

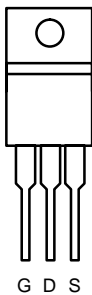


N-Channel 60-V (D-S) 175 °C MOSFET

| PRODUCT SUMMARY | | |
|-------------------|---------------------------|-----------------|
| $V_{(BR)DSS}$ (V) | $r_{DS(on)}$ (Ω) | I_D (A) |
| 60 | 0.0075 @ $V_{GS} = 10$ V | 75 ^a |
| | 0.0085 @ $V_{GS} = 4.5$ V | |

175 °C Rated
Maximum Junction Temperature

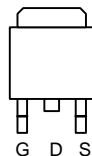
TO-220AB



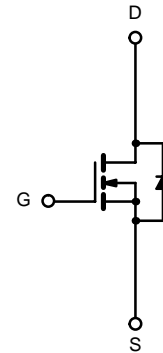
Top View
SUP75N06-07L

DRAIN connected to TAB

TO-263



Top View
SUB75N06-07L



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

| Parameter | Symbol | Limit | Unit |
|---|----------------|--|------------------|
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current ($T_J = 175^\circ\text{C}$) | I_D | $T_C = 25^\circ\text{C}$ | 75 ^a |
| | | $T_C = 125^\circ\text{C}$ | 55 |
| Pulsed Drain Current | I_{DM} | 240 | A |
| Avalanche Current | I_{AR} | 60 | |
| Repetitive Avalanche Energy ^b | E_{AR} | 280 | mJ |
| Power Dissipation | P_D | $T_C = 25^\circ\text{C}$ (TO-220AB and TO-263) | 250 ^c |
| | | $T_A = 25^\circ\text{C}$ (TO-263) ^d | 3.7 |
| Operating Junction and Storage Temperature Range | T_J, T_{stg} | -55 to 175 | $^\circ\text{C}$ |

THERMAL RESISTANCE RATINGS

| Parameter | Symbol | Limit | Unit |
|---------------------|------------|---------------------------------|--------------------|
| Junction-to-Ambient | R_{thJA} | PCB Mount (TO-263) ^d | 40 |
| | | Free Air (TO-220AB) | 62.5 |
| Junction-to-Case | R_{thJC} | 0.6 | $^\circ\text{C/W}$ |

Notes

- Package limited.
- Duty cycle $\leq 1\%$.
- See SOA curve for voltage derating.
- When mounted on 1" square PCB (FR-4 material).

SUP/SUB75N06-07L



Vishay Siliconix

| SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED) | | | | | | |
|---|----------------------|---|-----|--------|--------|------|
| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
| Static | | | | | | |
| Drain-Source Breakdown Voltage | V _{(BR)DSS} | V _{GS} = 0 V, I _D = 250 μA | 60 | | | V |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250 μA | 1.0 | | 3.0 | |
| Gate-Body Leakage | I _{GSS} | V _{DS} = 0 V, V _{GS} = ± 20 V | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 60 V, V _{GS} = 0 V | | | 1 | μA |
| | | V _{DS} = 60 V, V _{GS} = 0 V, T _J = 125 °C | | | 50 | |
| | | V _{DS} = 60 V, V _{GS} = 0 V, T _J = 175 °C | | | 250 | |
| On-State Drain Current ^a | I _{D(on)} | V _{DS} = 5 V, V _{GS} = 10 V | 120 | | | A |
| Drain-Source On-State Resistance ^a | r _{DS(on)} | V _{GS} = 10 V, I _D = 30 A | | 0.0061 | 0.0075 | Ω |
| | | V _{GS} = 4.5 V, I _D = 20A | | 0.0071 | 0.0085 | |
| | | V _{GS} = 10 V, I _D = 30 A, T _J = 125 °C | | | 0.012 | |
| | | V _{GS} = 10 V, I _D = 30 A, T _J = 175 °C | | | 0.015 | |
| Forward Transconductance ^a | g _{fs} | V _{DS} = 15 V, I _D = 30 A | 30 | | | S |
| Dynamic^b | | | | | | |
| Input Capacitance | C _{iss} | V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz | | 6300 | | pF |
| Output Capacitance | C _{oss} | | | 920 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 350 | | |
| Total Gate Charge ^c | Q _g | V _{DS} = 30 V, V _{GS} = 10 V, I _D = 75 A | | 75 | 120 | nC |
| Gate-Source Charge ^c | Q _{gs} | | | 18 | | |
| Gate-Drain Charge ^c | Q _{gd} | | | 27 | | |
| Turn-On Delay Time ^c | t _{d(on)} | V _{DD} = 30 V, R _L = 0.47 Ω I _D ≅ 75 A, V _{GEN} = 10 V, R _G = 2.5 Ω | | 14 | 40 | ns |
| Rise Time ^c | t _r | | | 15 | 40 | |
| Turn-Off Delay Time ^c | t _{d(off)} | | | 150 | 300 | |
| Fall Time ^c | t _f | | | 50 | 100 | |
| | | | | | | |
| Source-Drain Diode Ratings and Characteristics (T_C = 25 °C)^b | | | | | | |
| Continuous Current | I _S | | | | 75 | A |
| Pulsed Current | I _{SM} | | | | 240 | |
| Forward Voltage ^a | V _{SD} | I _F = 75 A, V _{GS} = 0 V | | 1.0 | 1.3 | V |
| Reverse Recovery Time | t _{rr} | I _F = 75 A, di/dt = 100 A/μs | | 67 | 120 | ns |
| Peak Reverse Recovery Current | I _{RM(REC)} | | | 6 | 8 | A |
| Reverse Recovery Charge | Q _{rr} | | | | 0.2 | 0.48 |

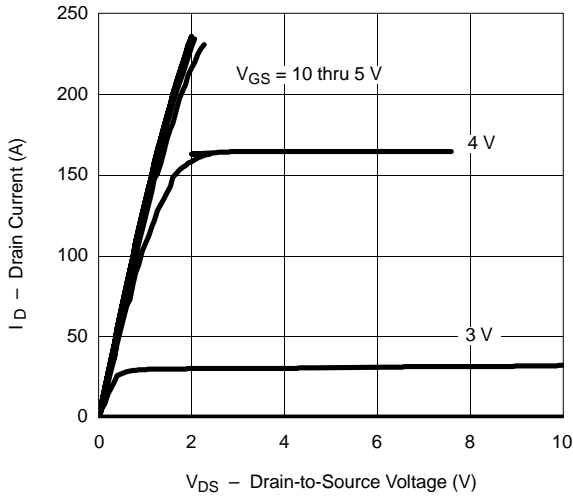
Notes

- Pulse test: pulse width ≤ 300 μsec, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.
- Independent of operating temperature.

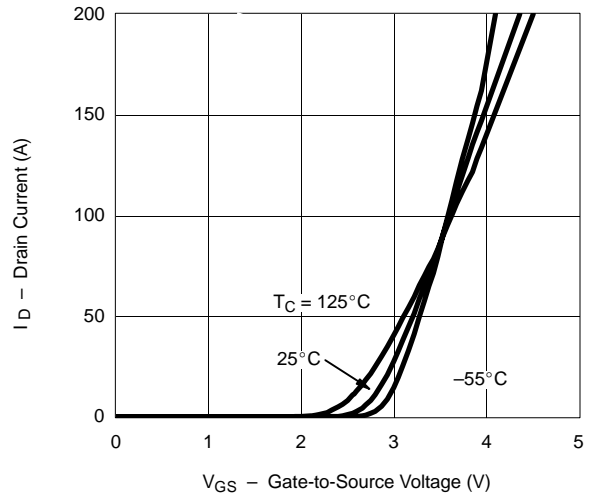


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

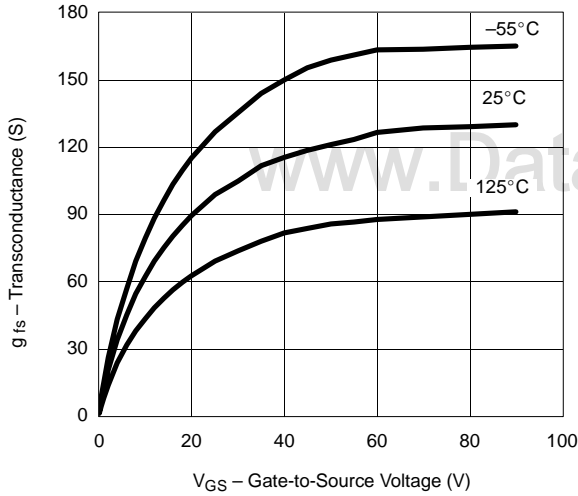
Output Characteristics



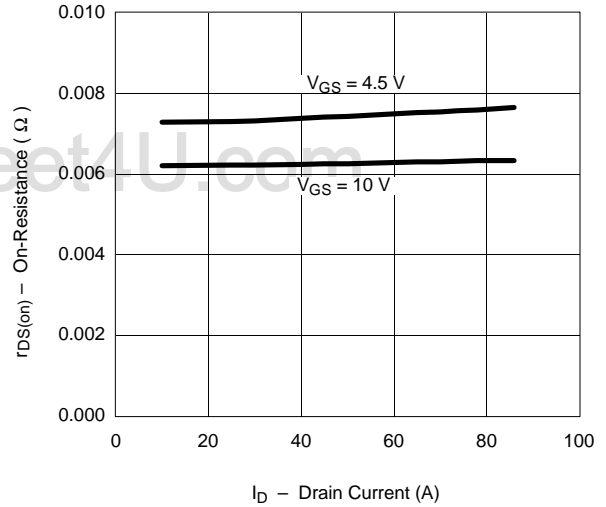
Transfer Characteristics



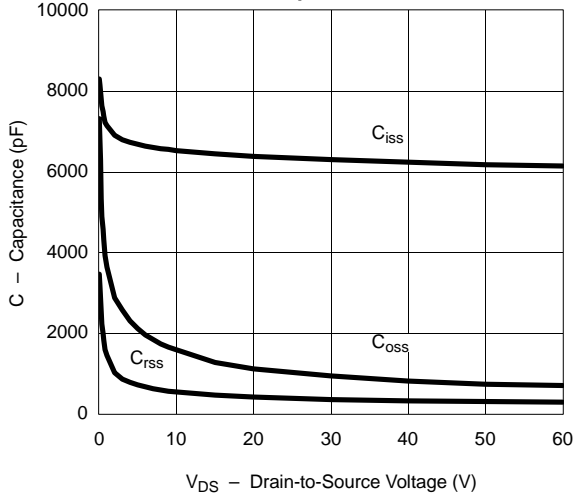
Transconductance



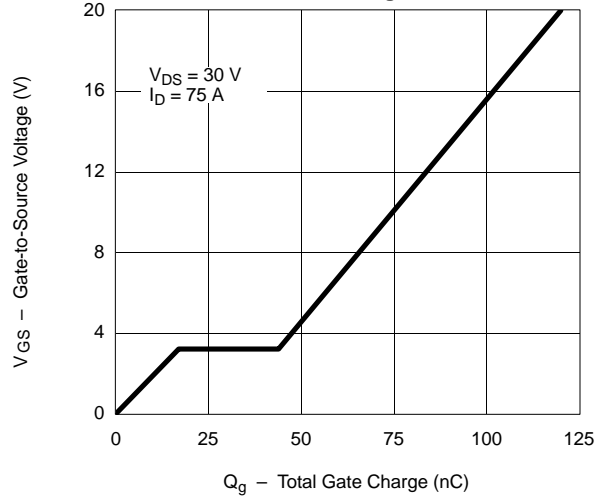
On-Resistance vs. Drain Current



Capacitance



Gate Charge

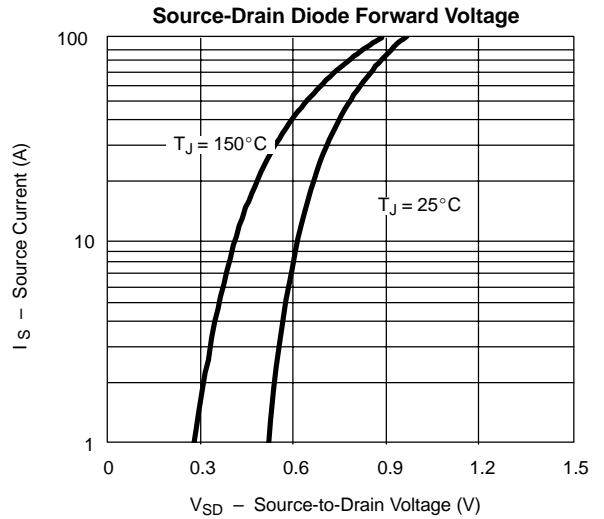
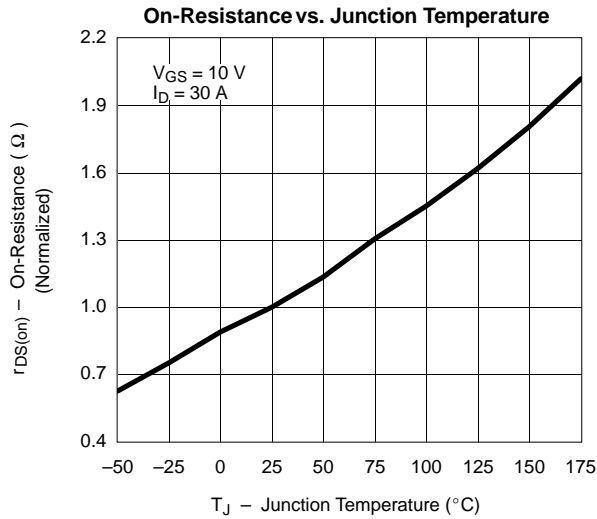


SUP/SUB75N06-07L

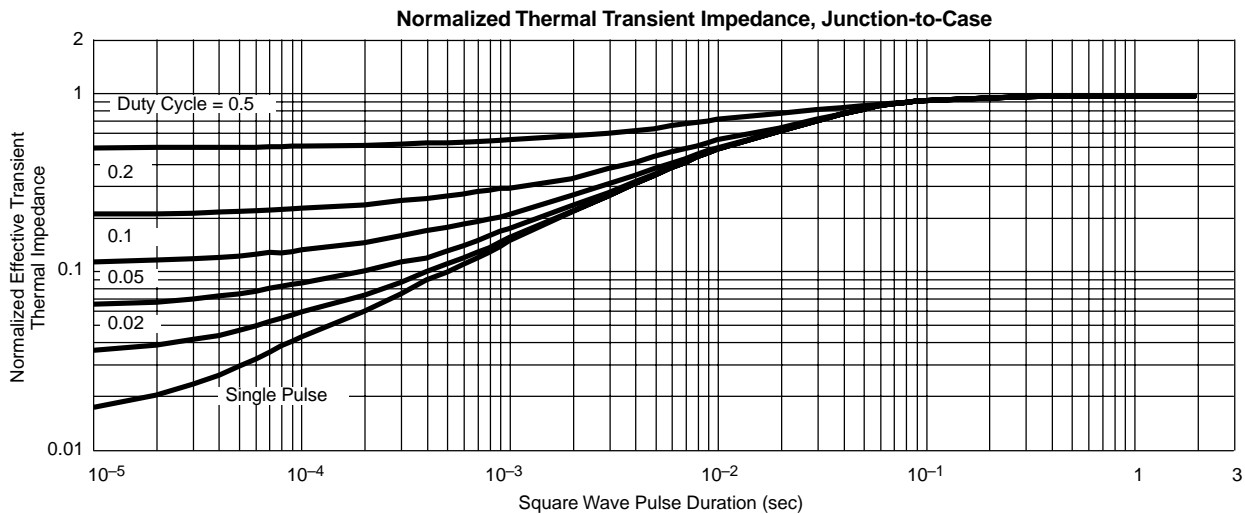
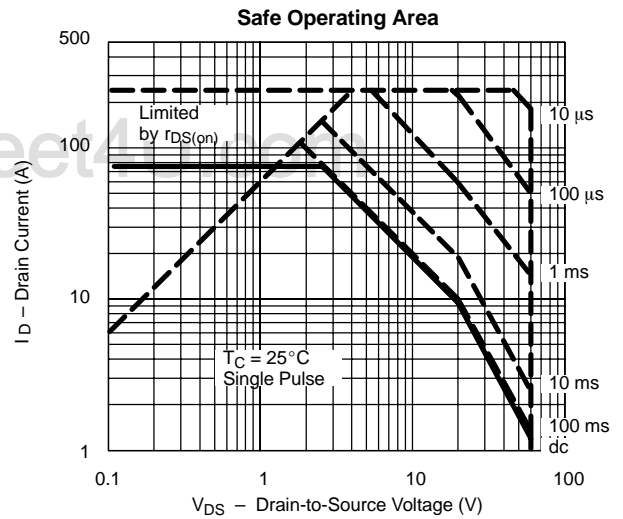
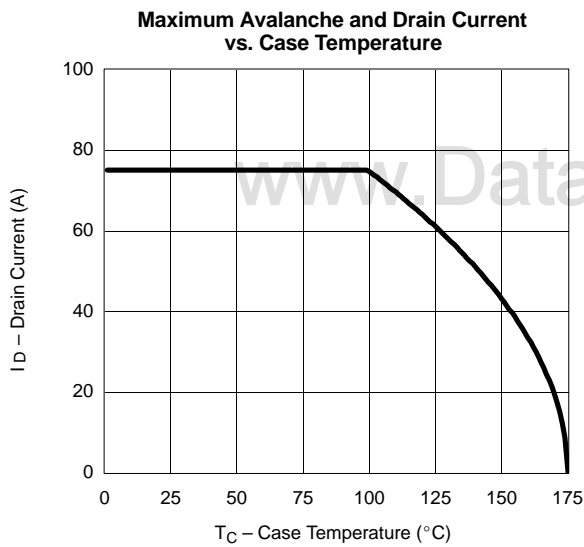


Vishay Siliconix

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



THERMAL RATINGS





Notice

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.

www.DataSheet4U.com