

# MCH6660

## Electrical Characteristics at Ta=25°C

| Parameter                                  | Symbol   | Conditions                    | Value |       |      | Unit |
|--------------------------------------------|----------|-------------------------------|-------|-------|------|------|
|                                            |          |                               | min   | typ   | max  |      |
| [N-channel]                                |          |                               |       |       |      |      |
| Drain-to-Source Breakdown Voltage          | V(BR)DSS | ID=1mA, VGS=0V                | 20    |       |      | V    |
| Zero-Gate Voltage Drain Current            | IDSS     | VDS=20V, VGS=0V               |       |       | 1    | μA   |
| Gate-to-Source Leakage Current             | IGSS     | VGS=±8V, VDS=0V               |       |       | ±10  | μA   |
| Gate Threshold Voltage                     | VGS(th)  | VDS=10V, ID=1mA               | 0.4   |       | 1.3  | V    |
| Forward Transconductance                   | gFS      | VDS=10V, ID=1A                |       | 1.9   |      | S    |
| Static Drain-to-Source On-State Resistance | RDS(on)1 | ID=1A, VGS=4.5V               |       | 105   | 136  | mΩ   |
|                                            | RDS(on)2 | ID=0.5A, VGS=2.5V             |       | 147   | 205  | mΩ   |
|                                            | RDS(on)3 | ID=0.3A, VGS=1.8V             |       | 212   | 318  | mΩ   |
| Input Capacitance                          | Ciss     | VDS=10V, f=1MHz               |       | 128   |      | pF   |
| Output Capacitance                         | Coss     |                               |       | 28    |      | pF   |
| Reverse Transfer Capacitance               | Crss     |                               |       | 21    |      | pF   |
| Turn-ON Delay Time                         | tD(on)   | See specified Test Circuit.   |       | 5.1   |      | ns   |
| Rise Time                                  | tr       |                               |       | 11    |      | ns   |
| Turn-OFF Delay Time                        | tD(off)  |                               |       | 14.5  |      | ns   |
| Fall Time                                  | tf       |                               |       | 12    |      | ns   |
| Total Gate Charge                          | Qg       | VDS=10V, VGS=4.5V, ID=2A      |       | 1.8   |      | nC   |
| Gate-to-Source Charge                      | Qgs      |                               |       | 0.3   |      | nC   |
| Gate-to-Drain “Miller” Charge              | Qgd      |                               |       | 0.55  |      | nC   |
| Forward Diode Voltage                      | VSD      | IS=2A, VGS=0V                 |       | 0.85  | 1.2  | V    |
| [P-channel]                                |          |                               |       |       |      |      |
| Drain-to-Source Breakdown Voltage          | V(BR)DSS | ID=-1mA, VGS=0V               | -20   |       |      | V    |
| Zero-Gate Voltage Drain Current            | IDSS     | VDS=-20V, VGS=0V              |       |       | -1   | μA   |
| Gate-to-Source Leakage Current             | IGSS     | VGS=±8V, VDS=0V               |       |       | ±10  | μA   |
| Gate Threshold Voltage                     | VGS(th)  | VDS=-10V, ID=-1mA             | -0.4  |       | -1.4 | V    |
| Forward Transconductance                   | gFS      | VDS=-10V, ID=-750mA           |       | 1.9   |      | S    |
| Static Drain-to-Source On-State Resistance | RDS(on)1 | ID=-750mA, VGS=-4.5V          |       | 205   | 266  | mΩ   |
|                                            | RDS(on)2 | ID=-300mA, VGS=-2.5V          |       | 295   | 413  | mΩ   |
|                                            | RDS(on)3 | ID=-100mA, VGS=-1.8V          |       | 430   | 645  | mΩ   |
| Input Capacitance                          | Ciss     | VDS=-10V, f=1MHz              |       | 120   |      | pF   |
| Output Capacitance                         | Coss     |                               |       | 26    |      | pF   |
| Reverse Transfer Capacitance               | Crss     |                               |       | 20    |      | pF   |
| Turn-ON Delay Time                         | tD(on)   | See specified Test Circuit.   |       | 5.3   |      | ns   |
| Rise Time                                  | tr       |                               |       | 9.7   |      | ns   |
| Turn-OFF Delay Time                        | tD(off)  |                               |       | 16    |      | ns   |
| Fall Time                                  | tf       |                               |       | 14    |      | ns   |
| Total Gate Charge                          | Qg       | VDS=-10V, VGS=-4.5V, ID=-1.5A |       | 1.7   |      | nC   |
| Gate-to-Source Charge                      | Qgs      |                               |       | 0.28  |      | nC   |
| Gate-to-Drain “Miller” Charge              | Qgd      |                               |       | 0.47  |      | nC   |
| Forward Diode Voltage                      | VSD      | IS=-1.5A, VGS=0V              |       | -0.89 | -1.2 | V    |

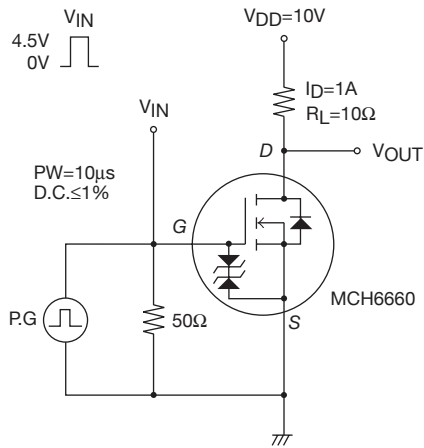
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

## Thermal Resistance Ratings

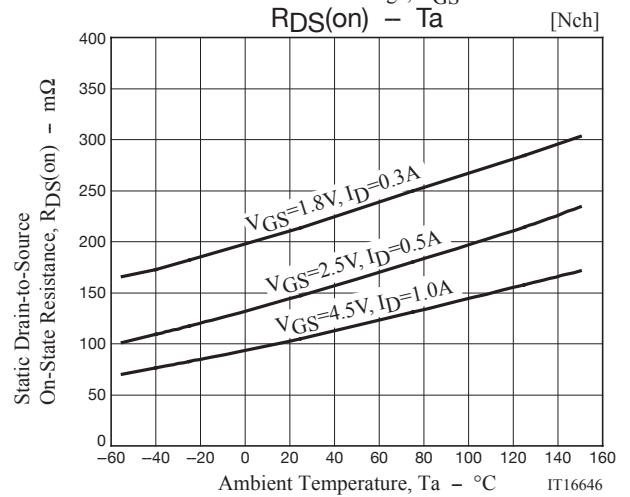
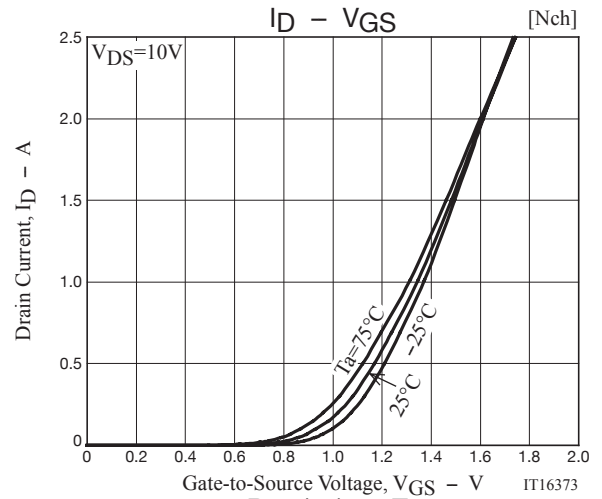
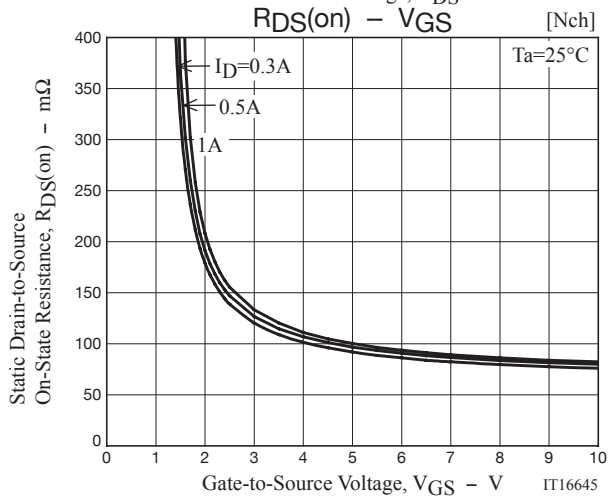
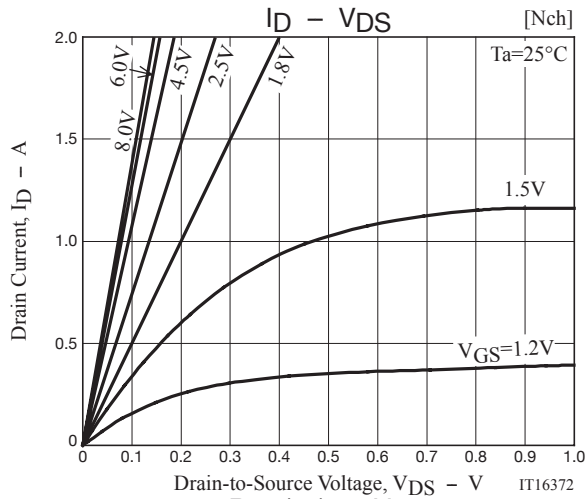
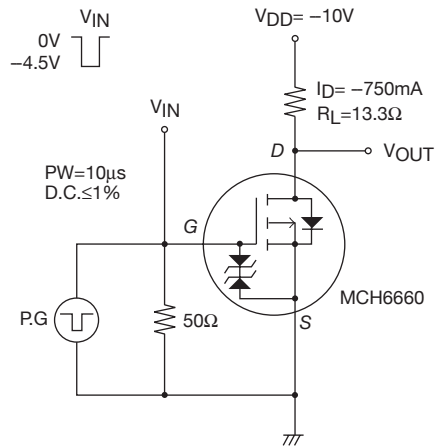
| Parameter                                                                                  | Symbol | Value | Unit |
|--------------------------------------------------------------------------------------------|--------|-------|------|
| Junction to Ambient<br>When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm) 1unit | RθJA   | 156.3 | °C/W |

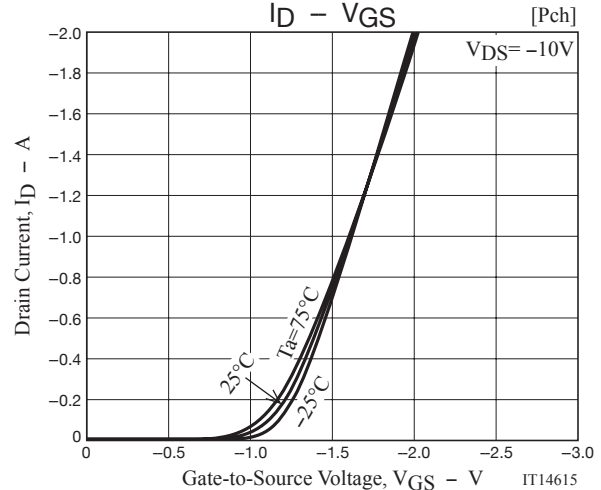
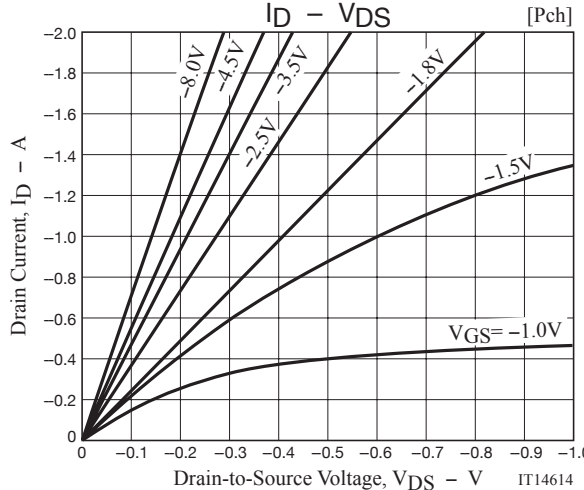
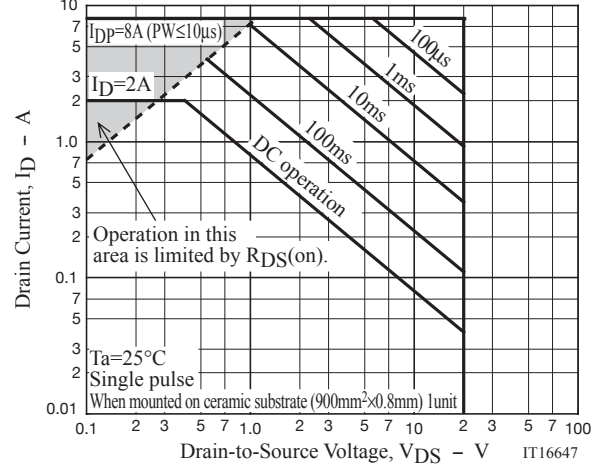
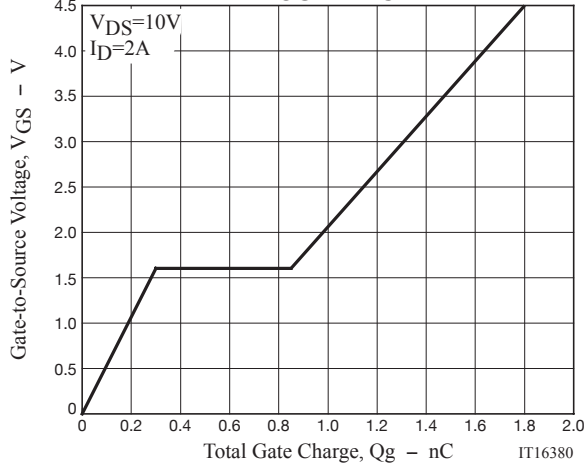
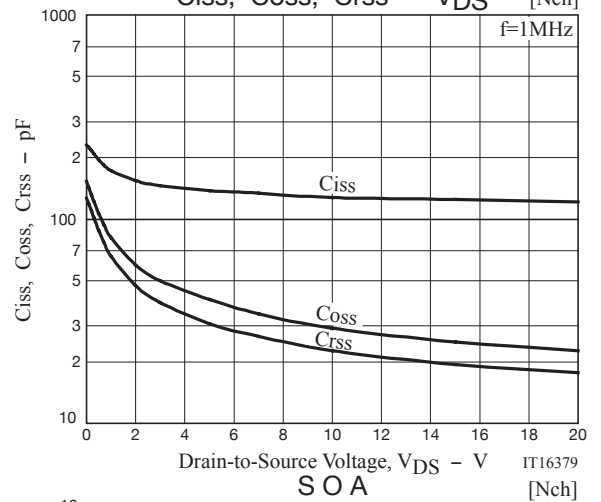
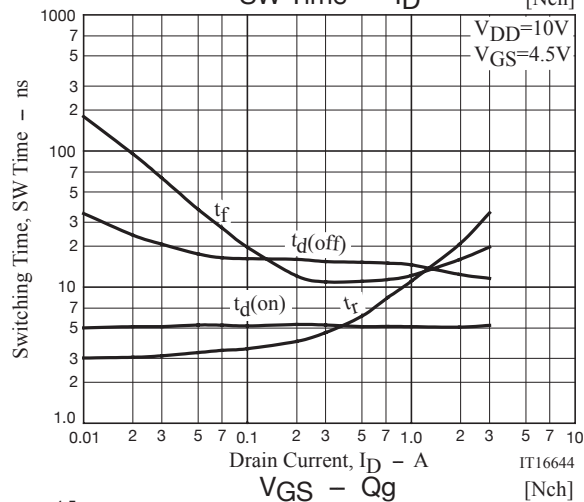
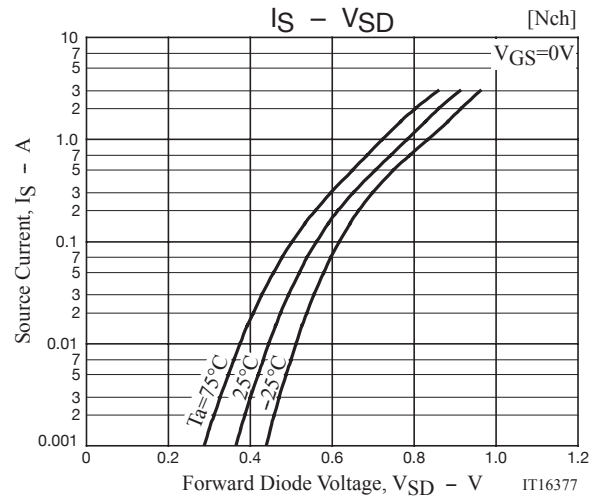
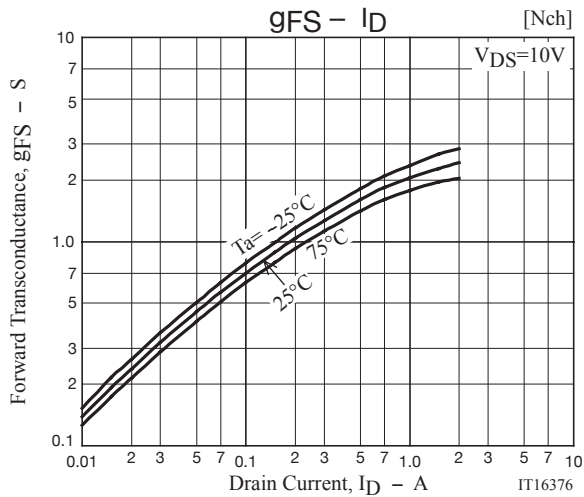
## Switching Time Test Circuit

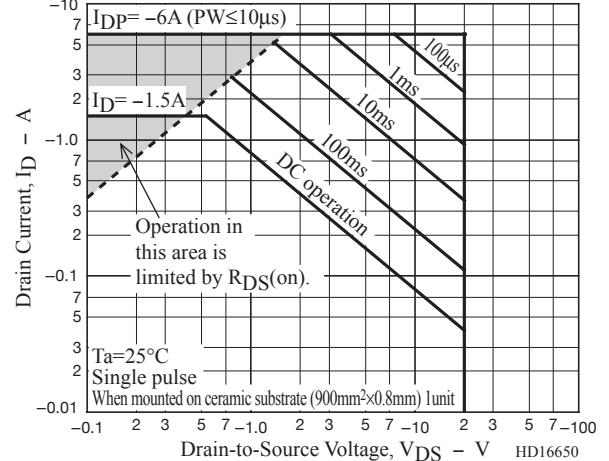
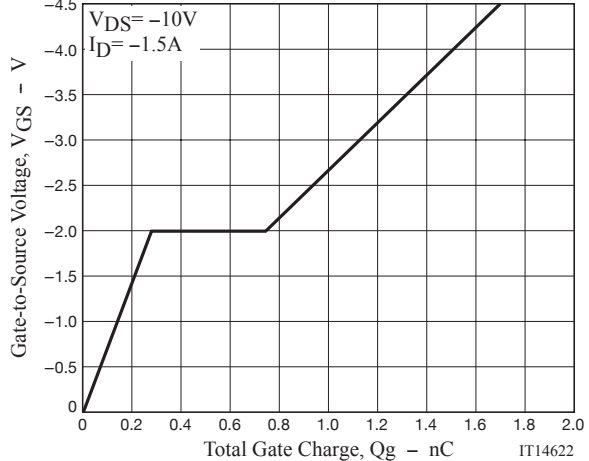
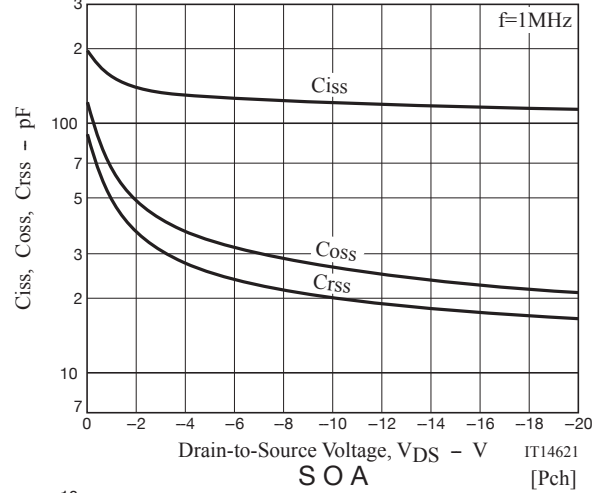
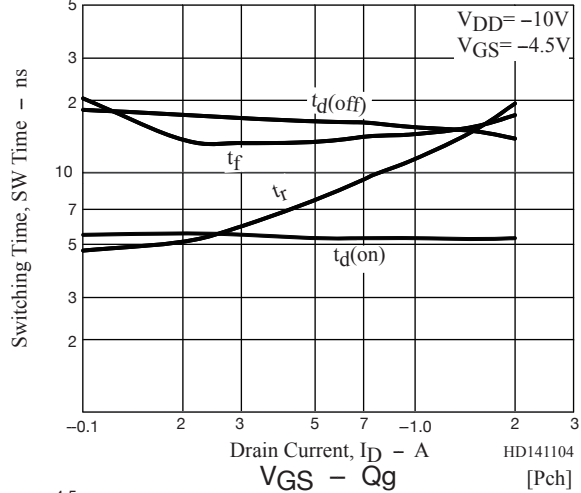
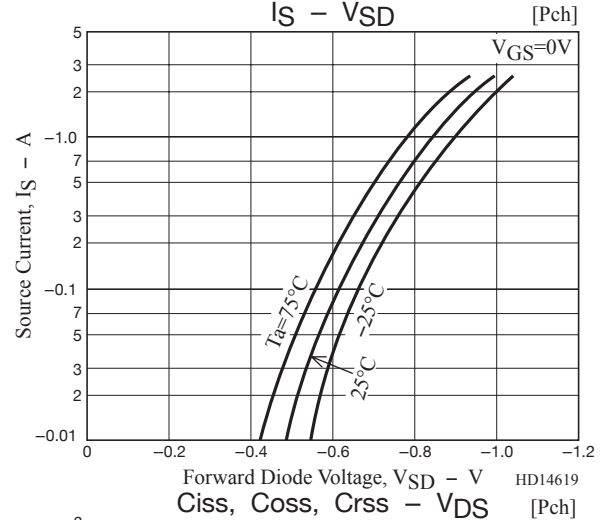
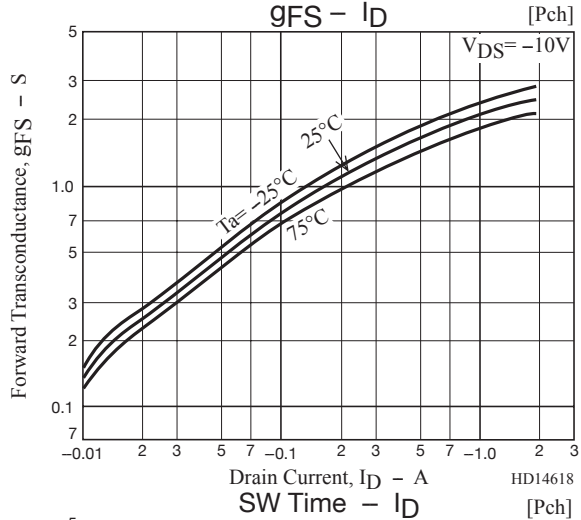
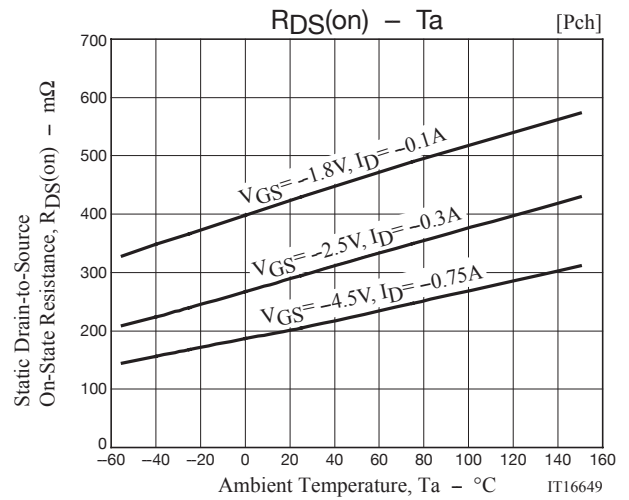
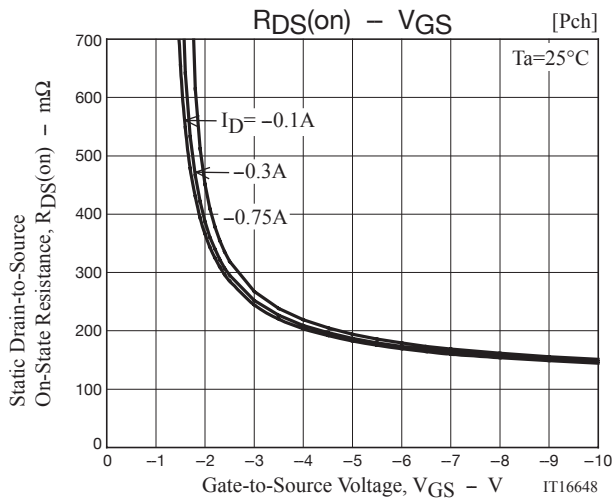
[N-channel]



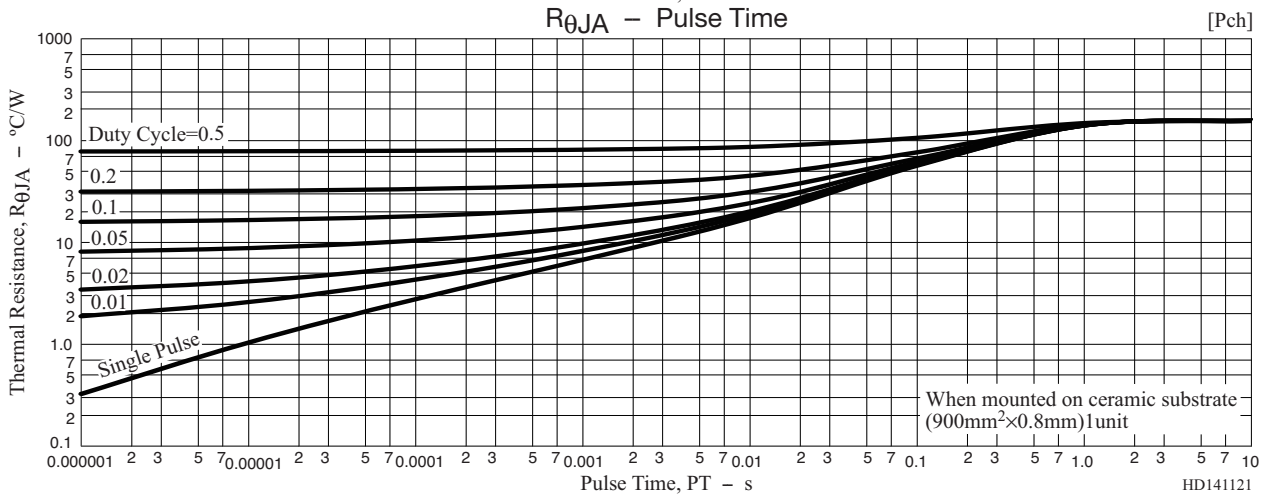
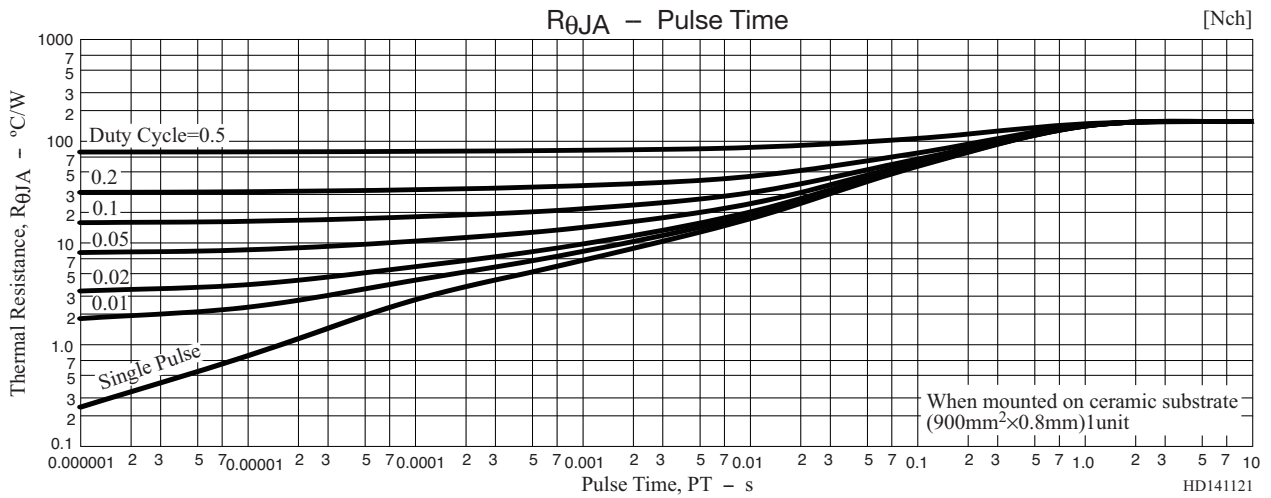
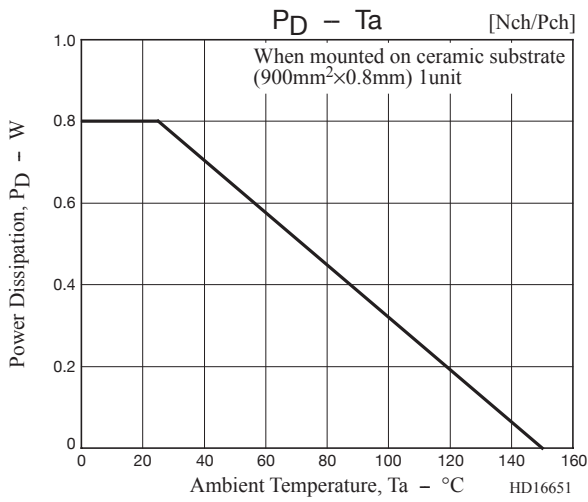
[P-channel]







# MCH6660



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## Package Dimensions

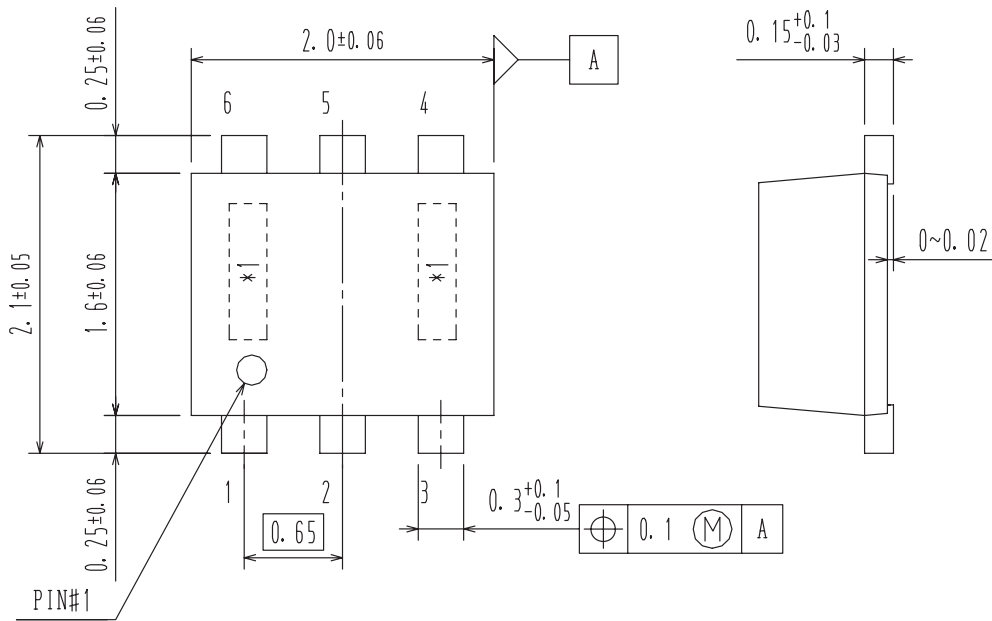
unit : mm

MCH6660-TL-H, MCH6660-TL-W

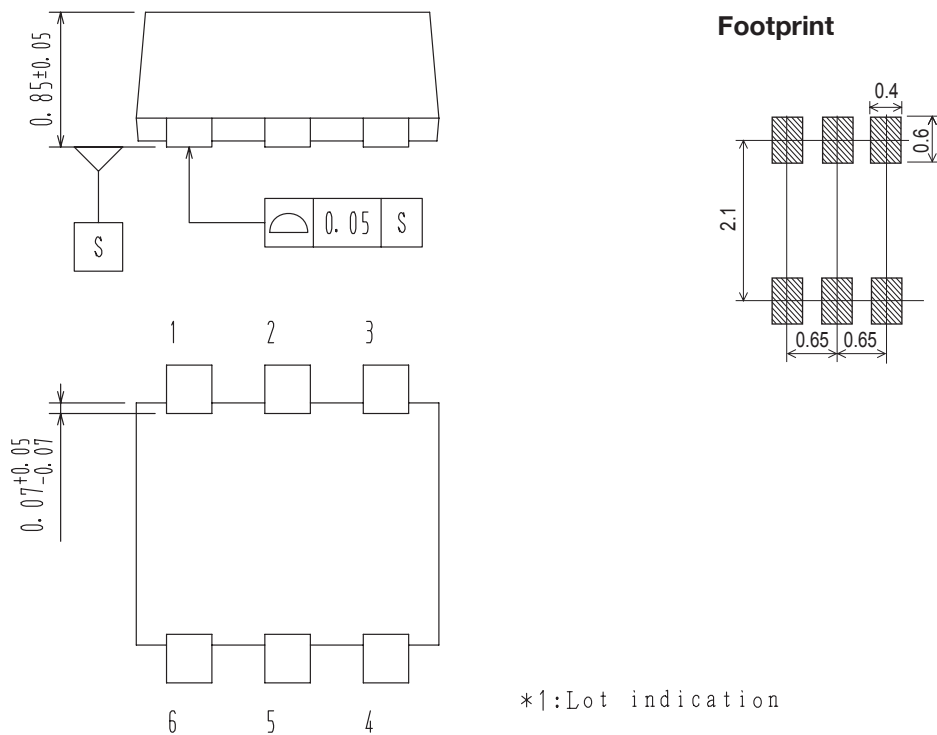
## SC-88FL / MCPH6

CASE 419AS

ISSUE O



## Recommended Soldering Footprint



\*1: Lot indication

## ORDERING INFORMATION

| Device       | Package | Shipping       | memo                     |
|--------------|---------|----------------|--------------------------|
| MCH6660-TL-H | MCPH6   | 3,000pcs./reel | Pb-Free and Halogen Free |
| MCH6660-TL-W |         |                |                          |

Note on usage : Since the MCH6660 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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