

# HITK0203MP

Silicon N Channel MOS FET  
Power Switching

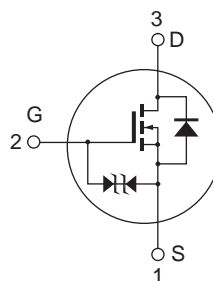
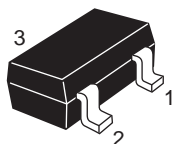
R07DS0481EJ0100  
Rev.1.00  
Jun 22, 2011

## Features

- Low on-resistance  
 $R_{DS(on)} = 68\text{ m}\Omega$  typ ( $V_{GS} = 4.5\text{ V}$ ,  $I_D = 1.5\text{ A}$ )
- Low drive current
- High speed switching
- 2.5 V gate drive

## Outline

RENESAS Package code: PLSP0003ZB-A  
(Package name: MPAK)



1. Source
2. Gate
3. Drain

Note: Marking is "SG".

## Absolute Maximum Ratings

( $T_a = 25^\circ\text{C}$ )

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	20	V
Gate to source voltage	$V_{GSS}$	$\pm 12$	V
Drain current	$I_D$	2.9	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	10	A
Body - drain diode reverse drain current	$I_{DR}$	2.9	A
Channel dissipation	$P_{ch}$ <sup>Note2</sup>	0.8	W
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

Notes: 1.  $PW \leq 10\ \mu\text{s}$ , duty cycle  $\leq 1\%$

2. When using the glass epoxy board (FR-4: 40 x 40 x 1 mm)

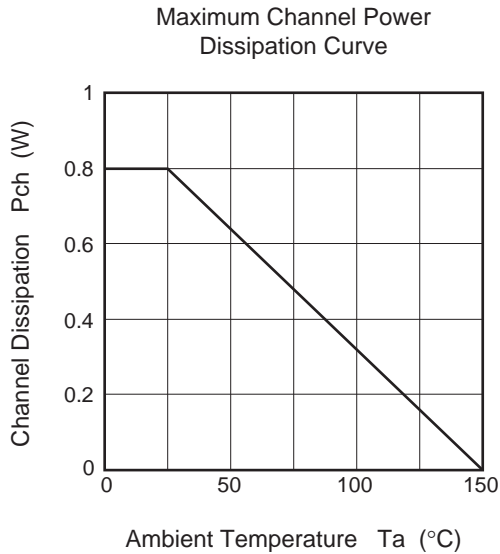
## Electrical Characteristics

(Ta = 25°C)

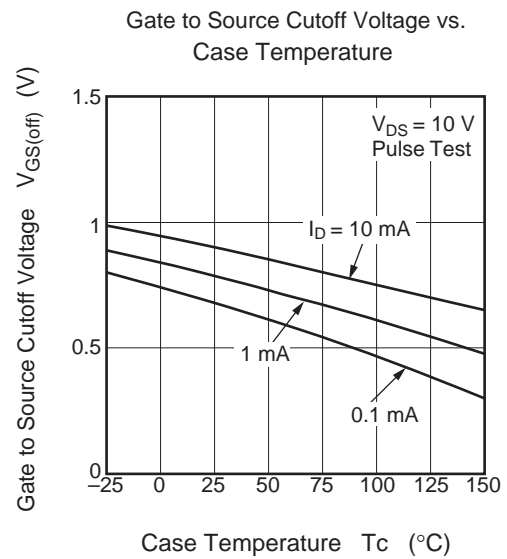
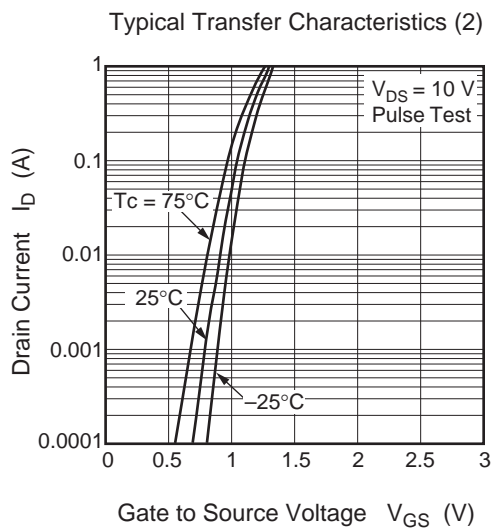
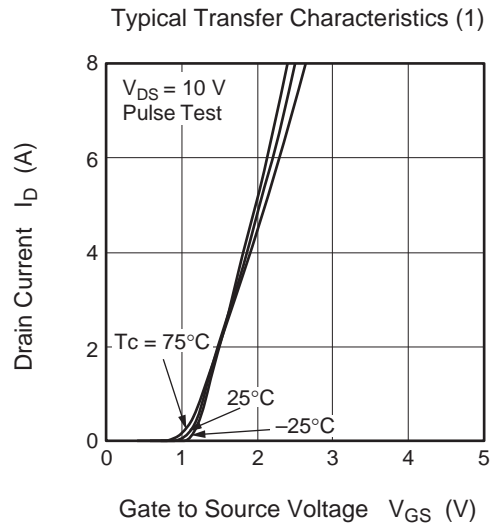
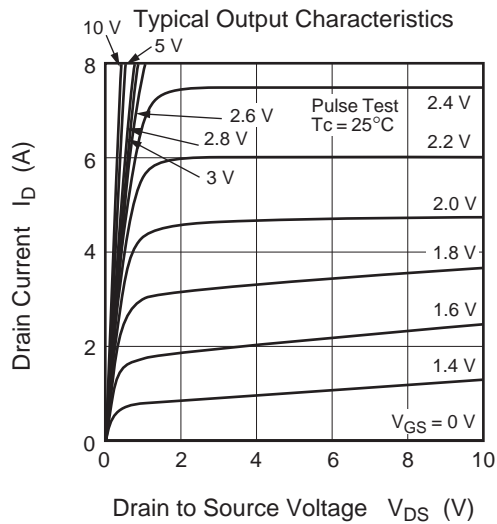
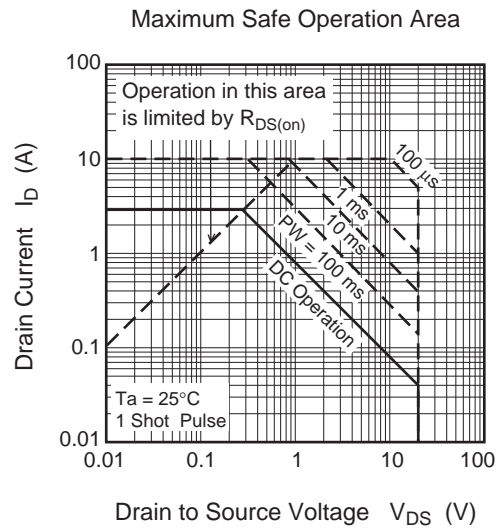
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	20	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 12$	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 10 \text{ V}$ , $V_{DS} = 0$
Drain to source leak current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 20 \text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	0.4	—	1.4	V	$V_{DS} = 10 \text{ V}$ , $I_D = 1 \text{ mA}$
Drain to source on state resistance	$R_{DS(on)}$	—	68	90	m $\Omega$	$I_D = 1.5 \text{ A}$ , $V_{GS} = 4.5 \text{ V}$ <sup>Note3</sup>
	$R_{DS(on)}$	—	105	150	m $\Omega$	$I_D = 1.5 \text{ A}$ , $V_{GS} = 2.5 \text{ V}$ <sup>Note3</sup>
Forward transfer admittance	$ y_{fs} $	3.0	5.0	—	S	$I_D = 1.5 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note3</sup>
Input capacitance	$C_{iss}$	—	159	—	pF	$V_{DS} = 10 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	48	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	20	—	pF	
Turn - on delay time	$t_{d(on)}$	—	11	—	ns	$I_D = 1.5 \text{ A}$ $V_{GS} = 4.5 \text{ V}$ $R_L = 6.6 \text{ }\Omega$ $R_g = 4.7 \text{ }\Omega$
Rise time	$t_r$	—	81	—	ns	
Turn - off delay time	$t_{d(off)}$	—	27	—	ns	
Fall time	$t_f$	—	8	—	ns	
Total gate charge	$Q_g$	—	1.9	—	nC	$V_{DD} = 10 \text{ V}$
Gate to source charge	$Q_{gs}$	—	0.4	—	nC	$V_{GS} = 4.5 \text{ V}$
Gate to drain charge	$Q_{gd}$	—	0.5	—	nC	$I_D = 2.9 \text{ A}$
Body - drain diode forward voltage	$V_{DF}$	—	0.85	1.1	V	$I_F = 2.9 \text{ A}$ , $V_{GS} = 0$ <sup>Note3</sup>

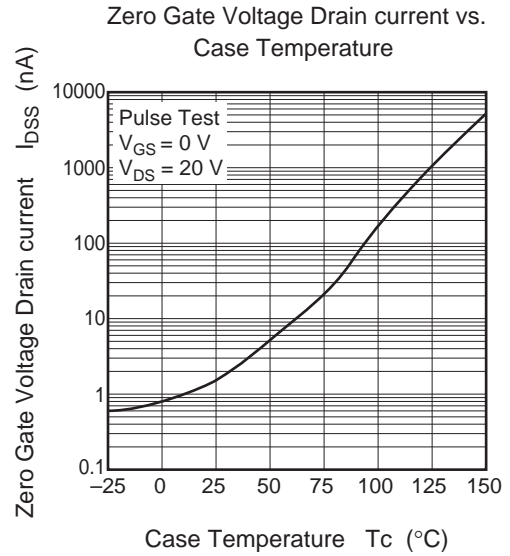
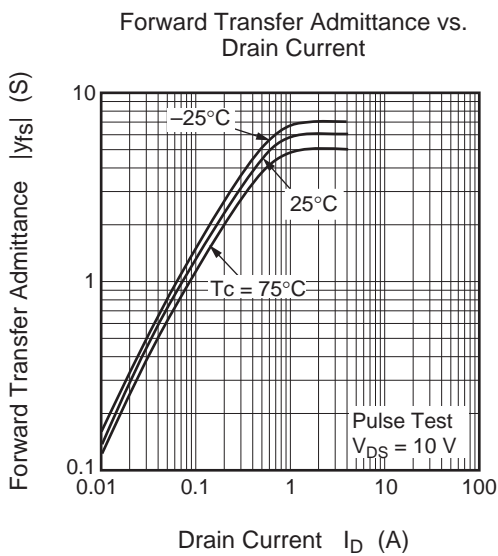
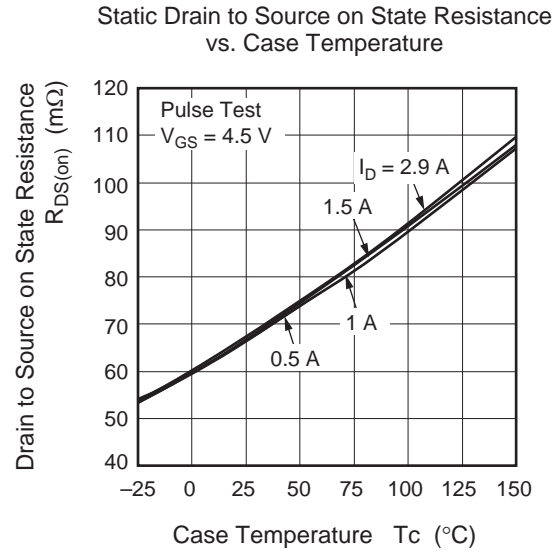
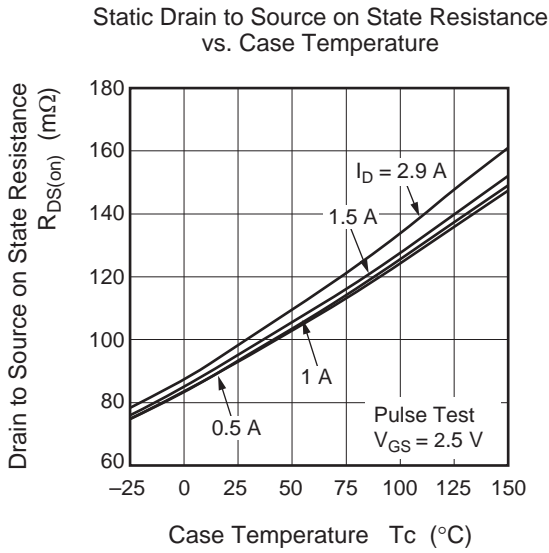
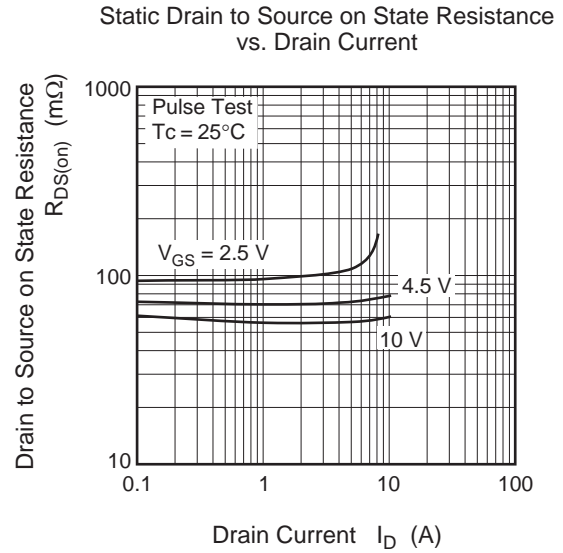
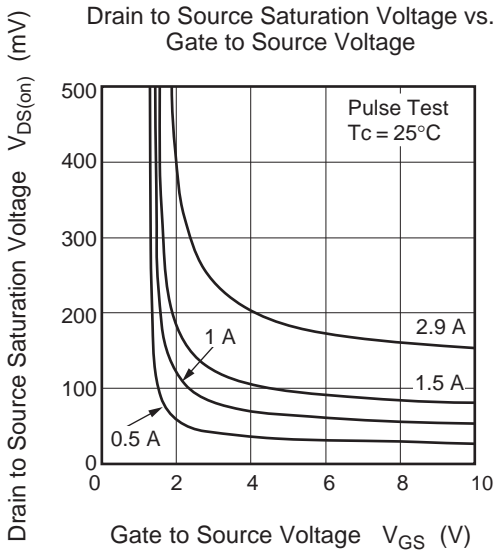
Notes: 3. Pulse test

### Main Characteristics

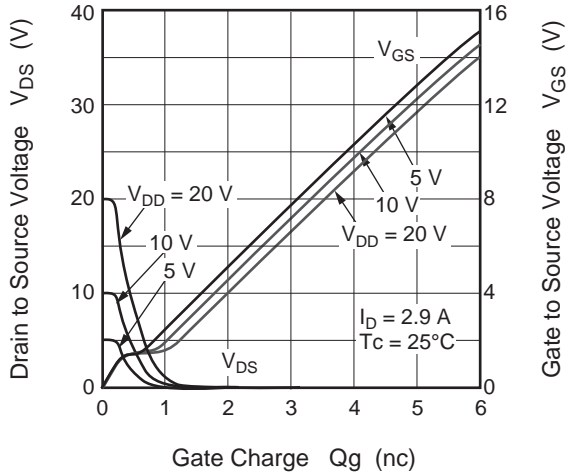


\*When using the glass epoxy board (FR-4: 40 × 40 × 1 mm)

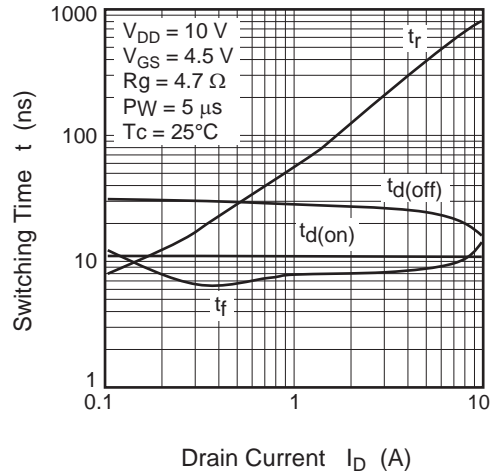




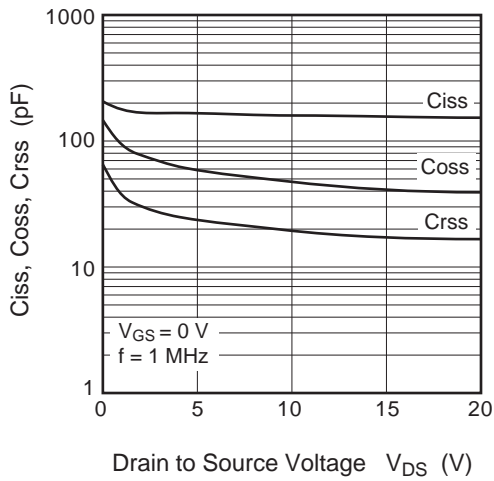
Dynamic Input Characteristics



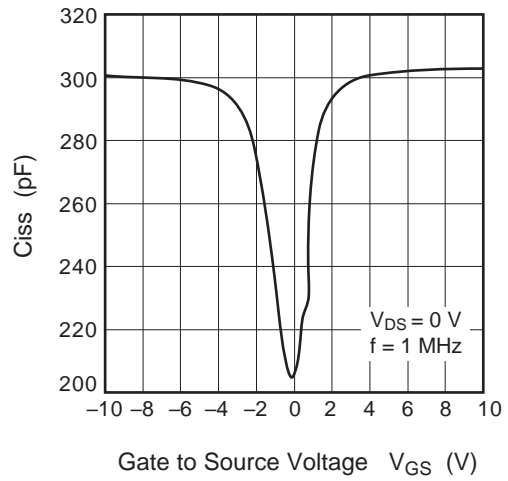
Switching Characteristics



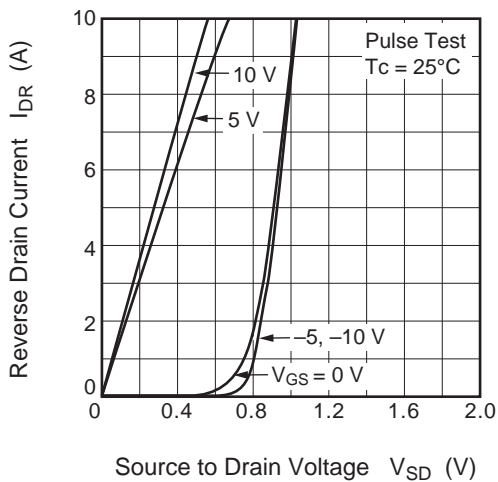
Typical Capacitance vs. Drain to Source Voltage



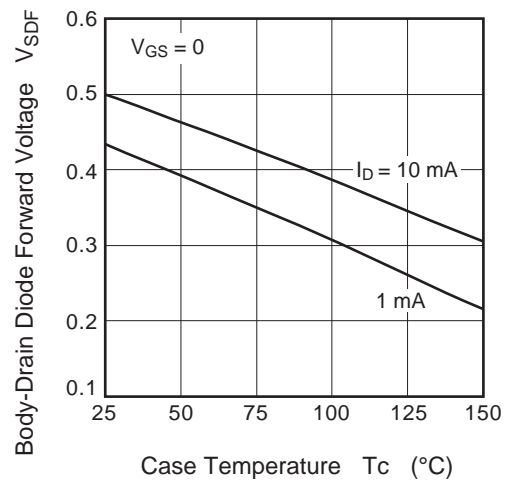
Input Capacitance vs. Gate to Source Voltage



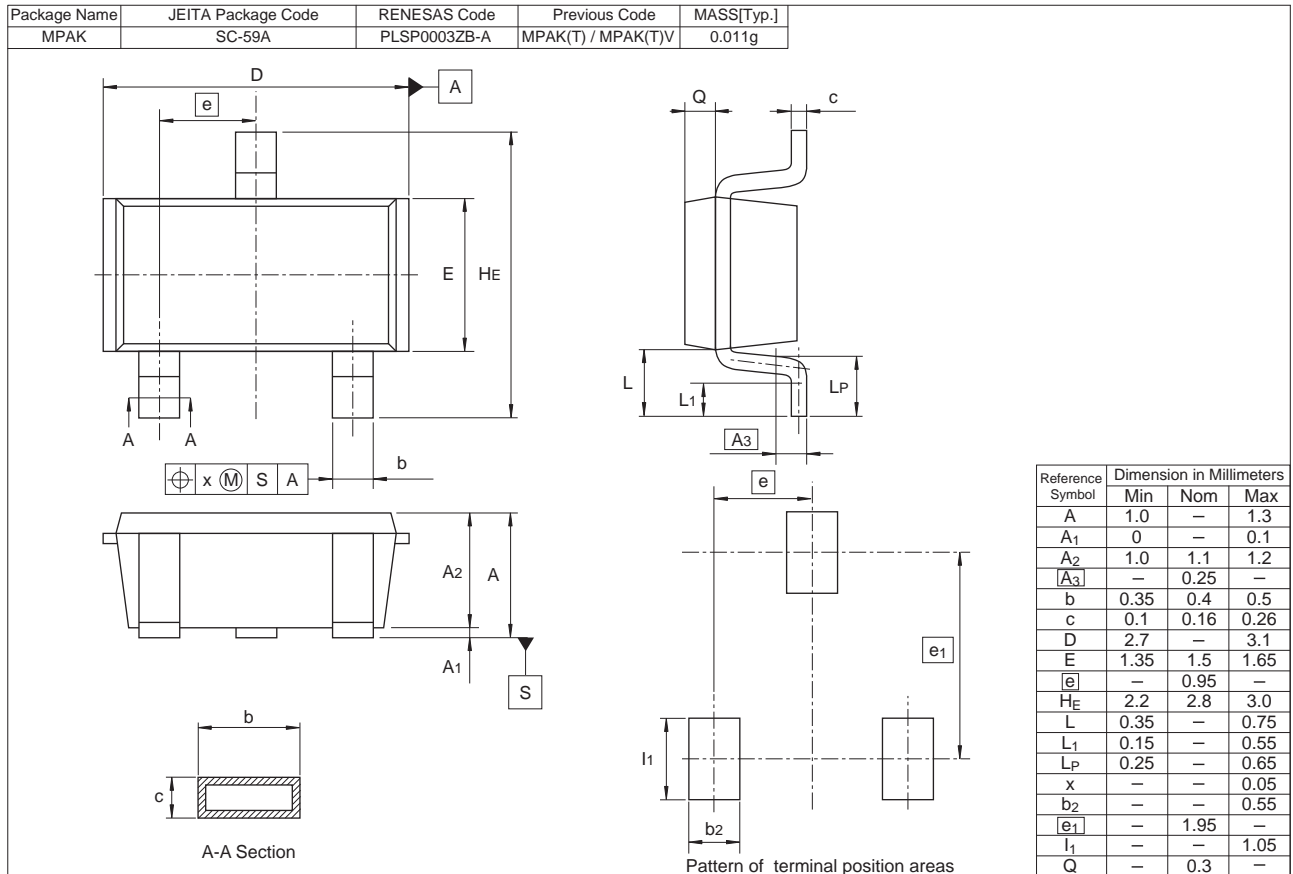
Reverse Drain Current vs. Source to Drain Voltage



Body-Drain Diode Forward Voltage vs. Case Temperature



### Package Dimensions



### Ordering Information

Orderable Part Number	Quantity	Shipping Container
HITK0203MPTL-HQ	3000 pcs.	φ178 mm reel, 8 mm Emboss taping

Note: This product is designed for consumer use and not for automotive.

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