

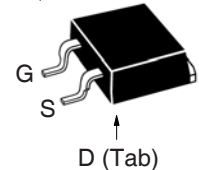
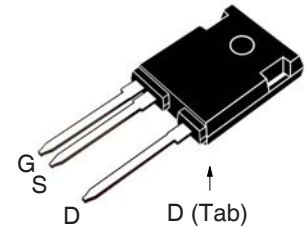
**Depletion Mode
MOSFET**
**IXTA1N170DHF
IXTH1N170DHF**

$$V_{DSX} = 1700V$$

$$I_{D(on)} \geq 1A$$

$$R_{DS(on)} \leq 16\Omega$$

N-Channel

TO-263HV (IXTA)

TO-247HV (IXTH)


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

| Symbol | Test Conditions | Maximum Ratings | |
|---------------|---|-------------------|------------------|
| V_{DSX} | $T_J = 25^\circ\text{C}$ to 150°C | 1700 | V |
| V_{DGX} | $T_J = 25^\circ\text{C}$ to 150°C , $R_{GS} = 1M\Omega$ | 1700 | V |
| V_{GSX} | Continuous | ± 20 | V |
| V_{GSM} | Transient | ± 30 | V |
| P_D | $T_C = 25^\circ\text{C}$ | 290 | W |
| T_J | | - 55 ... +150 | $^\circ\text{C}$ |
| T_{JM} | | 150 | $^\circ\text{C}$ |
| T_{stg} | | - 55 ... +150 | $^\circ\text{C}$ |
| T_L | Maximum Lead Temperature for Soldering | 300 | $^\circ\text{C}$ |
| T_{SOLD} | 1.6 mm (0.062in.) from Case for 10s | 260 | $^\circ\text{C}$ |
| F_C | Mounting Force (TO-263HV) | 10..65 / 22..14.6 | N/lb |
| M_d | Mounting Torque (TO-247HV) | 1.13/10 | Nm/lb.in |
| Weight | TO-263HV | 2.5 | g |
| | TO-247HV | 6.0 | g |

Features

- Normally ON Mode
- Molding Epoxies Meet UL 94 V-0 Flammability Classification

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- Audio Amplifiers
- Start-Up Circuits
- Protection Circuits
- Ramp Generators
- Current Regulators
- Active Loads

| Symbol | Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified) | Characteristic Values | | |
|----------------|---|-----------------------|------|---------------------------------------|
| | | Min. | Typ. | Max. |
| BV_{DSX} | $V_{GS} = -5V$, $I_D = 250\mu\text{A}$ | 1700 | | V |
| $V_{GS(off)}$ | $V_{DS} = 25V$, $I_D = 250\mu\text{A}$ | - 2.5 | | - 4.5 V |
| I_{GSX} | $V_{GS} = \pm 20V$, $V_{DS} = 0V$ | | | ± 100 nA |
| $I_{DSX(off)}$ | $V_{DS} = V_{DSX}$, $V_{GS} = -5V$ $T_J = 125^\circ\text{C}$ | | | 10 μA 100 μA |
| $R_{DS(on)}$ | $V_{GS} = 0V$, $I_D = 0.5A$, Note 1 | | | 16 Ω |
| $I_{D(on)}$ | $V_{GS} = 0V$, $V_{DS} = 50V$, Note 1 | 1.0 | | A |

| Symbol | Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified) | Characteristic Values | | |
|--------------|--|-----------------------|------|-------------------------|
| | | Min. | Typ. | Max. |
| g_{fs} | $V_{DS} = 30\text{V}$, $I_D = 0.5\text{A}$, Note 1 | 570 | 950 | mS |
| C_{iss} | $V_{GS} = -10\text{V}$, $V_{DS} = 25\text{V}$, $f = 1\text{MHz}$ | | 3090 | pF |
| C_{oss} | | | 95 | pF |
| C_{rss} | | | 30 | pF |
| $t_{d(on)}$ | Resistive Switching Times $V_{GS} = \pm 5\text{V}$, $V_{DS} = 850\text{V}$, $I_D = 0.5\text{A}$ $R_G = 10\Omega$ (External) | | 46 | ns |
| t_r | | | 38 | ns |
| $t_{d(off)}$ | | | 130 | ns |
| t_f | | | 216 | ns |
| $Q_{g(on)}$ | $V_{GS} = \pm 5\text{V}$, $V_{DS} = 850\text{V}$, $I_D = 0.5\text{A}$ | | 47 | nC |
| Q_{gs} | | | 3.7 | nC |
| Q_{gd} | | | 25 | nC |
| R_{thJC} | TO-247HV | | | 0.43 $^\circ\text{C/W}$ |
| R_{thCS} | | | 0.21 | $^\circ\text{C/W}$ |

Safe-Operating-Area Specification

| Symbol | Test Conditions | Characteristic Values | | |
|--------|---|-----------------------|------|------|
| | | Min. | Typ. | Max. |
| SOA | $V_{DS} = 1700\text{V}$, $I_D = 100\text{mA}$, $T_C = 75^\circ\text{C}$, $T_p = 5\text{s}$ | 170 | | W |

Source-Drain Diode

| Symbol | Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified) | Characteristic Values | | |
|----------|--|-----------------------|------|---------------|
| | | Min. | Typ. | Max. |
| V_{SD} | $I_F = 1\text{A}$, $V_{GS} = -10\text{V}$, Note 1 | | 0.75 | 1.30 V |
| t_{rr} | $I_F = 1\text{A}$, $-di/dt = 100\text{A}/\mu\text{s}$ $V_R = 100\text{V}$, $V_{GS} = -10\text{V}$ | | 2.8 | μs |
| I_{RM} | | | 45.0 | A |
| Q_{RM} | | | 63.0 | μC |

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

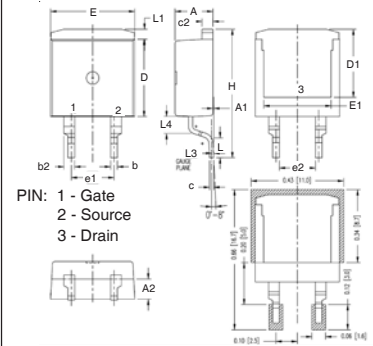
PRELIMINARY TECHNICAL INFORMATION

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 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.

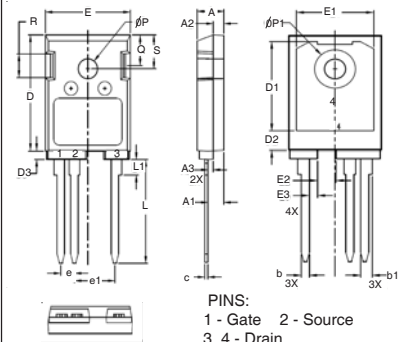
IXYS MOSFETs and IGBTs are covered 4,835,592 4,931,844 5,049,961 5,237,481 6,162,665 6,404,065 B1 6,683,344 6,727,585 7,005,734 B2 7,157,338B2
by one or more of the following U.S. patents: 4,860,072 5,017,508 5,063,307 5,381,025 6,259,123 B1 6,534,343 6,710,405 B2 6,759,692 7,063,975 B2
4,881,106 5,034,796 5,187,117 5,486,715 6,306,728 B1 6,583,505 6,710,463 6,771,478 B2 7,071,537

TO-263HV-2L Outline



| SYM | INCHES | | MILLIMETER | |
|------|--------|------|------------|-------|
| | MIN | MAX | MIN | MAX |
| A | .170 | .185 | 4.30 | 4.70 |
| A1 | .000 | .008 | 0.00 | 0.20 |
| A2 | .091 | .098 | 2.30 | 2.50 |
| b | .028 | .035 | 0.70 | 0.90 |
| b2 | .046 | .054 | 1.18 | 1.38 |
| C | .018 | .024 | 0.45 | 0.60 |
| C2 | .049 | .055 | 1.25 | 1.40 |
| D | .354 | .370 | 9.00 | 9.40 |
| D1 | .311 | .327 | 7.90 | 8.30 |
| E | .386 | .402 | 9.80 | 10.20 |
| E1 | .307 | .323 | 7.80 | 8.20 |
| e1 | .200 | BSC | 5.08 | BSC |
| (e2) | .163 | .174 | 4.13 | 4.43 |
| H | .591 | .614 | 15.00 | 15.60 |
| L | .079 | .102 | 2.00 | 2.60 |
| L1 | .039 | .055 | 1.00 | 1.40 |
| L3 | .010 | BSC | 0.254 | BSC |
| (L4) | .071 | .087 | 1.80 | 2.20 |

TO-247HV Outline



| SYM | INCHES | | MILLIMETERS | |
|-----|--------|------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | .193 | .201 | 4.90 | 5.10 |
| A1 | .114 | .122 | 2.90 | 3.10 |
| A2 | .075 | .083 | 1.90 | 2.10 |
| A3 | .035 | .043 | 0.90 | 1.10 |
| b | .053 | .059 | 1.35 | 1.50 |
| b1 | .075 | .083 | 1.90 | 2.10 |
| c | .022 | .030 | 0.55 | 0.75 |
| D | .819 | .843 | 20.80 | 21.40 |
| D1 | .638 | .646 | 16.20 | 16.40 |
| D2 | .134 | .146 | 3.40 | 3.70 |
| D3 | .055 | .063 | 1.40 | 1.60 |
| E | .622 | .638 | 15.80 | 16.20 |
| E1 | .520 | .528 | 13.20 | 13.40 |
| E2 | .118 | .126 | 3.00 | 3.20 |
| E3 | .051 | .059 | 1.30 | 1.50 |
| e | .100 | BSC | 2.54 | BSC |
| e1 | .300 | BSC | 7.62 | BSC |
| L | .732 | .748 | 18.60 | 19.00 |
| L1 | .106 | .118 | 2.70 | 3.00 |
| øP | .138 | .142 | 3.50 | 3.60 |
| øP1 | .272 | .280 | 6.90 | 7.10 |
| Q | .216 | .224 | 5.50 | 5.70 |
| R | .165 | .169 | 4.20 | 4.30 |
| S | .240 | .248 | 6.10 | 6.30 |

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

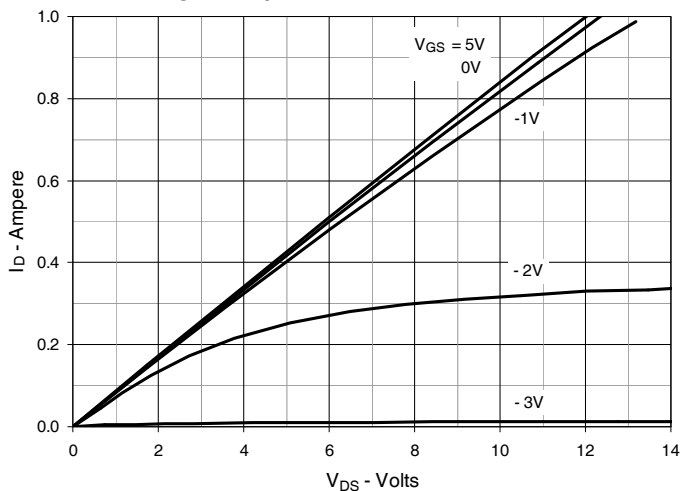


Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

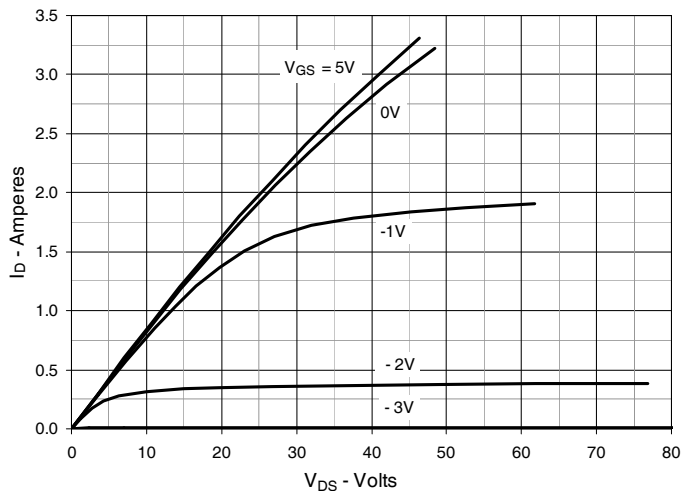


Fig. 3. Output Characteristics @ $T_J = 125^\circ\text{C}$

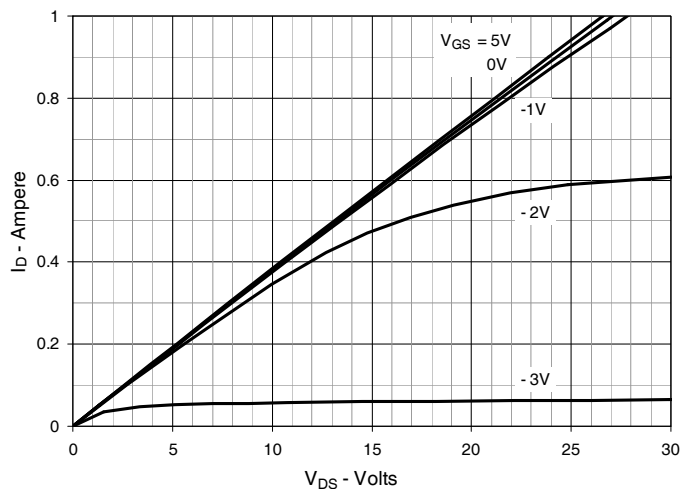


Fig. 4. Drain Current @ $T_J = 25^\circ\text{C}$

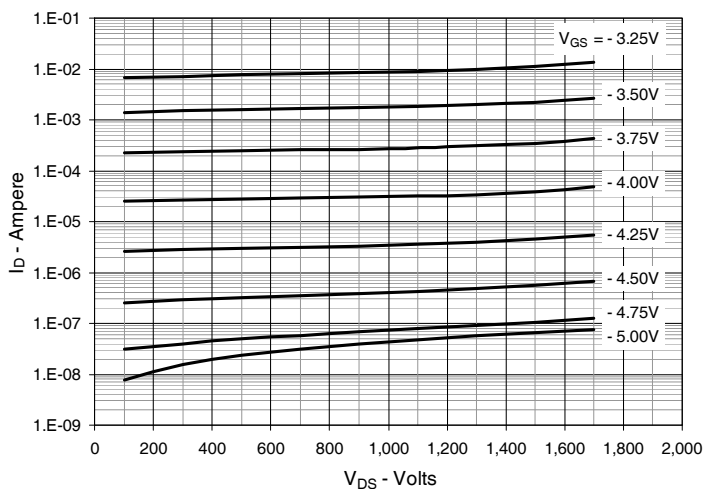


Fig. 5. Drain Current @ $T_J = 100^\circ\text{C}$

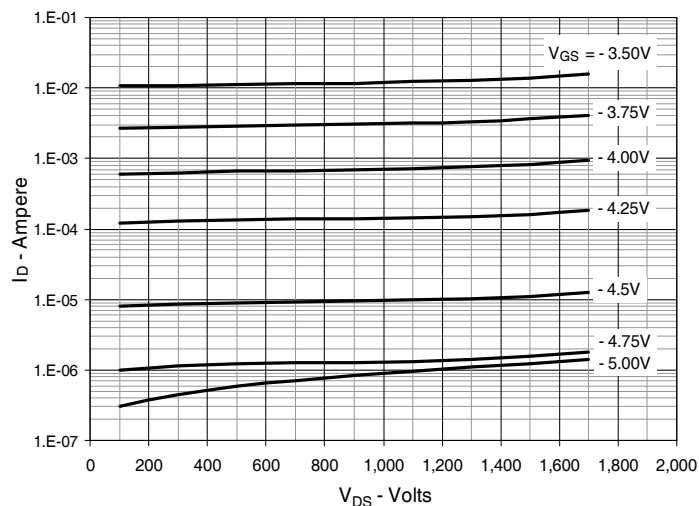


Fig. 6. Dynamic Resistance vs. Gate Voltage

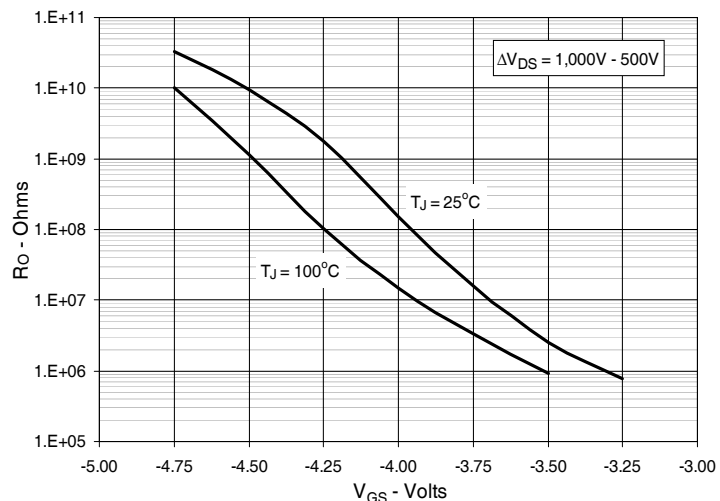


Fig. 7. Normalized $R_{DS(on)}$ vs. Junction Temperature

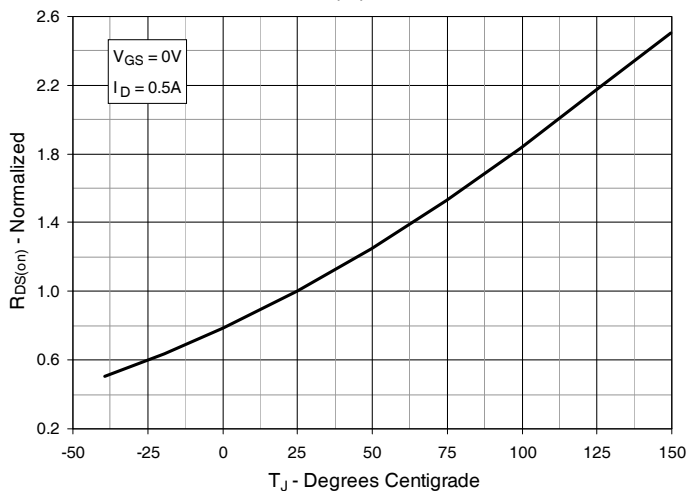


Fig. 8. $R_{DS(on)}$ Normalized to $I_D = 0.5A$ Value vs. Drain Current

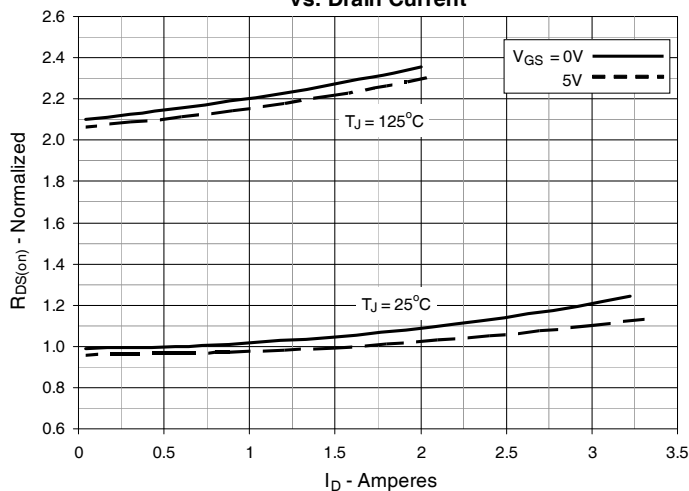


Fig. 9. Input Admittance

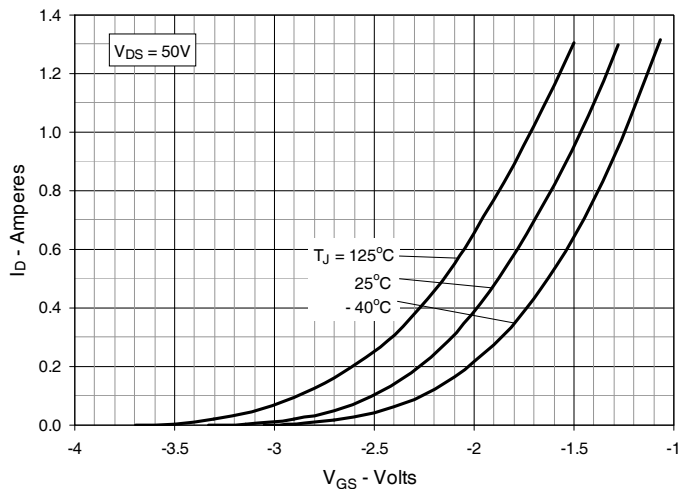


Fig. 10. Transconductance

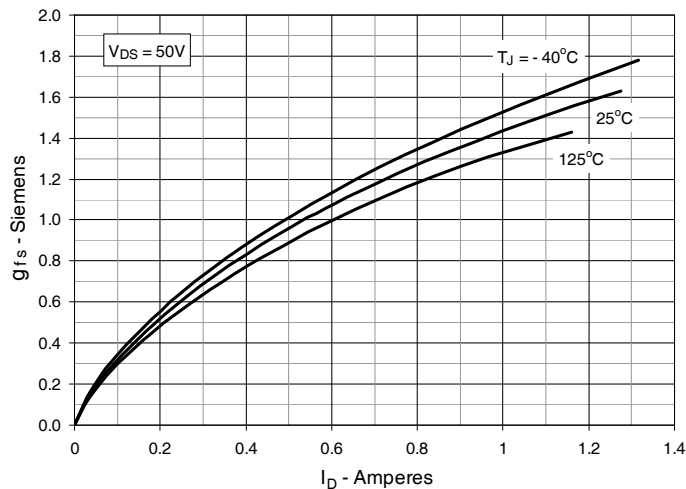


Fig. 11. Normalized Breakdown and Threshold Voltages vs. Junction Temperature

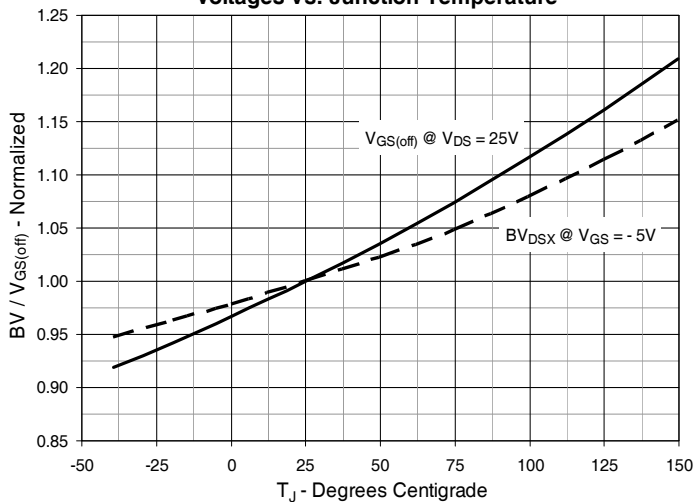


Fig. 12. Forward Voltage Drop of Intrinsic Diode

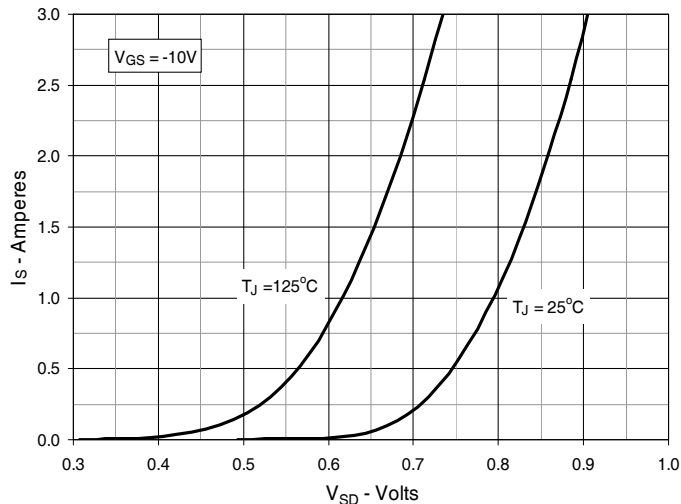


Fig. 13. Capacitance

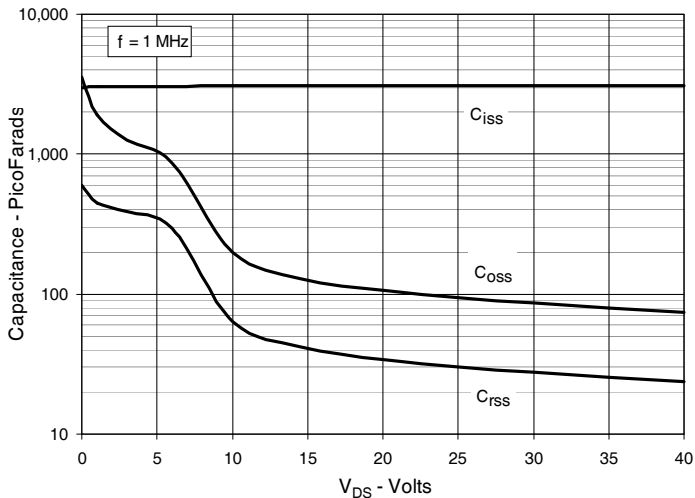


Fig. 14. Gate Charge

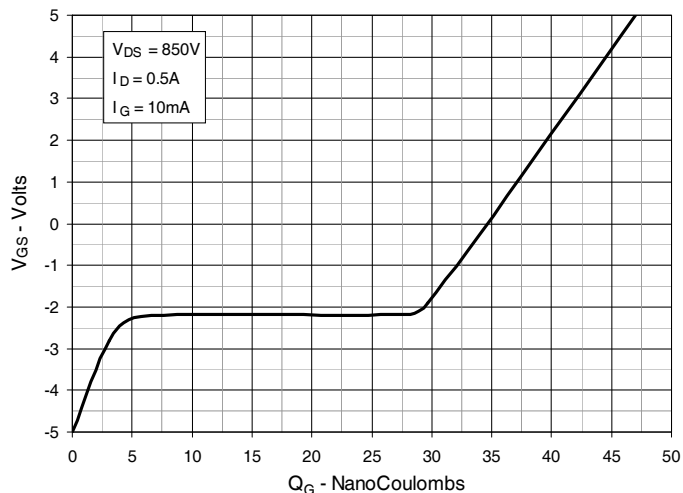


Fig. 15. Forward-Bias Safe Operating Area @ $T_C = 25^\circ\text{C}$

@ $T_C = 25^\circ\text{C}$

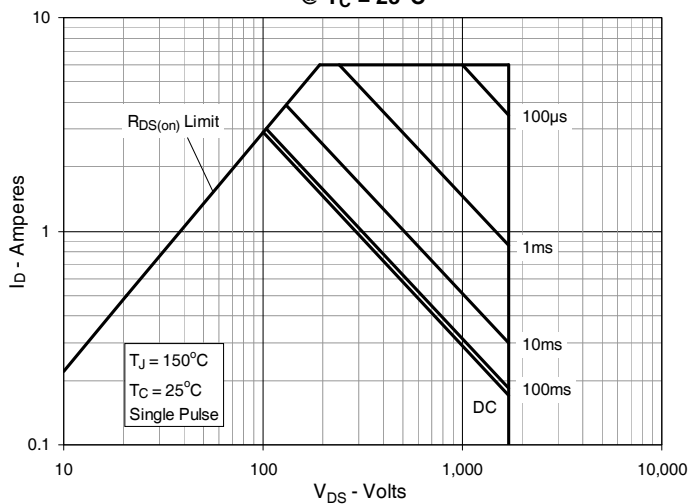


Fig. 16. Forward-Bias Safe Operating Area @ $T_C = 75^\circ\text{C}$

@ $T_C = 75^\circ\text{C}$

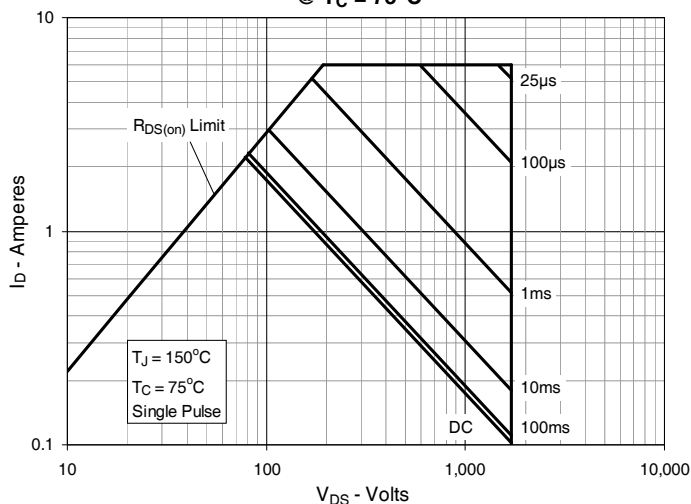
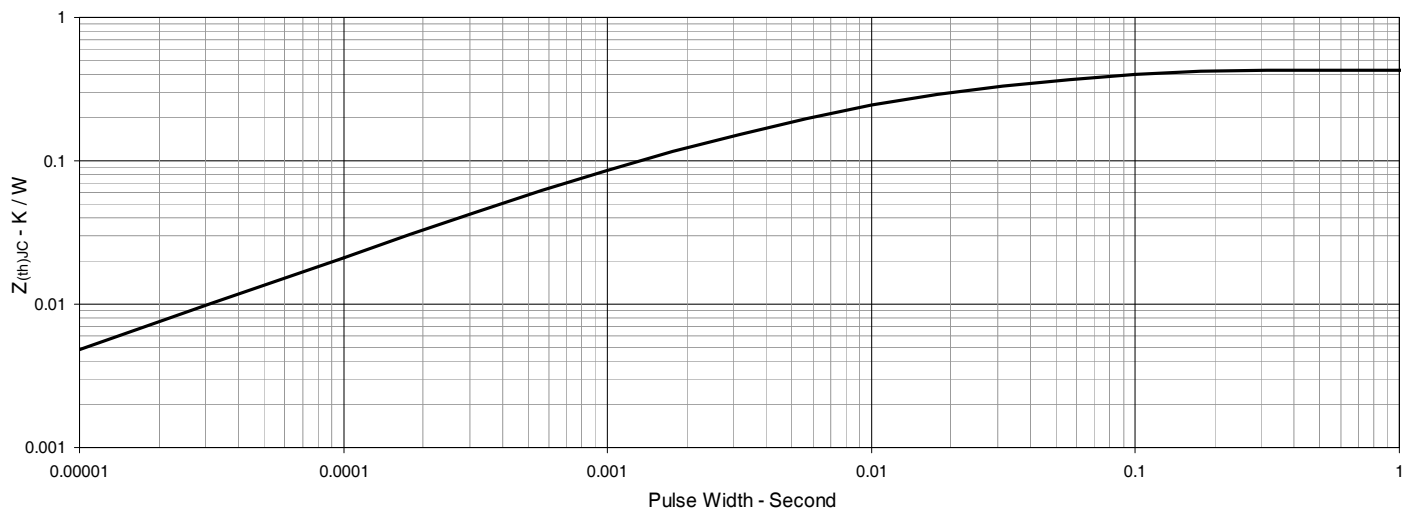


Fig. 17. Maximum Transient Thermal Impedance





Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [MOSFET](#) category:

Click to view products by [IXYS](#) manufacturer:

Other Similar products are found below :

[614233C](#) [648584F](#) [IRFD120](#) [JANTX2N5237](#) [FCA20N60_F109](#) [FDZ595PZ](#) [2SK2545\(Q,T\)](#) [405094E](#) [423220D](#) [TPCC8103,L1Q\(CM](#)
[MIC4420CM-TR](#) [VN1206L](#) [614234A](#) [715780A](#) [NTNS3166NZT5G](#) [SSM6J414TU,LF\(T](#) [751625C](#) [BUK954R8-60E](#) [NTE6400](#) [SQJ402EP-](#)
[T1-GE3](#) [2SK2614\(TE16L1,Q\)](#) [2N7002KW-FAI](#) [DMN1017UCP3-7](#) [EFC2J004NUZTDG](#) [ECH8691-TL-W](#) [FCAB21350L1](#) [P85W28HP2F-](#)
[7071](#) [DMN1053UCP4-7](#) [NTE221](#) [NTE222](#) [NTE2384](#) [NTE2903](#) [NTE2941](#) [NTE2945](#) [NTE2946](#) [NTE2960](#) [NTE2967](#) [NTE2969](#) [NTE2976](#)
[NTE6400A](#) [NTE2910](#) [NTE2916](#) [NTE2956](#) [NTE2911](#) [DMN2080UCB4-7](#) [TK10A80W,S4X\(S](#) [SSM6P69NU,LF](#) [DMP22D4UFO-7B](#)
[DMN1006UCA6-7](#) [DMN16M9UCA6-7](#)