

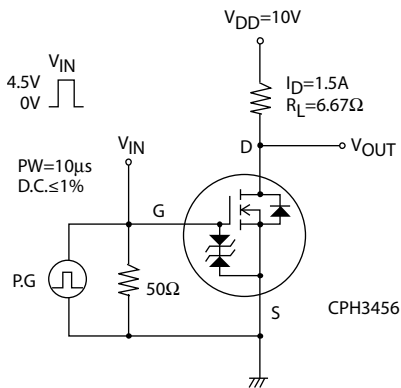
# CPH3456

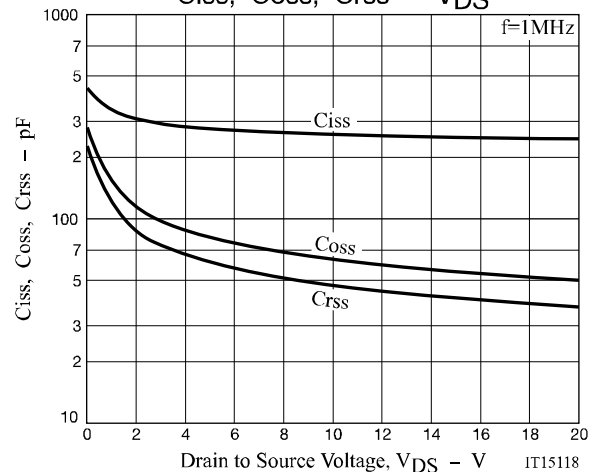
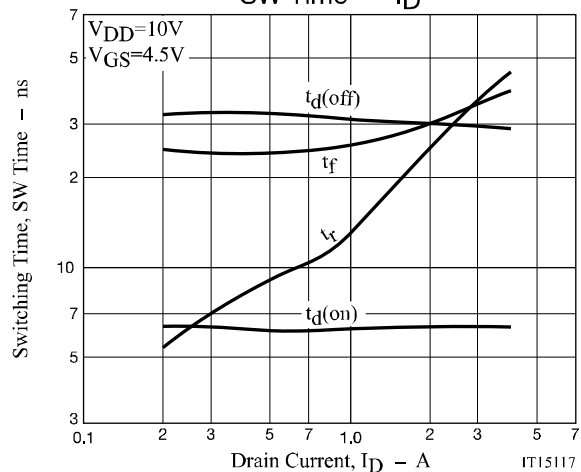
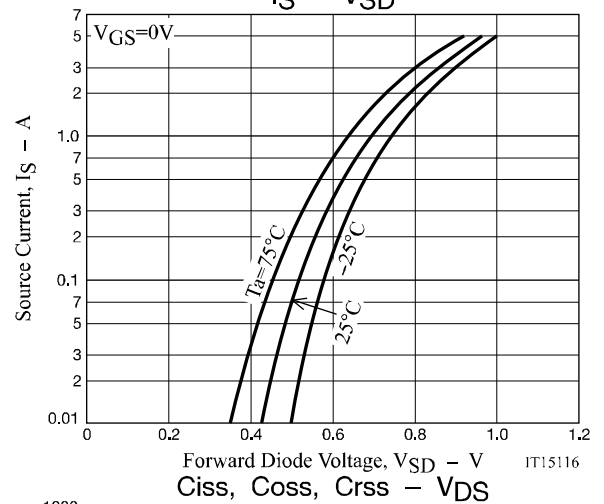
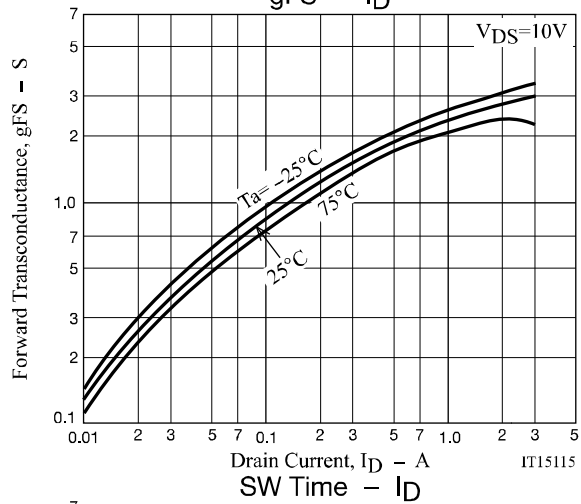
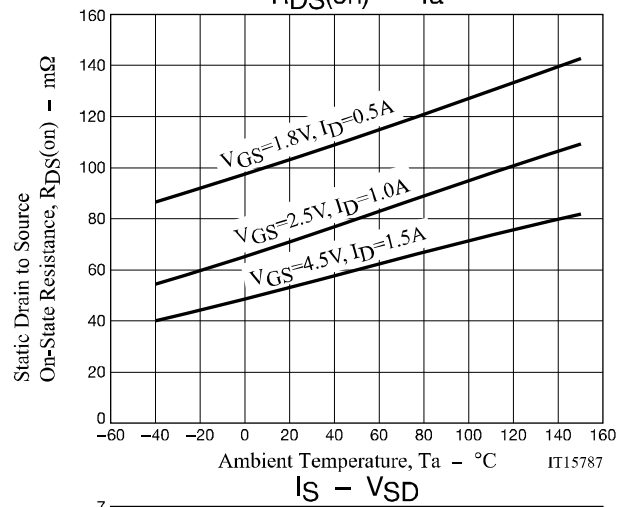
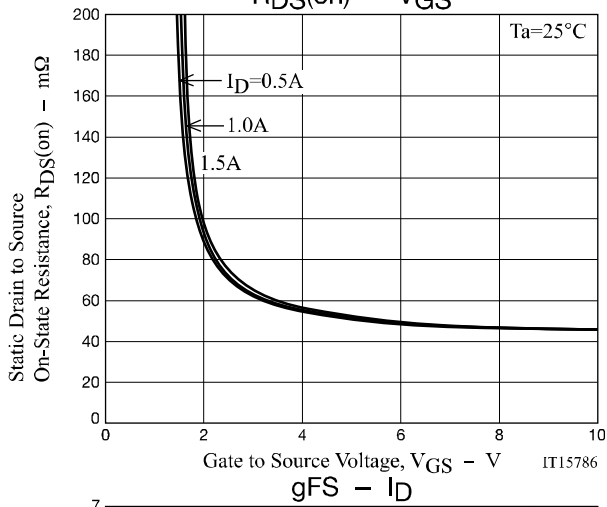
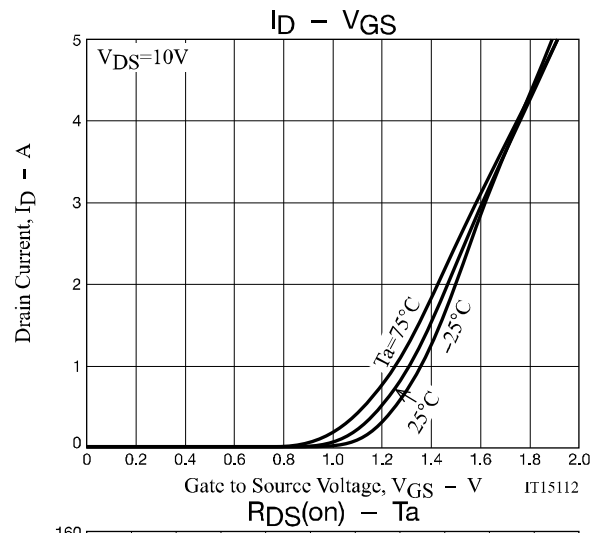
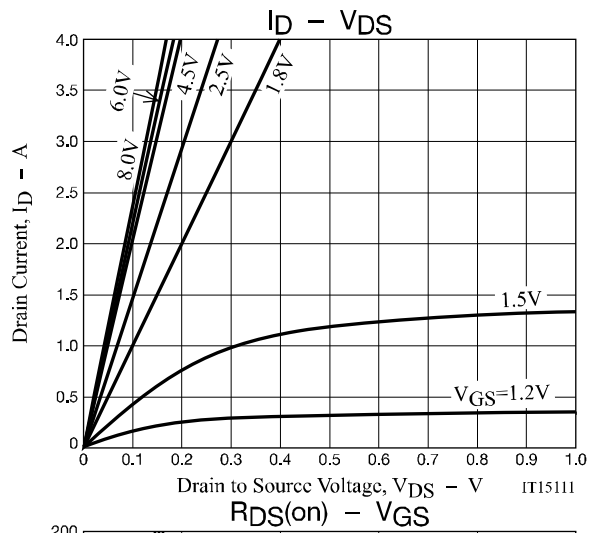
## Electrical Characteristics at $T_a = 25^\circ\text{C}$

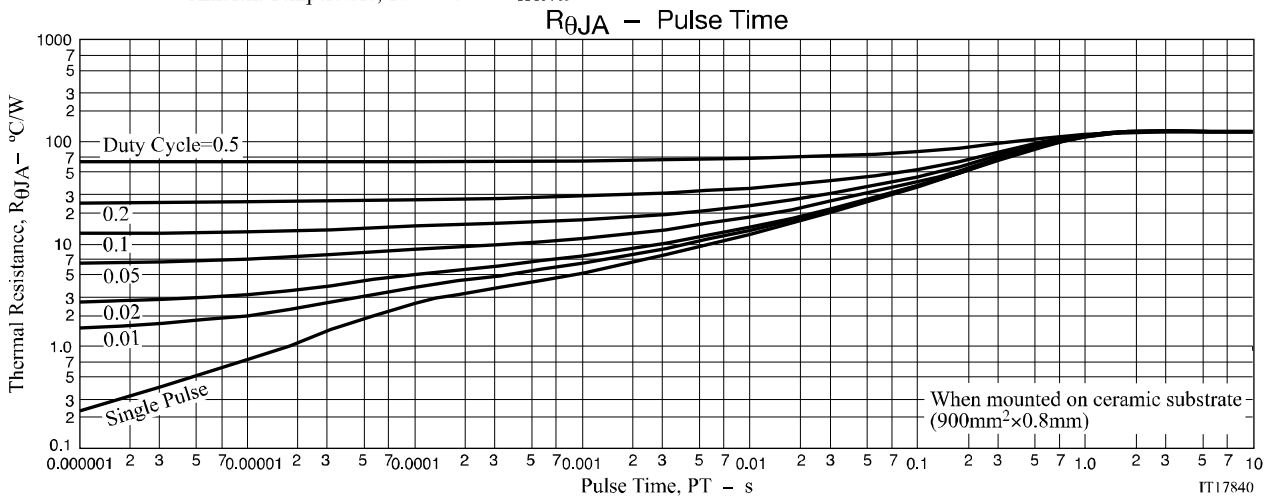
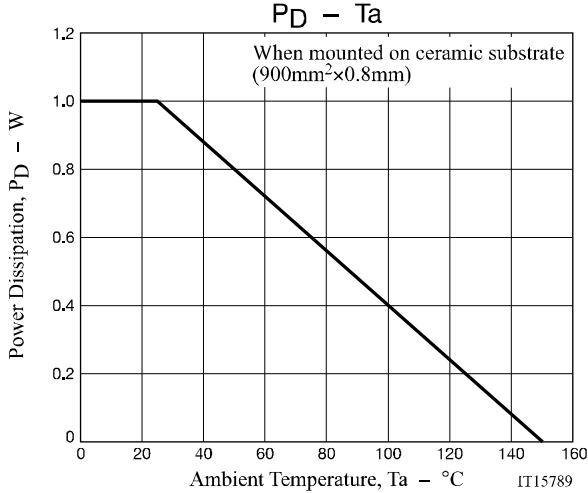
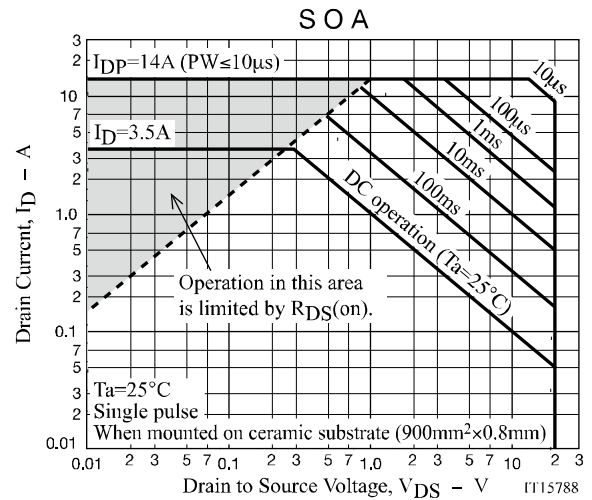
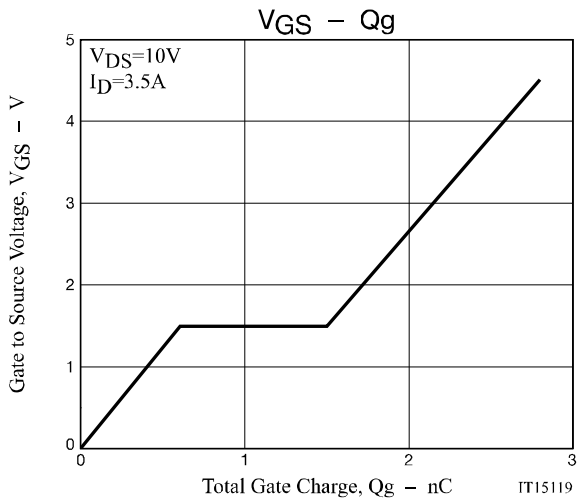
| Parameter                                  | Symbol        | Conditions                                                     | Value |      |          | Unit             |
|--------------------------------------------|---------------|----------------------------------------------------------------|-------|------|----------|------------------|
|                                            |               |                                                                | min   | typ  | max      |                  |
| Drain to Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D=1\text{mA}$ , $V_{GS}=0\text{V}$                          | 20    |      |          | V                |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS}=20\text{V}$ , $V_{GS}=0\text{V}$                       |       |      | 1        | $\mu\text{A}$    |
| Gate to Source Leakage Current             | $I_{GSS}$     | $V_{GS}=\pm 8\text{V}$ , $V_{DS}=0\text{V}$                    |       |      | $\pm 10$ | $\mu\text{A}$    |
| Gate Threshold Voltage                     | $V_{GS(th)}$  | $V_{DS}=10\text{V}$ , $I_D=1\text{mA}$                         | 0.4   |      | 1.3      | V                |
| Forward Transconductance                   | $g_{FS}$      | $V_{DS}=10\text{V}$ , $I_D=1.5\text{A}$                        |       | 2.8  |          | S                |
| Static Drain to Source On-State Resistance | $R_{DS(on)1}$ | $I_D=1.5\text{A}$ , $V_{GS}=4.5\text{V}$                       |       | 54   | 71       | $\text{m}\Omega$ |
|                                            | $R_{DS(on)2}$ | $I_D=1\text{A}$ , $V_{GS}=2.5\text{V}$                         |       | 73   | 103      | $\text{m}\Omega$ |
|                                            | $R_{DS(on)3}$ | $I_D=0.5\text{A}$ , $V_{GS}=1.8\text{V}$                       |       | 104  | 156      | $\text{m}\Omega$ |
| Input Capacitance                          | $C_{iss}$     | $V_{DS}=10\text{V}$ , $f=1\text{MHz}$                          |       | 260  |          | pF               |
| Output Capacitance                         | $C_{oss}$     |                                                                |       | 65   |          | pF               |
| Reverse Transfer Capacitance               | $C_{rss}$     |                                                                |       | 50   |          | pF               |
| Turn-ON Delay Time                         | $t_d(on)$     | See specified Test Circuit                                     |       | 6.2  |          | ns               |
| Rise Time                                  | $t_r$         |                                                                |       | 19   |          | ns               |
| Turn-OFF Delay Time                        | $t_d(off)$    |                                                                |       | 30   |          | ns               |
| Fall Time                                  | $t_f$         |                                                                |       | 28   |          | ns               |
| Total Gate Charge                          | $Q_g$         | $V_{DS}=10\text{V}$ , $V_{GS}=4.5\text{V}$ , $I_D=3.5\text{A}$ |       | 2.8  |          | nC               |
| Gate to Source Charge                      | $Q_{gs}$      |                                                                |       | 0.6  |          | nC               |
| Gate to Drain "Miller" Charge              | $Q_{gd}$      |                                                                |       | 0.9  |          | nC               |
| Forward Diode Voltage                      | $V_{SD}$      | $I_S=3.5\text{A}$ , $V_{GS}=0\text{V}$                         |       | 0.85 | 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







## Package Dimensions

CPH3456-TL-H/ CPH3456-TL-W

### CPH3

CASE 318BA

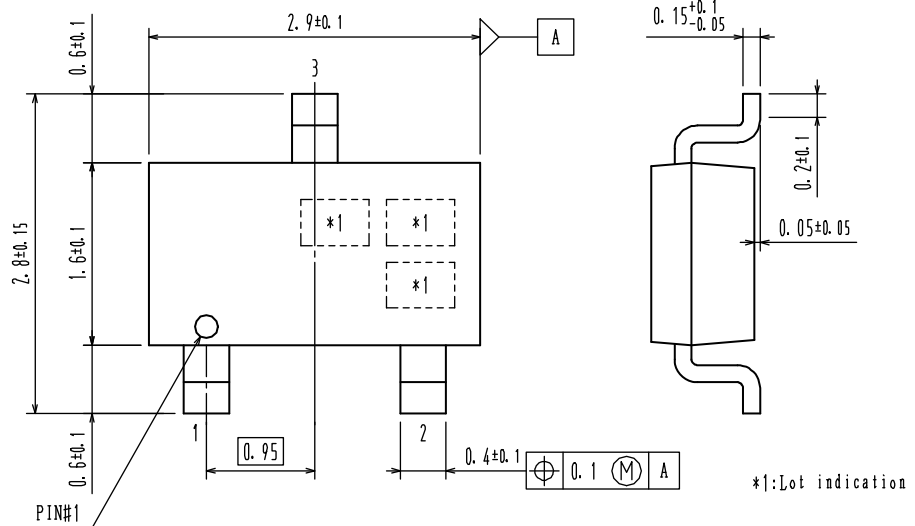
ISSUE O

Unit : mm

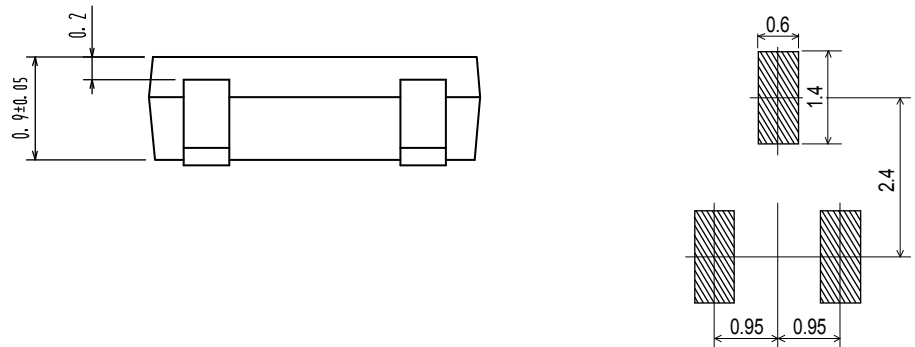
1 : Gate

2 : Source

3 : Drain



## Recommended Soldering Footprint



## ORDERING INFORMATION

| Device       | Package                       | Shipping             | Note                           |
|--------------|-------------------------------|----------------------|--------------------------------|
| CPH3456-TL-H | CPH3, SC-59<br>SOT-23, TO-236 | 3,000<br>pcs. / reel | Pb-Free<br>and<br>Halogen Free |
| CPH3456-TL-W |                               |                      |                                |

Note on usage : Since the CPH3456 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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