



ON Semiconductor®

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# CPH3350

## P-Channel Power MOSFET -20V, -3A, 83mΩ, Single CPH3

### Features

- Ultrahigh-speed switching
- 1.8V drive
- Halogen free compliance
- Protection diode in

### Specifications

Absolute Maximum Ratings at Ta=25°C

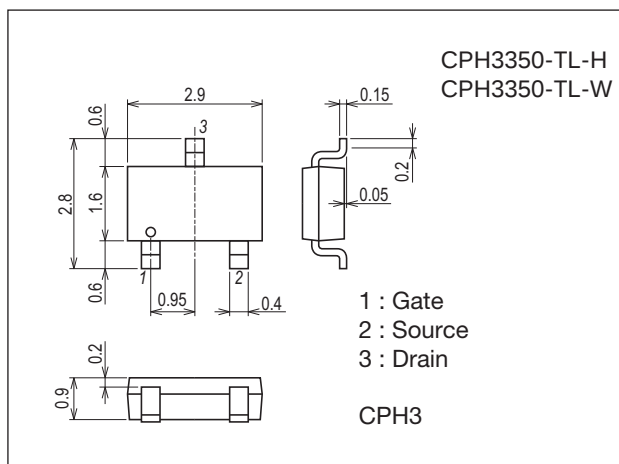
| Parameter                   | Symbol           | Conditions                                       | Ratings     | Unit |
|-----------------------------|------------------|--------------------------------------------------|-------------|------|
| Drain-to-Source Voltage     | V <sub>DSS</sub> |                                                  | -20         | V    |
| Gate-to-Source Voltage      | V <sub>GSS</sub> |                                                  | ±10         | V    |
| Drain Current (DC)          | I <sub>D</sub>   |                                                  | -3          | A    |
| Drain Current (Pulse)       | I <sub>DP</sub>  | PW≤10μs, duty cycle≤1%                           | -12         | A    |
| Allowable Power Dissipation | P <sub>D</sub>   | When mounted on ceramic substrate (900mm²×0.8mm) | 1.0         | W    |
| Channel Temperature         | T <sub>ch</sub>  |                                                  | 150         | °C   |
| Storage Temperature         | T <sub>stg</sub> |                                                  | -55 to +150 | °C   |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### Package Dimensions

unit : mm (typ)

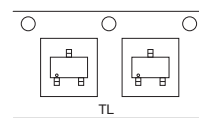
7015A-004



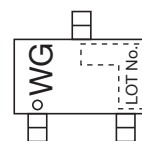
### Product & Package Information

- Package : CPH3
- JEITA, JEDEC : SC-59, TO-236, SOT-23
- Minimum Packing Quantity : 3,000 pcs./reel

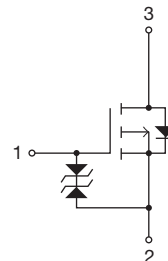
### Packing Type: TL



### Marking



### Electrical Connection

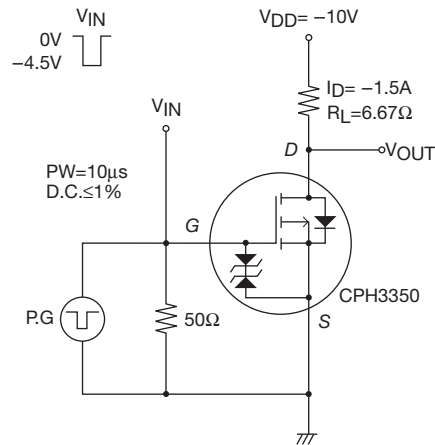


# CPH3350

## Electrical Characteristics at Ta=25°C

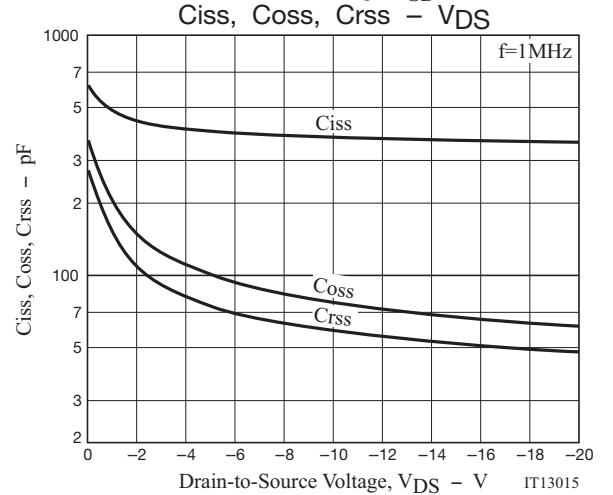
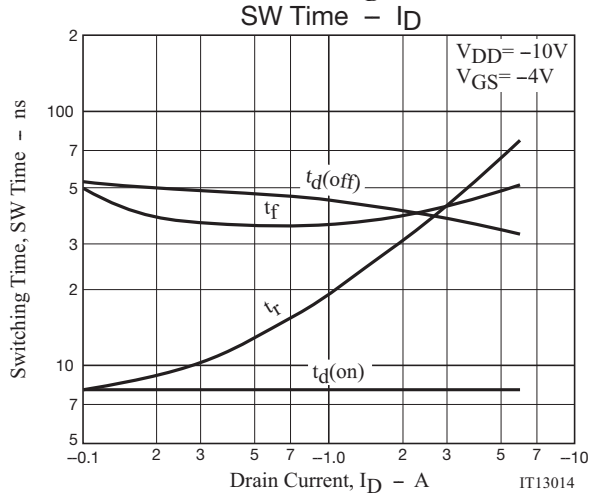
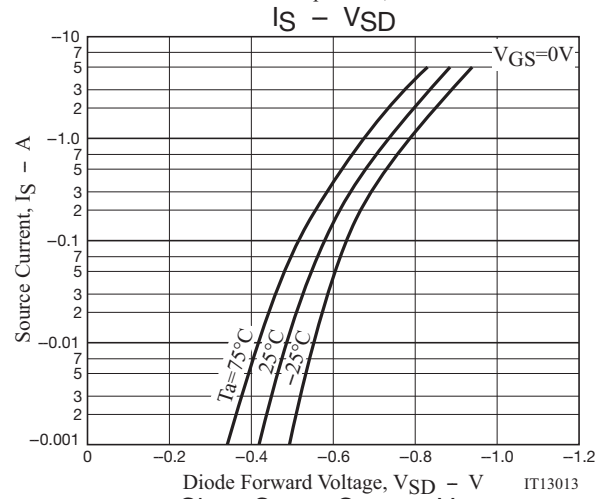
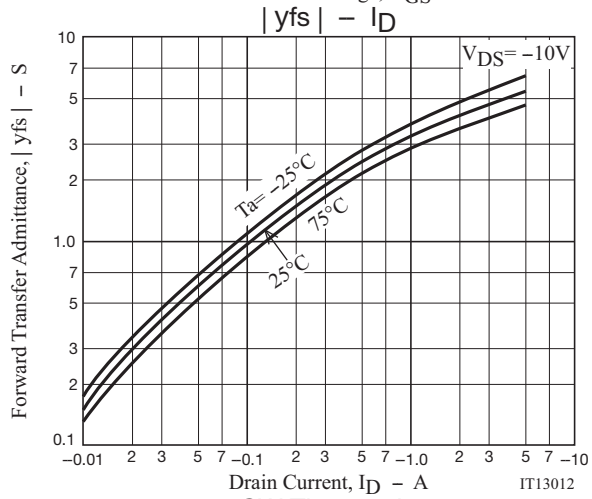
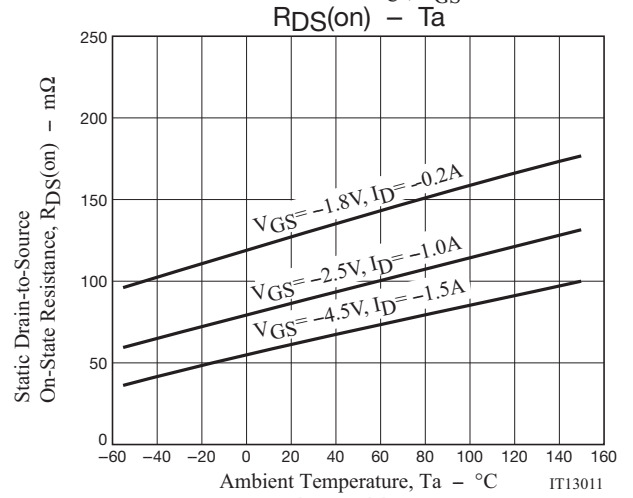
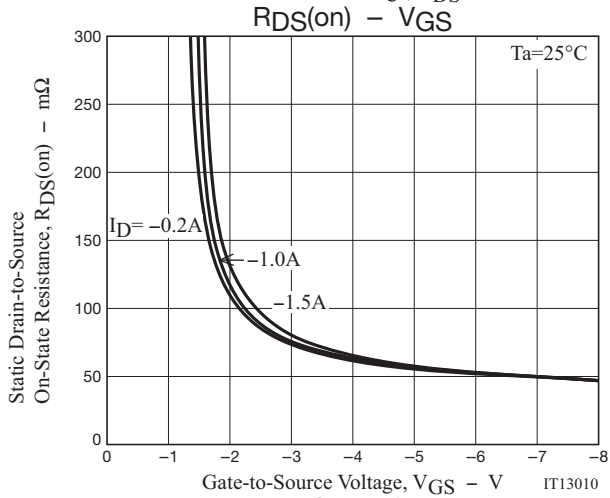
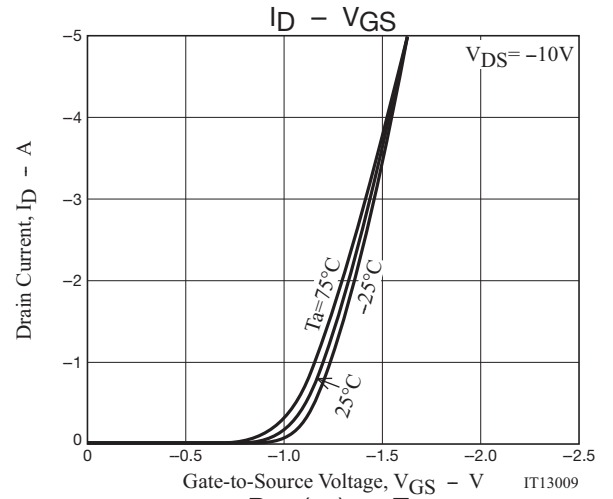
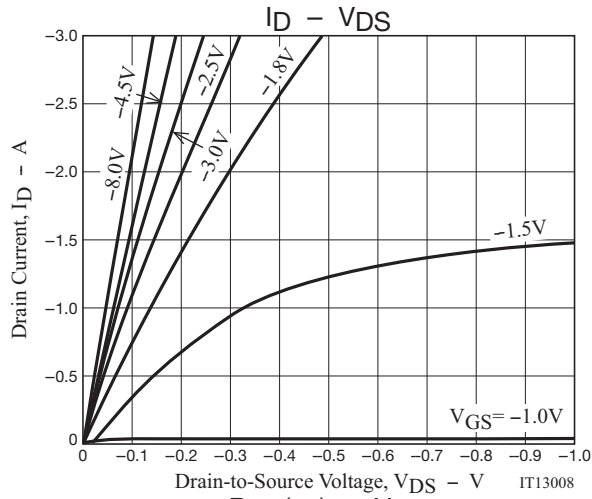
| Parameter                                  | Symbol        | Conditions                                 | Ratings |       |          | Unit       |
|--------------------------------------------|---------------|--------------------------------------------|---------|-------|----------|------------|
|                                            |               |                                            | min     | typ   | max      |            |
| Drain-to-Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D = -1mA, V_{GS} = 0V$                  | -20     |       |          | V          |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS} = -20V, V_{GS} = 0V$               |         |       | -1       | $\mu A$    |
| Gate-to-Source Leakage Current             | $I_{GSS}$     | $V_{GS} = \pm 8V, V_{DS} = 0V$             |         |       | $\pm 10$ | $\mu A$    |
| Cutoff Voltage                             | $V_{GS(off)}$ | $V_{DS} = -10V, I_D = -1mA$                | -0.4    |       | -1.3     | V          |
| Forward Transfer Admittance                | $ y_{fs} $    | $V_{DS} = -10V, I_D = -1.5A$               |         | 4.3   |          | S          |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D = -1.5A, V_{GS} = -4.5V$              |         | 64    | 83       | m $\Omega$ |
|                                            | $R_{DS(on)2}$ | $I_D = -1A, V_{GS} = -2.5V$                |         | 89    | 124      | m $\Omega$ |
|                                            | $R_{DS(on)3}$ | $I_D = -0.2A, V_{GS} = -1.8V$              |         | 131   | 196      | m $\Omega$ |
| Input Capacitance                          | $C_{iss}$     | $V_{DS} = -10V, f = 1MHz$                  |         | 375   |          | pF         |
| Output Capacitance                         | $C_{oss}$     |                                            |         | 77    |          | pF         |
| Reverse Transfer Capacitance               | $C_{rss}$     |                                            |         | 58    |          | pF         |
| Turn-ON Delay Time                         | $t_{d(on)}$   | See specified Test Circuit.                |         | 8.1   |          | ns         |
| Rise Time                                  | $t_r$         |                                            |         | 26    |          | ns         |
| Turn-OFF Delay Time                        | $t_{d(off)}$  |                                            |         | 42    |          | ns         |
| Fall Time                                  | $t_f$         |                                            |         | 37    |          | ns         |
| Total Gate Charge                          | $Q_g$         | $V_{DS} = -10V, V_{GS} = -4.5V, I_D = -3A$ |         | 4.6   |          | nC         |
| Gate-to-Source Charge                      | $Q_{gs}$      |                                            |         | 0.8   |          | nC         |
| Gate-to-Drain "Miller" Charge              | $Q_{gd}$      |                                            |         | 1.3   |          | nC         |
| Diode Forward Voltage                      | $V_{SD}$      | $I_S = -3A, V_{GS} = 0V$                   |         | -0.83 | -1.2     | V          |

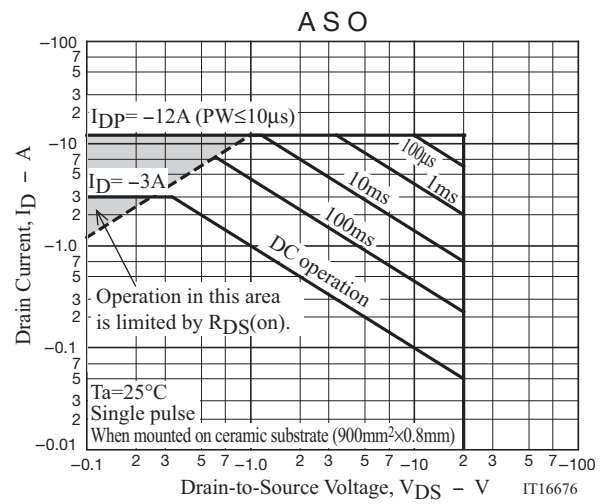
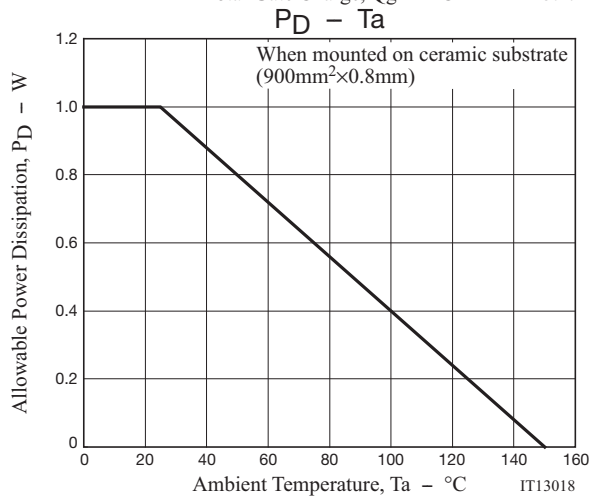
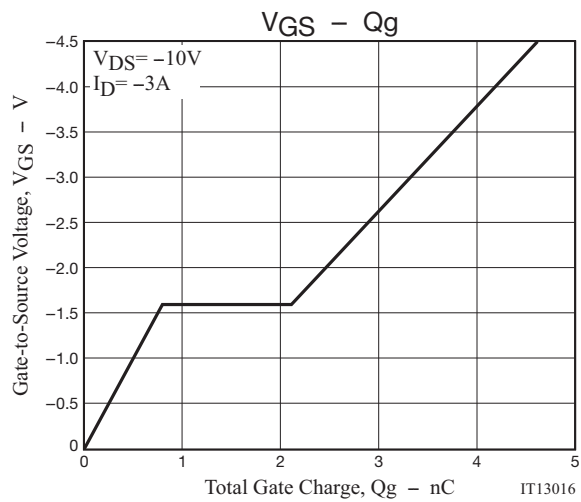
## Switching Time Test Circuit



## Ordering Information

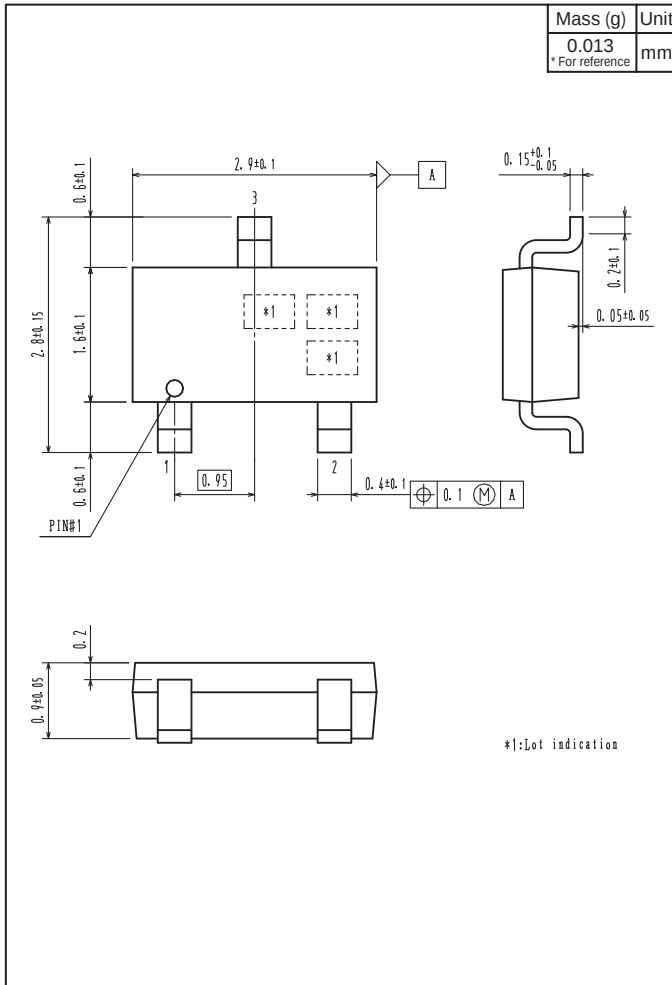
| Device       | Package | Shipping       | memo                     |
|--------------|---------|----------------|--------------------------|
| CPH3350-TL-H | CPH3    | 3,000pcs./reel | Pb Free and Halogen Free |
| CPH3350-TL-W |         |                |                          |



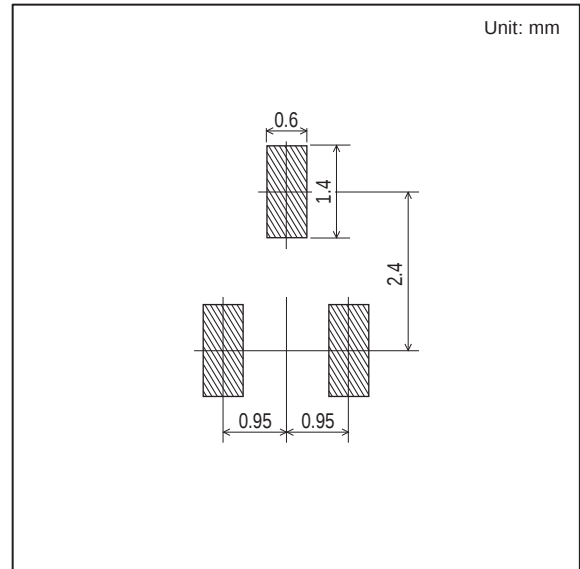


## Outline Drawing

CPH3350-TL-H, CPH3350-TL-W



### Land Pattern Example



Note on usage : Since the CPH3350 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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