

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | I_D |
|---------------|-----------------|-------|
| 60V | 5mΩ@10V | 70A |
| | 8mΩ@4.5V | |

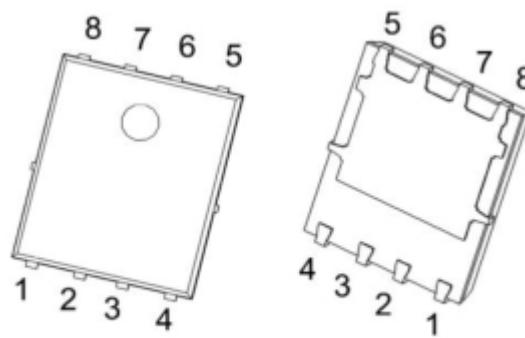
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

Applications

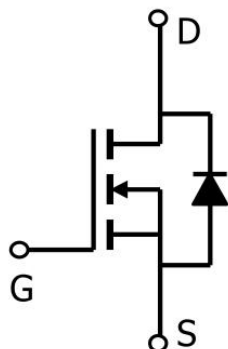
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

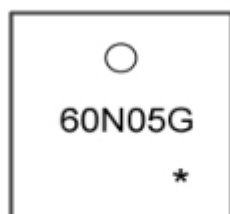


PDFNWB5X6-8L

Circuit diagram



Marking



60N05G : Product code
* : Month code.

Absolute maximum ratings

(T_a=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|------------------|-----------|-------|
| Drain-Source Voltage | V _{DS} | 60 | V |
| Gate-Source Voltage | V _{GS} | ±20 | V |
| Continuous Drain Current(Tc=25°C) | I _D | 70 | A |
| Pulse Drain Current Tested | I _{DM} | 280 | A |
| Single Pulse Avalanche Energy ¹ | E _{AS} | 289 | mJ |
| Maximum Power Dissipation(Tc=25°C) | P _D | 60 | W |
| Thermal Resistance-Junction to Case | R _{θJC} | 2.08 | °C/ W |
| Maximum Junction Temperature | T _J | -55~ +150 | °C |
| Storage Temperature Range | T _{STG} | -55~ +150 | °C |

Electrical characteristics

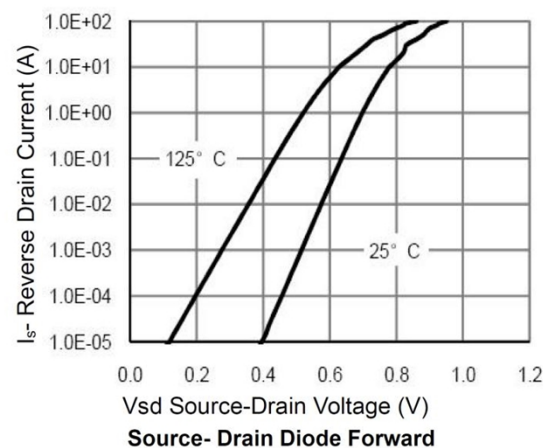
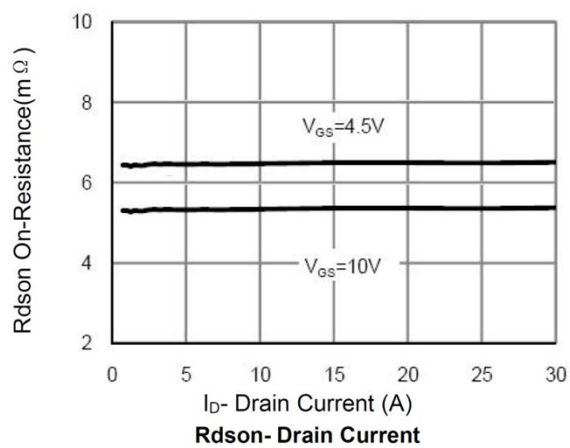
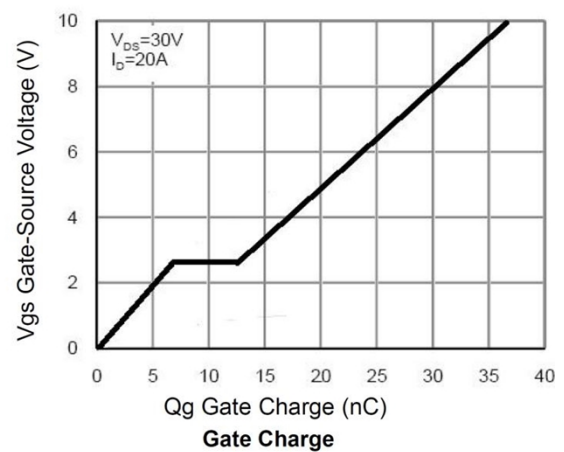
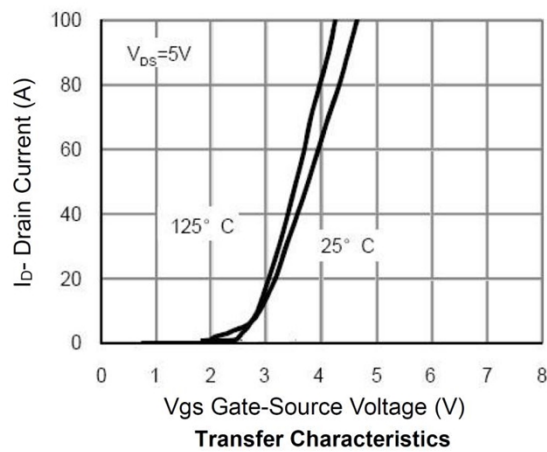
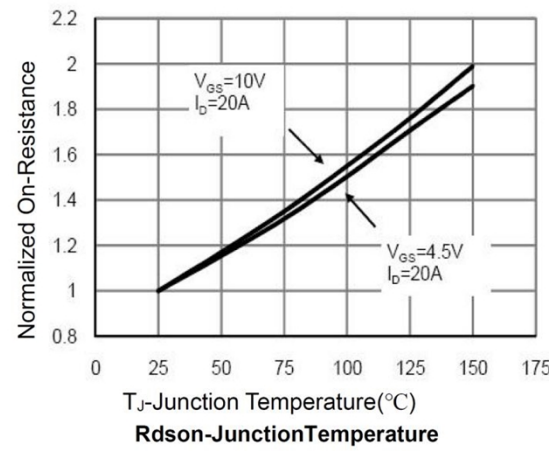
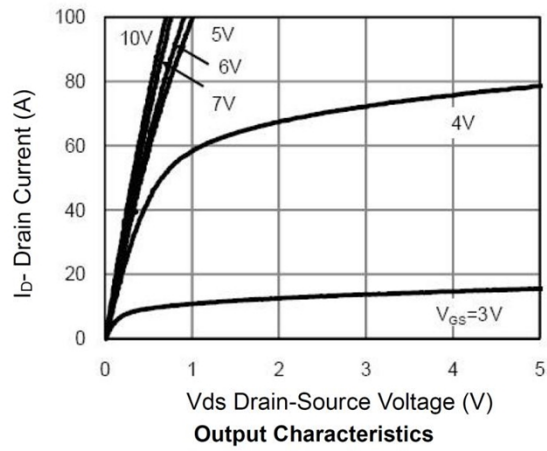
($T_A=25^{\circ}\text{C}$, unless otherwise noted)

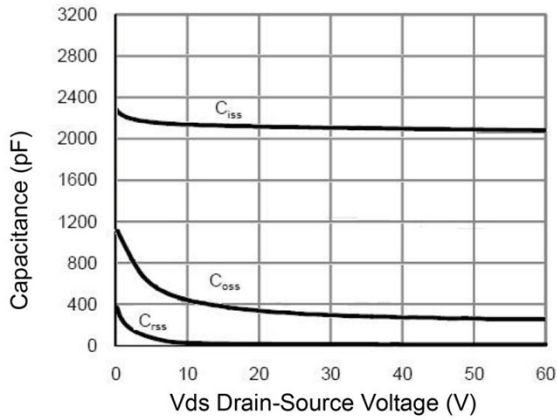
| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|---------------------|--|------|------|------|------|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV (BR)DSS | V _{GS} = 0V, I _D =250μA | 60 | | | V |
| Drain-source leakage current | I _{DSS} | V _{DS} =48V,V _{GS} = 0V | | | 1 | uA |
| Gate-source leakage current | I _{GSS} | V _{GS} =±20V,V _{DS} = 0V | | | ±100 | uA |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250μA | 1.0 | 2.0 | 3.0 | V |
| Drain-Source On-State Resistance | R _{DS(on)} | V _{GS} =10V, I _D =20A | | 5 | 6.3 | mΩ |
| | | V _{GS} =4.5V, I _D =10A | | 8 | 10.5 | |
| Dynamic Characteristics Reverse | | | | | | |
| Input Capacitance | C _{iss} | V _{GS} =0V, V _{DS} =30V, f=1MHz | | 2083 | | pF |
| Output Capacitance | C _{oss} | | | 793 | | |
| Transfer Capacitance | C _{rss} | | | 16 | | |
| Total Gate Charge | Q _g | V _{DS} =30V , V _{GS} =10V, I _D =20A | | 37.5 | | pF |
| Gate-Source Charge | Q _{gs} | | | 6.5 | | |
| Gate-Drain Charge | Q _{gd} | | | 10 | | |
| Turn-On Delay Time | T _{d(on)} | V _{DD} =30V, I _D =20A, V _{GS} =10V, R _G =4.7Ω | | 9 | | nS |
| Rise Time | T _r | | | 3.5 | | |
| Turn-Off Delay Time | T _{d(off)} | | | 32 | | |
| Fall Time | T _f | | | 5.5 | | |
| Drain-Source Body Diode Characteristics | | | | | | |
| Source-Drain Diode Forward Voltage | V _{SD} | V _{GS} =0V ,I _S =1A | | | 1.2 | V |

Note :

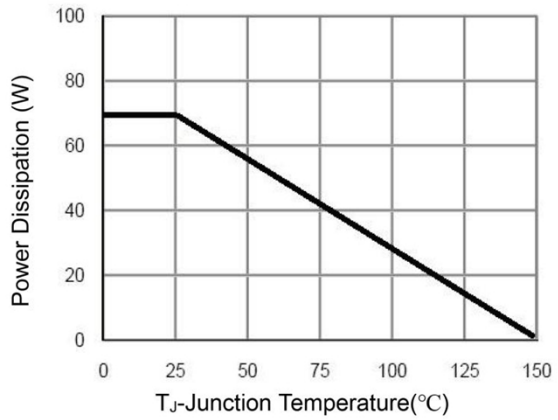
1. The E_{AS} data shows Max. rating . The test condition is $V_{DD}=30V, V_{GS}=10V, L=0.5mH, R_G=25\Omega$

Typical Characteristics

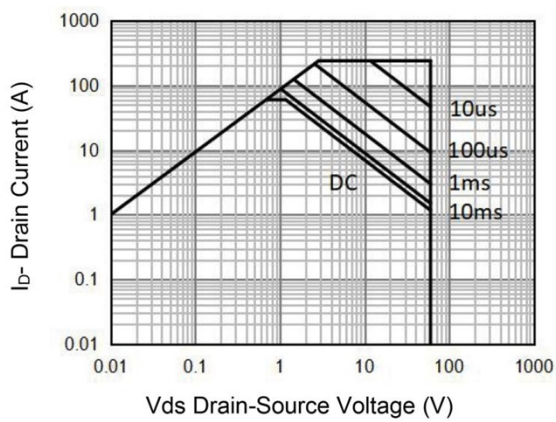




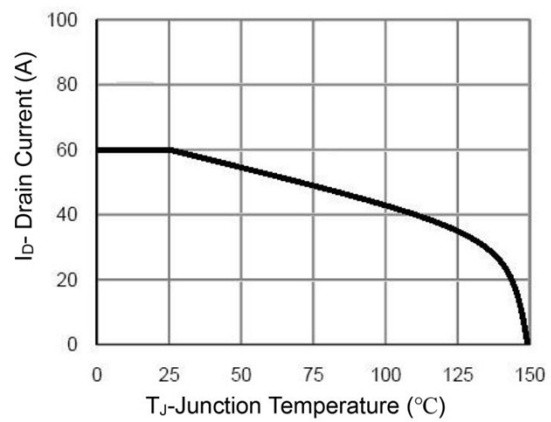
Capacitance vs Vds



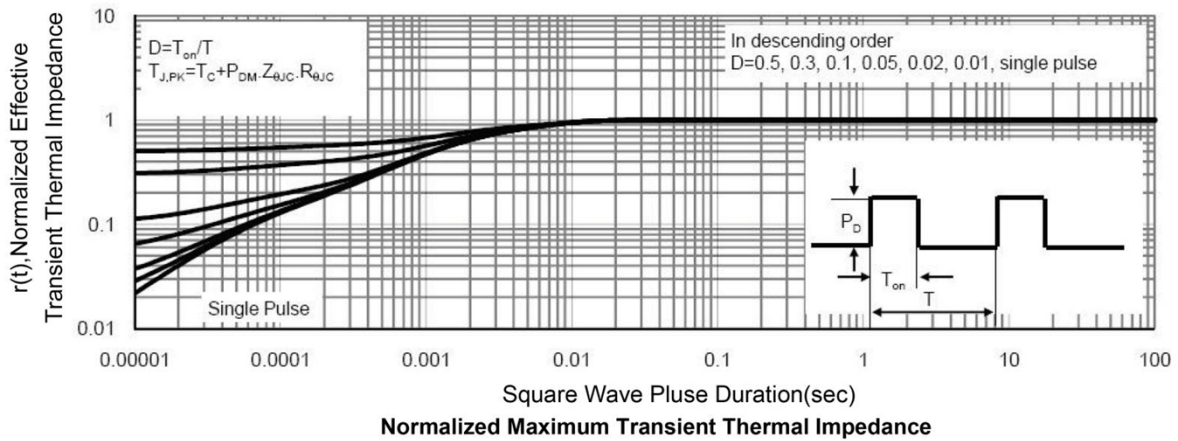
Power De-rating



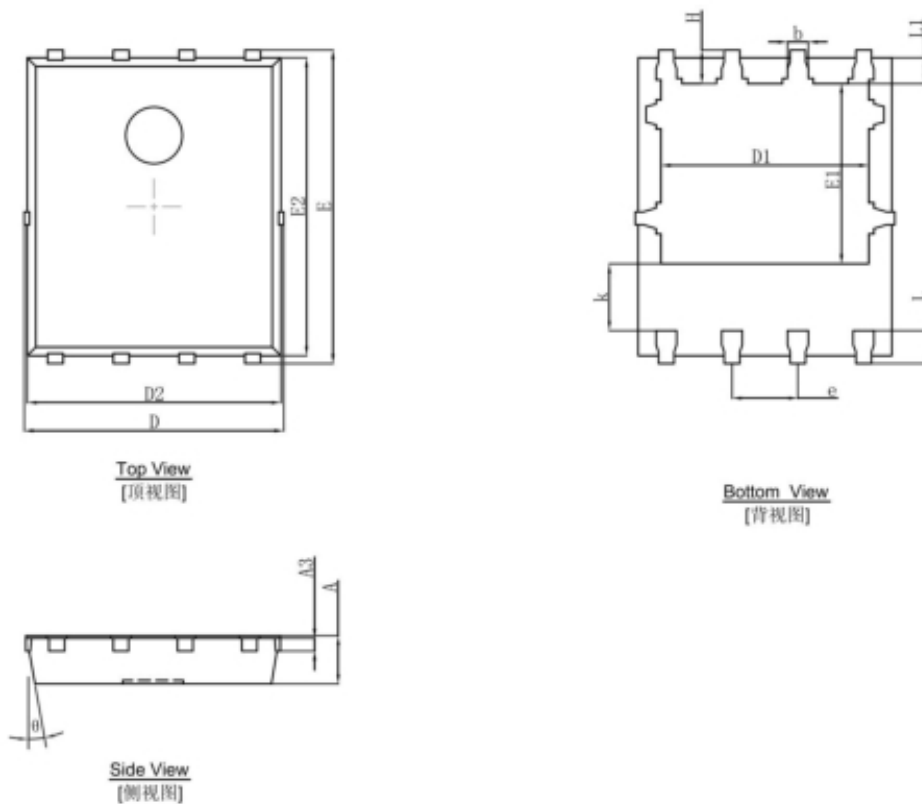
Safe Operation Area



Current De-rating



PDFNWB5X6-8L Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|----------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.900 | 1.000 | 0.035 | 0.039 |
| A3 | 0.254REF. | | 0.010REF. | |
| D | 4.944 | 5.096 | 0.195 | 0.201 |
| E | 5.974 | 6.126 | 0.235 | 0.241 |
| D1 | 3.910 | 4.110 | 0.154 | 0.162 |
| E1 | 3.375 | 3.575 | 0.133 | 0.141 |
| D2 | 4.824 | 4.976 | 0.190 | 0.196 |
| E2 | 5.674 | 5.826 | 0.223 | 0.229 |
| k | 1.190 | 1.390 | 0.047 | 0.055 |
| b | 0.350 | 0.450 | 0.014 | 0.018 |
| e | 1.270TYP. | | 0.050TYP. | |
| L | 0.559 | 0.711 | 0.022 | 0.028 |
| L1 | 0.424 | 0.576 | 0.017 | 0.023 |
| H | 0.574 | 0.726 | 0.023 | 0.029 |
| θ | 10° | 12° | 10° | 12° |