

# MOSFET – Power, Single P-Channel

**-30 V, -5 A, 59 mΩ**

## MCH6341

### Features

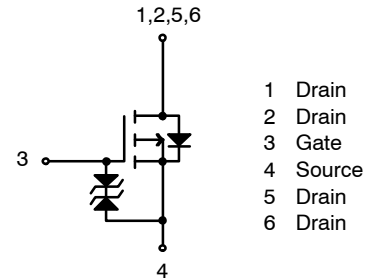
- Low  $R_{DS(on)}$
- 4 V Drive
- ESD Diode Protected Gate
- This Device is Pb-Free and Halogen Free and RoHS Compliant

### ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

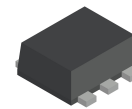
| Parameter               | Symbol    | Conditions                                                              | Value          | Unit |
|-------------------------|-----------|-------------------------------------------------------------------------|----------------|------|
| Drain-to-Source Voltage | $V_{DSS}$ |                                                                         | -30            | V    |
| Gate-to-Source Voltage  | $V_{GSS}$ |                                                                         | ±20            | V    |
| Drain Current (DC)      | $I_D$     |                                                                         | -5             | A    |
| Drain Current (Pulse)   | $I_{DP}$  | $PW \leq 10 \mu s$ ,<br>duty cycle $\leq 1\%$                           | -20            | A    |
| Power Dissipation       | $P_D$     | When mounted on<br>ceramic substrate<br>(1200 mm <sup>2</sup> × 0.8 mm) | 1.5            | W    |
| Junction Temperature    | $T_J$     |                                                                         | 150            | °C   |
| Storage Temperature     | $T_{stg}$ |                                                                         | -55 to<br>+150 | °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.

| $V_{DSS}$ | $R_{DS(ON)}$ MAX | $I_D$ MAX |
|-----------|------------------|-----------|
| -30 V     | 59 mΩ @ -10 V    | -5 A      |
|           | 100 mΩ @ -4.5 V  |           |
|           | 115 mΩ @ -4 V    |           |

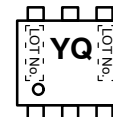


### ELECTRICAL CONNECTION P-CHANNEL



SC-88FL / MCPH6  
CASE 419AS

### MARKING DIAGRAM



YQ = Specific Device Code

### ORDERING INFORMATION

| Device       | Package                             | Shipping†             |
|--------------|-------------------------------------|-----------------------|
| MCH6341-TL-W | MCPH6<br>(Pb-Free,<br>Halogen Free) | 3000 /<br>Tape & Reel |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, [BRD8011/D](#).

# MCH6341

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| Parameter                                  | Symbol        | Test Condition                                                         | Value |       |          | Unit             |
|--------------------------------------------|---------------|------------------------------------------------------------------------|-------|-------|----------|------------------|
|                                            |               |                                                                        | Min   | Typ   | Max      |                  |
| Drain-to-Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D = -1 \text{ mA}, V_{GS} = 0 \text{ V}$                            | -30   | -     | -        | V                |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS} = -30 \text{ V}, V_{GS} = 0 \text{ V}$                         | -     | -     | -1       | $\mu\text{A}$    |
| Gate-to-Source Leakage Current             | $I_{GSS}$     | $V_{GS} = \pm 16 \text{ V}, V_{DS} = 0 \text{ V}$                      | -     | -     | $\pm 10$ | $\mu\text{A}$    |
| Gate Threshold Voltage                     | $V_{GS(th)}$  | $V_{DS} = -10 \text{ V}, I_D = -1 \text{ mA}$                          | -1.2  | -     | -2.6     | V                |
| Forward Transconductance                   | $g_{FS}$      | $V_{DS} = -10 \text{ V}, I_D = -3 \text{ A}$                           | 2.8   | 4.8   | -        | S                |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D = -3 \text{ A}, V_{GS} = -10 \text{ V}$                           | -     | 45    | 59       | $\text{m}\Omega$ |
|                                            | $R_{DS(on)2}$ | $I_D = -1.5 \text{ A}, V_{GS} = -4.5 \text{ V}$                        | -     | 71    | 100      | $\text{m}\Omega$ |
|                                            | $R_{DS(on)3}$ | $I_D = -1.5 \text{ A}, V_{GS} = -4 \text{ V}$                          | -     | 82    | 115      | $\text{m}\Omega$ |
| Input Capacitance                          | $C_{iss}$     | $V_{DS} = -10 \text{ V}, f = 1 \text{ MHz}$                            | -     | 430   | -        | pF               |
| Output Capacitance                         | $C_{oss}$     |                                                                        | -     | 105   | -        | pF               |
| Reverse Transfer Capacitance               | $C_{rss}$     |                                                                        | -     | 75    | -        | pF               |
| Turn-ON Delay Time                         | $t_d(on)$     | See specified Test Circuit                                             | -     | 7.5   | -        | ns               |
| Rise Time                                  | $t_r$         |                                                                        | -     | 26    | -        | ns               |
| Turn-OFF Delay Time                        | $t_d(off)$    |                                                                        | -     | 45    | -        | ns               |
| Fall Time                                  | $t_f$         |                                                                        | -     | 35    | -        | ns               |
| Total Gate Charge                          | $Q_g$         | $V_{DS} = -15 \text{ V}, V_{GS} = -10 \text{ V}, I_D = -5.0 \text{ A}$ | -     | 10    | -        | nC               |
| Gate-to-Source Charge                      | $Q_{gs}$      |                                                                        | -     | 2.0   | -        | nC               |
| Gate-to-Drain "Miller" Charge              | $Q_{gd}$      |                                                                        | -     | 2.5   | -        | nC               |
| Diode Forward Voltage                      | $V_{SD}$      | $I_S = -5 \text{ A}, V_{GS} = 0 \text{ V}$                             | -     | -0.87 | -1.5     | 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.

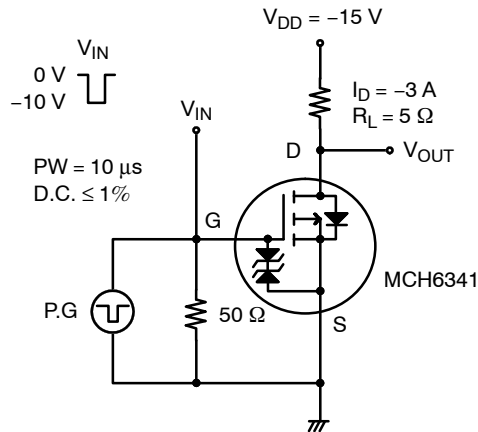
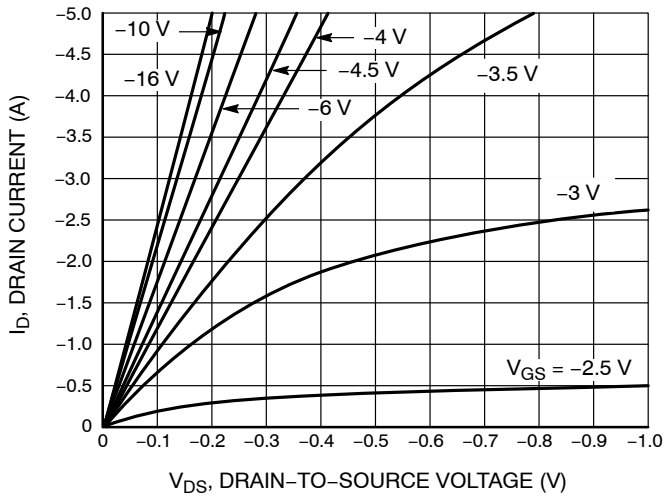
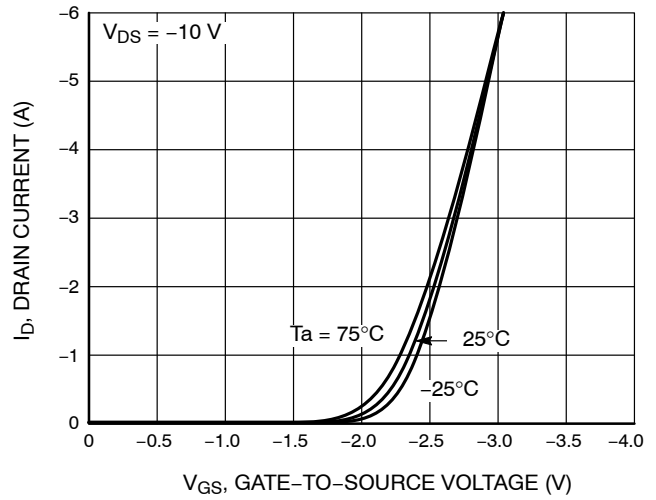
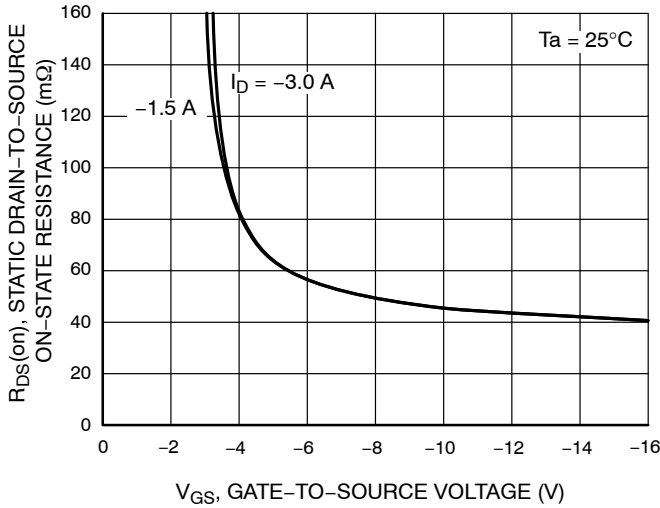
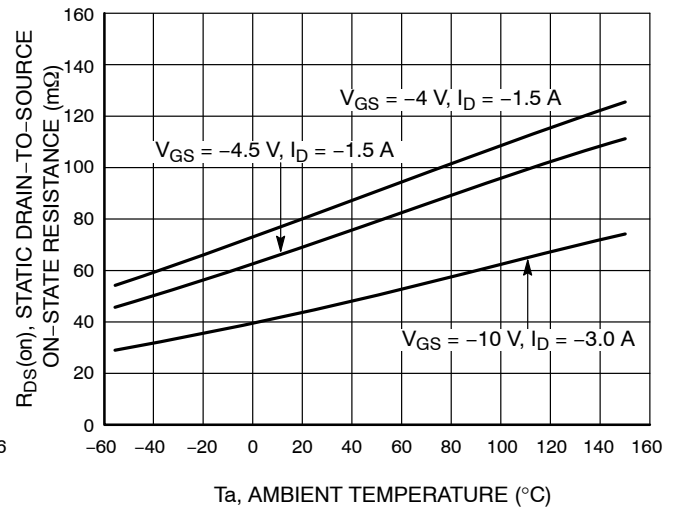
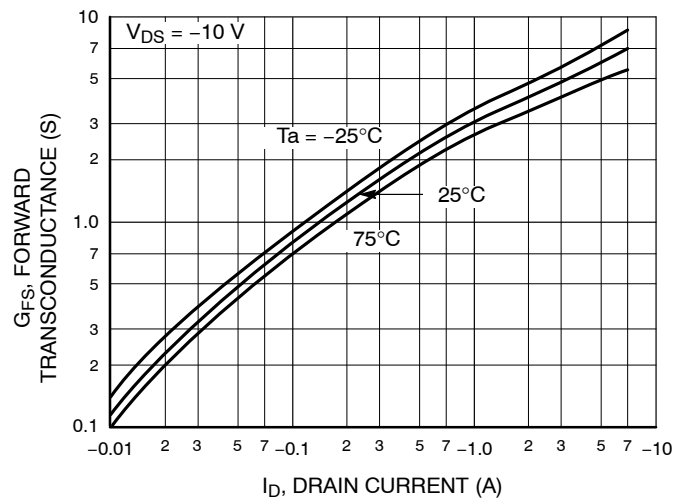
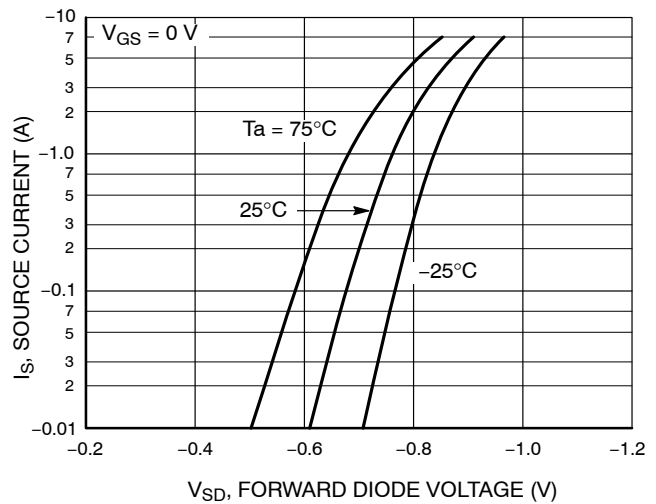


Figure 1. Switching Time Test Circuit

## TYPICAL CHARACTERISTICS

Figure 2.  $I_D - V_{DS}$ Figure 3.  $I_D - V_{GS}$ Figure 4.  $R_{DS(on)} - V_{GS}$ Figure 5.  $R_{DS(on)} - T_a$ Figure 6.  $g_{FS} - I_D$ Figure 7.  $I_S - V_{SD}$

TYPICAL CHARACTERISTICS (continued)

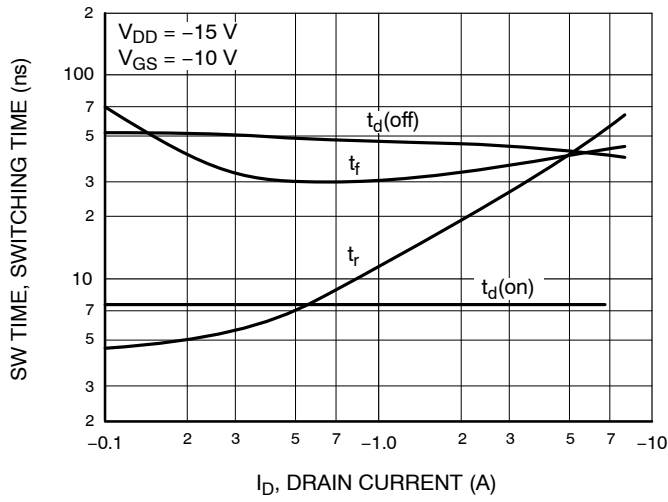


Figure 8. SW Time –  $I_D$

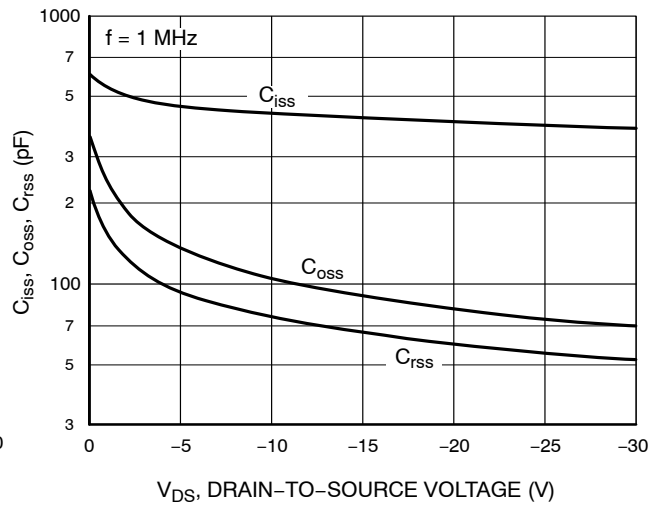


Figure 9.  $C_{iss}$ ,  $C_{oss}$ ,  $C_{rss}$  –  $V_{DS}$

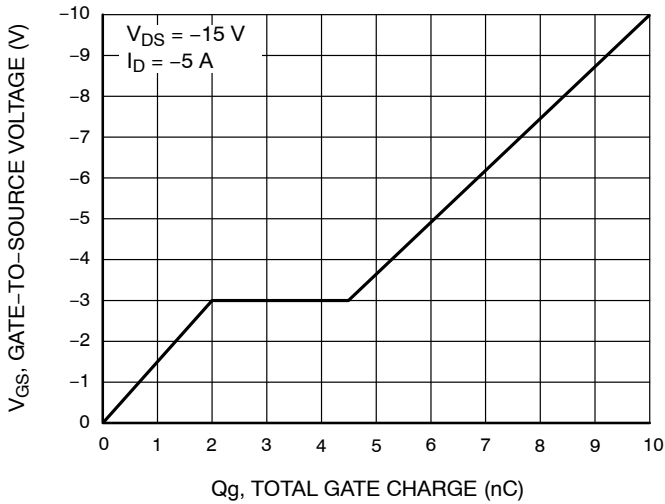


Figure 10.  $V_{GS}$  –  $Q_g$

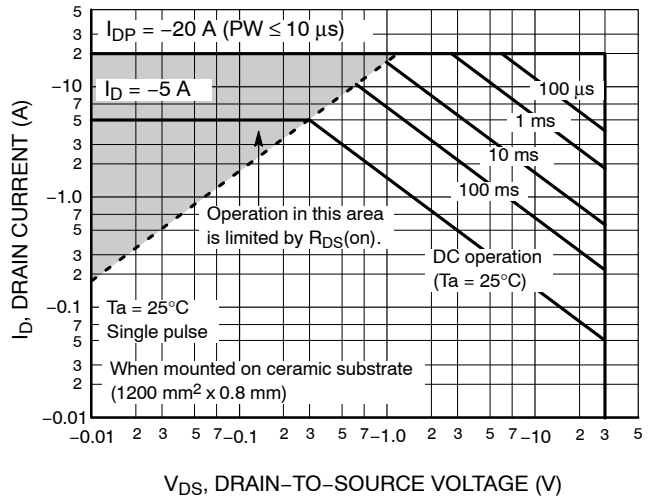


Figure 11. SOA

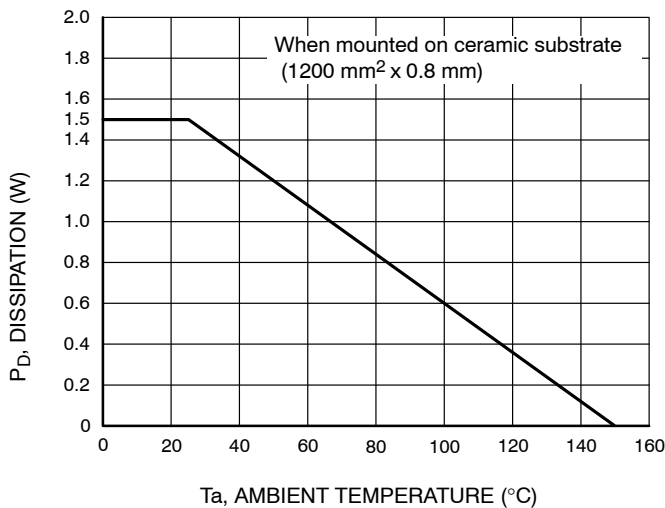
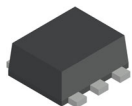


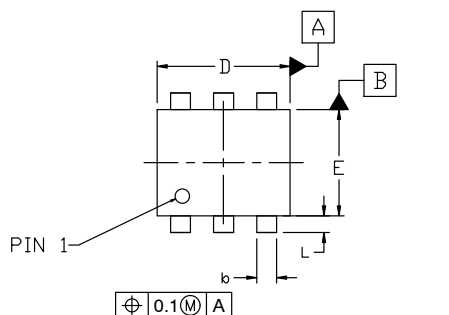
Figure 12.  $P_D$  –  $T_a$

# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS

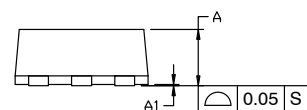


**SC-88FL / MCPH6**  
**CASE 419AS**  
**ISSUE A**

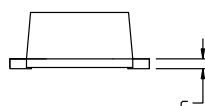
DATE 28 SEP 2022



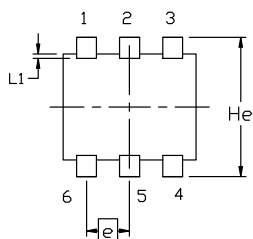
TOP VIEW



SIDE VIEW



FRONT VIEW



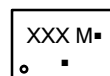
BOTTOM VIEW

## NOTES:

1. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND THE BAR PROTRUSIONS.

| DIM | MILLIMETERS |      |      |
|-----|-------------|------|------|
|     | MIN.        | NOM. | MAX. |
| A   | 0.80        | 0.85 | 0.90 |
| A1  | 0.00        | ---  | 0.02 |
| b   | 0.25        | 0.30 | 0.40 |
| c   | 0.12        | 0.15 | 0.25 |
| D   | 1.94        | 2.00 | 2.06 |
| E   | 1.54        | 1.60 | 1.66 |
| He  | 2.05        | 2.10 | 2.15 |
| L   | 0.19        | 0.25 | 0.31 |
| L1  | 0.00        | 0.07 | 0.12 |
| e   | 0.65 BSC    |      |      |

## GENERIC MARKING DIAGRAM\*



XXX = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

|                         |                        |                                                                                                                                                                                     |
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