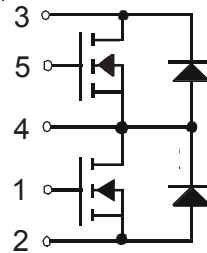


### TrenchT2™ HiperFET N-Channel Power MOSFET

### FMM150-0075X2F

$$\begin{aligned} V_{DSS} &= 75V \\ I_{D25} &= 120A \\ R_{DS(on)} &\leq 5.8m\Omega \\ t_{rr(typ)} &= 66ns \end{aligned}$$

### Phase Leg Topology

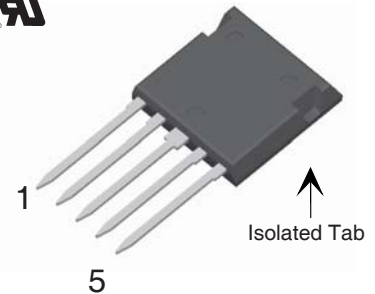


| Symbol     | Test Conditions                      | Maximum Ratings   |       |
|------------|--------------------------------------|-------------------|-------|
| $T_J$      |                                      | -55 ... +175      | °C    |
| $T_{JM}$   |                                      | 175               | °C    |
| $T_{stg}$  |                                      | -55 ... +175      | °C    |
| $V_{ISOL}$ | 50/60Hz, RMS, t = 1min, Leads-to-Tab | 2500              | ~V    |
| $T_L$      | 1.6mm (0.062 in.) from Case for 10s  | 300               | °C    |
| $T_{SOLD}$ | Plastic Body for 10s                 | 260               | °C    |
| $F_C$      | Mounting Force                       | 20..120 / 4.5..27 | N/lb. |

| Symbol    | Test Conditions                                                          | Maximum Ratings |      |
|-----------|--------------------------------------------------------------------------|-----------------|------|
| $V_{DSS}$ | $T_J = 25^\circ\text{C}$ to $175^\circ\text{C}$                          | 75              | V    |
| $V_{DGR}$ | $T_J = 25^\circ\text{C}$ to $175^\circ\text{C}$ , $R_{GS} = 1M\Omega$    | 75              | V    |
| $V_{GSM}$ | Transient                                                                | $\pm 30$        | V    |
| $I_{D25}$ | $T_C = 25^\circ\text{C}$                                                 | 120             | A    |
| $I_{DM}$  | $T_C = 25^\circ\text{C}$ , Pulse Width Limited by $T_{JM}$               | 500             | A    |
| $I_A$     | $T_C = 25^\circ\text{C}$                                                 | 115             | A    |
| $E_{AS}$  | $T_C = 25^\circ\text{C}$                                                 | 850             | mJ   |
| $dV/dt$   | $I_S \leq I_{DM}$ , $V_{DD} \leq V_{DSS}$ , $T_J \leq 175^\circ\text{C}$ | 20              | V/ns |
| $P_D$     | $T_C = 25^\circ\text{C}$                                                 | 170             | W    |

| Symbol     | Test Conditions                                                        | Characteristic Values |      |      |
|------------|------------------------------------------------------------------------|-----------------------|------|------|
|            |                                                                        | Min.                  | Typ. | Max. |
| $C_p$      | Coupling Capacitance Between Shorted Pins and Mounting Tab in the Case |                       | 40   | pF   |
| $d_S, d_A$ | Pin - Pin                                                              | 1.7                   |      | mm   |
| $d_S, d_A$ | Pin - Backside Metal                                                   | 5.5                   |      | mm   |
| Weight     |                                                                        |                       | 9    | g    |

ISOPLUS i4-Pak™



### Features

- Silicon Chip on Direct-Copper Bond (DCB) Substrate
  - UL Recognized Package
  - Isolated Mounting Surface
  - 2500V Electrical Isolation
- Avalanche Rated
- Low  $Q_G$
- Low Drain-to-Tab Capacitance
- Low Package Inductance

### Advantages

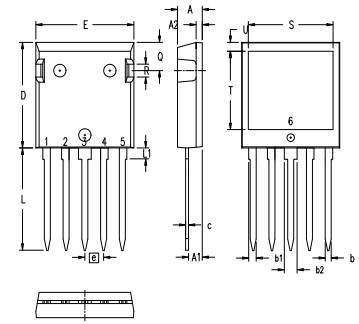
- Easy to Mount
- Space Savings
- High Power Density

### Applications

- DC-DC Converters
- Battery Chargers
- Switched-Mode and Resonant-Mode Power Supplies
- DC Choppers
- AC Motor Drives
- Uninterruptible Power Supplies
- High Speed Power Switching Applications

| Symbol       | Test Conditions                                                                                                          | Characteristic Values |      |                           |
|--------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------|------|---------------------------|
|              |                                                                                                                          | Min.                  | Typ. | Max.                      |
| $BV_{DSS}$   | $V_{GS} = 0V, I_D = 250\mu A$                                                                                            | 75                    |      | V                         |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu A$                                                                                        | 2.0                   |      | 4.0 V                     |
| $I_{GSS}$    | $V_{GS} = \pm 20V, V_{DS} = 0V$                                                                                          |                       |      | $\pm 200$ nA              |
| $I_{DSS}$    | $V_{DS} = V_{DSS}, V_{GS} = 0V$                                                                                          |                       |      | 25 $\mu A$<br>250 $\mu A$ |
|              | $T_J = 150^\circ C$                                                                                                      |                       |      |                           |
| $R_{DS(on)}$ | $V_{GS} = 10V, I_D = 100A, \text{Note 1}$                                                                                |                       |      | 5.8 m $\Omega$            |
| $g_{fs}$     | $V_{DS} = 10V, I_D = 60A, \text{Note 1}$                                                                                 | 50                    | 83   | S                         |
| $C_{iss}$    | $V_{GS} = 0V, V_{DS} = 25V, f = 1\text{ MHz}$                                                                            |                       | 10.5 | nF                        |
| $C_{oss}$    |                                                                                                                          |                       | 1165 | pF                        |
| $C_{rss}$    |                                                                                                                          |                       | 125  | pF                        |
| $t_{d(on)}$  | <b>Resistive Switching Times</b><br>$V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 115A$<br>$R_G = 2\Omega$ (External) |                       | 23   | ns                        |
| $t_r$        |                                                                                                                          |                       | 18   | ns                        |
| $t_{d(off)}$ |                                                                                                                          |                       | 33   | ns                        |
| $t_f$        |                                                                                                                          |                       | 15   | ns                        |
| $Q_{g(on)}$  | $V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 100A$                                                                   |                       | 178  | nC                        |
| $Q_{gs}$     |                                                                                                                          |                       | 37   | nC                        |
| $Q_{gd}$     |                                                                                                                          |                       | 55   | nC                        |
| $R_{thJC}$   |                                                                                                                          |                       |      | 0.88 $^\circ C/W$         |
| $R_{thCS}$   |                                                                                                                          | 0.15                  |      | $^\circ C/W$              |

## ISOPLUS i4-Pak™ Outline



NOTE: Bottom heatsink meets 3000 Volts AC 1 sec isolation to the other pins.

| SYM | INCHES   |      | MILLIMETERS |       |
|-----|----------|------|-------------|-------|
|     | MIN      | MAX  | MIN         | MAX   |
| A   | .190     | .205 | 4.83        | 5.21  |
| A1  | .102     | .118 | 2.59        | 3.00  |
| A2  | .046     | .085 | 1.17        | 2.16  |
| b   | .045     | .055 | 1.14        | 1.40  |
| b1  | .058     | .068 | 1.47        | 1.73  |
| b2  | .100     | .110 | 2.54        | 2.79  |
| C   | .020     | .029 | 0.51        | 0.74  |
| D   | .819     | .840 | 20.80       | 21.34 |
| E   | .770     | .799 | 19.56       | 20.29 |
| e   | .150 BSC |      | 3.81 BSC    |       |
| L   | .780     | .840 | 19.81       | 21.34 |
| L1  | .083     | .102 | 2.11        | 2.59  |
| Q   | .210     | .244 | 5.33        | 6.20  |
| R   | .100     | .180 | 2.54        | 4.57  |
| S   | .660     | .690 | 16.76       | 17.53 |
| T   | .590     | .620 | 14.99       | 15.75 |
| U   | .065     | .080 | 1.65        | 2.03  |

Ref: IXYS CO 0077 R0

## Source-Drain Diode

| Symbol   | Test Conditions                                               | Characteristic Values |      |       |
|----------|---------------------------------------------------------------|-----------------------|------|-------|
|          |                                                               | Min.                  | Typ. | Max.  |
| $I_S$    | $V_{GS} = 0V$                                                 |                       |      | 230 A |
| $I_{SM}$ | Repetitive, Pulse Width Limited by $T_{JM}$                   |                       |      | 900 A |
| $V_{SD}$ | $I_F = 75A, V_{GS} = 0V, \text{Note 1}$                       |                       |      | 1.5 V |
| $t_{rr}$ | $I_F = 115A, -di/dt = 100A/\mu s$<br>$V_R = 37V, V_{GS} = 0V$ |                       | 66   | ns    |
| $I_{RM}$ |                                                               |                       | 4.4  | A     |
| $Q_{RM}$ |                                                               |                       | 145  | nC    |

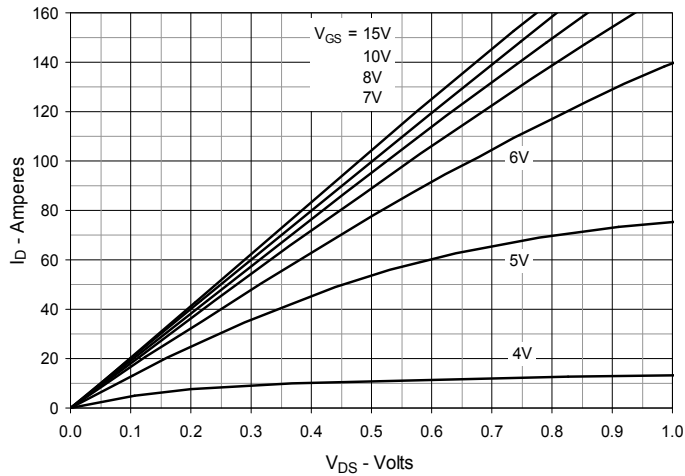
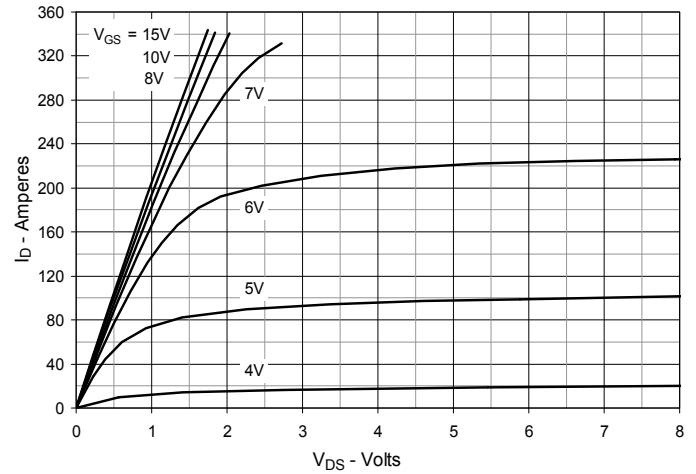
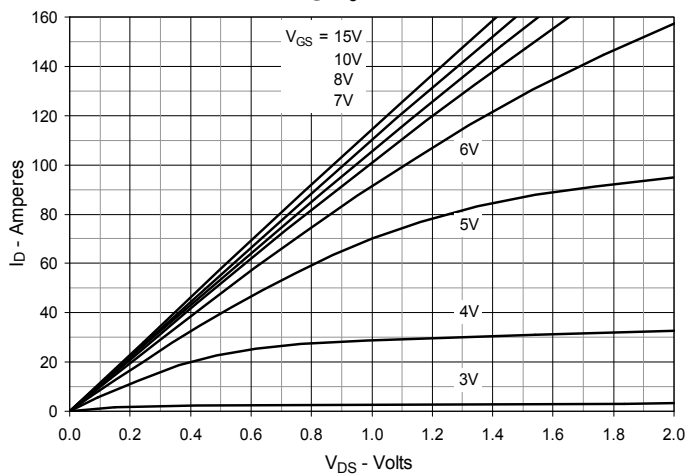
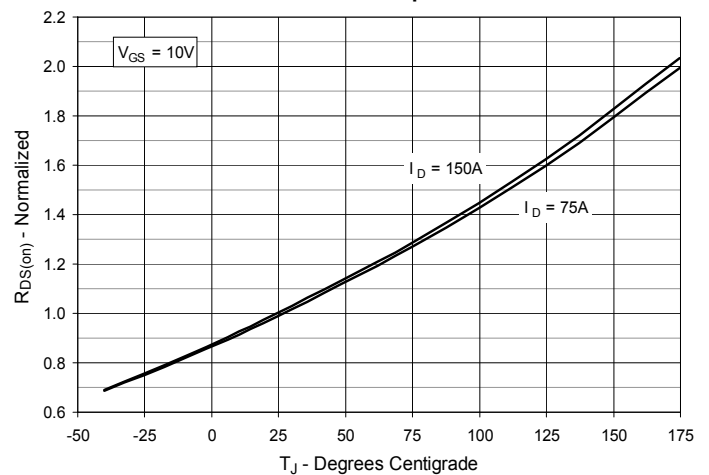
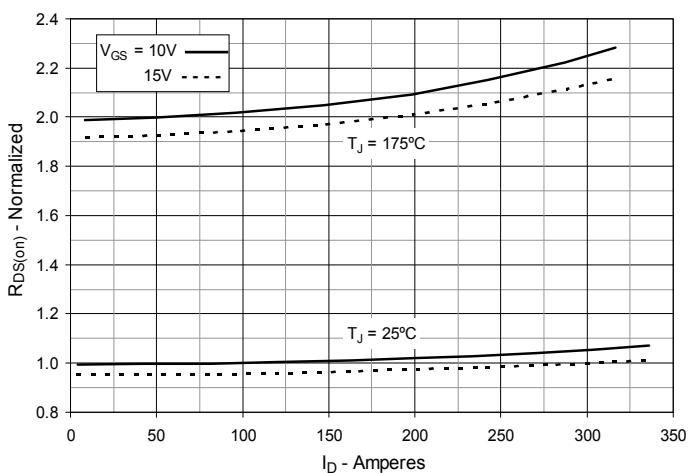
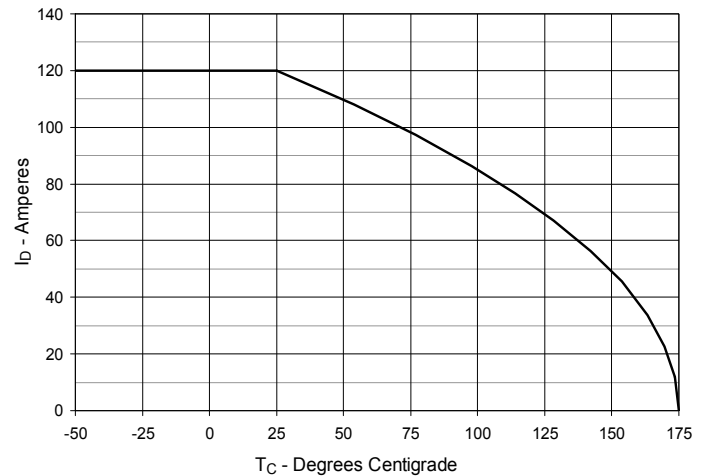
Note 1. Pulse test,  $t \leq 300\mu s$ , duty cycle,  $d \leq 2\%$ .

## ADVANCE TECHNICAL INFORMATION

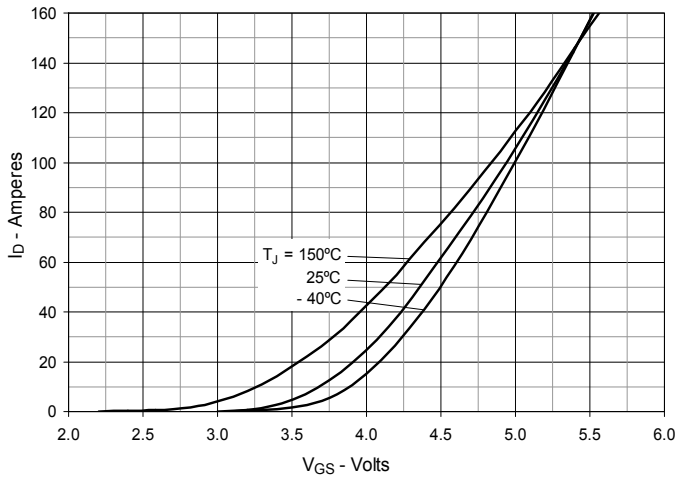
The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated objective result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

IXYS Reserves The Right to Change Limits, Test Conditions, and Dimensions.

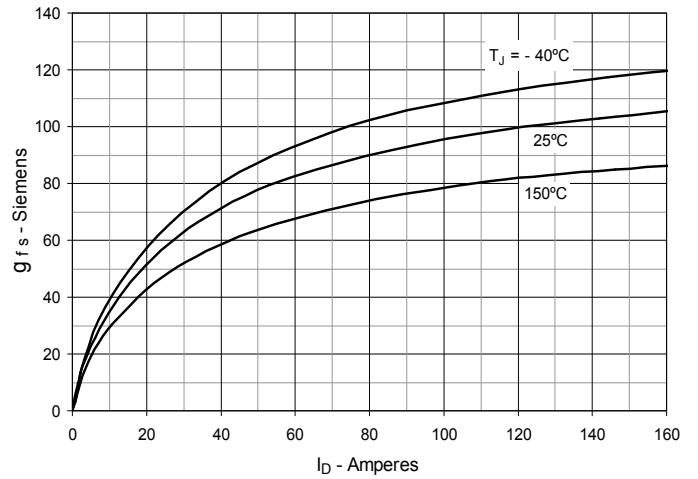
|                                                                                  |           |           |           |           |              |              |              |              |              |             |
|----------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|--------------|--------------|--------------|--------------|--------------|-------------|
| IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: | 4,835,592 | 4,931,844 | 5,049,961 | 5,237,481 | 6,162,665    | 6,404,065 B1 | 6,683,344    | 6,727,585    | 7,005,734 B2 | 7,157,338B2 |
|                                                                                  | 4,850,072 | 5,017,508 | 5,063,307 | 5,381,025 | 6,259,123 B1 | 6,534,343    | 6,710,405 B2 | 6,759,692    | 7,063,975 B2 |             |
|                                                                                  | 4,881,106 | 5,034,796 | 5,187,117 | 5,486,715 | 6,306,728 B1 | 6,583,505    | 6,710,463    | 6,771,478 B2 | 7,071,537    |             |

**Fig. 1. Output Characteristics**
**@  $T_J = 25^\circ\text{C}$** 

**Fig. 2. Extended Output Characteristics**
**@  $T_J = 25^\circ\text{C}$** 

**Fig. 3. Output Characteristics**
**@  $T_J = 150^\circ\text{C}$** 

**Fig. 4.  $R_{DS(on)}$  Normalized to  $I_D = 75\text{A}$  Value vs.**
**Junction Temperature**

**Fig. 5.  $R_{DS(on)}$  Normalized to  $I_D = 75\text{A}$  Value vs. Drain Current**

**Fig. 6. Drain Current vs. Case Temperature**


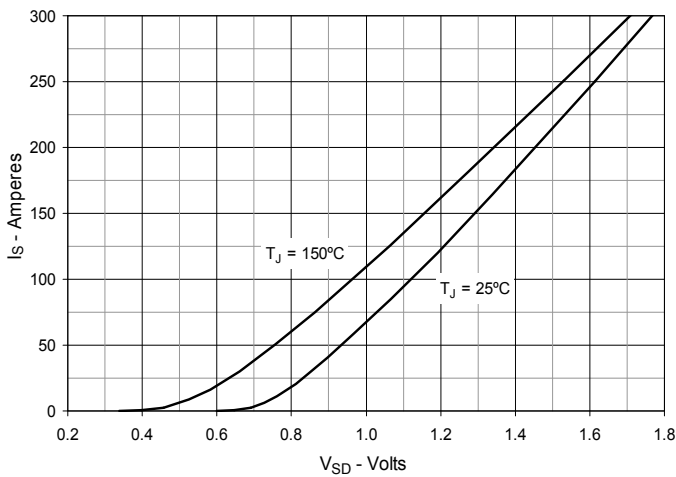
**Fig. 7. Input Admittance**



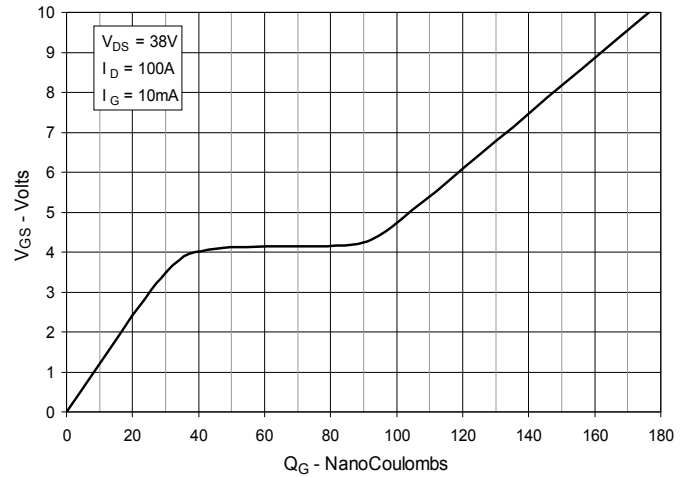
**Fig. 8. Transconductance**



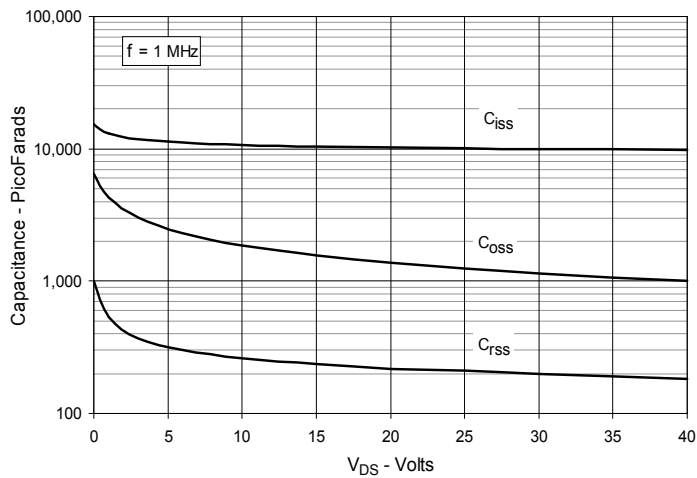
**Fig. 9. Forward Voltage Drop of Intrinsic Diode**



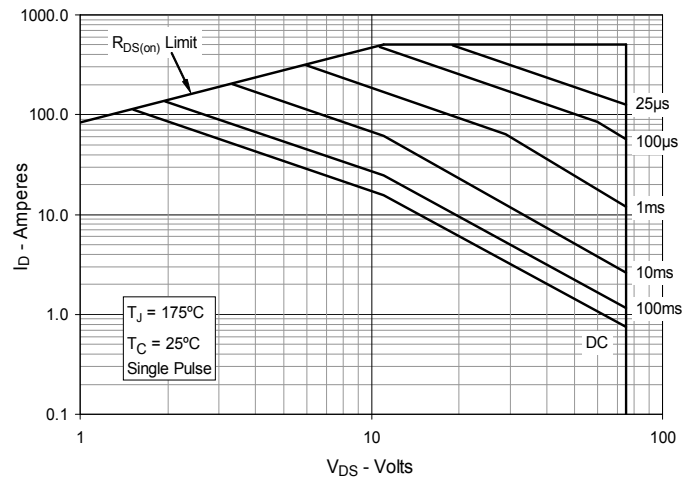
**Fig. 10. Gate Charge**



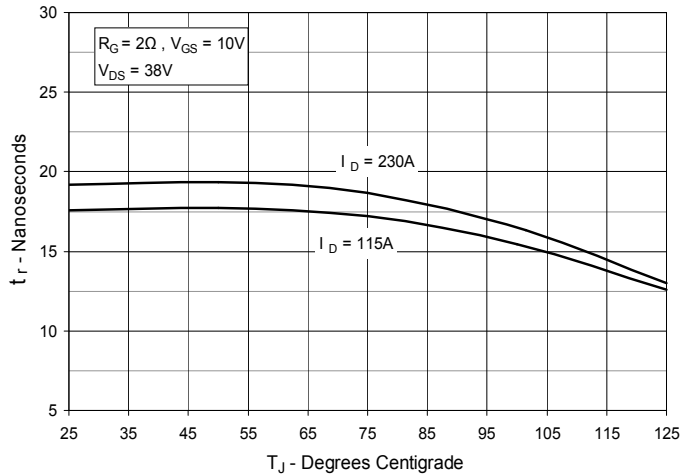
**Fig. 11. Capacitance**



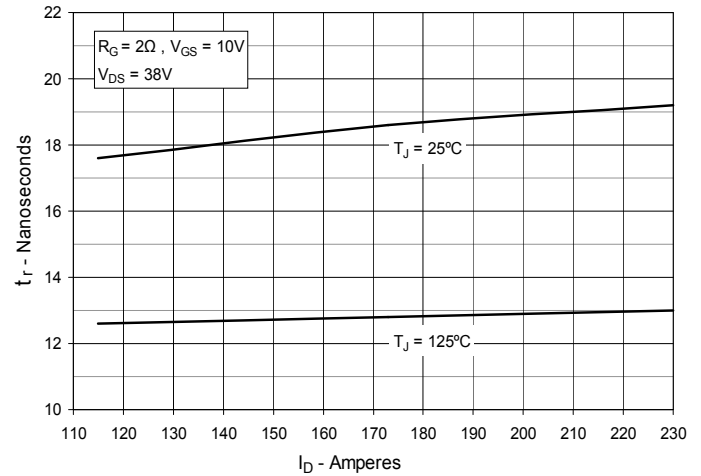
**Fig. 12. Forward-Bias Safe Operating Area**



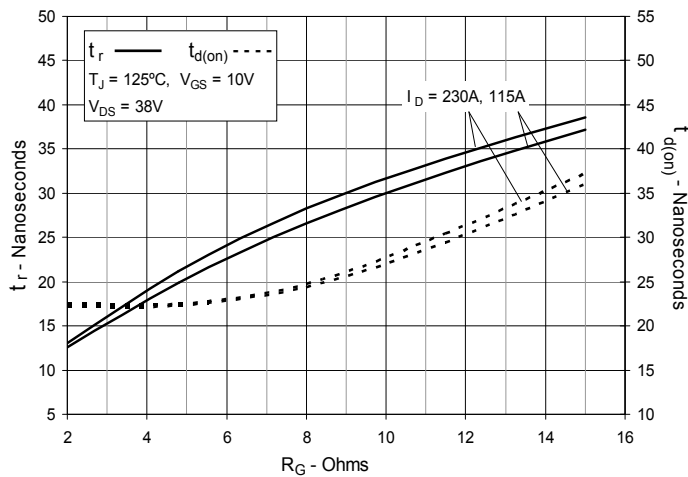
**Fig. 13. Resistive Turn-on  
Rise Time vs. Junction Temperature**



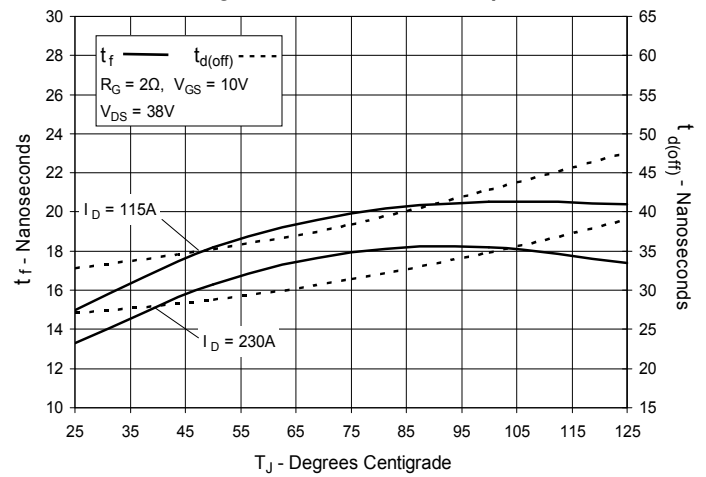
**Fig. 14. Resistive Turn-on  
Rise Time vs. Drain Current**



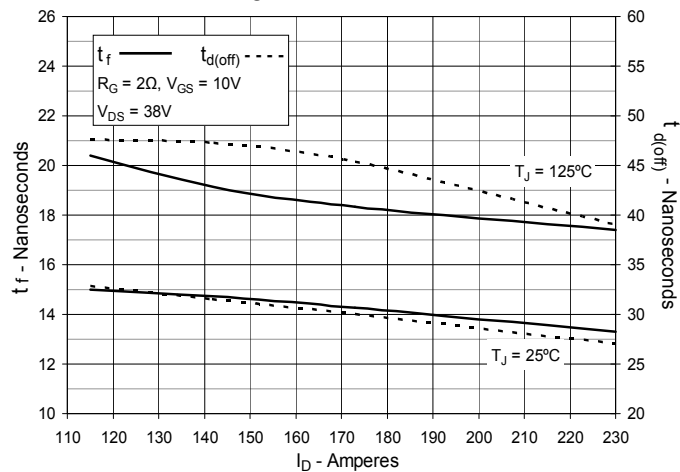
**Fig. 15. Resistive Turn-on  
Switching Times vs. Gate Resistance**



**Fig. 16. Resistive Turn-off  
Switching Times vs. Junction Temperature**



**Fig. 17. Resistive Turn-off  
Switching Times vs. Drain Current**



**Fig. 18. Resistive Turn-off  
Switching Times vs. Gate Resistance**

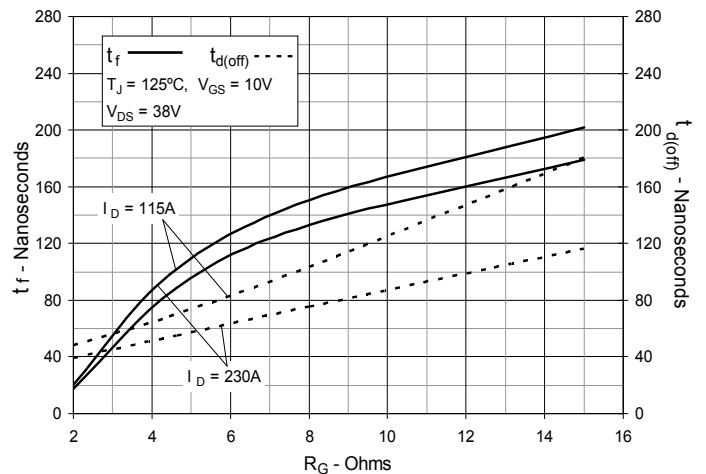
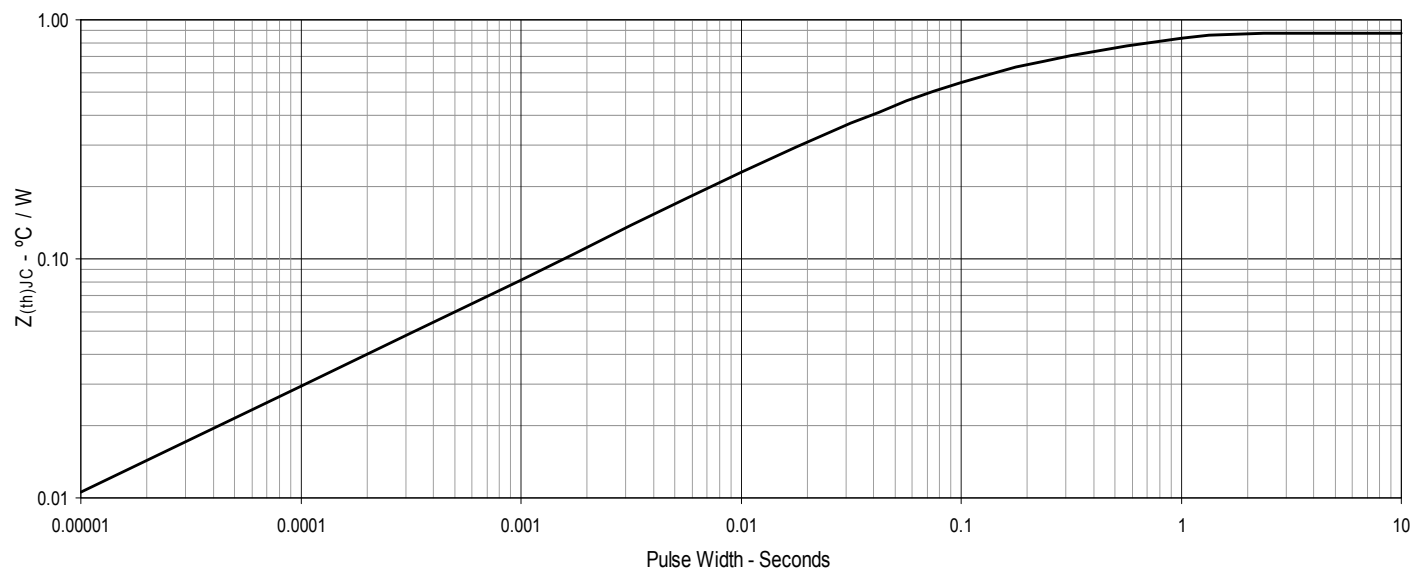


Fig. 19. Maximum Transient Thermal Impedance



## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9