Ordering number : ENA1529B

# CPH6350

## P-Channel Power MOSFET
## −30V, −6A, 43mΩ, Single CPH6

ON Semiconductor®
http://onsemi.com

### Features

- 4V drive
- Low ON-resistance
- Protection diode in

### Specifications

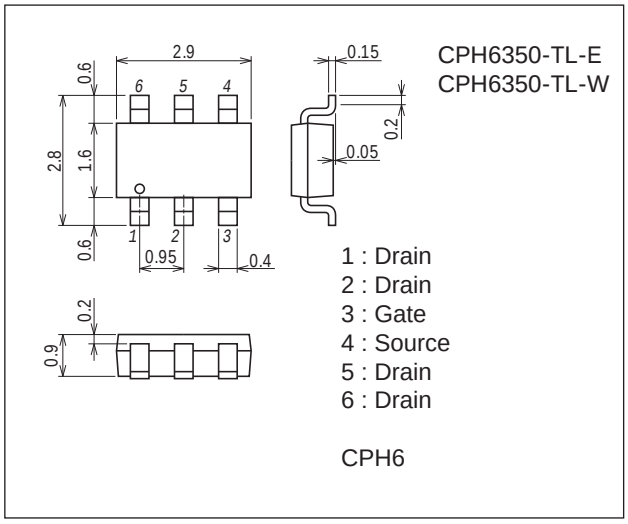
#### Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Drain to Source Voltage | $V_{DSS}$ | | −30 | V |
| Gate to Source Voltage | $V_{GSS}$ | | ±20 | V |
| Drain Current (DC) | $I_D$ | | −6 | A |
| Drain Current (Pulse) | $I_{DP}$ | PW≤10μs, duty cycle≤1% | −24 | A |
| Allowable Power Dissipation | $P_D$ | When mounted on ceramic substrate (900mm²×0.8mm) | 1.6 | W |
| Channel Temperature | Tch | | 150 | °C |
| Storage Temperature | Tstg | | −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

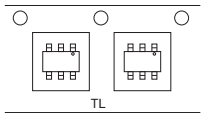
unit : mm (typ)
7018A-003



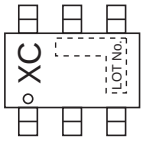

### Ordering & Package Information

| Device | Package | Shipping | memo |
|---|---|---|---|
| CPH6350-TL-E | CPH6<br>SC-74, SOT-26, SOT-457 | 3,000pcs./<br>reel | Pb-Free |
| CPH6350-TL-W | CPH6<br>SC-74, SOT-26, SOT-457 | 3,000pcs./<br>reel | Pb-Free<br>and<br>Halogen Free |

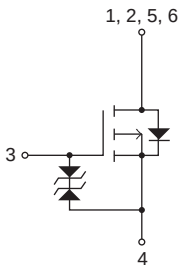
### Packing Type: TL




### Marking



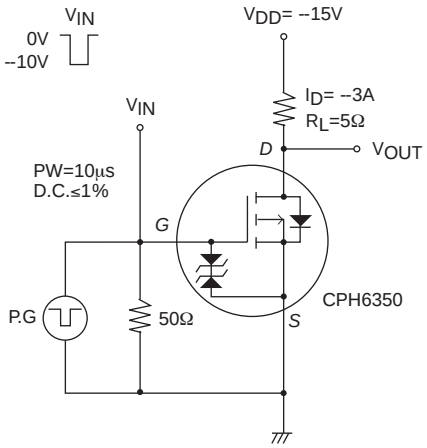

### Electrical Connection

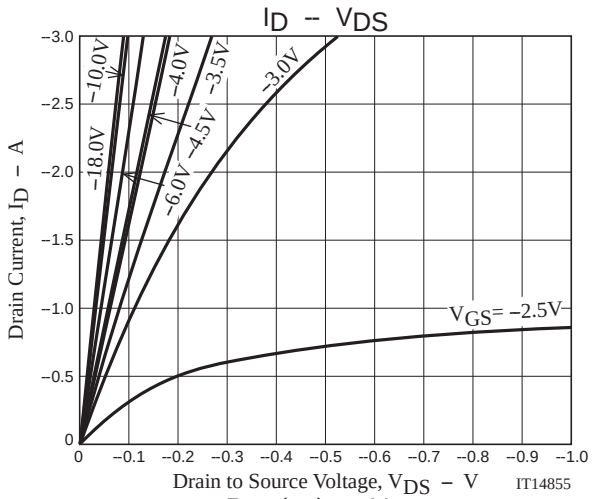


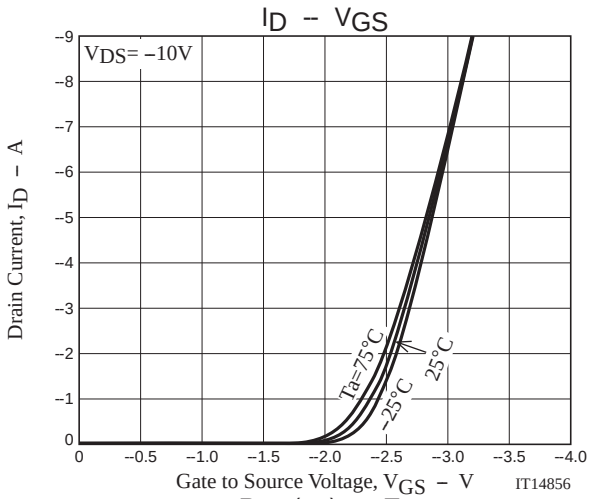
## Electrical Characteristics at Ta=25°C

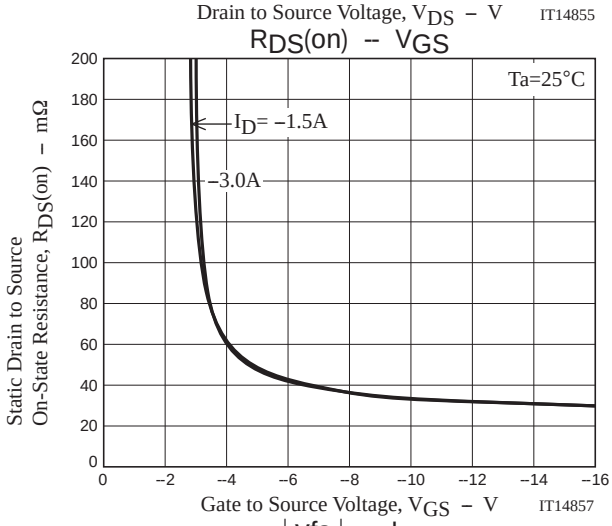
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Drain to Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D$=−1mA, $V_{GS}$=0V | −30 | | | V |
| Zero-Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=−30V, $V_{GS}$=0V | | | −1 | μA |
| Gate to Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±16V, $V_{DS}$=0V | | | ±10 | μA |
| Cutoff Voltage | $V_{GS}$(off) | $V_{DS}$=−10V, $I_D$=−1mA | −1.2 | | −2.6 | V |
| Forward Transfer Admittance | \| yfs \| | $V_{DS}$=−10V, $I_D$=−3A | | 5.4 | | S |
| Static Drain to Source On-State Resistance | $R_{DS}$(on)1 | $I_D$=−3A, $V_{GS}$=−10V | | 33 | 43 | mΩ |
| | $R_{DS}$(on)2 | $I_D$=−1.5A, $V_{GS}$=−4.5V | | 58 | 82 | mΩ |
| | $R_{DS}$(on)3 | $I_D$=−1.5A, $V_{GS}$=−4V | | 61 | 86 | mΩ |
| Input Capacitance | Ciss | $V_{DS}$=−10V, f=1MHz | | 600 | | pF |
| Output Capacitance | Coss | | | 145 | | pF |
| Reverse Transfer Capacitance | Crss | | | 110 | | pF |
| Turn-ON Delay Time | $t_{d}$(on) | See specified Test Circuit. | | 7.4 | | ns |
| Rise Time | $t_r$ | | | 27 | | ns |
| Turn-OFF Delay Time | $t_{d}$(off) | | | 62 | | ns |
| Fall Time | $t_f$ | | | 45 | | ns |
| Total Gate Charge | Qg | $V_{DS}$=−15V, $V_{GS}$=−10V, $I_D$=−6A | | 13 | | nC |
| Gate to Source Charge | Qgs | | | 1.8 | | nC |
| Gate to Drain “Miller” Charge | Qgd | | | 3.2 | | nC |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=−6A, $V_{GS}$=0V | | −0.87 | −1.2 | V |

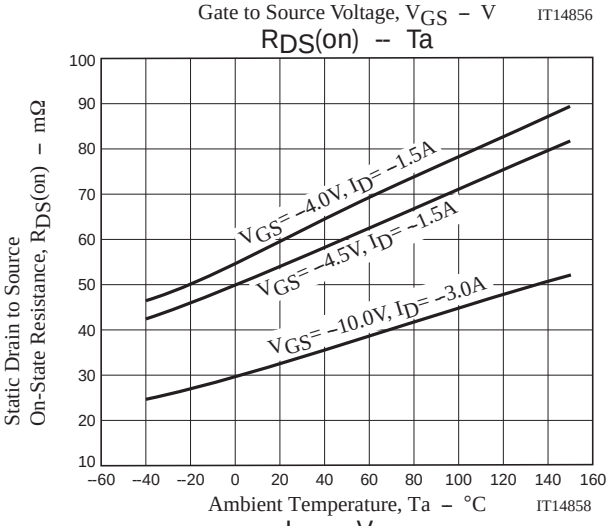
## Switching Time Test Circuit

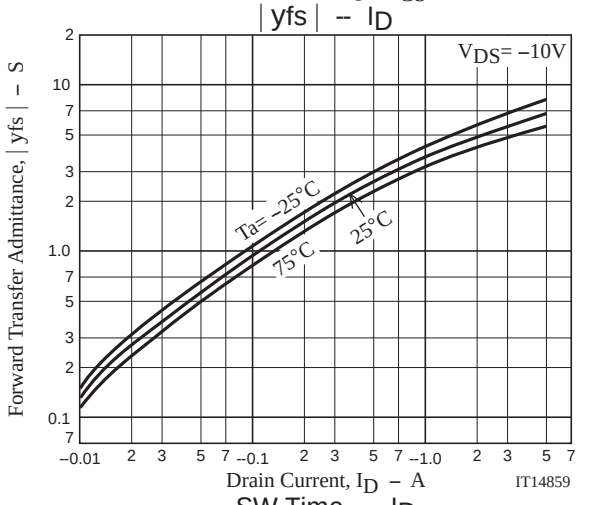


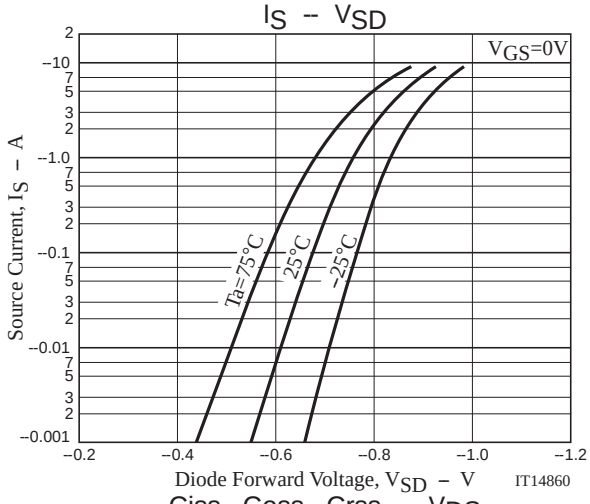

ID -- VDS
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT14855
–10.0V
–4.0V
–3.5V
–3.0V
–18.0V
–4.5V
–6.0V
VGS= –2.5V

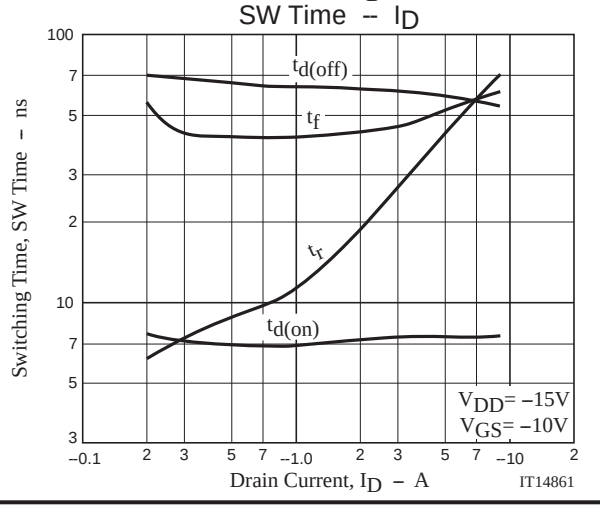

ID -- VGS
VDS= –10V
Drain Current, ID – A
Gate to Source Voltage, VGS – V
IT14856
Ta=75°C
25°C
–25°C

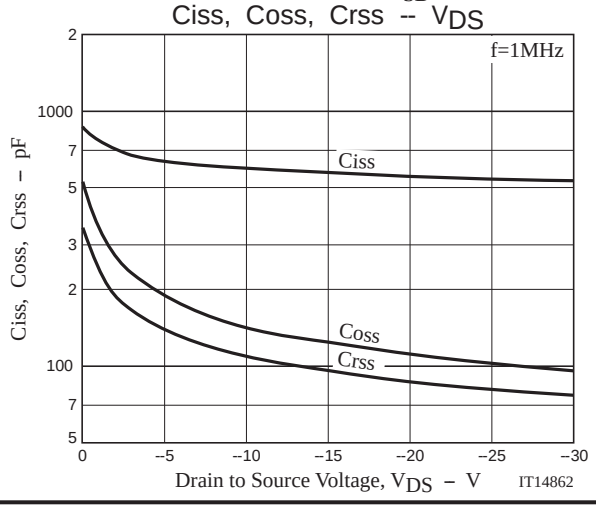

RDS(on) -- VGS
Ta=25°C
ID= –1.5A
–3.0A
Static Drain to Source On-State Resistance, RDS(on) – mΩ
Gate to Source Voltage, VGS – V
IT14857

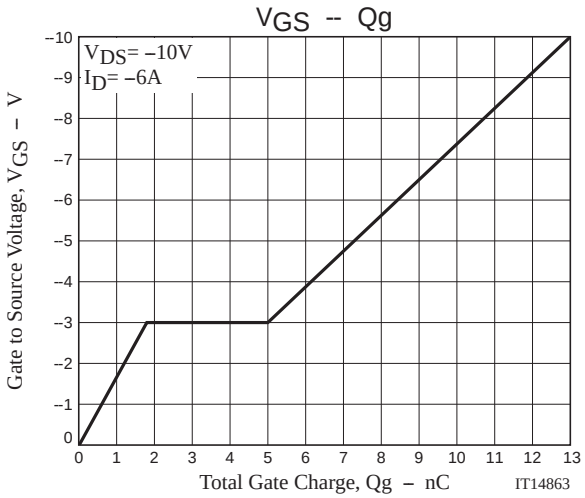

RDS(on) -- Ta
VGS= –4.0V, ID= –1.5A
VGS= –4.5V, ID= –1.5A
VGS= –10.0V, ID= –3.0A
Static Drain to Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT14858

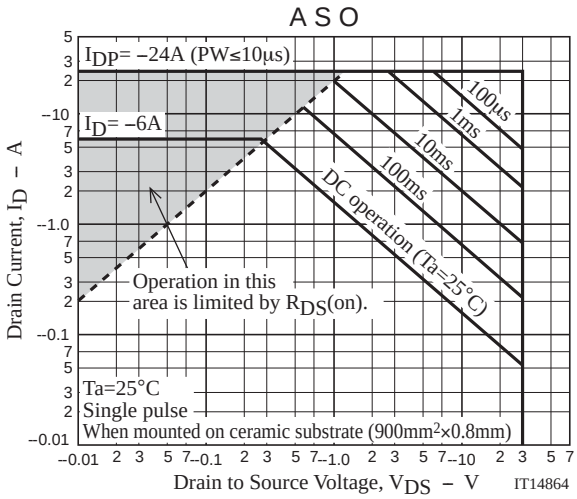

| yfs | -- ID
VDS= –10V
Ta= –25°C
25°C
75°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT14859

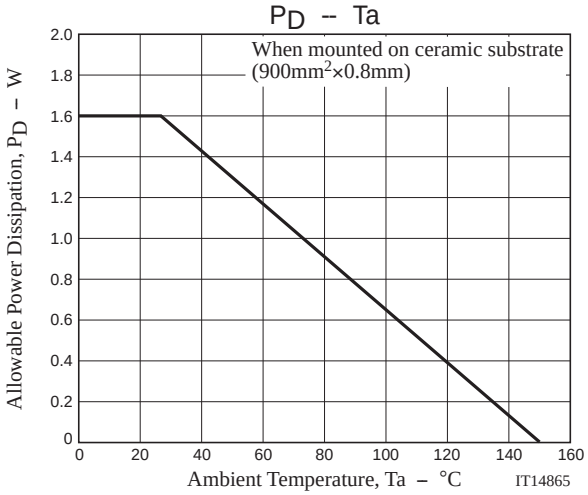

IS -- VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT14860


SW Time -- ID
td(off)
tf
tr
td(on)
VDD= –15V
VGS= –10V
Switching Time, SW Time – ns
Drain Current, ID – A
IT14861


Ciss, Coss, Crss -- VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain to Source Voltage, VDS – V
IT14862

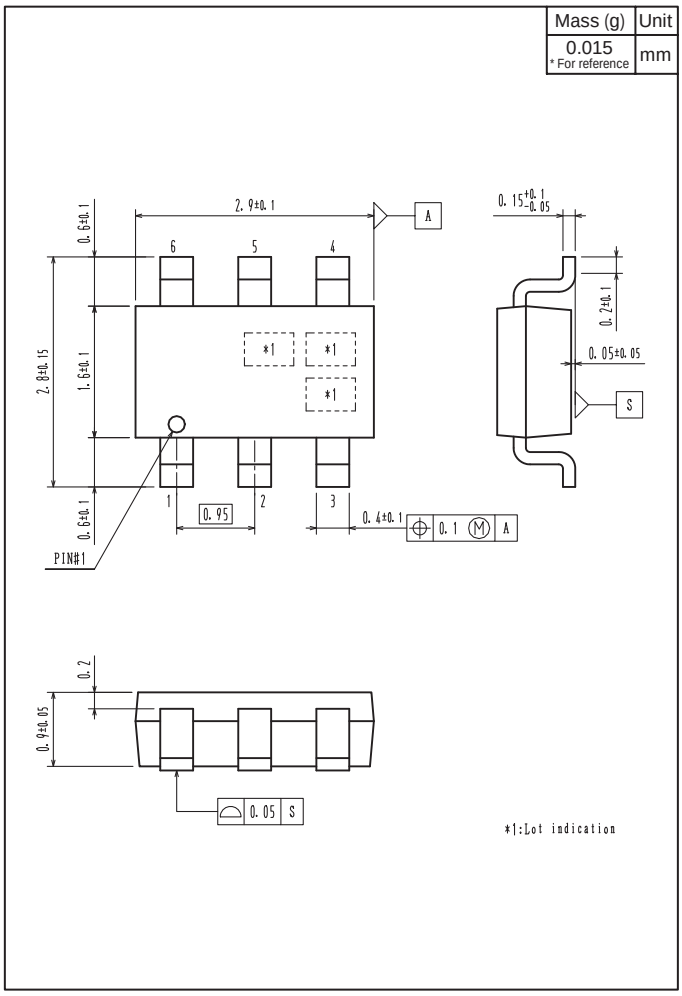

VGS -- Qg
VDS= −10V
ID= −6A
Gate to Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT14863


A S O
IDP= −24A (PW≤10μs)
ID= −6A
100μs
1ms
10ms
100ms
DC operation (Ta=25°C)
Operation in this
area is limited by RDS(on).
Ta=25°C
Single pulse
When mounted on ceramic substrate (900mm2×0.8mm)
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT14864

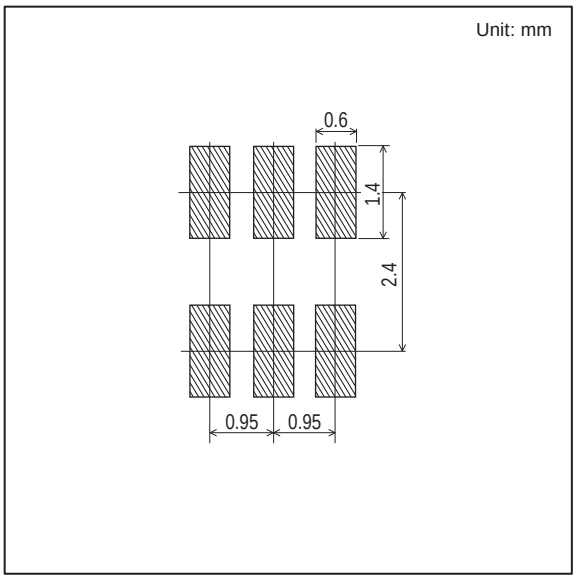

PD -- Ta
When mounted on ceramic substrate
(900mm2×0.8mm)
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT14865

## Outline Drawing

CPH6350-TL-E, CPH6350-TL-W




## Land Pattern Example



Note on usage : Since the CPH6350 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.