

Notification about the transfer of the semiconductor business

The semiconductor business of Panasonic Corporation was transferred on September 1, 2020 to Nuvoton Technology Corporation (hereinafter referred to as "Nuvoton"). Accordingly, Panasonic Semiconductor Solutions Co., Ltd. became under the umbrella of the Nuvoton Group, with the new name of Nuvoton Technology Corporation Japan (hereinafter referred to as "NTCJ").

In accordance with this transfer, semiconductor products will be handled as NTCJ-made products after September 1, 2020. However, such products will be continuously sold through Panasonic Corporation.

Publisher of this Document is NTCJ.

If you would find description "Panasonic" or "Panasonic semiconductor solutions", please replace it with NTCJ.

※ Except below description page

"Request for your special attention and precautions in using the technical information and semiconductors described in this book"

Nuvoton Technology Corporation Japan



FK4B01100L

Single N-channel MOS FET

For load switching circuits

■ Features

- Low Drain-source ON resistance: RDS(on) typ. = 27 mΩ (VGS = 2.5 V)
- CSP (Chip Size Package)
- RoHS compliant (EU RoHS / MSL: Level 1 compliant)

■ Marking Symbol: 1A

■ Packaging

Embossed type (Thermo-compression sealing) : 20 000 pcs / reel (standard)

■ Absolute Maximum Ratings Ta = 25 °C

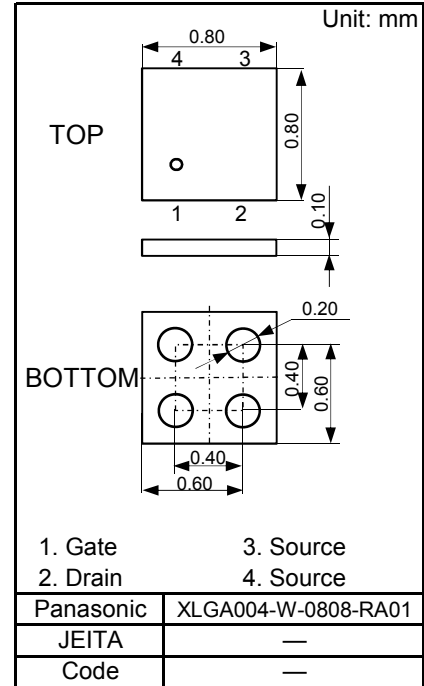
| Parameter | Symbol | Rating | Unit |
|-------------------------------|----------------------|------------|------|
| Drain-Source Voltage | VDS | 12 | V |
| Gate-Source Voltage | VGS | ±8 | V |
| Drain Current | ID1 ^{*1} | 3.4 | A |
| | ID2 ^{*2} | 5.2 | |
| | ID3 ^{*3} | 6.5 | |
| Peak Drain Current | IDp1 ^{*1*4} | 27 | A |
| | IDp2 ^{*2*4} | 41 | |
| | IDp3 ^{*3*4} | 52 | |
| Power Dissipation | PD1 ^{*1} | 0.36 | W |
| | PD2 ^{*2} | 0.82 | |
| | PD3 ^{*3} | 1.3 | |
| Channel Temperature | Tch | 150 | °C |
| Operating Ambient Temperature | Topr | -40 ~ +85 | °C |
| Storage Temperature | Tstg | -55 ~ +150 | °C |

Note *1 FR4 board (25.4mm×25.4mm×t1.0mm), Min Cu 36mm² Copper

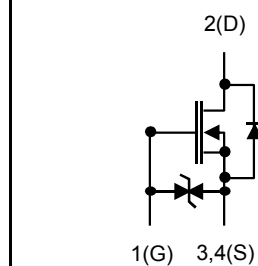
*2 FR4 board (25.4mm×25.4mm×t1.0mm), Full Cu

*3 Ceramic substrate (70mm×70mm×t1.0mm)

*4 t = 10 μs, Duty Cycle < 1%



■ Internal Connection



■ Electrical Characteristics Ta = 25 °C ± 3 °C

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|--|---------|---|-----------|------|-----|------|
| Drain-Source Breakdown Voltage | VDSS | ID = 1 mA, VGS = 0 | 12 | | | V |
| Zero Gate Voltage Drain Current | IDSS | VDS = 12 V, VGS = 0 | | | 10 | μA |
| Gate-Source Leakage Current | IGSS | VGS = ±8 V, VDS = 0 V | | | ±10 | μA |
| Gate Threshold Voltage | Vth | ID = 236 μA, VDS = 10 V | 0.3 | | 1.0 | V |
| Drain-Source ON Resistance | RDS(on) | ID = 1.5 A, VGS = 4.5 V | | 22 | 30 | mΩ |
| | | ID = 1.0 A, VGS = 2.5 V | | 27 | 40 | |
| | | ID = 0.5 A, VGS = 1.8 V | | 33 | 56 | |
| | | ID = 0.25 A, VGS = 1.5 V | | 43 | 99 | |
| Input Capacitance ^{*1} | Ciss | VDS = 10 V | | 275 | | pF |
| Output Capacitance ^{*1} | Coss | VGS = 0 | | 100 | | |
| Reverse Transfer Capacitance ^{*1} | Crss | f = 1MHz | | 70 | | |
| Turn-on delay time ^{*1,*2} | td(on) | VDD = 6 V VGS = 0 to 4.5 V ID=1.0 A | | 7 | | ns |
| Rise time ^{*1,*2} | tr | | | 14 | | |
| Turn-off delay time ^{*1,*2} | td(off) | | | 165 | | |
| Fall time ^{*1,*2} | tf | | | 76 | | |
| Total Gate Charge ^{*1} | Qg | | VDD = 6 V | | 5.8 | |
| Gate to Source Charge ^{*1} | Qgs | VGS = 4.5 V | | 0.75 | | nC |
| Gate to Drain Miller Charge ^{*1} | Qgd | IS= 1.0 A | | 0.95 | | nC |
| Body Diode Forward Voltage | VF(D-S) | IF = 0.2A, VGS = 0V | | 0.6 | 1.2 | V |

Note Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 Measuring methods for transistors.

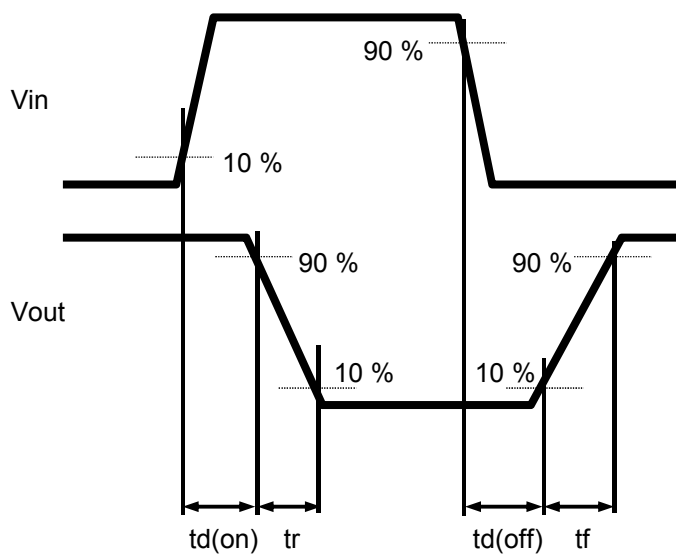
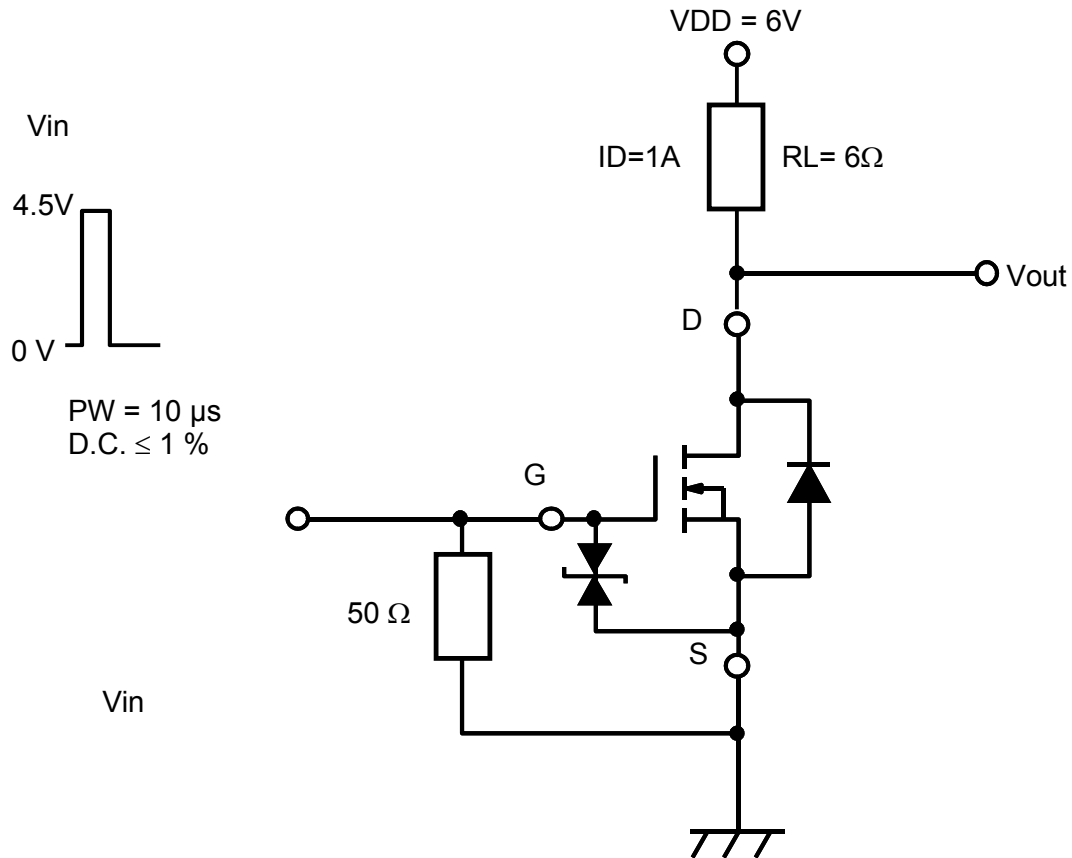
*1 Guaranteed by design, not subject to production testing

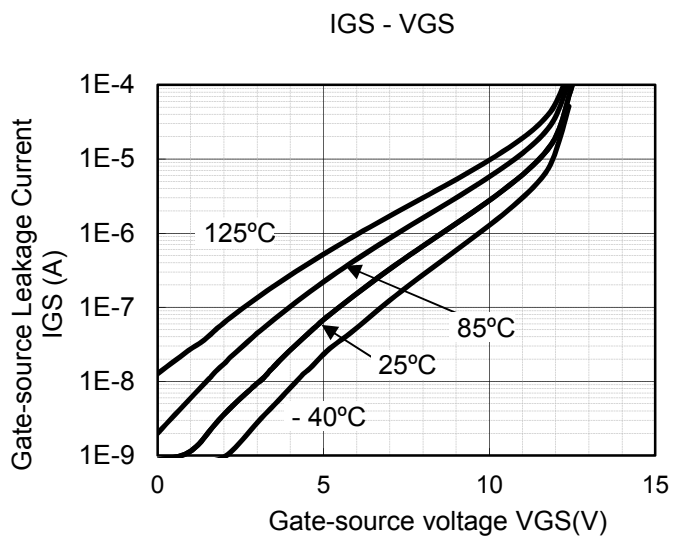
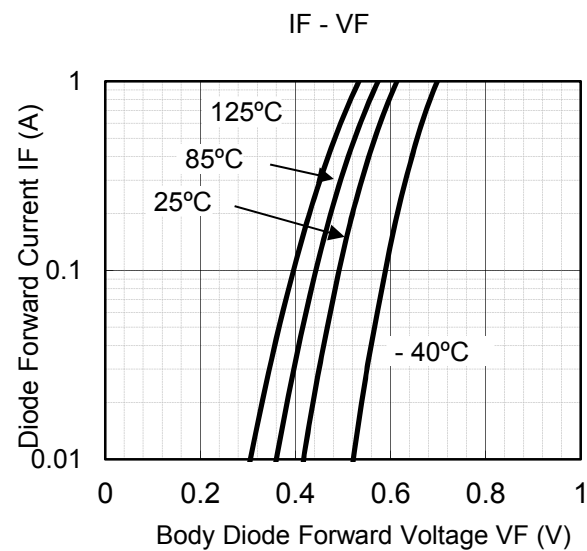
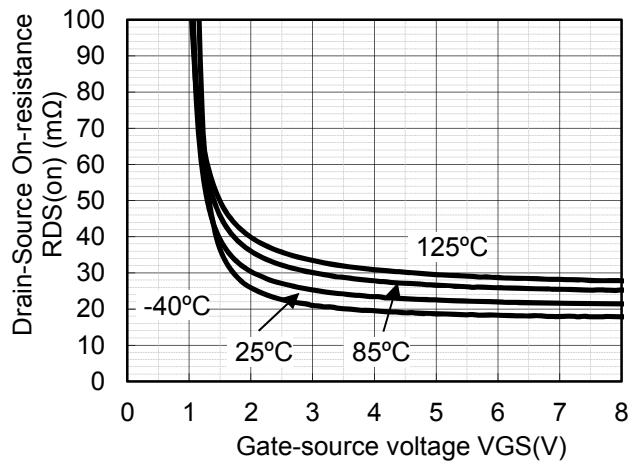
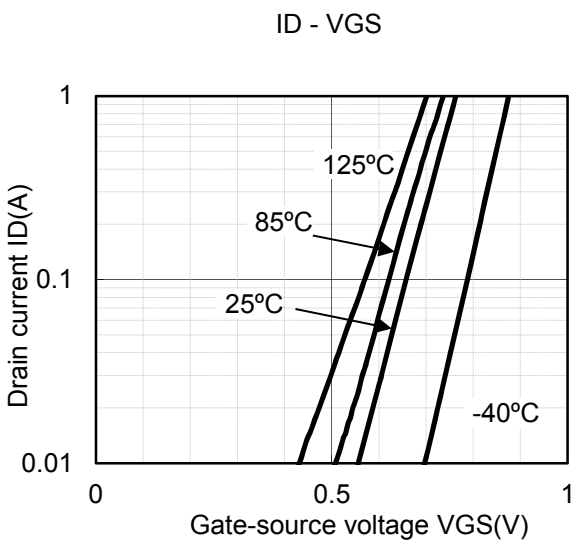
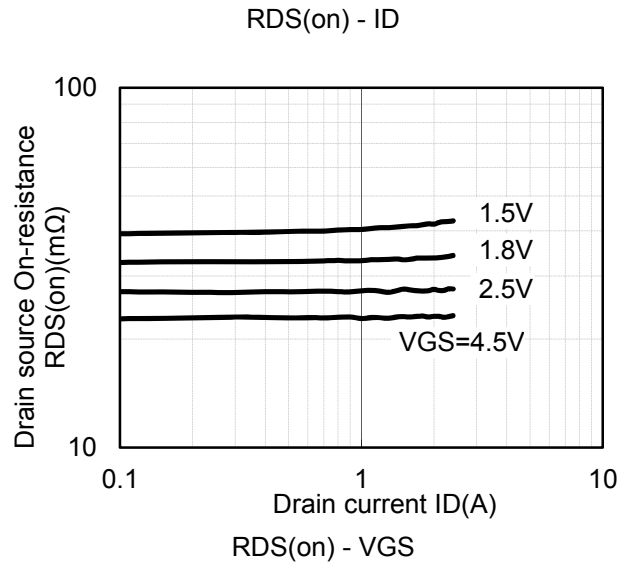
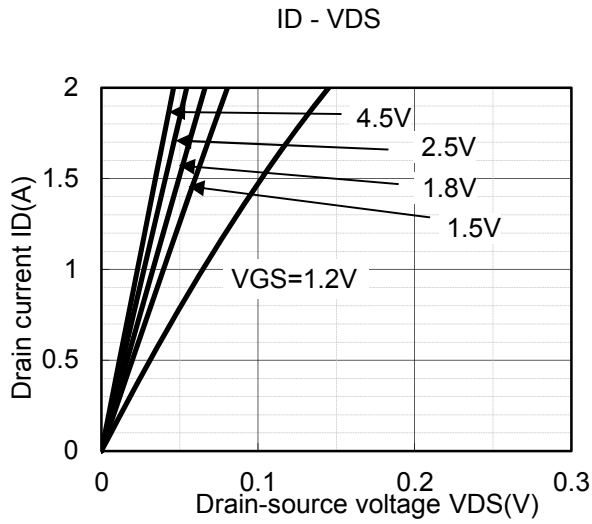
*2 Measurement circuit for Turn-on delay time / Rise time / Turn-off delay time / Fall time

■ Electrical State Discharge Characteristics

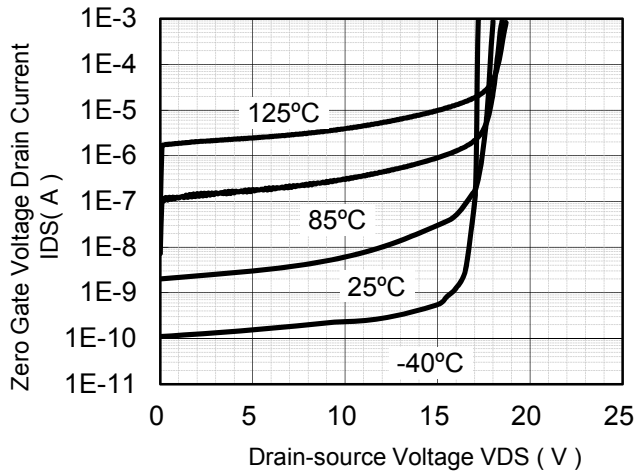
| Standard | Test Type | Symbol | Conditions | Class | Value | Unit |
|--------------|------------------|--------|------------------------|-------|-------------|------|
| AEC-Q101-001 | Human body model | HBM | C = 100 pF, R = 1.5 kΩ | H1C | >1k to 2k | V |
| | Machine model | MM | C = 200 pF, R = 0 Ω | M2 | >100 to 200 | V |

Note2: Measurement circuit

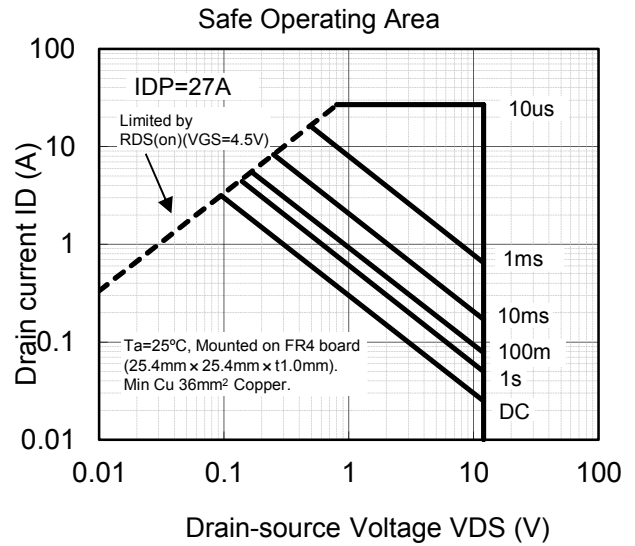
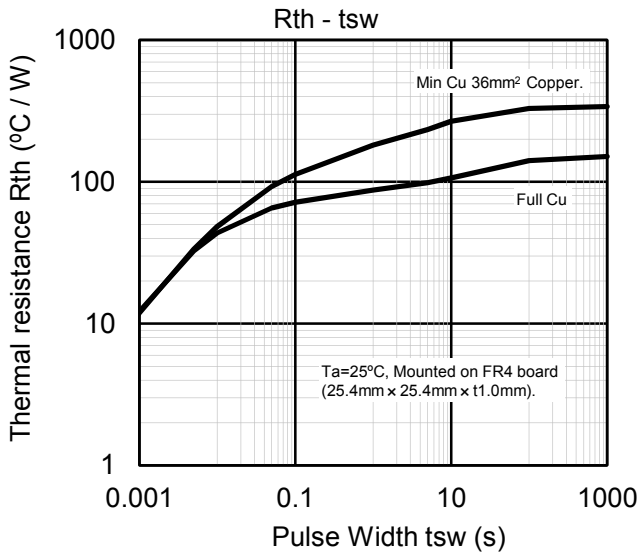
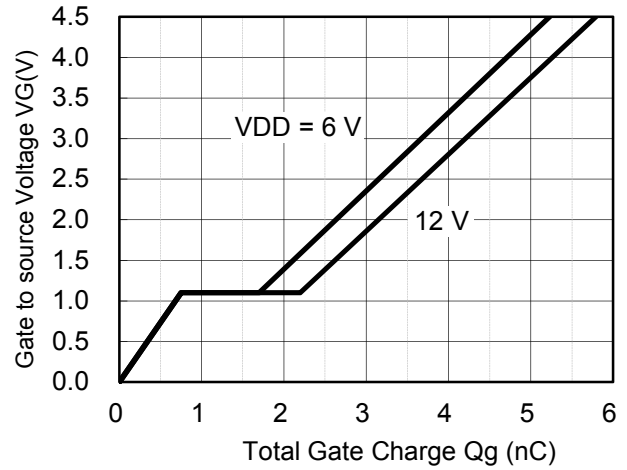




IDS - VDS

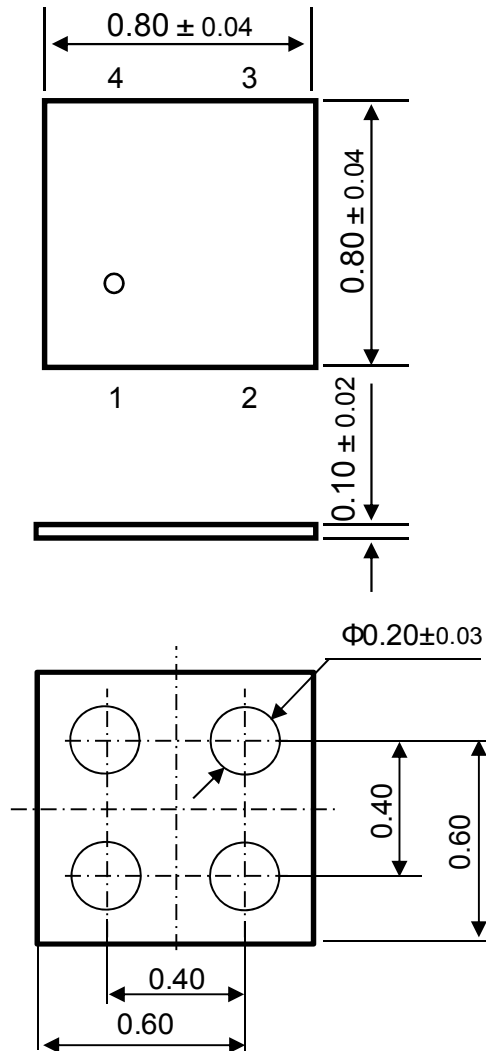


Dynamic Input/Output Characteristics

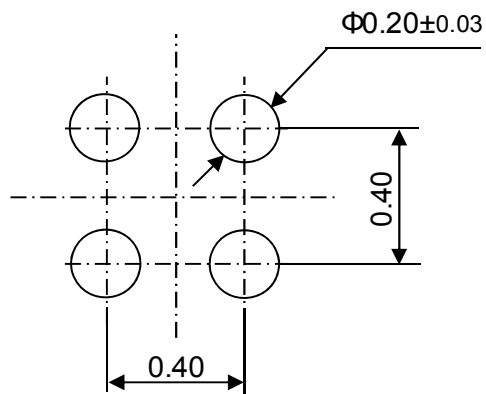


■ XLGA004-W-0808-RA01

Unit: mm



■ Land Pattern (Reference)



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