

μPA2660T1R

DUAL N-CHANNEL MOSFET
20 V, 4.0 A, 42 mΩ

R07DS0999EJ0100
Rev.1.00
Jan 16, 2013

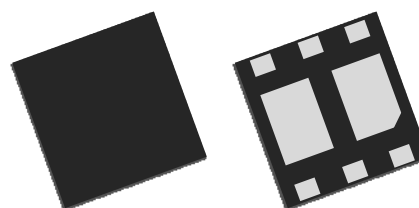
Description

The μPA2660T1R is Dual N-channel MOS Field Effect Transistors for switching application.

This device features a low on-state resistance and excellent switching characteristics, and is suitable for applications such as power switch of portable machine and so on.

Features

- DS MAXIMUM RATINGS 20V($T_A = 25^\circ\text{C}$)
- 2.5V drive available
- Low on-state resistance
 - $R_{DS(on)1} = 42\text{ m}\Omega$ MAX. ($V_{GS} = 4.5\text{ V}$, $I_D = 2.0\text{ A}$)
 - $R_{DS(on)2} = 62\text{ m}\Omega$ MAX. ($V_{GS} = 2.5\text{ V}$, $I_D = 2.0\text{ A}$)
- Built-in gate protection diode
- Lead-free and Halogen-free



6pinHUSON2020(Dual)

Ordering Information

Part Number	Package
μPA2660T1R-E2-AX*1	6pinHUSON2020(Dual)

Note: *1.Pb-free (This product does not contain Pb in the external electrode and other parts.)

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$)

Item	Symbol	Ratings	Unit
Drain to Source Voltage ($V_{GS} = 0\text{ V}$)	V_{DSS}	20	V
Gate to Source Voltage ($V_{DS} = 0\text{ V}$)	V_{GSS}	± 12	V
Drain Current (DC)	$I_{D(DC)}$	± 4.0	A
Drain Current (pulse)*1	$I_{D(pulse)}$	± 16	A
Total Power Dissipation (1 unit, 5 s)*2	P_{T1}	1.5	W
Total Power Dissipation (2 units, 5 s)*2	P_{T2}	2.3	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. Mounted on glass epoxy board of 25.4mm x 25.4mm x 0.8mm

Caution: This product is electrostatic-sensitive device due to low ESD capability and should be handled with caution for electrostatic discharge.

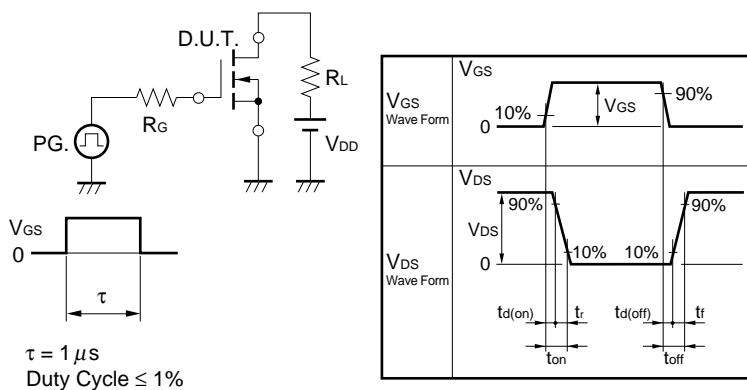
$$V_{ESD} = \pm 400\text{V MIN. (} C = 100\text{pF, } R = 1.5\text{K}\Omega \text{)}$$

Electrical Characteristics (T_A = 25°C)

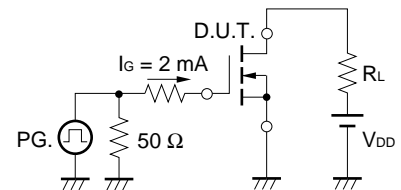
Characteristics	Symbol	MIN.	TYP.	MAX.	Unit	Test Conditions
Zero Gate Voltage Drain Current	I _{DSS}			1.0	μA	V _{DS} = 20 V, V _{GS} = 0 V
Gate Leakage Current	I _{GSS}			±10	μA	V _{GS} = ±10 V, V _{DS} = 0 V
Gate Cut-off Voltage	V _{GS(off)}	0.5		1.5	V	V _{DS} = 10 V, I _D = 1 mA
Forward Transfer Admittance *1	y _{fs}	5.0			S	V _{DS} = 10 V, I _D = 2.0 A
Drain to Source On-state Resistance *1	R _{DS(on)1}		33	42	mΩ	V _{GS} = 4.5 V, I _D = 2.0 A
	R _{DS(on)2}		43	62	mΩ	V _{GS} = 2.5 V, I _D = 2.0 A
Input Capacitance	C _{iss}		330		pF	V _{DS} = 10 V, V _{GS} = 0 V, f = 1.0 MHz
Output Capacitance	C _{oss}		66		pF	
Reverse Transfer Capacitance	C _{rss}		38		pF	
Turn-on Delay Time	t _{d(on)}		12		ns	I _D = 2.0 A, V _{DD} = 10 V, V _{GS} = 4.5 V, R _G = 6 Ω
Rise Time	t _r		6.4		ns	
Turn-off Delay Time	t _{d(off)}		27		ns	
Fall Time	t _f		6.6		ns	
Total Gate Charge	Q _G		4.5		nC	I _D = 4.0 A, V _{DD} = 16 V, V _{GS} = 10 V
Gate to Source Charge	Q _{GS}		1.0		nC	
Gate to Drain Charge	Q _{GD}		1.5		nC	
Body Diode Forward Voltage *1	V _{F(S-D)}			1.5	V	I _F = 4.0 A, V _{GS} = 0 V

Note: *1. Pulsed

TEST CIRCUIT 1 SWITCHING TIME

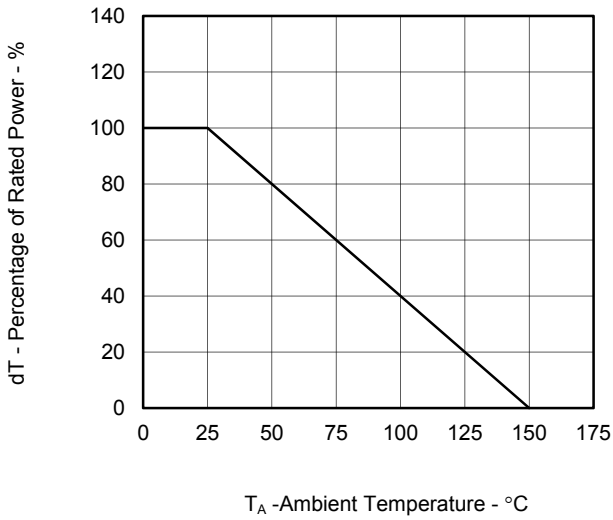


TEST CIRCUIT 2 GATE CHARGE

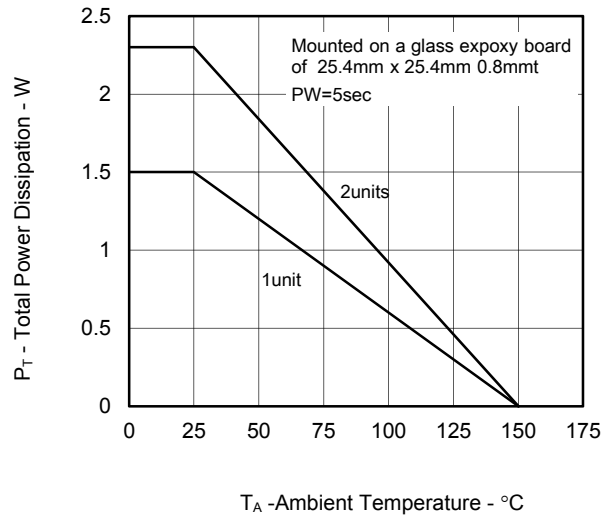


Typical Characteristics (T_A = 25°C)

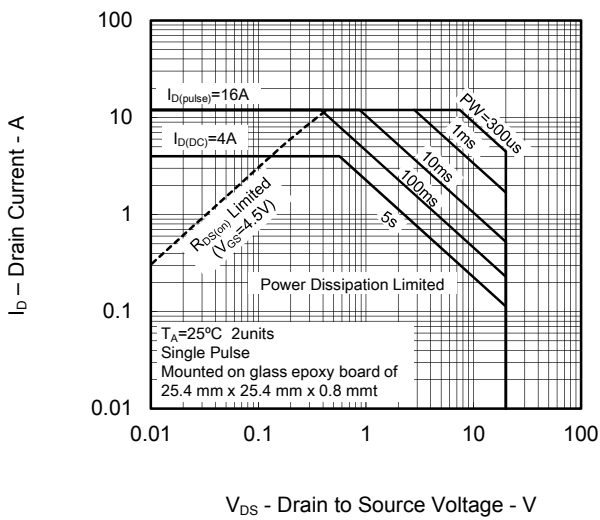
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



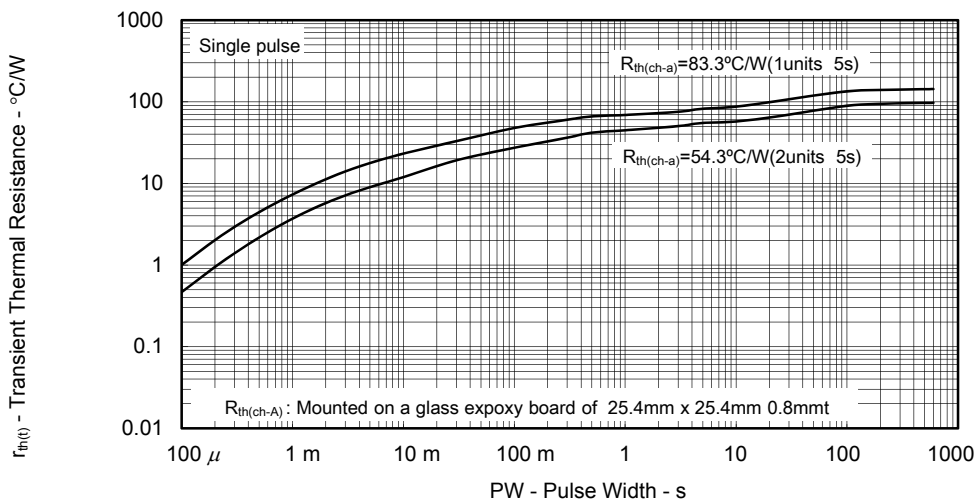
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



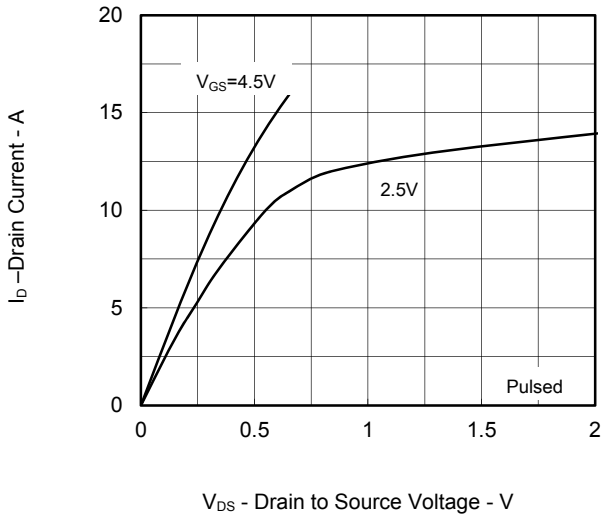
FORWARD BIAS SAFE OPERATING AREA



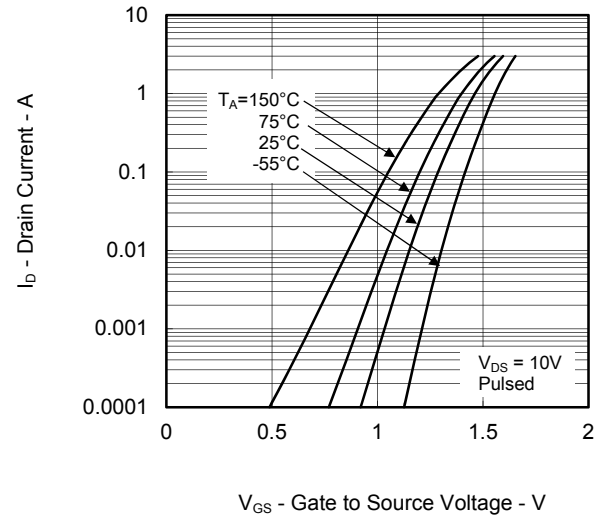
TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



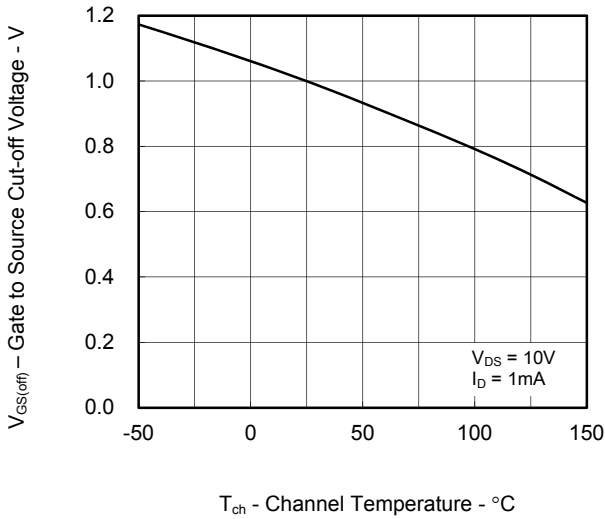
DRAIN CURRENT vs.
DRAIN TO SOURCE VOLTAGE



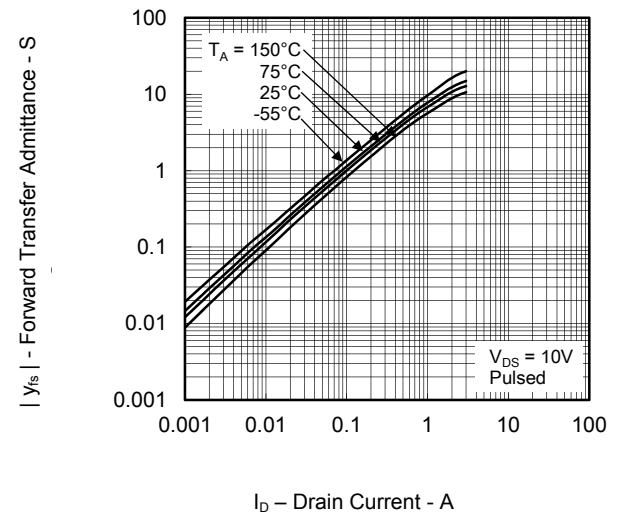
FORWARD TRANSFER CHARACTERISTICS



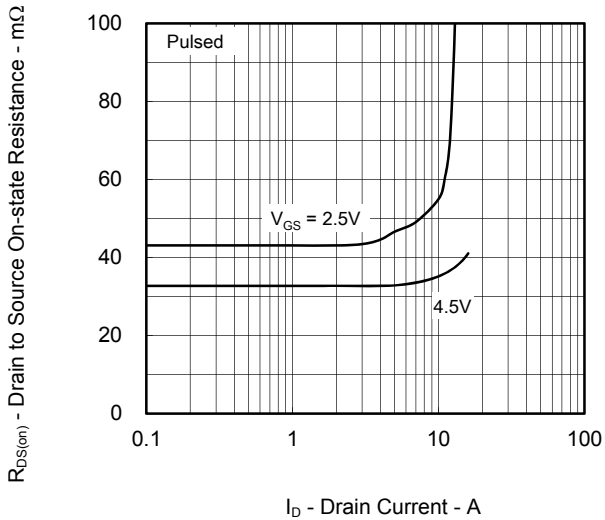
GATE TO SOURCE CUT-OFF VOLTAGE vs.
CHANNEL TEMPERATURE



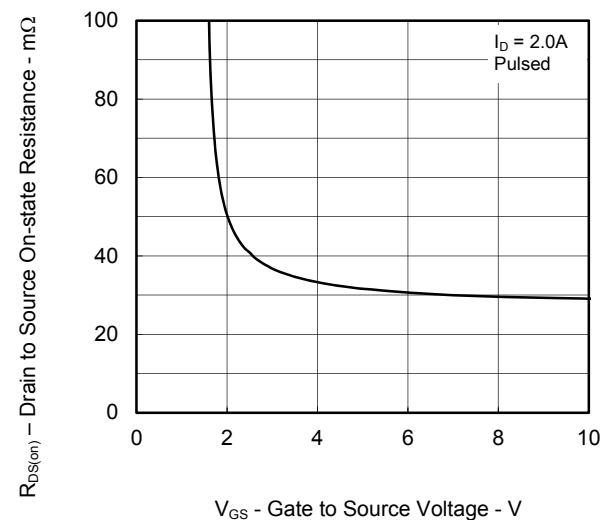
FORWARD TRANSFER ADMITTANCE vs.
DRAIN CURRENT



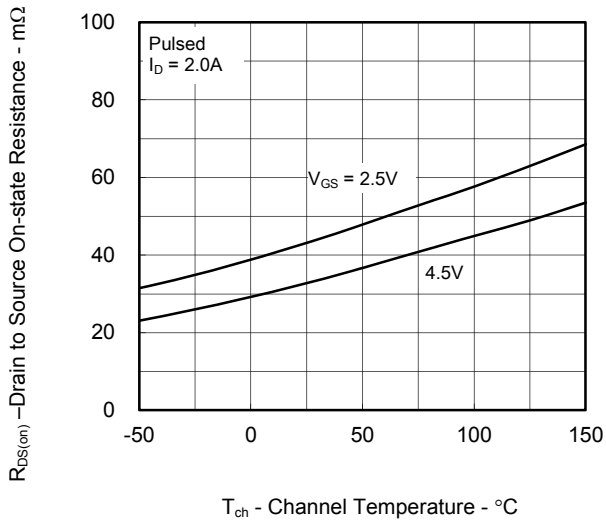
DRAIN TO SOURCE ON-STATE RESISTANCE vs.
DRAIN CURRENT



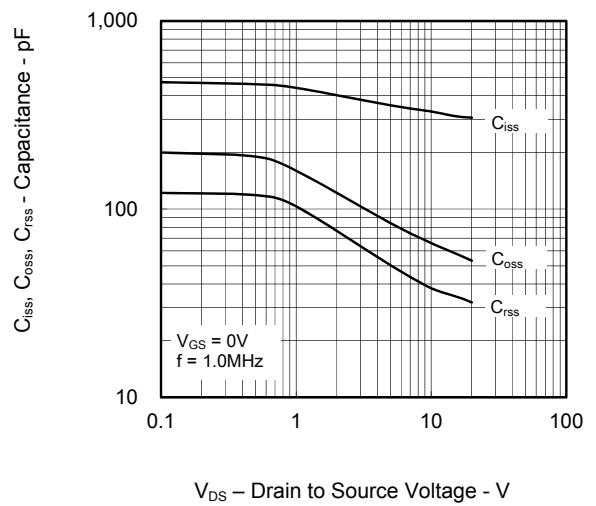
DRAIN TO SOURCE ON-STATE RESISTANCE vs.
GATE TO SOURCE VOLTAGE



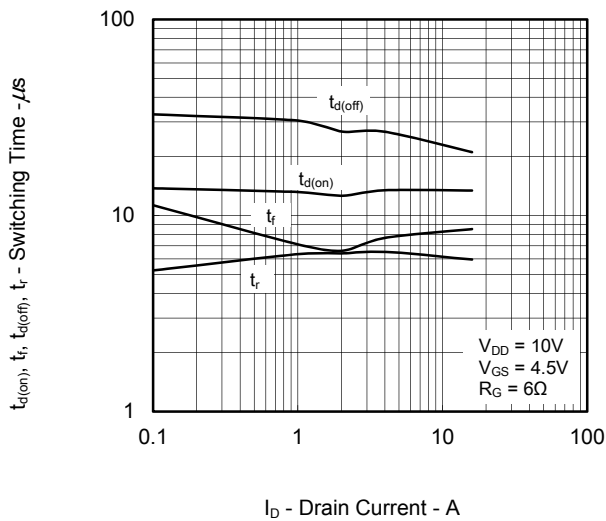
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



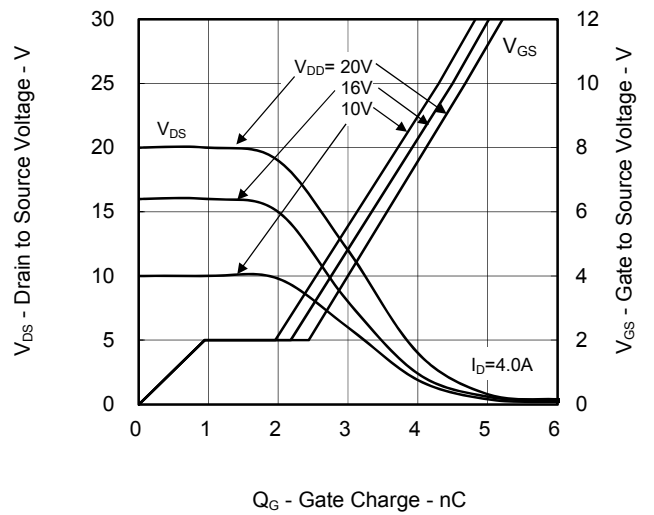
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



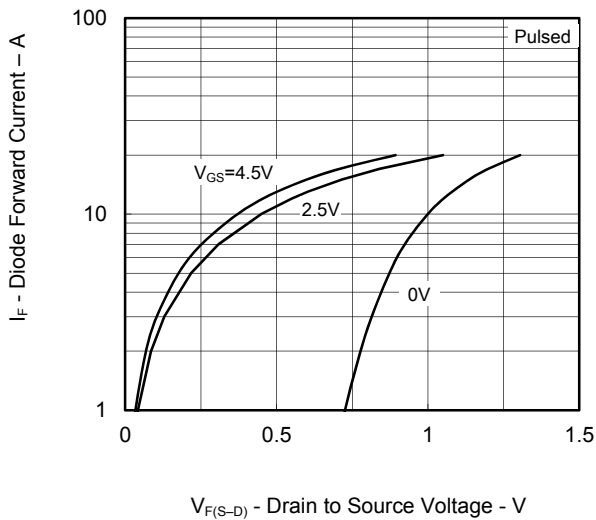
SWITCHING CHARACTERISTICS



DYNAMIC INPUT/OUTPUT CHARACTERISTICS

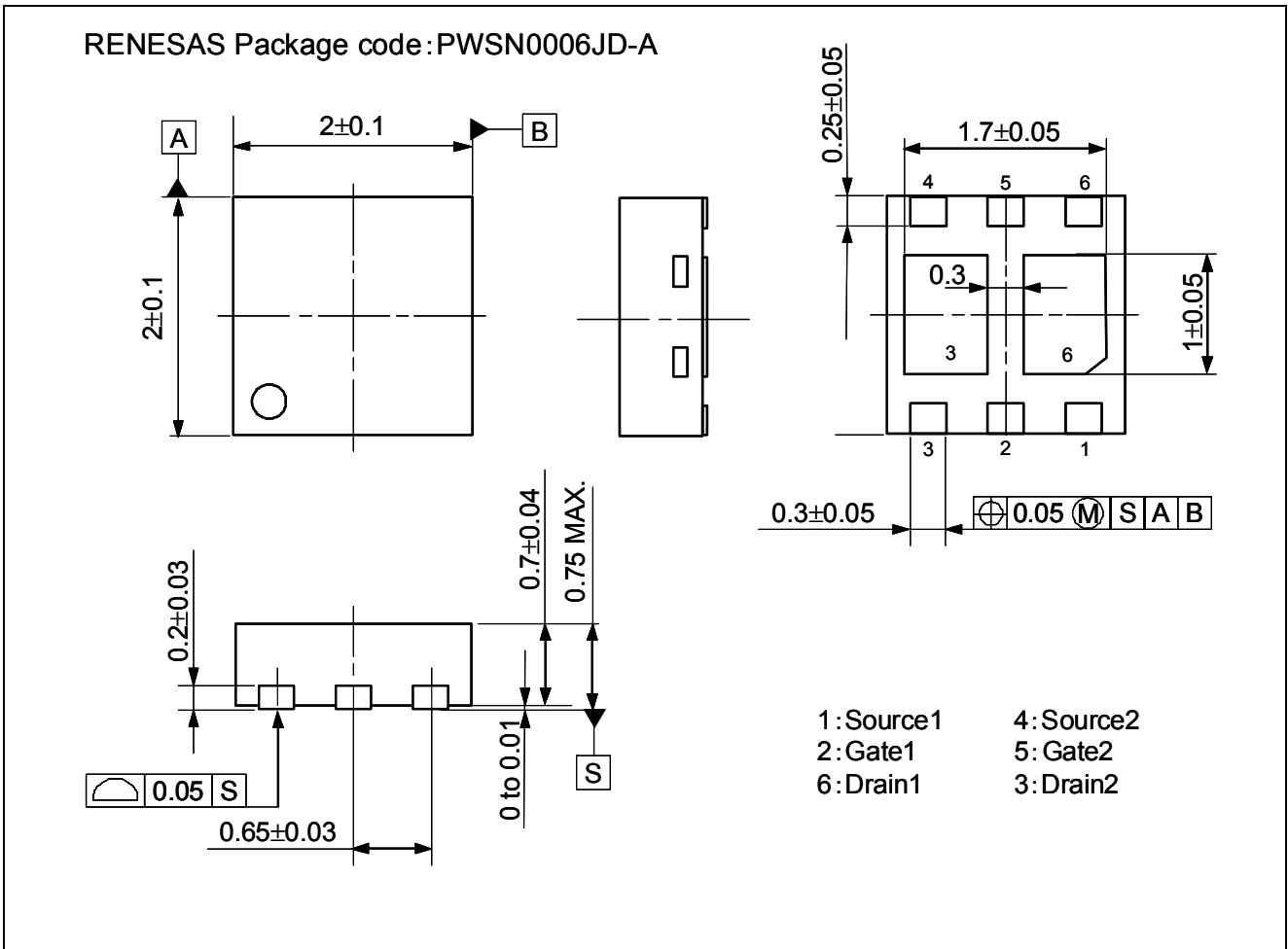


SOURCE TO DRAIN DIODE FORWARD VOLTAGE

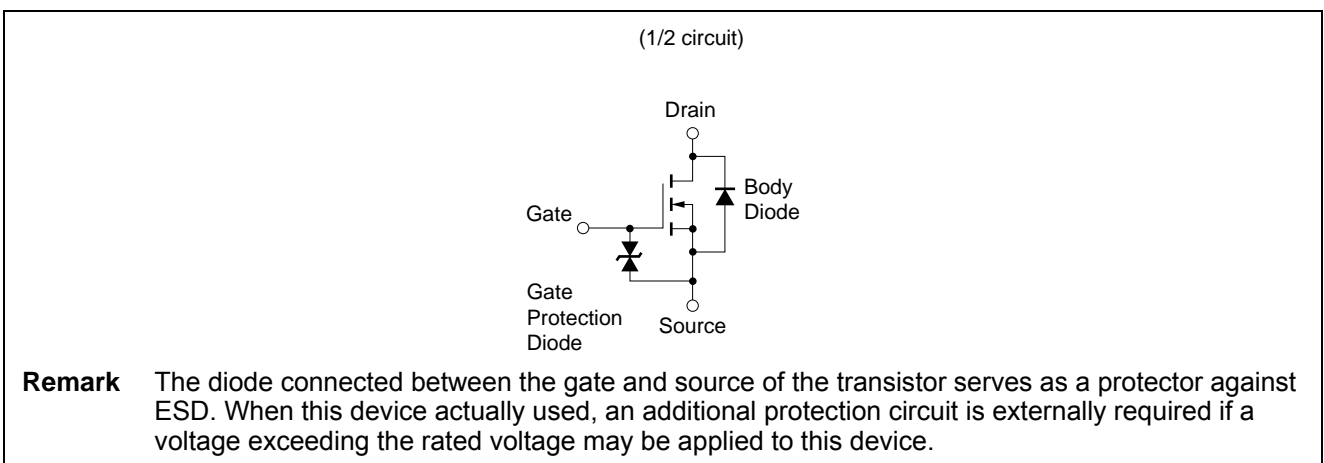


Package Drawings (Unit: mm)

6pinHUSON2020



Equivalent Circuit



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2880 Scott Boulevard Santa Clara, CA 95050-2554, U.S.A.
Tel: +1-408-588-6000, Fax: +1-408-588-6130

Renesas Electronics Canada Limited
1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada
Tel: +1-905-898-5441, Fax: +1-905-898-3220

Renesas Electronics Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: +44-1628-651-700, Fax: +44-1628-651-804

Renesas Electronics Europe GmbH
Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-65030, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
7th Floor, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100083, P.R.China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 204, 205, AZIA Center, No.1233 Lujiazui Ring Rd., Pudong District, Shanghai 200120, China
Tel: +86-21-5877-1818, Fax: +86-21-6887-7858 / -7898

Renesas Electronics Hong Kong Limited
Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2886-9318, Fax: +852 2886-9022/9044

Renesas Electronics Taiwan Co., Ltd.
13F, No. 363, Fu Shing North Road, Taipei, Taiwan
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80 Bendemeer Road, Unit #06-02 Hyflux Innovation Centre Singapore 339949
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Тел: +7 (812) 336 43 04 (многоканальный)
Email: org@lifeelectronics.ru