

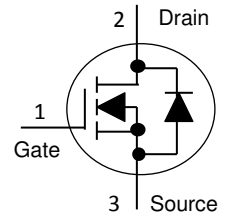
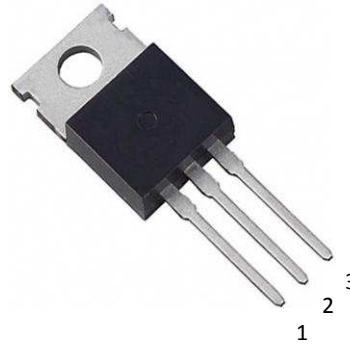
100V / 75A
N-Channel Enhancement Mode MOSFET

100V, $R_{DS(ON)}=13m\Omega@V_{GS}=10V, I_D=30A$

Features

- Low On-State Resistance
- Excellent Gate Charge x $R_{DS(ON)}$ Product (FOM)
- Fully Characterized Avalanche Voltage and Current
- Specially Designed for DC-DC Converter, Off-line UPS, Automotive System, Solenoid and Motor Control
- In compliance with EU RoHs 2002/95/EC Directives

TO-220AB



Mechanical Information

- Case: TO-220AB Molded Plastic
- Terminals : Solderable per MIL-STD-750, Method 2026

Marking & Ordering Information

| TYPE | MARKING | PACKAGE | PACKING |
|----------|---------|----------|------------|
| HY75N10T | 75N10T | TO-220AB | 50PCS/TUBE |

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Value | Units |
|--|----------------|-------------|------------------|
| Drain-Source Voltage | V_{DS} | 100 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current | I_D | 75 | A |
| Pulsed Drain Current ¹⁾ | I_{DM} | 300 | A |
| Maximum Power Dissipation | P_D | 136 | W |
| Derating Factor | | 0.91 | |
| Avalanche Energy with Single Pulse, $L=0.3mH$ | E_{AS} | 300 | mJ |
| Operating Junction and Storage Temperature Range | T_J, T_{STG} | -55 to +175 | $^\circ\text{C}$ |

Note : 1. Maximum DC current limited by the package

Thermal Characteristics

| Parameter | Symbol | Value | Units |
|--|-----------------|-------|---------------------------|
| Junction-to-Case Thermal Resistance | $R_{\theta JC}$ | 1.1 | $^\circ\text{C}/\text{W}$ |
| Junction-to-Ambient Thermal Resistance | $R_{\theta JA}$ | 62.5 | $^\circ\text{C}/\text{W}$ |

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Electrical Characteristics ($T_C=25$, Unless otherwise noted)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Units |
|----------------------------------|--------------|--|------|------|------|------------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V \cdot I_D=250\mu A$ | 100 | - | - | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS} \cdot I_D=250\mu A$ | 2 | 3 | 4 | V |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}=10V \cdot I_D=30A$ | - | 10 | 13 | m Ω |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=80V \cdot V_{GS}=0V$ | - | - | 1 | μA |
| Gate Body Leakage Current | I_{GSS} | $V_{GS}=\pm 20V \cdot V_{DS}=0V$ | - | - | 100 | nA |
| Dynamic | | | | | | |
| Total Gate Charge | Qg | $V_{DS}=50V \cdot I_D=30A$ $V_{GS}=10V$ | - | 156 | - | nC |
| Gate-Source Charge | Qgs | | - | 26.8 | - | |
| Gate-Drain Charge | Qgd | | - | 34 | - | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}=50V \cdot I_D=30A$ $V_{GS}=10V \cdot R_G=3.6\Omega$ | - | 32.2 | - | ns |
| Turn-On Rise Time | t_r | | - | 16.8 | - | |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 62 | - | |
| Turn-Off Fall Time | t_f | | - | 42 | - | |
| Input Capacitance | C_{iss} | $V_{DS}=30V \cdot V_{GS}=0V$ $f=1.0MHz$ | - | 4600 | - | pF |
| Output Capacitance | C_{oss} | | - | 320 | - | |
| Reverse Transfer Capacitance | C_{rss} | | - | 120 | - | |
| Gate Resistance | Rg | | - | 1.6 | - | Ω |
| Source-Drain Diode | | | | | | |
| Max. Diode Forward Voltage | I_S | - | - | - | 75 | A |
| Diode Forward Voltage | V_{SD} | $I_S=30A \cdot V_{GS}=0V$ | - | 0.84 | 1.4 | V |
| Reverse Recovery Time | t_{rr} | $V_{GS}=0V \cdot I_S=30A$ $di/dt=100A/\mu s$ | - | 72 | - | ns |
| Reverse Recovery Charge | Q_{rr} | | - | 210 | - | μC |

NOTE : Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$

Typical Characteristics Curves ($T_C=25^\circ\text{C}$, unless otherwise noted)

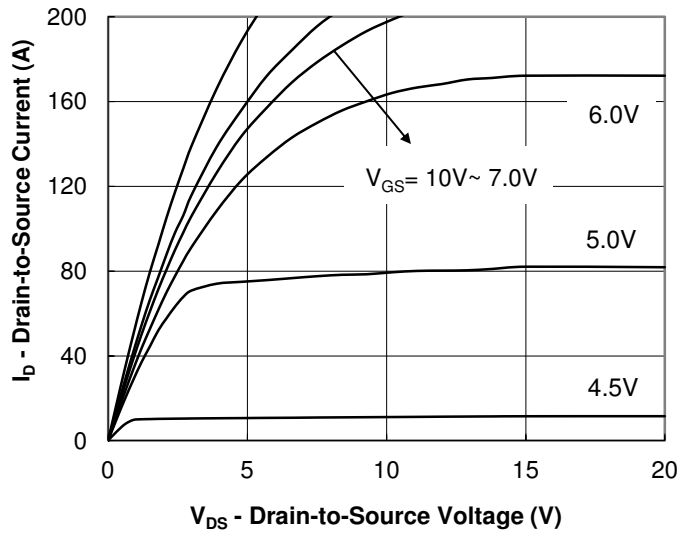


Fig.1 Output Characteristic

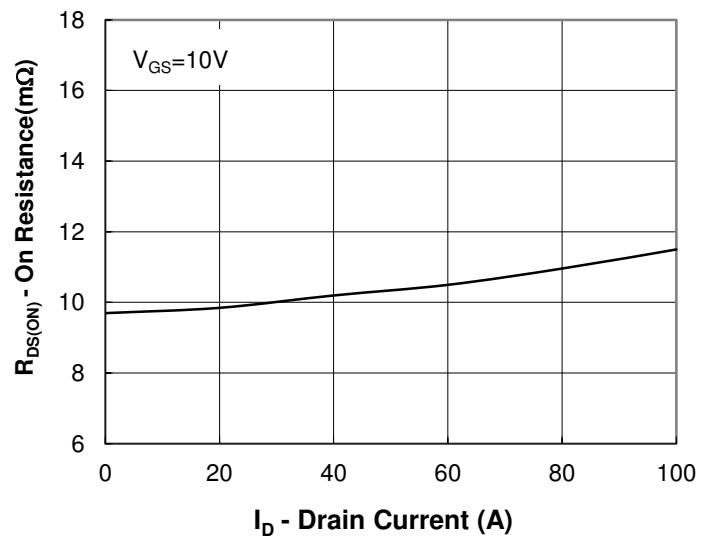


Fig.2 On-Resistance vs Drain Current

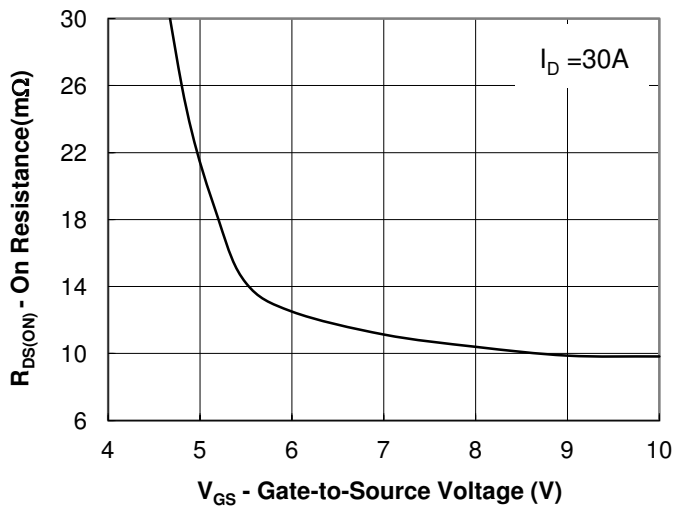


Fig.3 On-Resistance vs Gate to Source Voltage

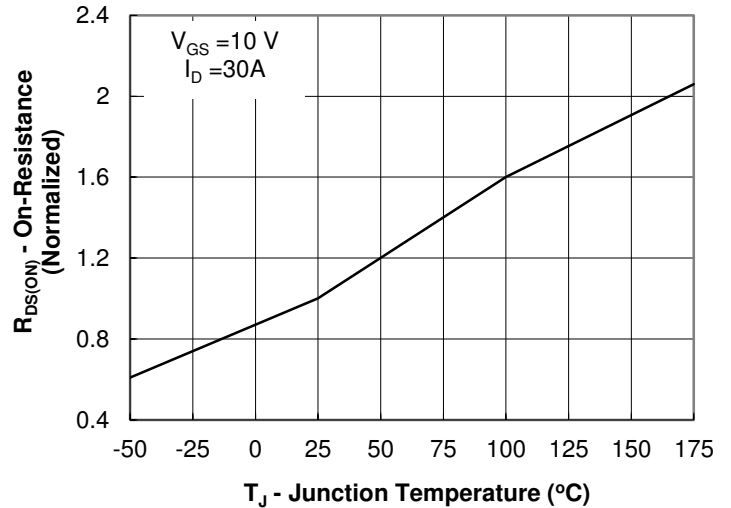


Fig.4 On-Resistance vs Junction Temperature

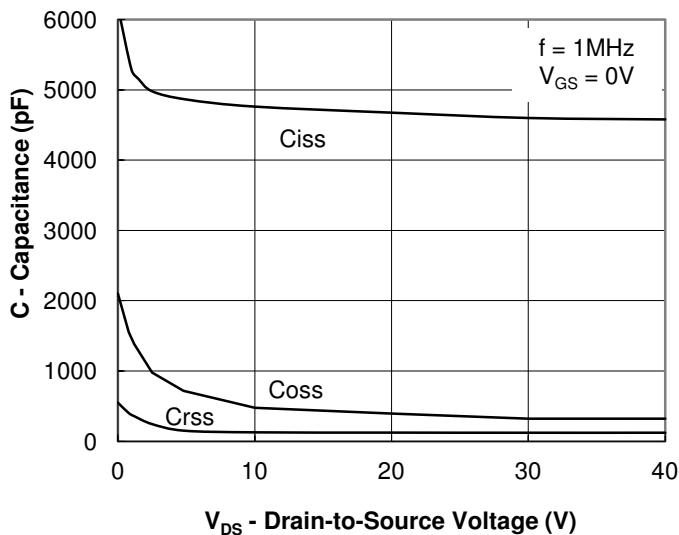


Fig.5 Capacitance Characteristic

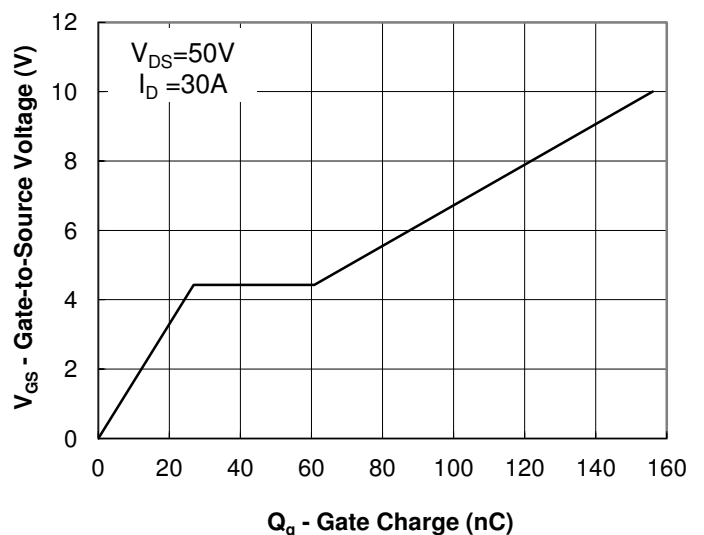


Fig.6 Gate Charge Characteristic

Typical Characteristics Curves ($T_C=25^{\circ}\text{C}$, unless otherwise noted)

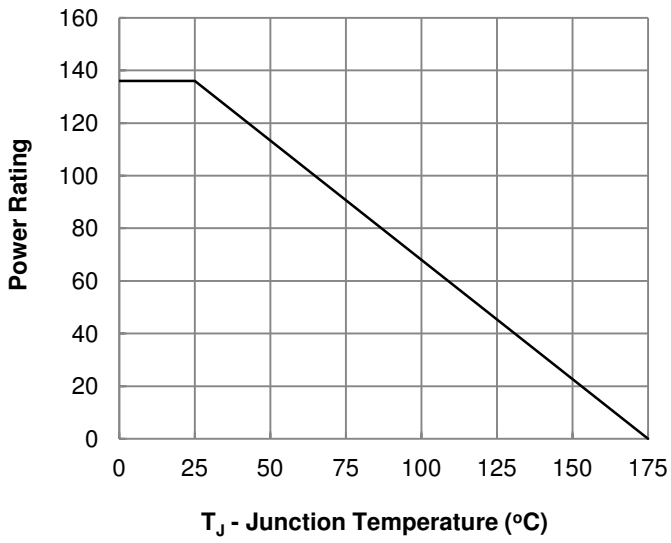


Fig.7 Power Derating Curve

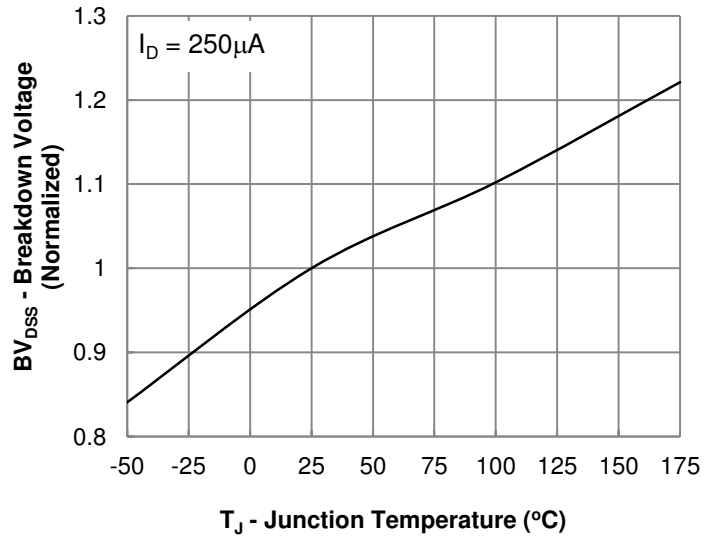


Fig.8 Breakdown Voltage vs Junction Temperature

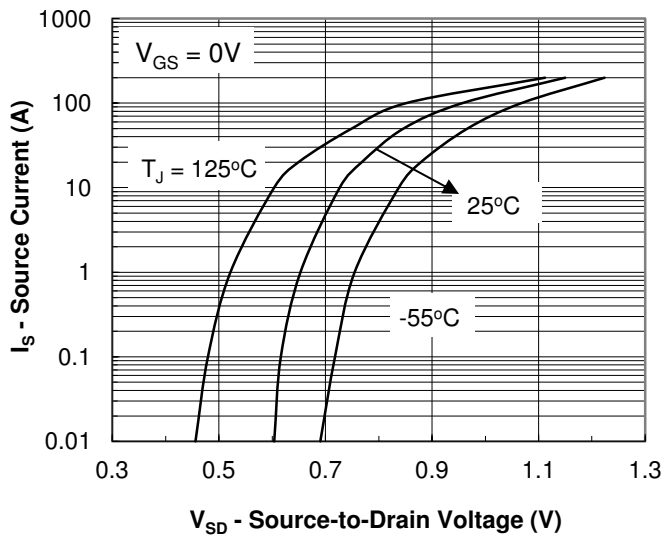


Fig.9 Body Diode Forward Voltage Characteristic