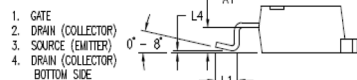
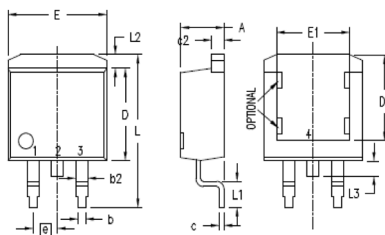


| Symbol       | Test Conditions                                                                                  | Characteristic Values<br>( $T_J = 25^\circ\text{C}$ , unless otherwise specified) |              |                                              |
|--------------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------|----------------------------------------------|
|              |                                                                                                  | Min.                                                                              | Typ.         | Max.                                         |
| $g_{fs}$     | $V_{DS} = 10\text{ V}; I_D = 0.5 I_{D25}$ , pulse test                                           | 12                                                                                | 20           | S                                            |
| $C_{iss}$    | $V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$                                    |                                                                                   | 2300         | pF                                           |
| $C_{oss}$    |                                                                                                  |                                                                                   | 430          | pF                                           |
| $C_{rss}$    |                                                                                                  |                                                                                   | 115          | pF                                           |
| $t_{d(on)}$  | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}$<br>$R_G = 10\ \Omega$ (External) |                                                                                   | 24           | ns                                           |
| $t_r$        |                                                                                                  |                                                                                   | 28           | ns                                           |
| $t_{d(off)}$ |                                                                                                  |                                                                                   | 81           | ns                                           |
| $t_f$        |                                                                                                  |                                                                                   | 30           | ns                                           |
| $Q_{g(on)}$  | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}$                                  |                                                                                   | 70           | nC                                           |
| $Q_{gs}$     |                                                                                                  |                                                                                   | 17           | nC                                           |
| $Q_{gd}$     |                                                                                                  |                                                                                   | 37           | nC                                           |
| $R_{thJC}$   | (TO-3P)<br>(TO-220)                                                                              |                                                                                   | 0.21<br>0.25 | $0.42^\circ\text{C/W}$<br>$^\circ\text{C/W}$ |
| $R_{thCS}$   |                                                                                                  |                                                                                   |              | $^\circ\text{C/W}$                           |

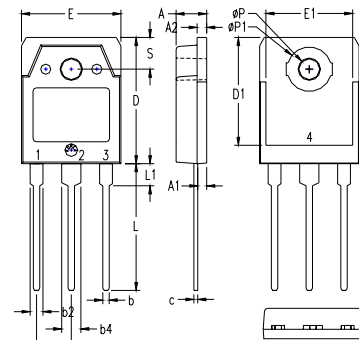
| Symbol   | Test Conditions                                                                                       | Characteristic Values<br>( $T_J = 25^\circ\text{C}$ , unless otherwise specified) |      |               |
|----------|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|---------------|
|          |                                                                                                       | Min.                                                                              | Typ. | Max.          |
| $I_S$    | $V_{GS} = 0\text{ V}$                                                                                 |                                                                                   |      | 42 A          |
| $I_{SM}$ | Repetitive                                                                                            |                                                                                   |      | 110 A         |
| $V_{SD}$ | $I_F = I_S, V_{GS} = 0\text{ V}$ ,<br>Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $d \leq 2\%$ |                                                                                   |      | 1.5 V         |
| $t_{rr}$ | $I_F = 25\text{ A}$<br>$-di/dt = 100\text{ A}/\mu\text{s}$                                            |                                                                                   | 200  | ns            |
| $Q_{RM}$ | $V_R = 100\text{ V}$                                                                                  |                                                                                   | 2.0  | $\mu\text{C}$ |

### TO-263 (IXTA) Outline



| SYM | INCHES   |          | MILLIMETERS |       |
|-----|----------|----------|-------------|-------|
|     | MIN      | MAX      | MIN         | MAX   |
| A   | .160     | .190     | 4.06        | 4.83  |
| A1  | .080     | .110     | 2.03        | 2.79  |
| b   | .020     | .039     | 0.51        | 0.99  |
| b1  | .045     | .055     | 1.14        | 1.40  |
| b2  | .016     | .029     | 0.40        | 0.74  |
| c   | .045     | .055     | 1.14        | 1.40  |
| D   | .340     | .380     | 8.64        | 9.65  |
| D1  | .315     | .350     | 8.00        | 8.89  |
| E   | .380     | .410     | 9.65        | 10.41 |
| E1  | .245     | .320     | 6.22        | 8.13  |
| e   | .100 BSC | .254 BSC |             |       |
| L   | .575     | .625     | 14.61       | 15.88 |
| L1  | .090     | .110     | 2.29        | 2.79  |
| L2  | .040     | .055     | 1.02        | 1.40  |
| L3  | .050     | .070     | 1.27        | 1.78  |
| L4  | 0        | .005     | 0           | 0.13  |

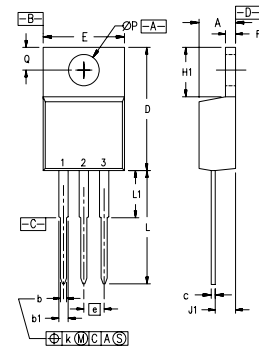
### TO-3P (IXTQ) Outline



- 1 - GATE  
2 - DRAIN (COLLECTOR)  
3 - SOURCE (EMITTER)  
4 - DRAIN (COLLECTOR)

| SYM | INCHES   |          | MILLIMETERS |       |
|-----|----------|----------|-------------|-------|
|     | MIN      | MAX      | MIN         | MAX   |
| A   | .185     | .193     | 4.70        | 4.90  |
| A1  | .051     | .059     | 1.30        | 1.50  |
| A2  | .057     | .065     | 1.45        | 1.65  |
| b   | .035     | .045     | 0.90        | 1.15  |
| b1  | .075     | .087     | 1.90        | 2.20  |
| b2  | .114     | .126     | 2.90        | 3.20  |
| c   | .022     | .031     | 0.55        | 0.80  |
| D   | .780     | .799     | 19.80       | 20.30 |
| D1  | .665     | .677     | 16.90       | 17.20 |
| E   | .610     | .622     | 15.50       | 15.80 |
| E1  | .531     | .539     | 13.50       | 13.70 |
| e   | .215 BSC | .545 BSC |             |       |
| L   | .779     | .795     | 19.80       | 20.20 |
| L1  | .134     | .142     | 3.40        | 3.60  |
| L2  | .126     | .134     | 3.20        | 3.40  |
| L3  | .272     | .280     | 6.90        | 7.10  |
| S   | .193     | .201     | 4.90        | 5.10  |

### TO-220 (IXTP) Outline



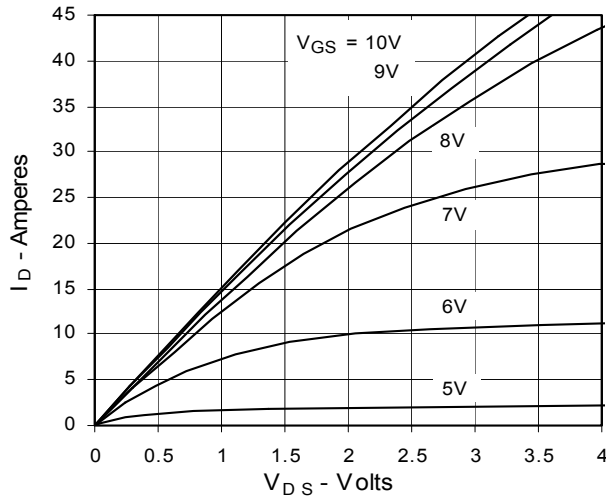
- Pins: 1 - Gate 2 - Drain

| 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 | .254 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  |
| L2  | .139     | .161     | 3.53        | 4.08  |
| Q   | .100     | .125     | 2.54        | 3.18  |

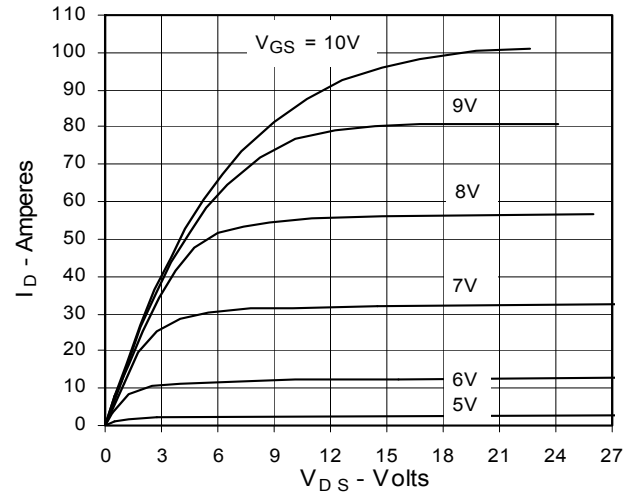
IXYS reserves the right to change limits, test conditions, and dimensions.

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one or more of the following U.S. patents: 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  
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

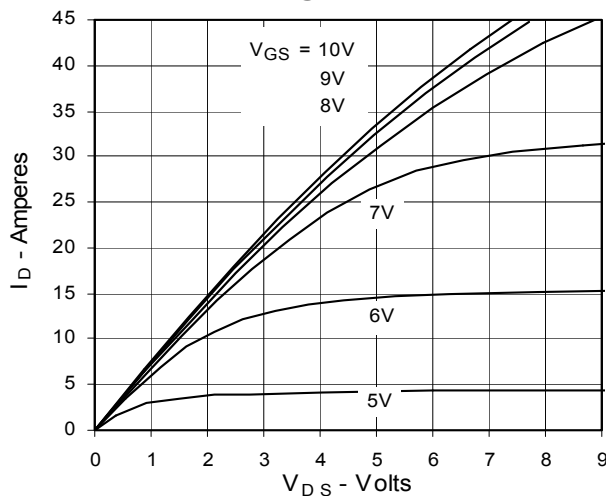
**Fig. 1. Output Characteristics**  
**@ 25°C**



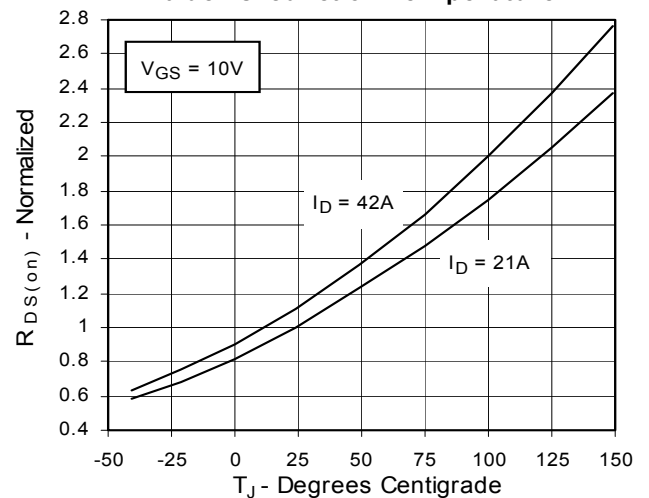
**Fig. 2. Extended Output Characteristics**  
**@ 25°C**



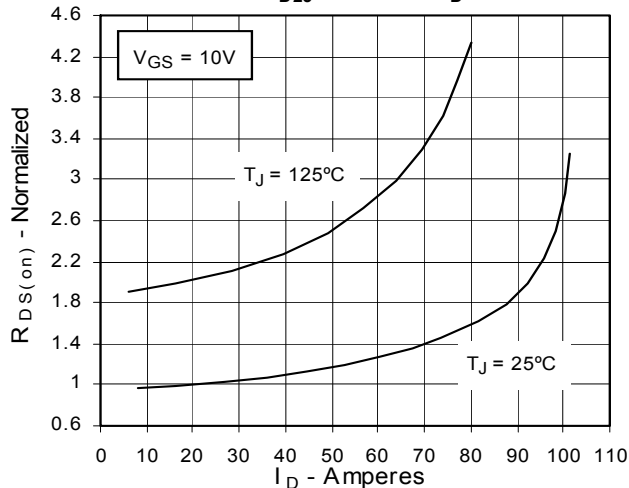
**Fig. 3. Output Characteristics**  
**@ 125°C**



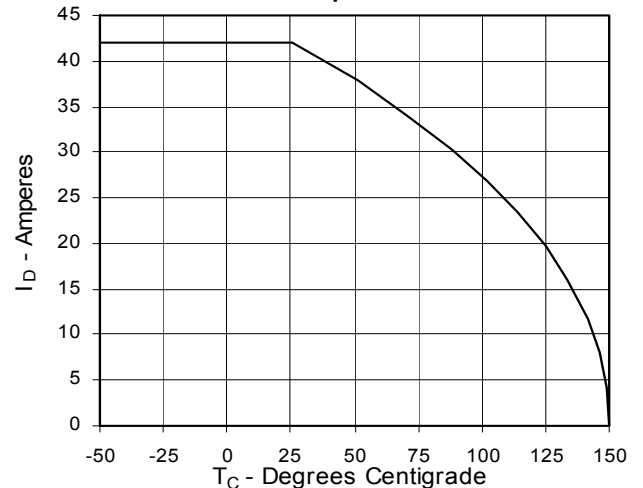
**Fig. 4.  $R_{DS(on)}$  Normalized to 0.5  $I_{D25}$**   
**Value vs. Junction Temperature**



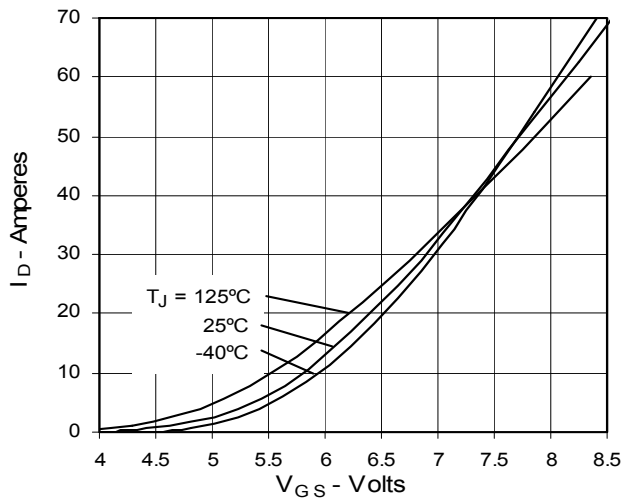
**Fig. 5.  $R_{DS(on)}$  Normalized to**  
**0.5  $I_{D25}$  Value vs.  $I_D$**



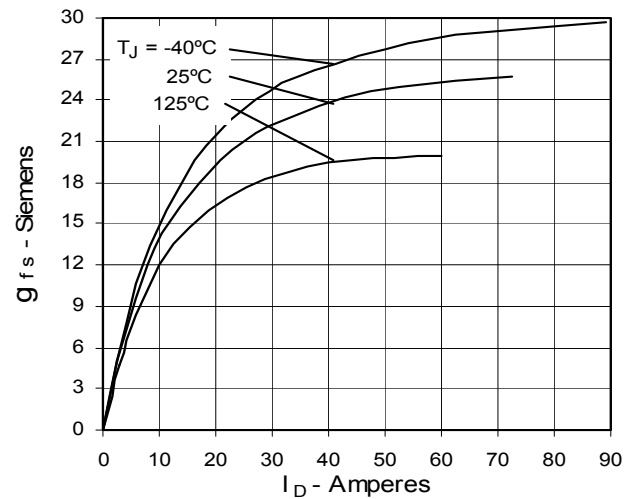
**Fig. 6. Drain Current vs. Case**  
**Temperature**



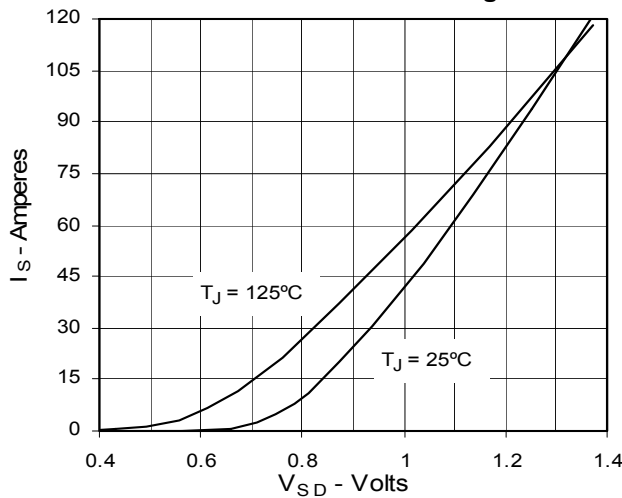
**Fig. 7. Input Admittance**



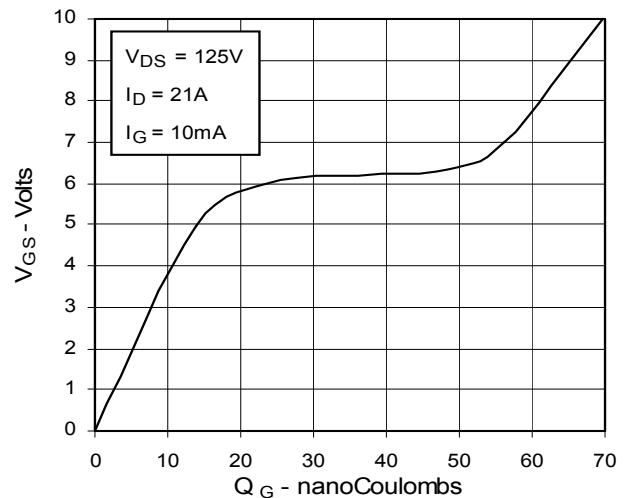
**Fig. 8. Transconductance**



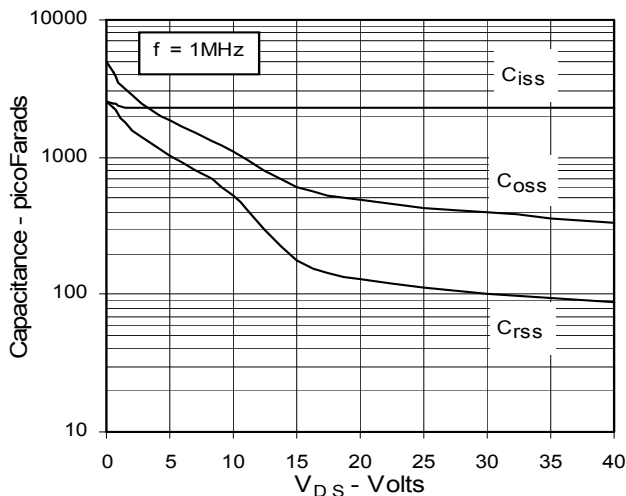
**Fig. 9. Source Current vs. Source-To-Drain Voltage**



**Fig. 10. Gate Charge**



**Fig. 11. Capacitance**



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

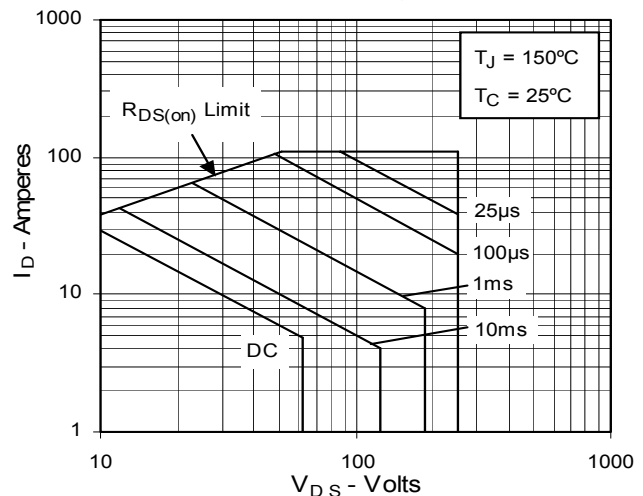
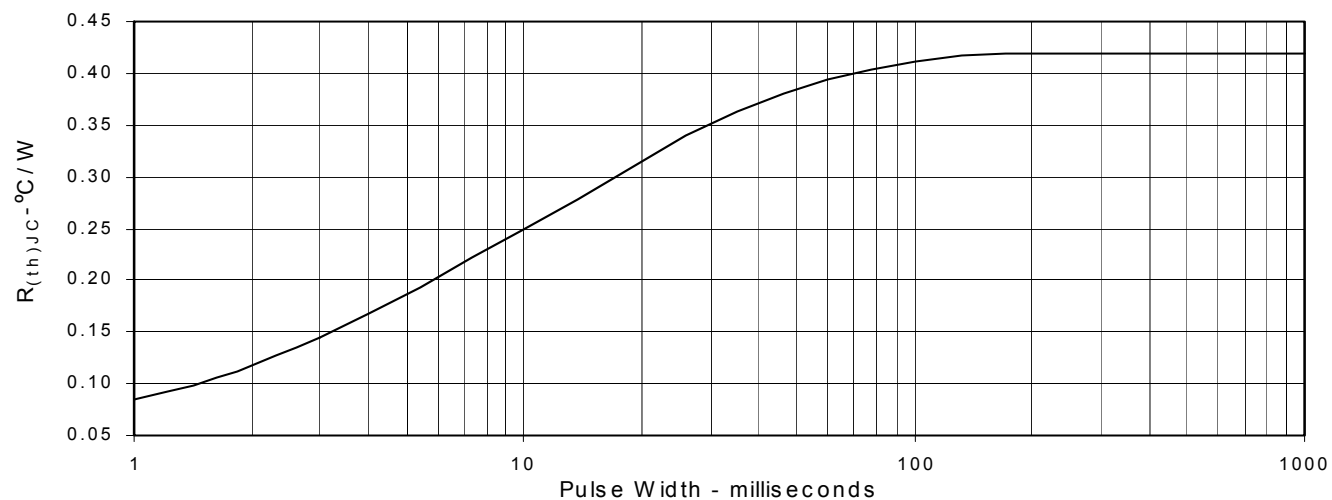


Fig. 13. Maximum Transient Thermal Resistance





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