
2SJ317

Silicon P-Channel MOS FET

HITACHI

Application

High speed power switching

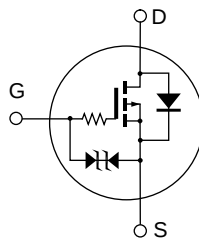
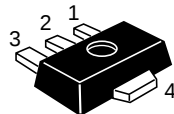
Low voltage operation

Features

- Very low on-resistance
- High speed switching
- Suitable for camera or VTR motor drive circuit, power switch, solenoid drive and etc.

Outline

UPAK



1. Gate
2. Drain
3. Source
4. Drain

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	-12	V
Gate to source voltage	V_{GSS}	-7	V
Drain current	I_D	±2	A
Drain peak current	$I_{D(pulse)}^{*1}$	±4	A
Body to drain diode reverse drain current	I_{DR}	2	A
Channel dissipation	Pch^{*2}	1	W
Channel temperature	Tch	150	°C
Storage temperature	$Tstg$	-55 to +150	°C

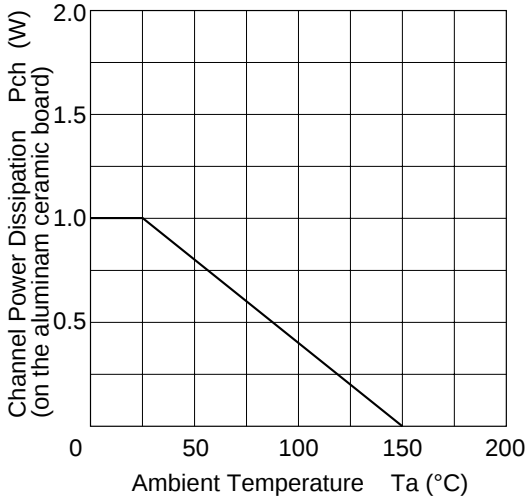
Notes: 1. $PW \leq 100 \mu s$, duty cycle $\leq 10\%$
2. Value on the alumina ceramic board (12.5×20×0.7 mm).
3. Marking is “NY”.

Electrical Characteristics (Ta = 25°C)

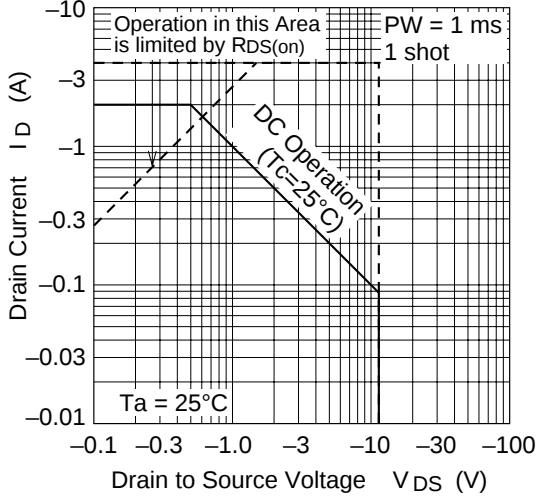
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-12	—	—	V	$I_D = -1 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±7	—	—	V	$I_G = \pm 10 \mu A$, $V_{DS} = 0$
Gate to source cutoff current	I_{GSS}	—	—	±5	μA	$V_{GS} = \pm 6.5 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	-1	μA	$V_{DS} = -8 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	-0.4	—	-1.4	V	$I_D = -100 \mu A$, $V_{DS} = -5 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)1}$	—	0.4	0.7	Ω	$I_D = -0.5 \text{ A}^{*1}$, $V_{GS} = -2.2 \text{ V}$
	$R_{DS(on)2}$	—	0.28	0.35	Ω	$I_D = -1 \text{ A}^{*1}$, $V_{GS} = -4 \text{ V}$
Forward transfer admittance	$ y_{fs} $	1.0	2.3	—	S	$I_D = -1 \text{ A}^{*1}$, $V_{DS} = -5 \text{ V}$
Input capacitance	C_{iss}	—	63	—	pF	$V_{DS} = -5 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	180	—	pF	
Reverse transfer capacitance	C_{rss}	—	23	—	pF	
Turn-on time	t_{on}	—	500	—	ns	$I_D = -0.2 \text{ A}^{*1}$, $V_{in} = -4 \text{ V}$, $R_L = 51 \Omega$
Turn-off time	t_{off}	—	2860	—	ns	

Note: 1. Pulse test

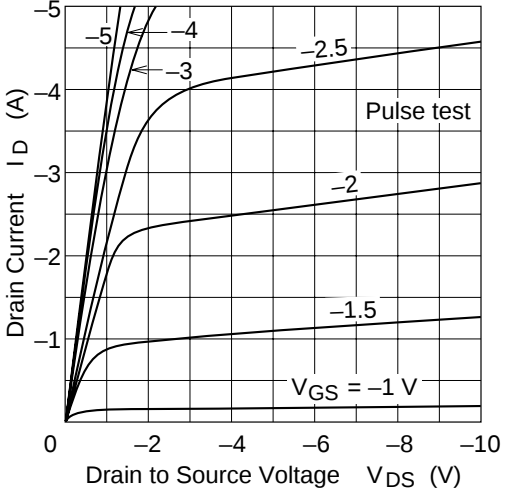
Maximun Power Dissipation Curve



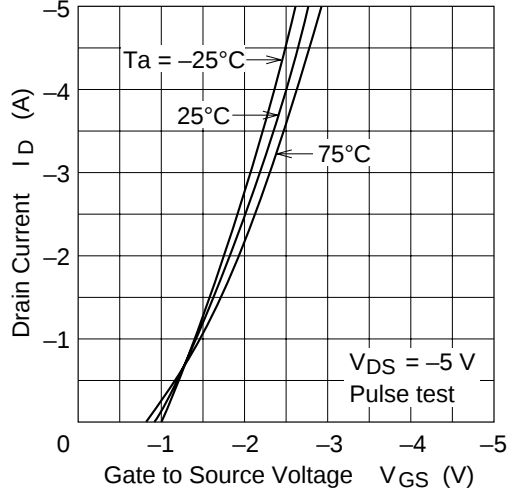
Maximun Safe Operation Area

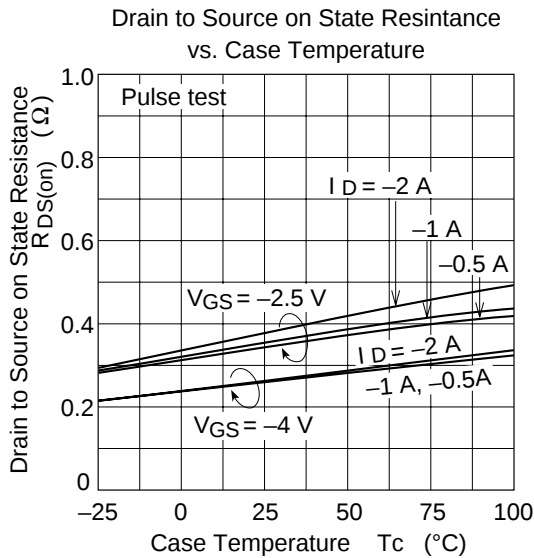
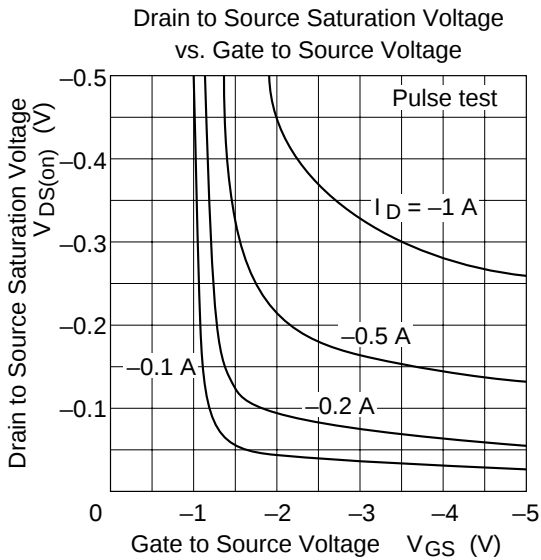
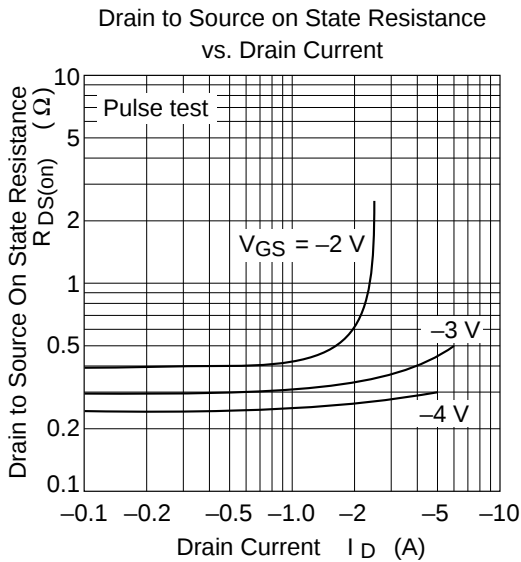
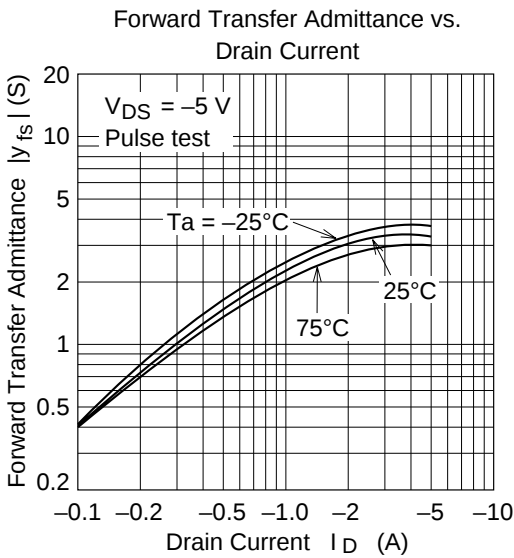


Typical Output Characteristics

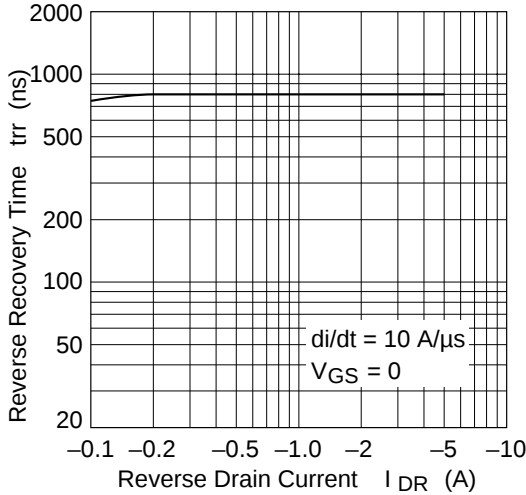


Typical Forward Transfer Characteristics

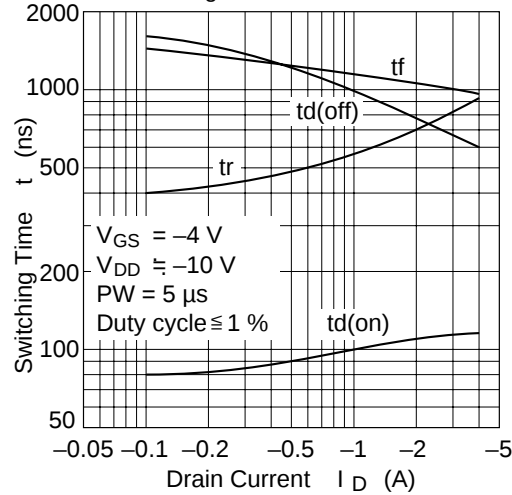




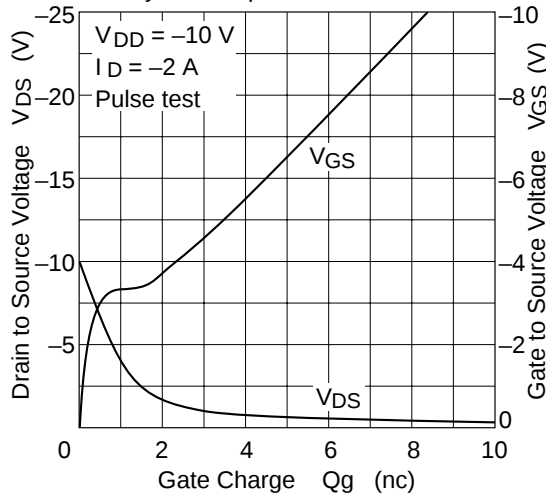
Reverse Recovery Time vs.
Reverse Drain Current



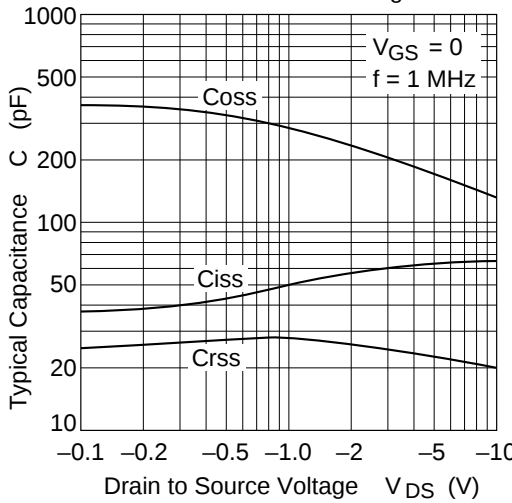
Switching Time vs. Drain Current

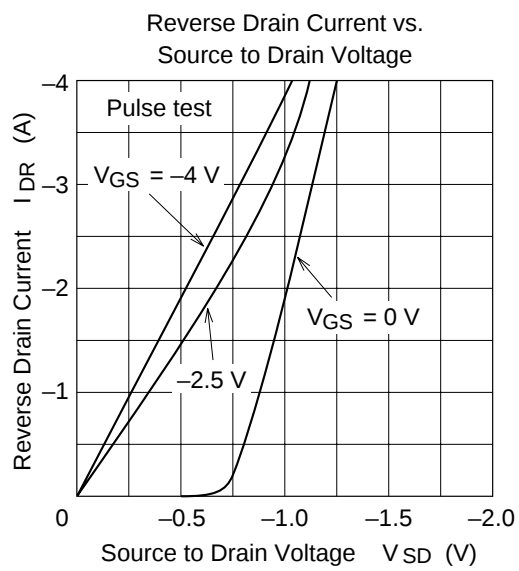


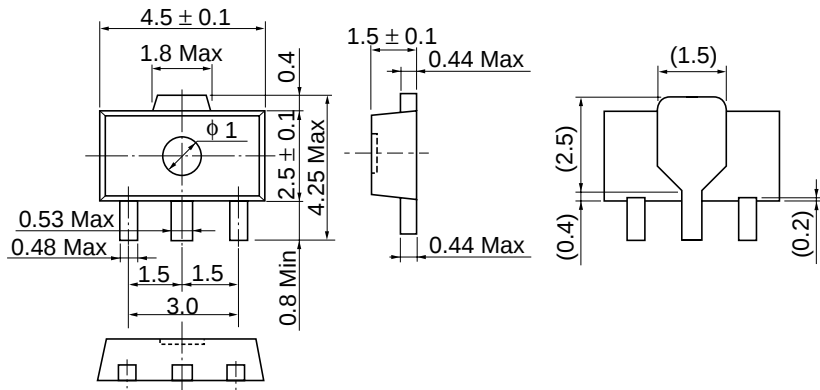
Dynamic Input Characteristics



Typical Capacitance vs.
Drain to Source Voltage







Hitachi Code	UPAK
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.050 g

Cautions

1. Hitachi neither warrants nor grants licenses of any rights of Hitachi's or any third party's patent, copyright, trademark, or other intellectual property rights for information contained in this document. Hitachi bears no responsibility for problems that may arise with third party's rights, including intellectual property rights, in connection with use of the information contained in this document.
2. Products and product specifications may be subject to change without notice. Confirm that you have received the latest product standards or specifications before final design, purchase or use.
3. Hitachi makes every attempt to ensure that its products are of high quality and reliability. However, contact Hitachi's sales office before using the product in an application that demands especially high quality and reliability or where its failure or malfunction may directly threaten human life or cause risk of bodily injury, such as aerospace, aeronautics, nuclear power, combustion control, transportation, traffic, safety equipment or medical equipment for life support.
4. Design your application so that the product is used within the ranges guaranteed by Hitachi particularly for maximum rating, operating supply voltage range, heat radiation characteristics, installation conditions and other characteristics. Hitachi bears no responsibility for failure or damage when used beyond the guaranteed ranges. Even within the guaranteed ranges, consider normally foreseeable failure rates or failure modes in semiconductor devices and employ systemic measures such as fail-safes, so that the equipment incorporating Hitachi product does not cause bodily injury, fire or other consequential damage due to operation of the Hitachi product.
5. This product is not designed to be radiation resistant.
6. No one is permitted to reproduce or duplicate, in any form, the whole or part of this document without written approval from Hitachi.
7. Contact Hitachi's sales office for any questions regarding this document or Hitachi semiconductor products.

HITACHI

Hitachi, Ltd.

Semiconductor & Integrated Circuits.
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan
Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

URL	NorthAmerica	:	http://semiconductor.hitachi.com/
	Europe	:	http://www.hitachi-eu.com/hel/ecg
	Asia (Singapore)	:	http://www.has.hitachi.com.sg/grp3/sicd/index.htm
	Asia (Taiwan)	:	http://www.hitachi.com.tw/E/Product/SICD_Frame.htm
	Asia (HongKong)	:	http://www.hitachi.com.hk/eng/bo/grp3/index.htm
	Japan	:	http://www.hitachi.co.jp/Sicd/indx.htm

For further information write to:

Hitachi Semiconductor (America) Inc. 179 East Tasman Drive, San Jose, CA 95134 Tel: <1> (408) 433-1990 Fax: <1> (408) 433-0223	Hitachi Europe GmbH Electronic components Group Dornacher Straße 3 D-85622 Feldkirchen, Munich Germany Tel: <49> (89) 9 9180-0 Fax: <49> (89) 9 29 30 00 Hitachi Europe Ltd. Electronic Components Group. Whitebrook Park Lower Cookham Road Maidenhead Berkshire SL6 8YA, United Kingdom Tel: <44> (1628) 585000 Fax: <44> (1628) 778322
--	---

Hitachi Asia Pte. Ltd. 16 Collyer Quay #20-00 Hitachi Tower Singapore 049318 Tel: 535-2100 Fax: 535-1533 Hitachi Asia Ltd. Taipei Branch Office 3F, Hung Kuo Building. No.167, Tun-Hwa North Road, Taipei (105) Tel: <886> (2) 2718-3666 Fax: <886> (2) 2718-8180
--

Hitachi Asia (Hong Kong) Ltd. Group III (Electronic Components) 7/F., North Tower, World Finance Centre, Harbour City, Canton Road, Tsim Sha Tsui, Kowloon, Hong Kong Tel: <852> (2) 735 9218 Fax: <852> (2) 730 0281 Telex: 40815 HITEC HX
--

Copyright ' Hitachi, Ltd., 1999. All rights reserved. Printed in Japan.