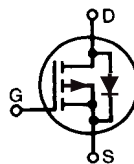


## TrenchP™ Power MOSFETs

**IXTA120P065T**  
**IXTP120P065T**  
**IXTH120P065T**

$V_{DSS} = -65V$   
 $I_{D25} = -120A$   
 $R_{DS(on)} \leq 10m\Omega$

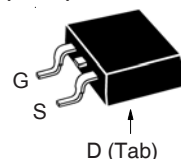
P-Channel Enhancement Mode  
Avalanche Rated



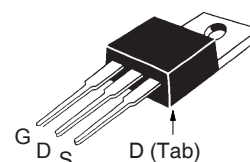
| Symbol     | Test Conditions                                           | Maximum Ratings |            |
|------------|-----------------------------------------------------------|-----------------|------------|
| $V_{DSS}$  | $T_J = 25^\circ C$ to $150^\circ C$                       | - 65            | V          |
| $V_{DGR}$  | $T_J = 25^\circ C$ to $150^\circ C$ , $R_{GS} = 1M\Omega$ | - 65            | V          |
| $V_{GSS}$  | Continuous                                                | $\pm 15$        | V          |
| $V_{GSM}$  | Transient                                                 | $\pm 25$        | V          |
| $I_{D25}$  | $T_C = 25^\circ C$                                        | - 120           | A          |
| $I_{DM}$   | $T_C = 25^\circ C$ , Pulse Width Limited by $T_{JM}$      | - 360           | A          |
| $I_A$      | $T_C = 25^\circ C$                                        | - 60            | A          |
| $E_{AS}$   | $T_C = 25^\circ C$                                        | 1               | J          |
| $P_D$      | $T_C = 25^\circ C$                                        | 298             | W          |
| $T_J$      |                                                           | -55 ... +150    | $^\circ C$ |
| $T_{JM}$   |                                                           | 150             | $^\circ C$ |
| $T_{stg}$  |                                                           | -55 ... +150    | $^\circ C$ |
| $T_L$      | 1.6mm (0.062 in.) from Case for 10s                       | 300             | $^\circ C$ |
| $T_{SOLD}$ | Plastic Body for 10s                                      | 260             | $^\circ C$ |
| $M_d$      | Mounting Torque (TO-220 & TO-247)                         | 1.13/10         | Nm/lb.in.  |
| Weight     | TO-263                                                    | 2.5             | g          |
|            | TO-220                                                    | 3.0             | g          |
|            | TO-247                                                    | 6.0             | g          |

| Symbol       | Test Conditions<br>( $T_J = 25^\circ C$ , Unless Otherwise Specified) | Characteristic Values |      |                               |
|--------------|-----------------------------------------------------------------------|-----------------------|------|-------------------------------|
|              |                                                                       | Min.                  | Typ. | Max.                          |
| $BV_{DSS}$   | $V_{GS} = 0V$ , $I_D = -250\mu A$                                     | - 65                  |      | V                             |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$ , $I_D = -250\mu A$                                 | - 2.0                 |      | V                             |
| $I_{GSS}$    | $V_{GS} = \pm 15V$ , $V_{DS} = 0V$                                    |                       |      | $\pm 100$ nA                  |
| $I_{DSS}$    | $V_{DS} = V_{DSS}$ , $V_{GS} = 0V$<br>$T_J = 125^\circ C$             |                       |      | - 10 $\mu A$<br>- 750 $\mu A$ |
| $R_{DS(on)}$ | $V_{GS} = -10V$ , $I_D = 0.5 \cdot I_{D25}$ , Note 1                  |                       |      | 10 m $\Omega$                 |

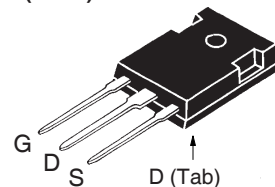
TO-263 AA (IXTA)



TO-220AB (IXTP)



TO-247 (IXTH)



G = Gate      D = Drain  
S = Source    Tab = Drain

### Features

- International Standard Packages
- Avalanche Rated
- Extended FBSOA
- Fast Intrinsic Diode
- Low  $R_{DS(ON)}$  and  $Q_G$

### Advantages

- Easy to Mount
- Space Savings
- High Power Density

### Applications

- High-Side Switching
- Push Pull Amplifiers
- DC Choppers
- Automatic Test Equipment
- Current Regulators
- Battery Charger Applications

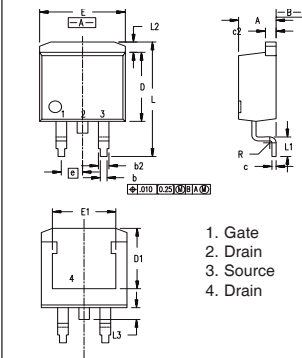
| Symbol       | Test Conditions<br>( $T_J = 25^\circ\text{C}$ , Unless Otherwise Specified)                                                             | Characteristic Values |      |                         |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------|-------------------------|
|              |                                                                                                                                         | Min.                  | Typ. | Max.                    |
| $g_{fs}$     | $V_{DS} = -10\text{V}$ , $I_D = 0.5 \cdot I_{D25}$ , Note 1                                                                             | 45                    | 75   | S                       |
| $C_{iss}$    | $V_{GS} = 0\text{V}$ , $V_{DS} = -25\text{V}$ , $f = 1\text{MHz}$                                                                       |                       | 13.2 | nF                      |
| $C_{oss}$    |                                                                                                                                         |                       | 1345 | pF                      |
| $C_{rss}$    |                                                                                                                                         |                       | 505  | pF                      |
| $t_{d(on)}$  | <b>Resistive Switching Times</b><br>$V_{GS} = -10\text{V}$ , $V_{DS} = -33\text{V}$ , $I_D = -50\text{A}$<br>$R_G = 1\Omega$ (External) |                       | 31   | ns                      |
| $t_r$        |                                                                                                                                         |                       | 28   | ns                      |
| $t_{d(off)}$ |                                                                                                                                         |                       | 38   | ns                      |
| $t_f$        |                                                                                                                                         |                       | 21   | ns                      |
| $Q_{g(on)}$  | $V_{GS} = -10\text{V}$ , $V_{DS} = 0.5 \cdot V_{DSS}$ , $I_D = 0.5 \cdot I_{D25}$                                                       |                       | 185  | nC                      |
| $Q_{gs}$     |                                                                                                                                         |                       | 55   | nC                      |
| $Q_{gd}$     |                                                                                                                                         |                       | 58   | nC                      |
| $R_{thJC}$   |                                                                                                                                         |                       |      | 0.42 $^\circ\text{C/W}$ |
| $R_{thCS}$   | (TO-220)                                                                                                                                |                       | 0.50 | $^\circ\text{C/W}$      |
|              | (TO-247)                                                                                                                                |                       | 0.21 | $^\circ\text{C/W}$      |

### Source-Drain Diode

| Symbol   | Test Conditions<br>( $T_J = 25^\circ\text{C}$ , Unless Otherwise Specified)                             | Characteristic Values |      |        |
|----------|---------------------------------------------------------------------------------------------------------|-----------------------|------|--------|
|          |                                                                                                         | Min.                  | Typ. | Max.   |
| $I_S$    | $V_{GS} = 0\text{V}$                                                                                    |                       |      | -120 A |
| $I_{SM}$ | Repetitive, Pulse Width Limited by $T_{JM}$                                                             |                       |      | -480 A |
| $V_{SD}$ | $I_F = -60\text{A}$ , $V_{GS} = 0\text{V}$ , Note 1                                                     |                       |      | -1.3 V |
| $t_{rr}$ | $I_F = -60\text{A}$ , $-di/dt = -100\text{A}/\mu\text{s}$<br>$V_R = -33\text{V}$ , $V_{GS} = 0\text{V}$ |                       | 53   | ns     |
| $Q_{RM}$ |                                                                                                         |                       | 77   | nC     |
| $I_{RM}$ |                                                                                                         |                       | -2.9 | A      |

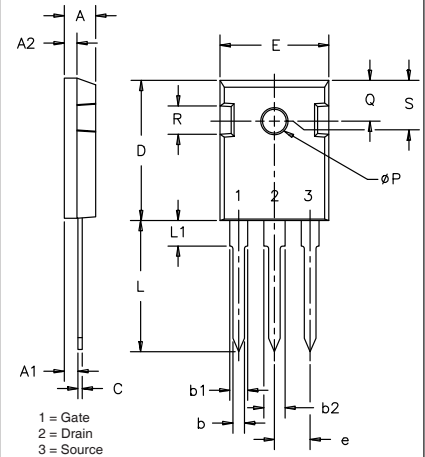
Note 1. Pulse test,  $t \leq 300\mu\text{s}$ , duty cycle,  $d \leq 2\%$ .

### TO-263 Outline



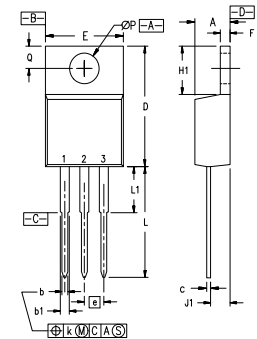
| Dim. | Millimeter |       | Inches |      |
|------|------------|-------|--------|------|
|      | Min.       | Max.  | Min.   | Max. |
| A    | 4.06       | 4.83  | .160   | .190 |
| b    | 0.51       | 0.99  | .020   | .039 |
| b2   | 1.14       | 1.40  | .045   | .055 |
| c    | 0.40       | 0.74  | .016   | .029 |
| c2   | 1.14       | 1.40  | .045   | .055 |
| D    | 8.64       | 9.65  | .340   | .380 |
| D1   | 8.00       | 8.89  | .280   | .320 |
| E    | 9.65       | 10.41 | .380   | .405 |
| E1   | 6.22       | 8.13  | .270   | .320 |
| e    | 2.54       | BSC   | .100   | BSC  |
| L    | 14.61      | 15.88 | .575   | .625 |
| L1   | 2.29       | 2.79  | .090   | .110 |
| L2   | 1.02       | 1.40  | .040   | .055 |
| L3   | 1.27       | 1.78  | .050   | .070 |
| L4   | 0          | 0.13  | 0      | .005 |

### TO-247 Outline



| SYM | INCHES   |      | MILLIMETERS |       |
|-----|----------|------|-------------|-------|
|     | MIN      | MAX  | MIN         | MAX   |
| A   | .185     | .209 | 4.7         | 5.3   |
| A1  | .087     | .102 | 2.2         | 2.54  |
| A2  | .059     | .098 | 2.2         | 2.6   |
| b   | .040     | .055 | 1.0         | 1.4   |
| b1  | .065     | .084 | 1.65        | 2.13  |
| b2  | .113     | .123 | 2.87        | 3.12  |
| C   | .016     | .031 | .4          | .8    |
| D   | .819     | .845 | 20.80       | 21.46 |
| E   | .610     | .640 | 15.75       | 16.26 |
| e   | .215 BSC |      | 5.45 BSC    |       |
| L   | .780     | .800 | 19.81       | 20.32 |
| L1  | .177     |      | 4.50        |       |
| ØP  | .140     | .144 | 3.55        | 3.65  |
| Q   | .212     | .244 | 5.4         | 6.2   |
| R   | .170     | .216 | 4.32        | 5.49  |
| S   | .242 BSC |      | 6.15 BSC    |       |

### TO-220 Outline



| SYM | INCHES   |      | MILLIMETERS |       |
|-----|----------|------|-------------|-------|
|     | MIN      | MAX  | MIN         | MAX   |
| A   | .170     | .190 | 4.32        | 4.83  |
| b   | .025     | .040 | 0.64        | 1.02  |
| b1  | .045     | .065 | 1.15        | 1.65  |
| c   | .014     | .022 | 0.35        | 0.56  |
| D   | .580     | .630 | 14.73       | 16.00 |
| E   | .390     | .420 | 9.91        | 10.66 |
| e   | .100 BSC |      | 2.54 BSC    |       |
| F   | .045     | .055 | 1.14        | 1.40  |
| H1  | .230     | .270 | 5.85        | 6.85  |
| J1  | .090     | .110 | 2.29        | 2.79  |
| k   | 0        | .015 | 0           | 0.38  |
| L   | .500     | .550 | 12.70       | 13.97 |
| L1  | .110     | .230 | 2.79        | 5.84  |
| ØP  | .139     | .161 | 3.53        | 4.08  |
| Q   | .100     | .125 | 2.54        | 3.18  |

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

IXYS MOSFETs and IGBTs are covered 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  
by one or more of the following U.S. patents: 4,860,072 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 @  $T_J = 25^\circ\text{C}$

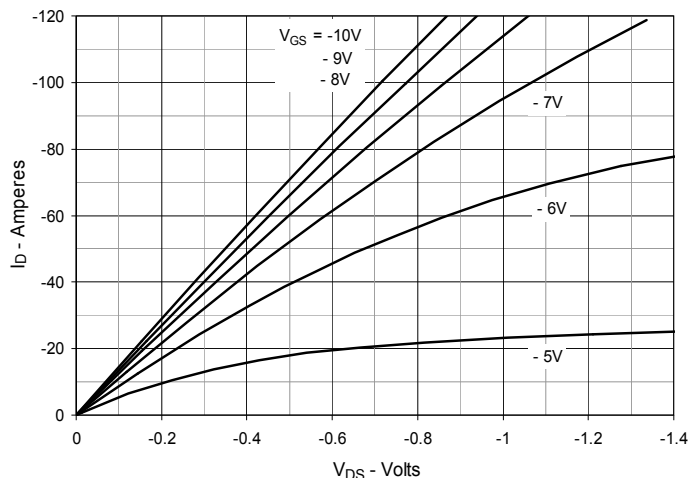


Fig. 2. Extended Output Characteristics @  $T_J = 25^\circ\text{C}$

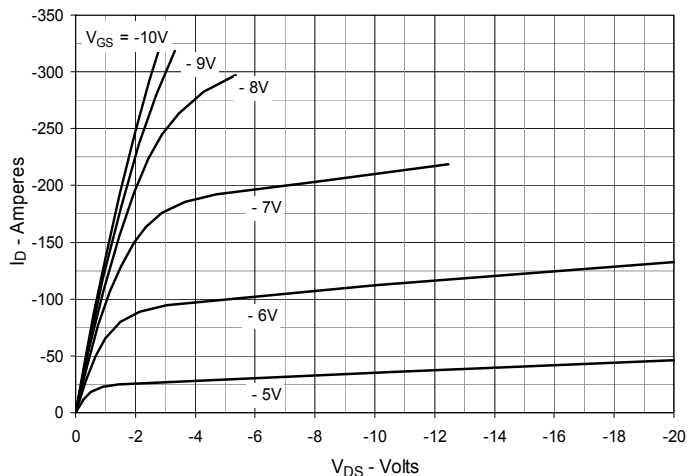


Fig. 3. Output Characteristics @  $T_J = 125^\circ\text{C}$

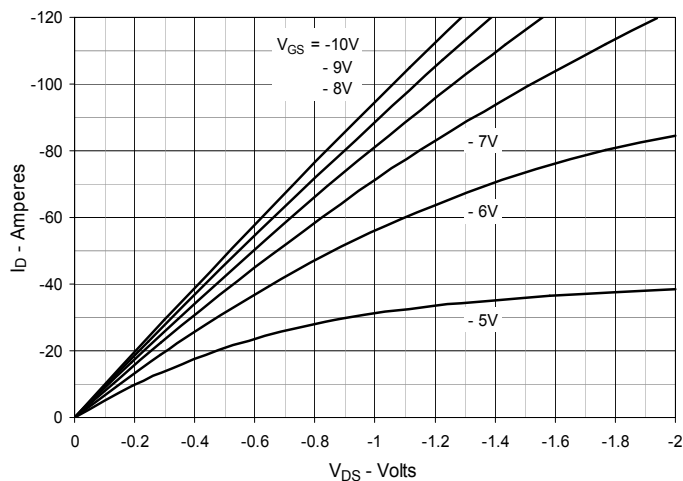


Fig. 4.  $R_{DS(on)}$  Normalized to  $I_D = -60\text{A}$  Value vs. Junction Temperature

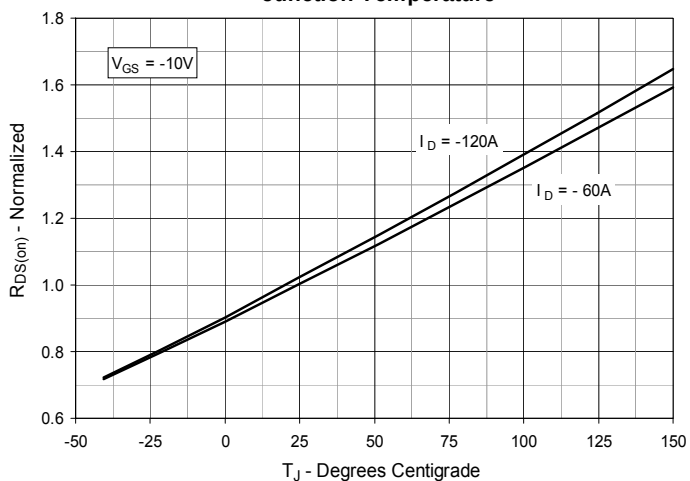


Fig. 5.  $R_{DS(on)}$  Normalized to  $I_D = -60\text{A}$  Value vs. Drain Current

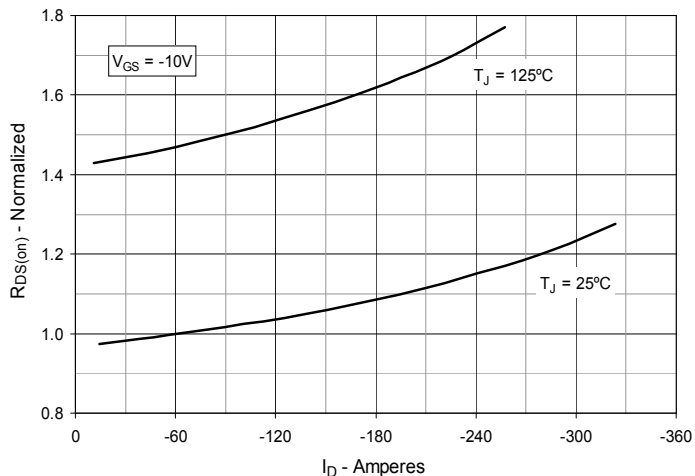


Fig. 6. Maximum Drain Current vs. Case Temperature

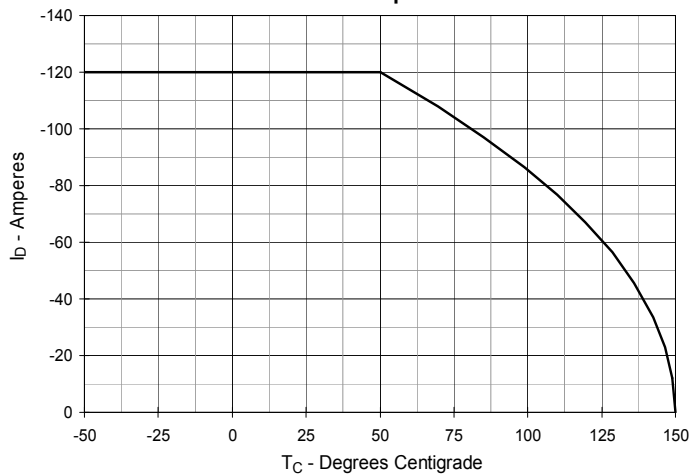


Fig. 7. Input Admittance

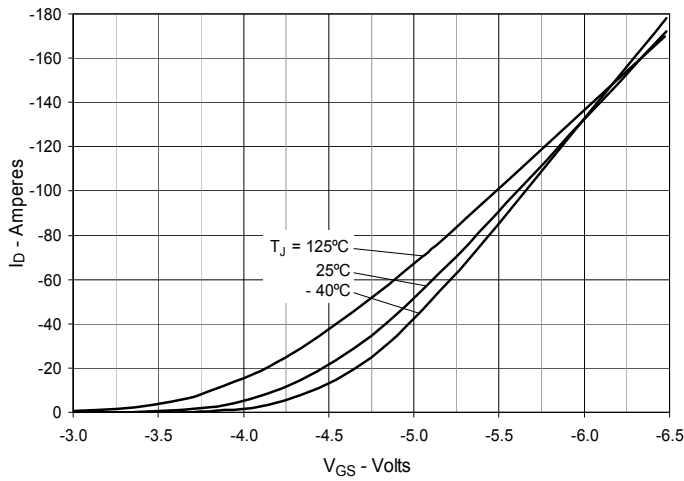


Fig. 8. Transconductance

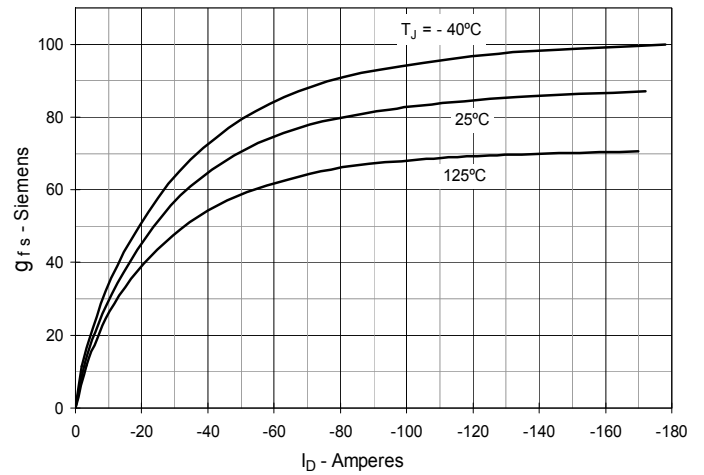


Fig. 9. Forward Voltage Drop of Intrinsic Diode

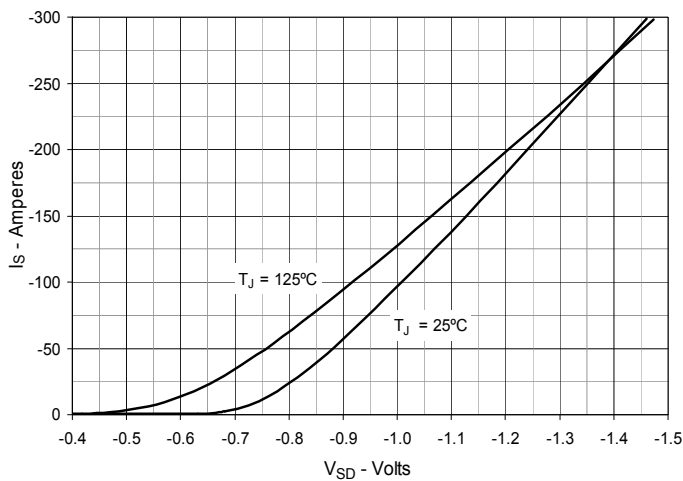


Fig. 10. Gate Charge

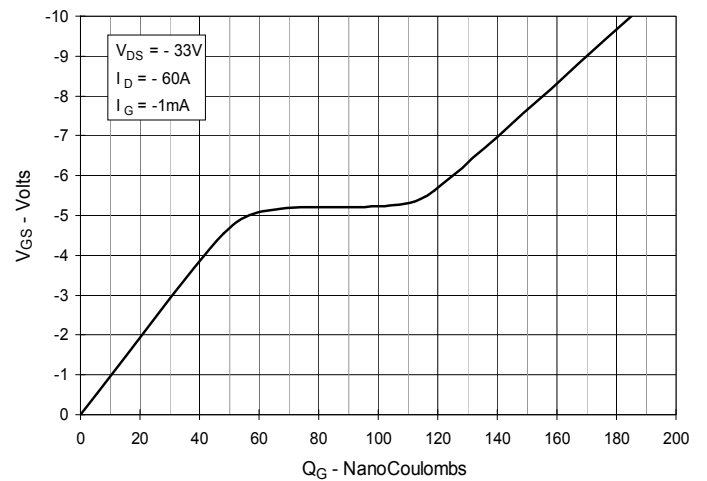


Fig. 11. Capacitance

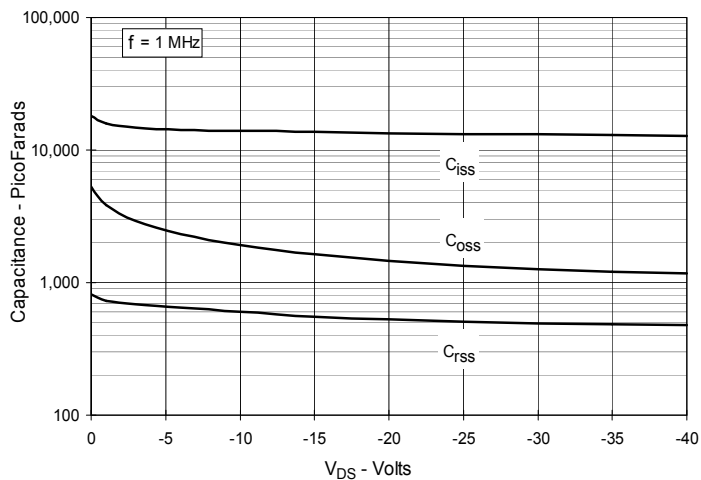


Fig. 12. Forward-Bias Safe Operating Area

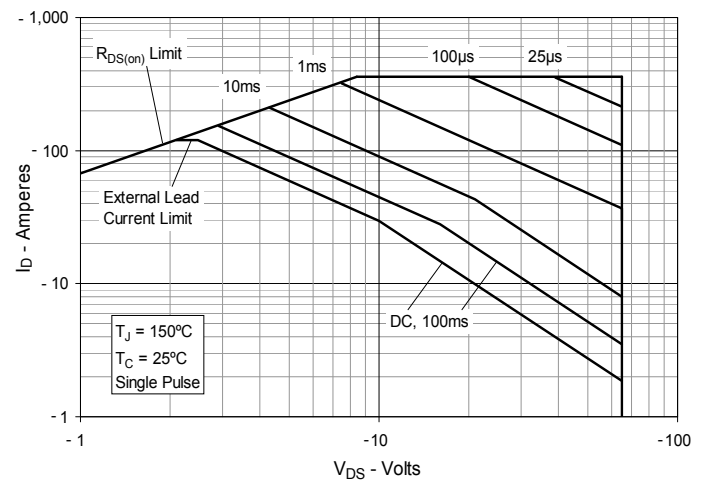


Fig. 13. Resistive Turn-on Rise Time vs. Junction Temperature

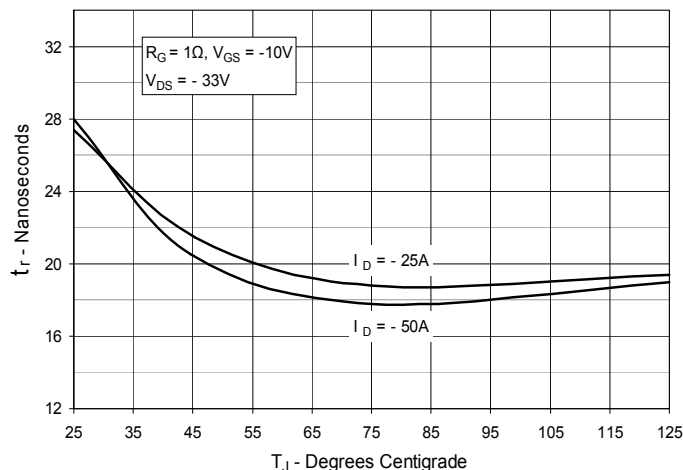


Fig. 14. Resistive Turn-on Rise Time vs. Drain Current

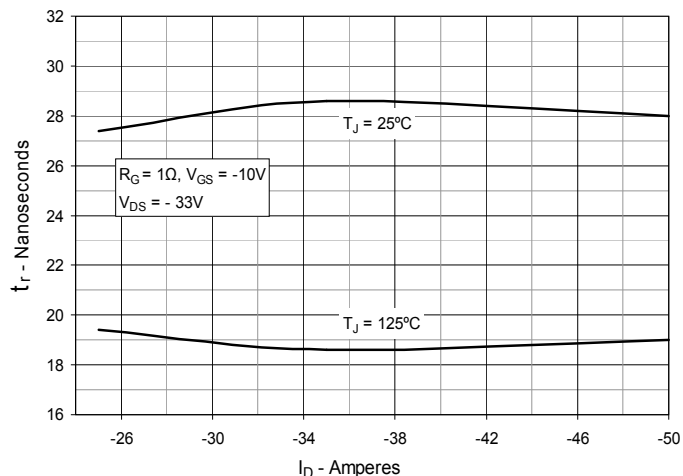


Fig. 15. Resistive Turn-on Switching Times vs. Gate Resistance

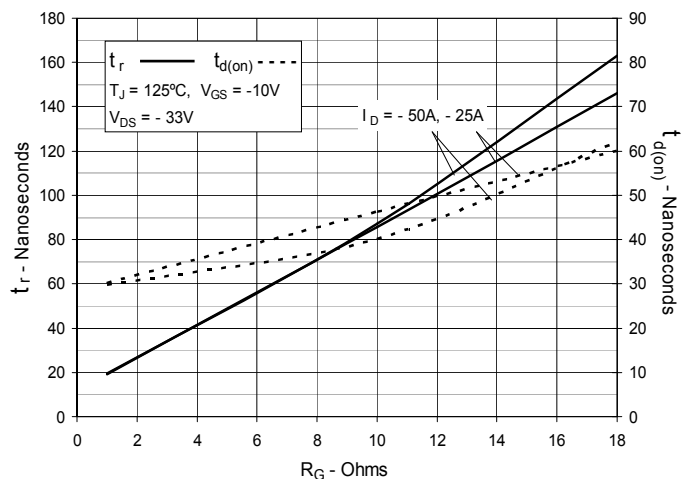


Fig. 16. Resistive Turn-off Switching Times vs. Junction Temperature

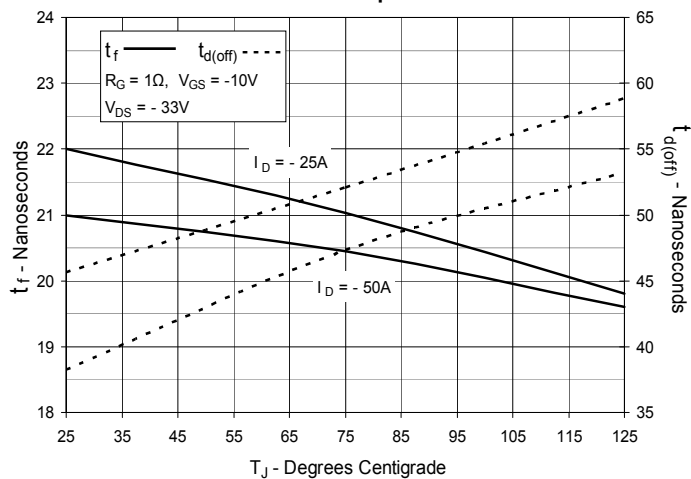


Fig. 17. Resistive Turn-off Switching Times vs. Drain Current

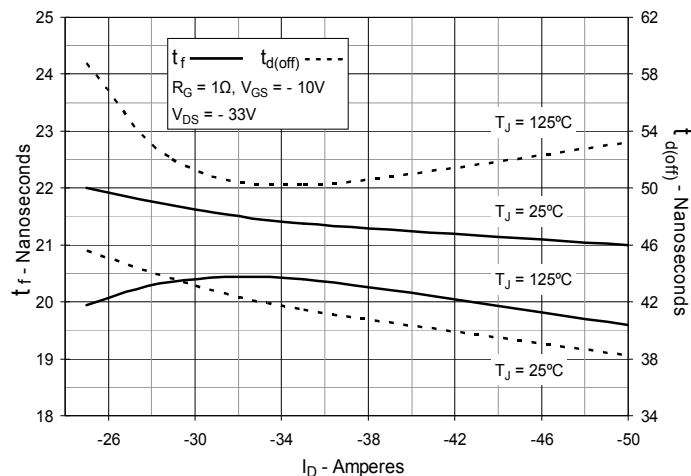


Fig. 18. Resistive Turn-off Switching Times vs. Gate Resistance

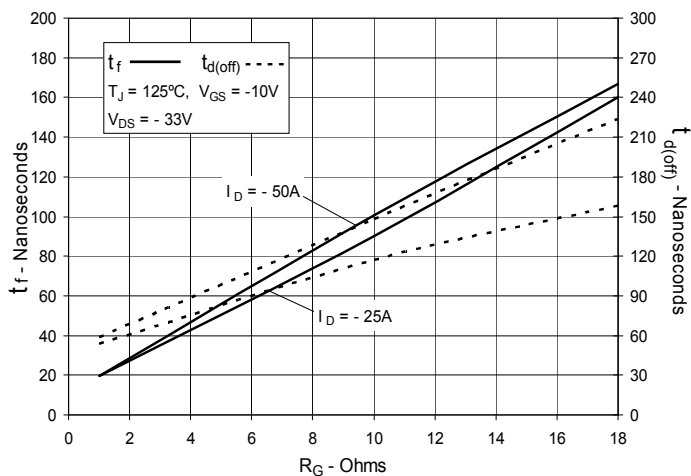
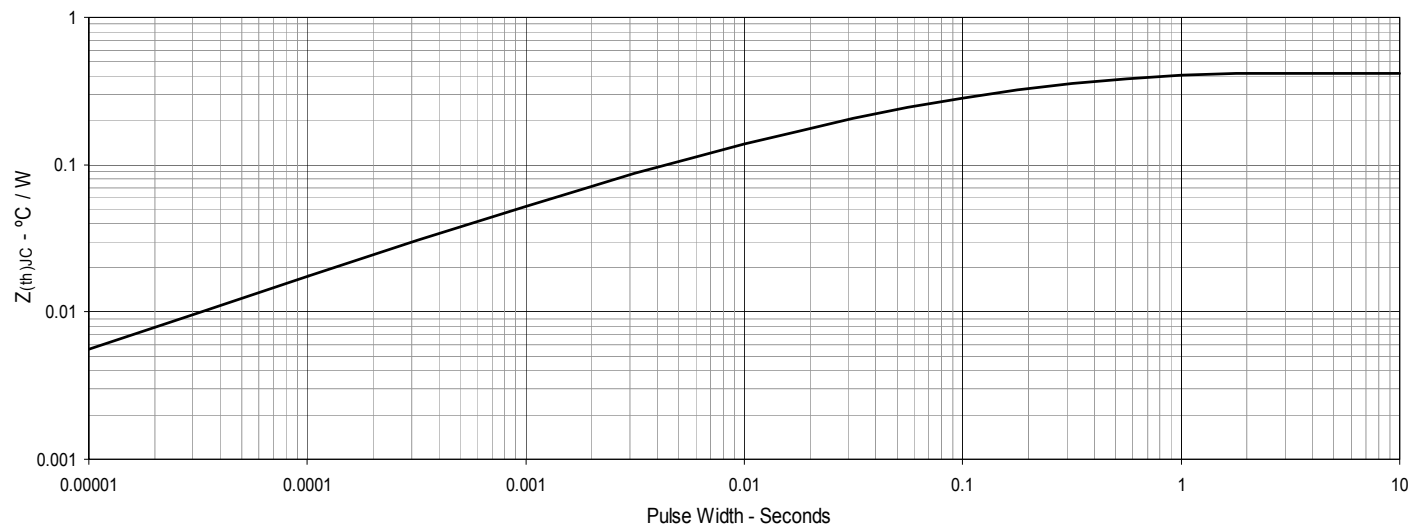


Fig. 19. Maximum Transient Thermal Impedance





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- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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