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# CPH3457

## N-Channel Power MOSFET 30V, 3A, 95mΩ, Single CPH3

### Features

- ON-resistance  $R_{DS(on)1}=73m\Omega$ (typ.)
- 1.8V drive
- Halogen free compliance
- Protection diode in

### Specifications

#### Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

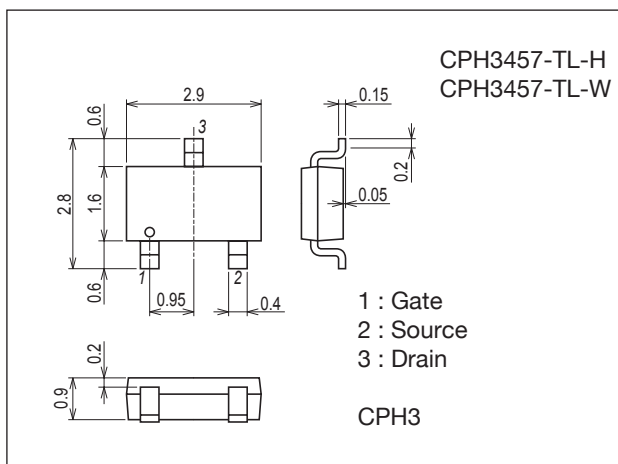
| Parameter               | Symbol    | Conditions                                                   | Value       | Unit             |
|-------------------------|-----------|--------------------------------------------------------------|-------------|------------------|
| Drain-to-Source Voltage | $V_{DS}$  |                                                              | 30          | V                |
| Gate-to-Source Voltage  | $V_{GS}$  |                                                              | $\pm 12$    | V                |
| Drain Current (DC)      | $I_D$     |                                                              | 3           | A                |
| Drain Current (Pulse)   | $I_{DP}$  | $PW \leq 10\mu s$ , duty cycle $\leq 1\%$                    | 12          | A                |
| Power Dissipation       | $P_D$     | When mounted on ceramic substrate ( $900mm^2 \times 0.8mm$ ) | 1.0         | W                |
| Junction Temperature    | $T_j$     |                                                              | 150         | $^\circ\text{C}$ |
| Storage Temperature     | $T_{stg}$ |                                                              | -55 to +150 | $^\circ\text{C}$ |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### Package Dimensions

unit : mm (typ)

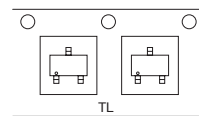
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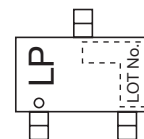
### Product & Package Information

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

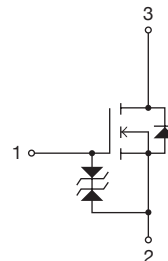
### Packing Type: TL



### Marking



### Electrical Connection



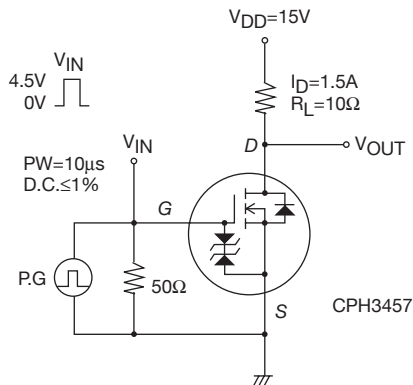
### ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

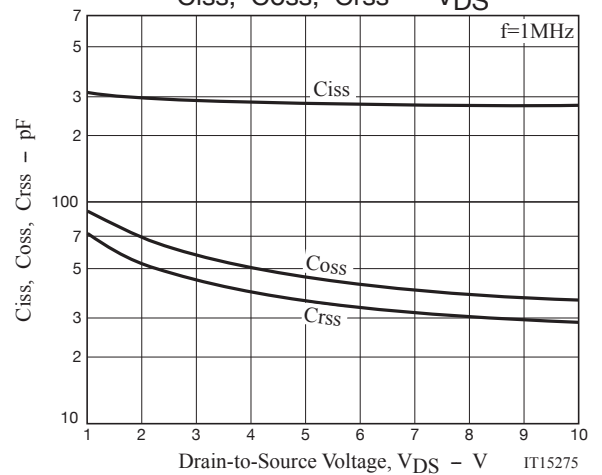
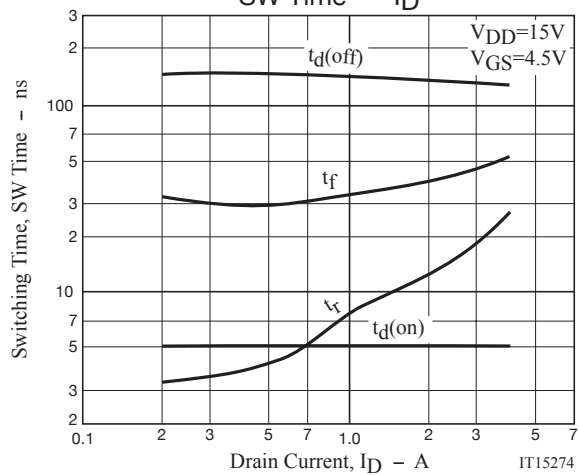
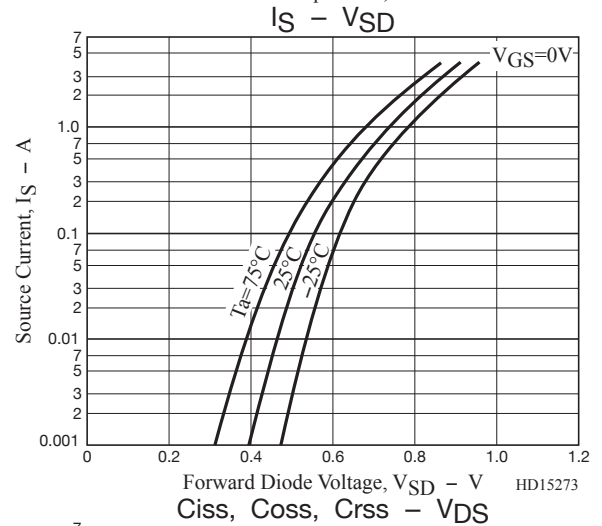
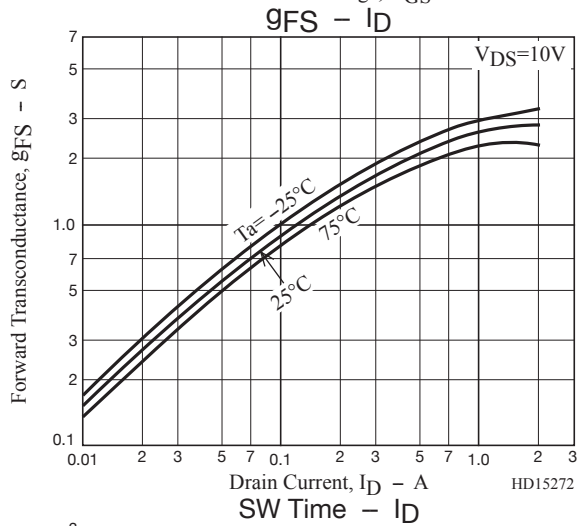
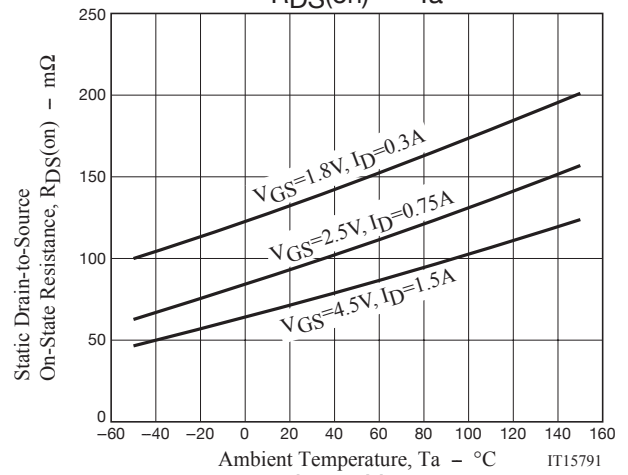
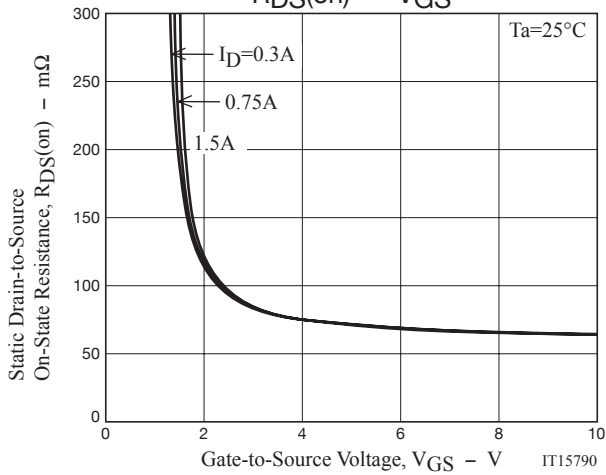
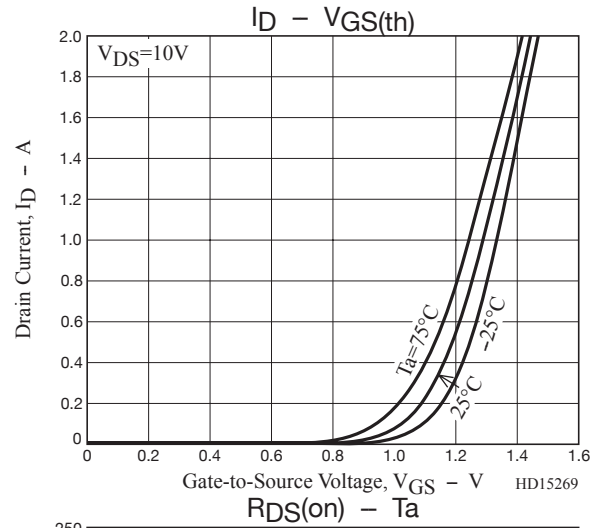
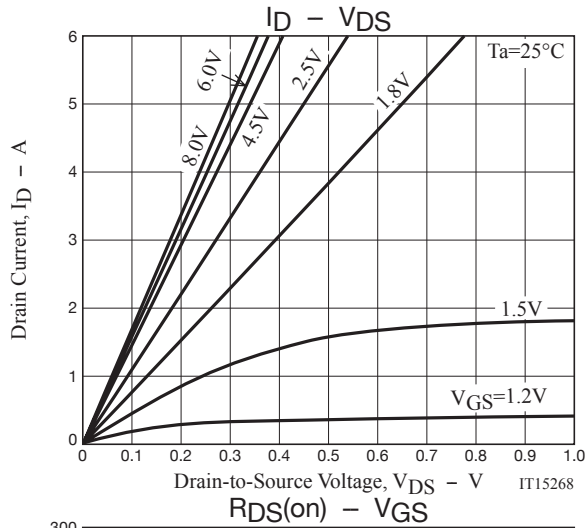
**Electrical Characteristics** at Ta=25°C

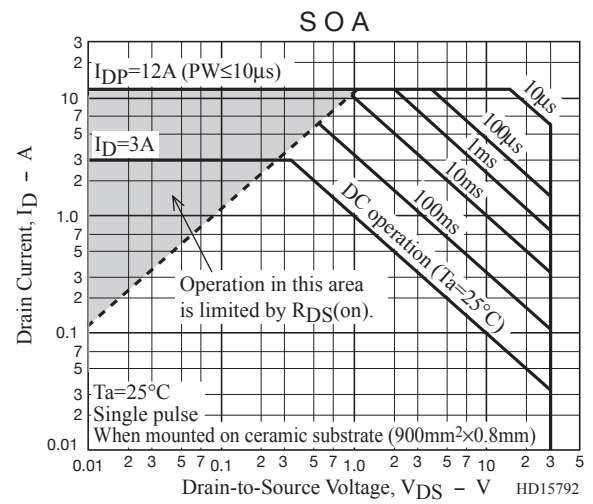
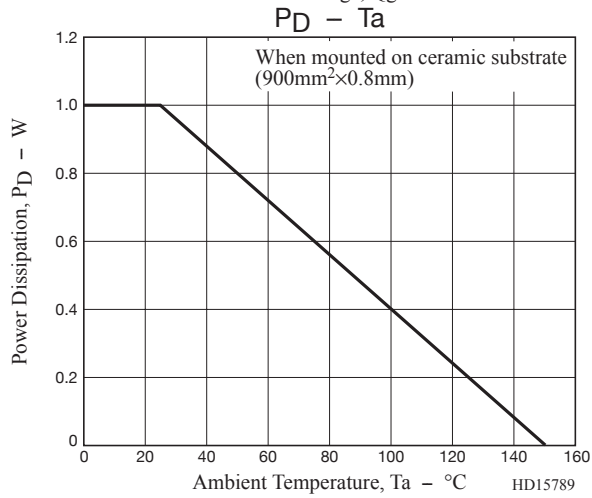
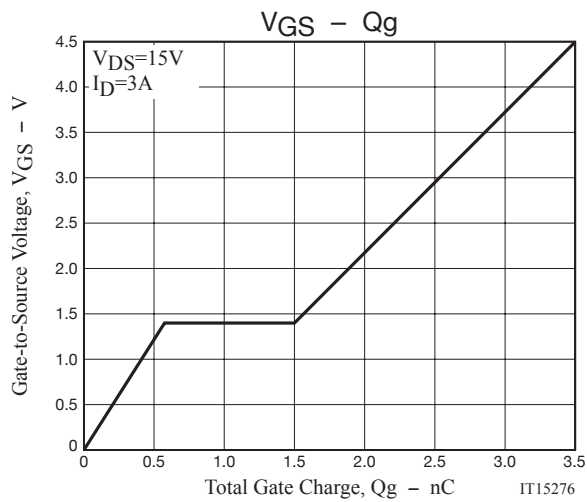
| Parameter                                  | Symbol        | Conditions                        | Value |      |          | Unit      |
|--------------------------------------------|---------------|-----------------------------------|-------|------|----------|-----------|
|                                            |               |                                   | min   | typ  | max      |           |
| Drain-to-Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D=1mA, V_{GS}=0V$              | 30    |      |          | V         |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS}=30V, V_{GS}=0V$           |       |      | 1        | $\mu A$   |
| Gate-to-Source Leakage Current             | $I_{GSS}$     | $V_{GS}=\pm 8V, V_{DS}=0V$        |       |      | $\pm 10$ | $\mu A$   |
| Gate Threshold Voltage                     | $V_{GS(th)}$  | $V_{DS}=10V, I_D=1mA$             | 0.4   |      | 1.3      | V         |
| Forward Transconductance                   | $g_{FS}$      | $V_{DS}=10V, I_D=1.5A$            |       | 2.7  |          | S         |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D=1.5A, V_{GS}=4.5V$           |       | 73   | 95       | $m\Omega$ |
|                                            | $R_{DS(on)2}$ | $I_D=0.75A, V_{GS}=2.5V$          |       | 95   | 133      | $m\Omega$ |
|                                            | $R_{DS(on)2}$ | $I_D=0.3A, V_{GS}=1.8V$           |       | 135  | 203      | $m\Omega$ |
| Input Capacitance                          | $C_{iss}$     | $V_{DS}=10V, f=1MHz$              |       | 265  |          | pF        |
| Output Capacitance                         | $C_{oss}$     | $V_{DS}=10V, f=1MHz$              |       | 35   |          | pF        |
| Reverse Transfer Capacitance               | $C_{rss}$     | $V_{DS}=10V, f=1MHz$              |       | 28   |          | pF        |
| Turn-ON Delay Time                         | $t_{d(on)}$   | See specified Test Circuit.       |       | 5.1  |          | ns        |
| Rise Time                                  | $t_r$         | See specified Test Circuit.       |       | 10   |          | ns        |
| Turn-OFF Delay Time                        | $t_{d(off)}$  | See specified Test Circuit.       |       | 137  |          | ns        |
| Fall Time                                  | $t_f$         | See specified Test Circuit.       |       | 36   |          | ns        |
| Total Gate Charge                          | $Q_g$         | $V_{DS}=15V, V_{GS}=4.5V, I_D=3A$ |       | 3.5  |          | nC        |
| Gate-to-Source Charge                      | $Q_{gs}$      | $V_{DS}=15V, V_{GS}=4.5V, I_D=3A$ |       | 0.57 |          | nC        |
| Gate-to-Drain "Miller" Charge              | $Q_{gd}$      | $V_{DS}=15V, V_{GS}=4.5V, I_D=3A$ |       | 0.93 |          | nC        |
| Forward Diode Voltage                      | $V_{SD}$      | $I_S=3A, V_{GS}=0V$               |       | 0.87 | 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.

**Switching Time Test Circuit****Ordering Information**

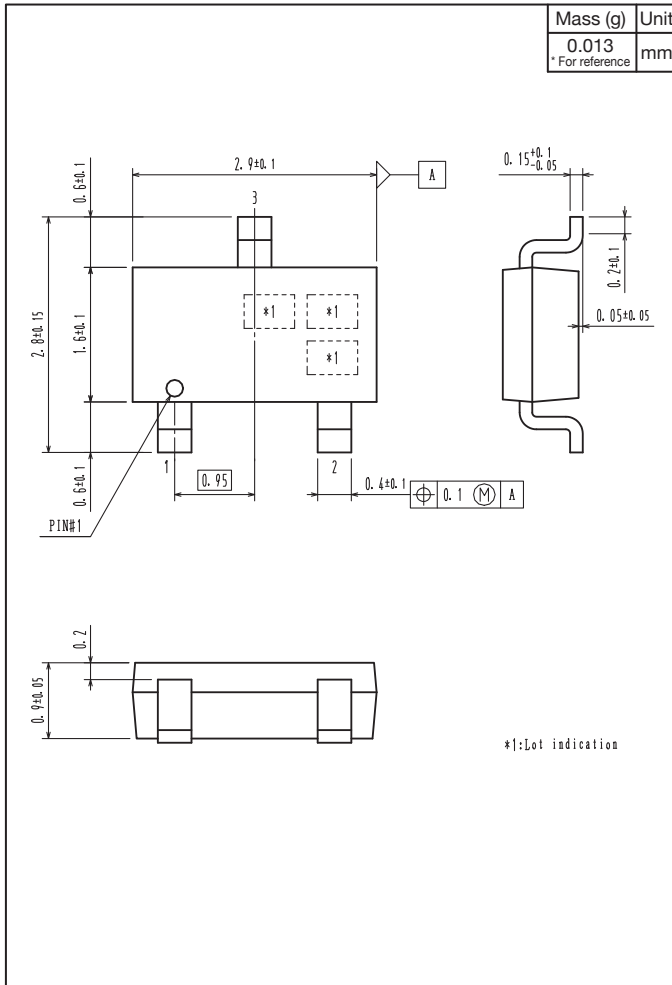
| Device       | Package | Shipping       | memo                     |
|--------------|---------|----------------|--------------------------|
| CPH3457-TL-H | CPH3    | 3,000pcs./reel | Pb-Free and Halogen Free |
| CPH3457-TL-W |         |                |                          |



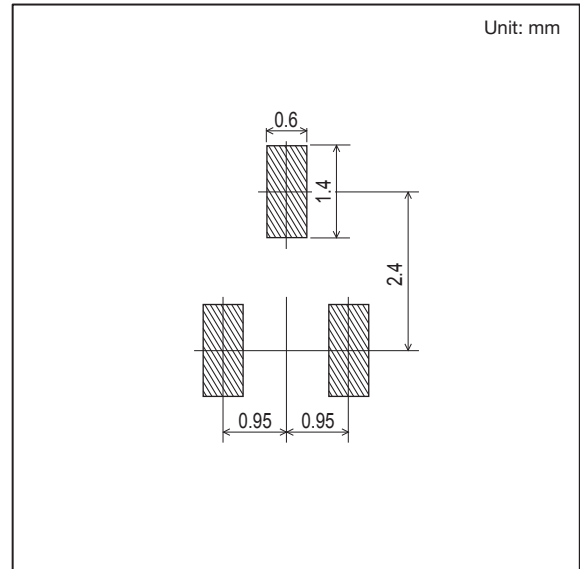


## Outline Drawing

CPH3457-TL-H, CPH3457-TL-W



## Land Pattern Example



Note on usage : Since the CPH3457 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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