

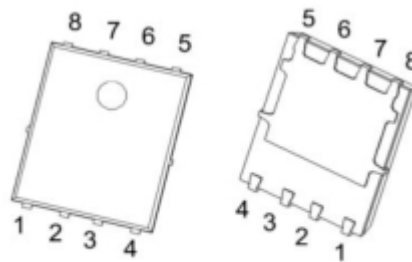
Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | I_D |
|---------------|-----------------|-------|
| -40V | 4.3mΩ@-10V | -110A |
| | 5.9mΩ@-4.5V | |

Feature

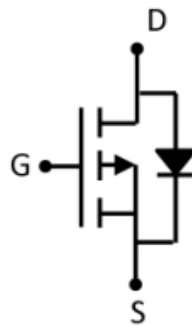
- High Power and current handing capability
- Low on-resistance $R_{DS(on)}$
- Pb-free lead plating; RoHS compliant

Package

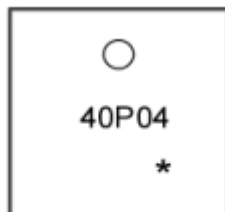


PDFN5×6-8L

Circuit diagram



Marking



40P04 =Device Code
* =Month Code

Absolute maximum ratings

(T_a=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|-----------------------------------|----------|------|
| Drain-Source Voltage | V _{DS} | -40 | V |
| Gate-Source Voltage | V _{GS} | ±20 | V |
| Drain Current-Continuous (T _C =25°C) | I _D | -110 | A |
| Drain Current-Pulsed ¹ | I _{DM} | -440 | A |
| Single Pulse Avalanche Energy ² | E _{AS} | 809 | mJ |
| Maximum Power Dissipation(T _C =25°C) | P _D | 73 | W |
| Thermal Resistance, Junction-to-Case | R _{θJC} | 1.71 | °C/W |
| Operating Junction and Storage Temperature Range | T _J , T _{STG} | -55~+150 | °C |

Electrical characteristics

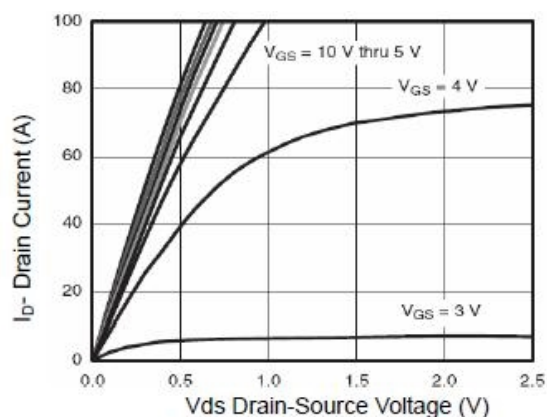
($T_A=25^{\circ}\text{C}$, unless otherwise noted)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|------------------------------------|---------------------|--|------|------|------|------|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV (BR)DSS | V _{GS} = 0V, I _D = -250μA | -40 | | | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = -32V, V _{GS} = 0V | | | -1 | uA |
| Gate-Source Leakage | I _{GSS} | V _{GS} = ±20V, V _{DS} =0V | | | ±100 | uA |
| Gate-Source Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =-250μA | -1 | -1.7 | -2.5 | V |
| Drain-Source On-Resistance | R _{DS(on)} | V _{GS} = -10V, I _D = -20A | | 4.3 | 5.5 | mΩ |
| | | V _{GS} = -4.5V, I _D = -20A | | 5.9 | 8 | |
| Dynamic Characteristics | | | | | | |
| Input Capacitance | C _{iss} | V _{GS} =0V, V _{DS} = -20V, f=1MHz | | 7010 | | pF |
| Output Capacitance | C _{oss} | | | 640 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 450 | | |
| Switching Characteristics | | | | | | |
| Turn-on Delay Time | T _{d(on)} | V _{DD} = -20V, , I _D =-20A V _{GS} = -10V, R _{GEN} =2.4Ω | | 10 | | nS |
| Turn-on Rise Time | T _r | | | 15 | | |
| Turn-off Delay Time | T _{d(off)} | | | 93 | | |
| Turn-off Fall Time | T _f | | | 20 | | |
| Total Gate Charge | Q _g | V _{DS} = -20V, I _D = -20A , V _{GS} = -10V | | 74 | | nC |
| Gate-Source Charge | Q _{gs} | | | 22 | | |
| Gate-Drain Charge | Q _{gd} | | | 18 | | |
| Drain-Source Diode Characteristics | | | | | | |
| Diode Forward Voltage | V _{SD} | V _{GS} =0V,I _S = -2A | | | -1.2 | V |

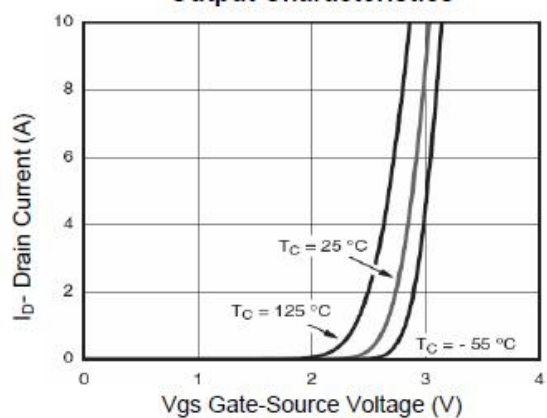
Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. E_{AS} data shows Max. rating . The test condition is $V_{DD}=-20V, V_{GS}=-10V, L=0.5mH$
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

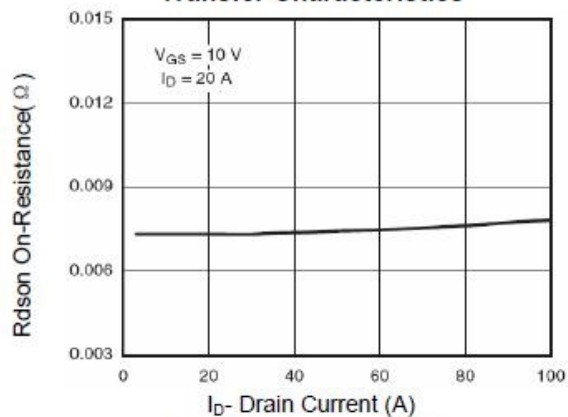
Typical Characteristics



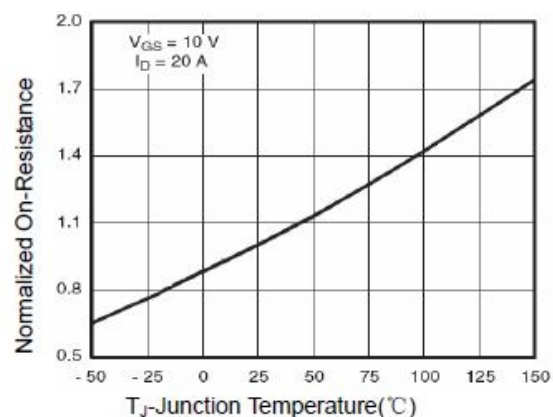
Output Characteristics



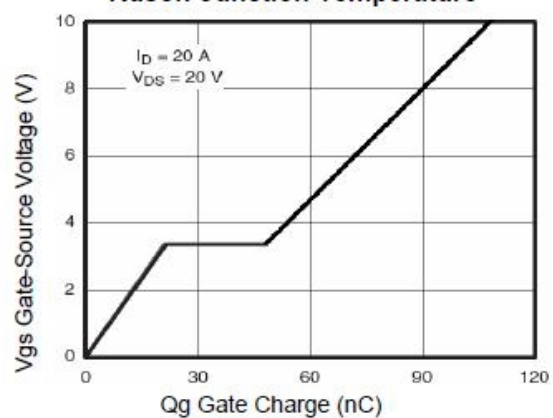
Transfer Characteristics



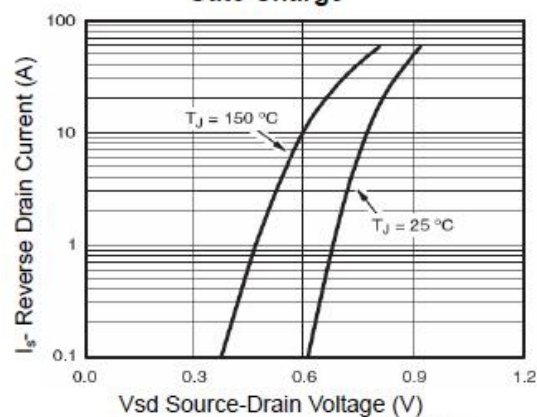
$R_{ds(on)}$ - Drain Current



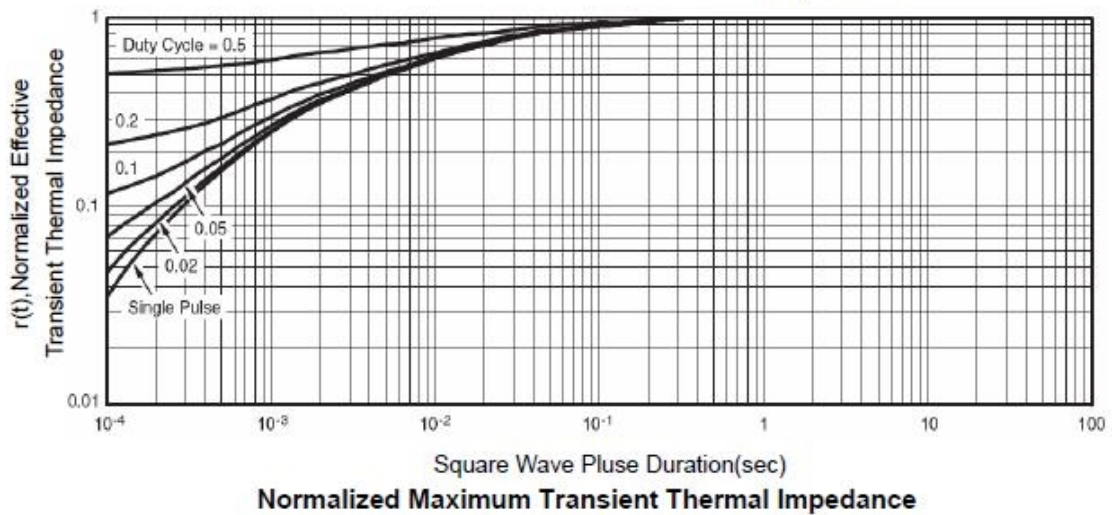
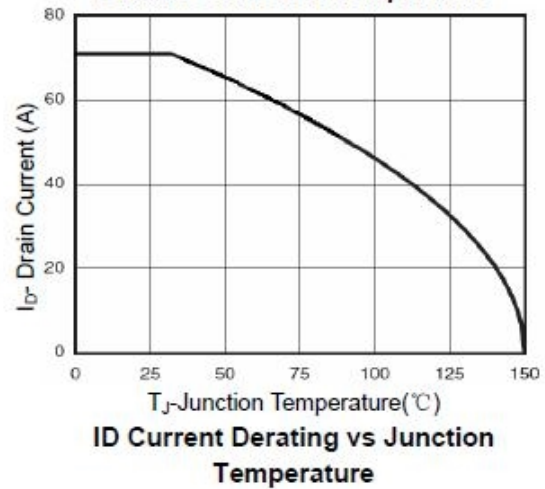
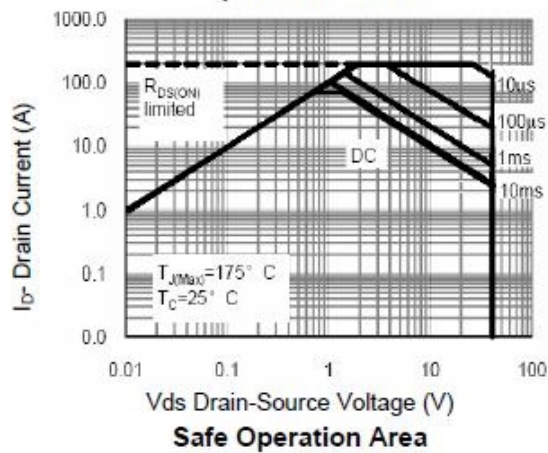
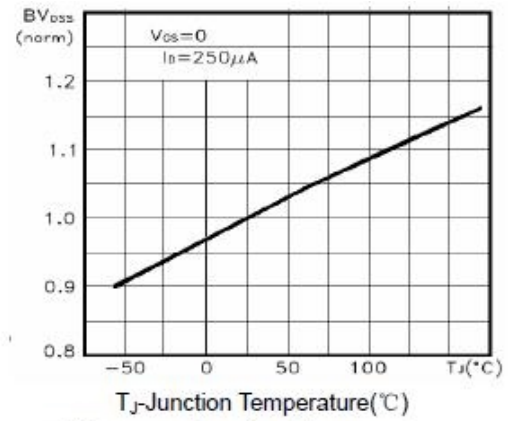
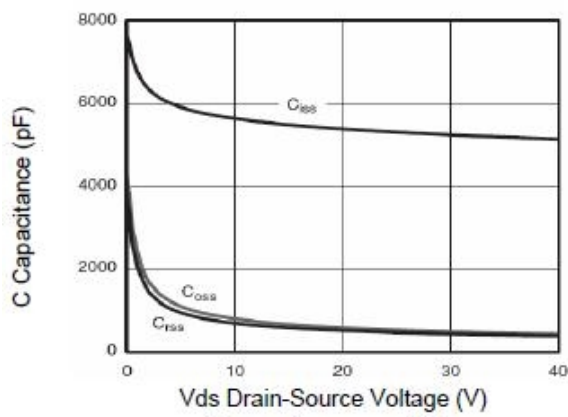
$R_{ds(on)}$ -Junction Temperature



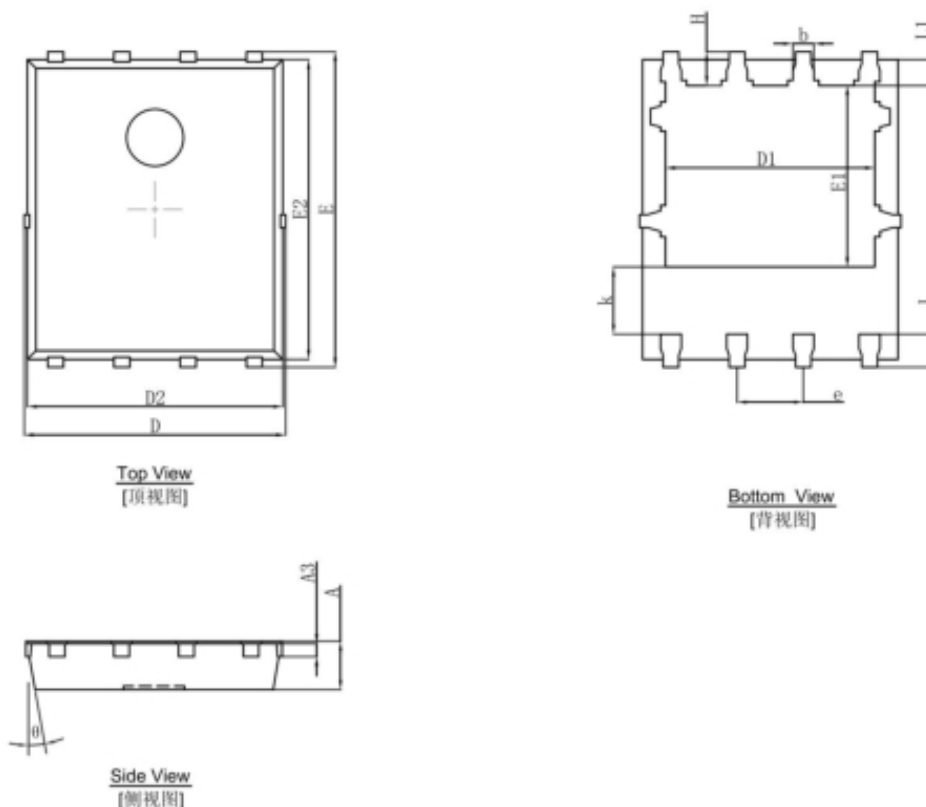
Gate Charge



Source- Drain Diode Forward



PDFN5×6-8L 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° |