

H5N2512FN

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G1767-0100

Rev.1.00

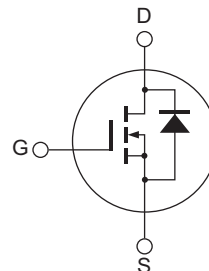
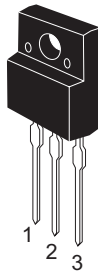
Jul 02, 2009

Features

- Low on-resistance
- Low leakage current
- High speed switching
- Built-in fast recovery diode

Outline

RENESAS Package code: PRSS0003AB-A
(Package name: TO-220FN)



1. Gate
2. Drain
3. Source

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DS}	250	V
Gate to source voltage	V_{GS}	± 30	V
Drain current	I_D	18	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	72	A
Body-drain diode reverse drain current	I_{DR}	18	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$ ^{Note1}	72	A
Avalanche current	I_{AP} ^{Note3}	18	A
Channel dissipation	P_{ch} ^{Note2}	35	W
Channel to case thermal impedance	θ_{ch-c}	3.57	°C/W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

- Notes: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1\%$
 2. Value at $T_c = 25^\circ C$
 3. $T_{ch} \leq 150^\circ C$

Electrical Characteristics

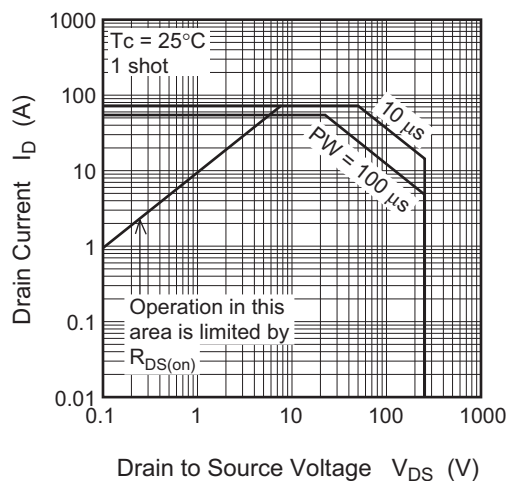
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to Source breakdown voltage	$V_{(BR)DSS}$	250	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 250 \text{ V}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 30 \text{ V}$, $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.5	—	4.0	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Forward transfer admittance	$ y_{fs} $	9	16	—	S	$I_D = 9 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note4}
Static drain to source on state resistance	$R_{DS(on)}$	—	0.082	0.105	Ω	$I_D = 9 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4}
Input capacitance	C_{iss}	—	2200	—	pF	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	300	—	pF	
Reverse transfer capacitance	C_{rss}	—	85	—	pF	
Turn-on delay time	$t_{d(on)}$	—	32	—	ns	$I_D = 9 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 13.9 \Omega$ $R_g = 10 \Omega$
Rise time	t_r	—	60	—	ns	
Turn-off delay time	$t_{d(off)}$	—	160	—	ns	
Fall time	t_f	—	60	—	ns	
Total gate charge	Q_g	—	81	—	nC	$V_{DD} = 200 \text{ V}$ $V_{GS} = 10 \text{ V}$ $I_D = 18 \text{ A}$
Gate to source charge	Q_{gs}	—	10	—	nC	
Gate to drain charge	Q_{gd}	—	38	—	nC	
Body-drain diode forward voltage	V_{DF}	—	0.9	1.4	V	$I_F = 18 \text{ A}$, $V_{GS} = 0$ ^{Note4}
Body-drain diode reverse recovery time	t_{rr}	—	110	—	ns	$I_F = 18 \text{ A}$, $V_{GS} = 0$ $diF/dt = 100 \text{ A}/\mu\text{s}$
Body-drain diode reverse recovery time	Q_{rr}	—	0.39	—	μC	

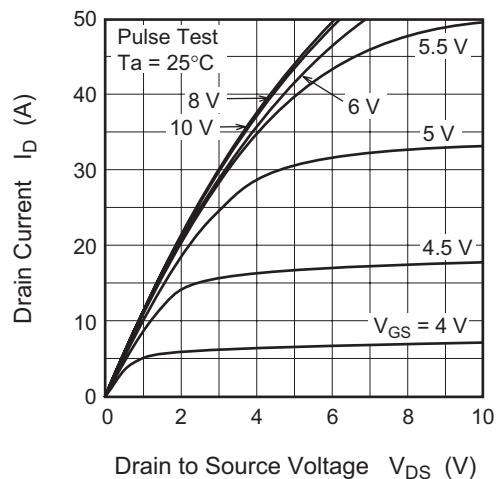
Notes: 4. Pulse test

Main Characteristics

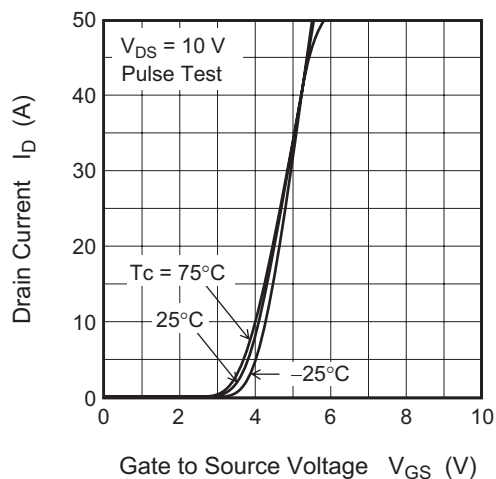
Maximum Safe Operation Area



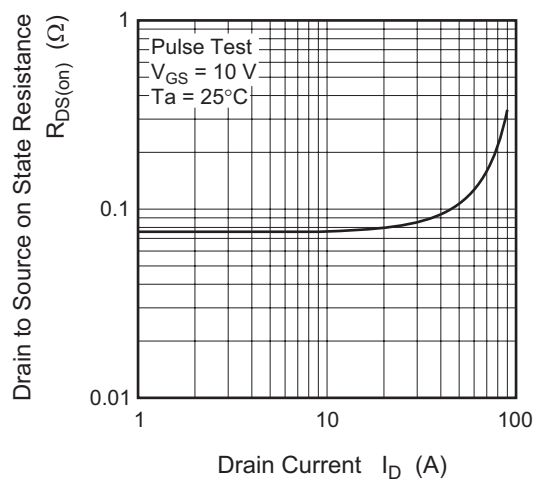
Typical Output Characteristics



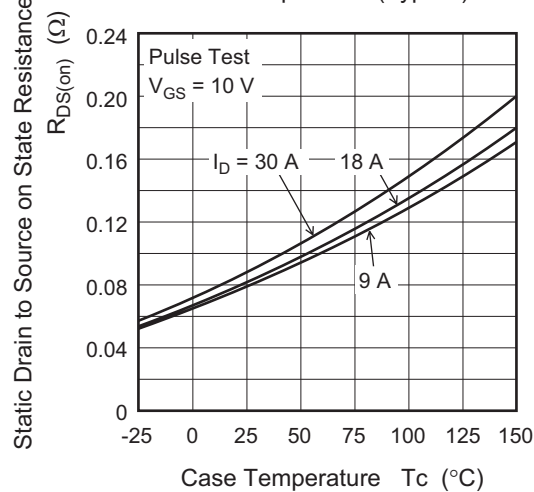
Typical Transfer Characteristics



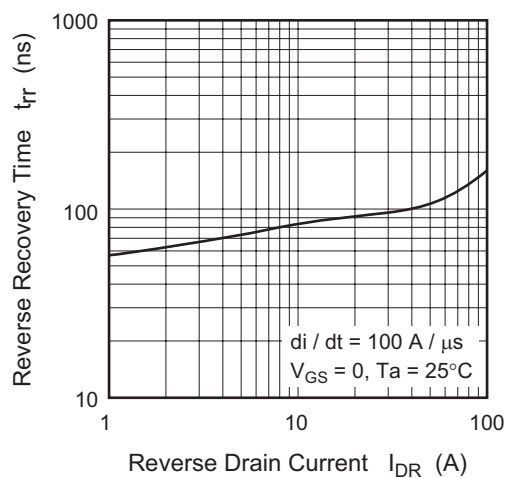
Static Drain to Source on State Resistance vs. Drain Current (Typical)

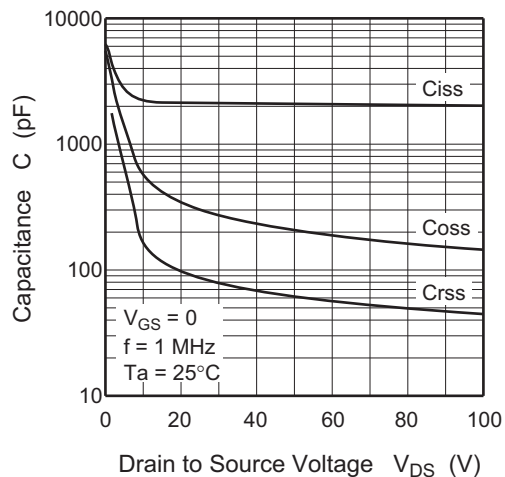


Static Drain to Source on State Resistance vs. Temperature (Typical)

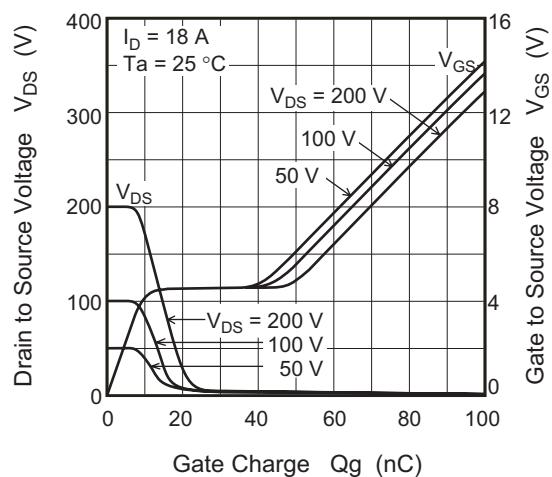
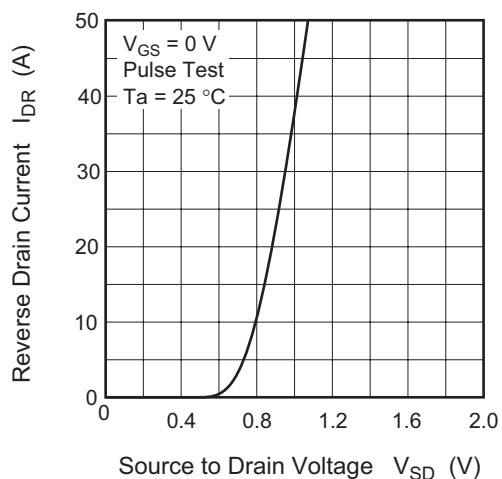
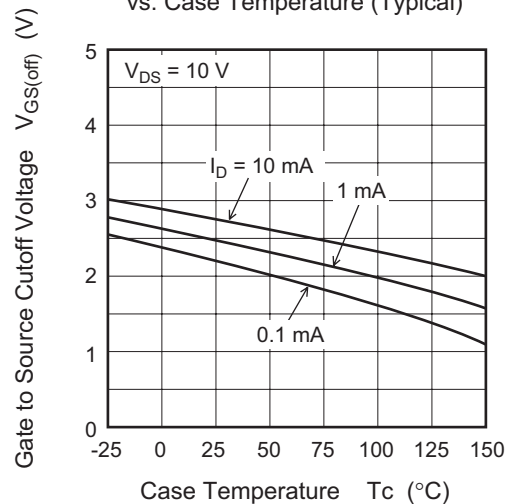


Body-Drain Diode Reverse Recovery Time (Typical)

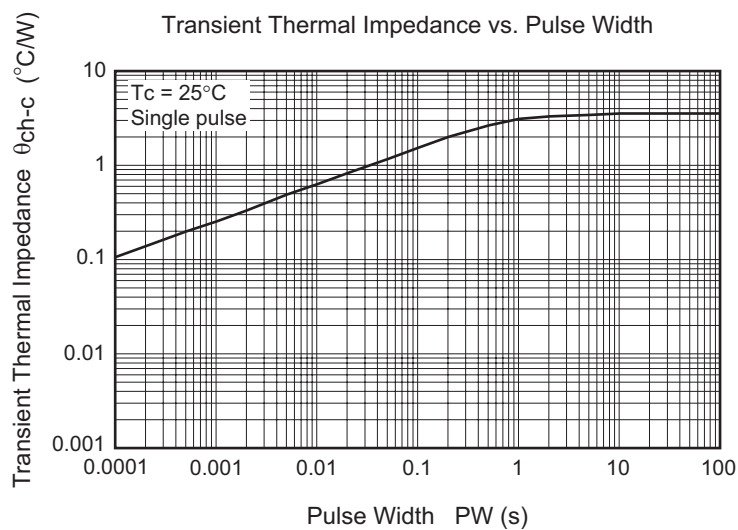


Typical Capacitance vs.
Drain to Source Voltage

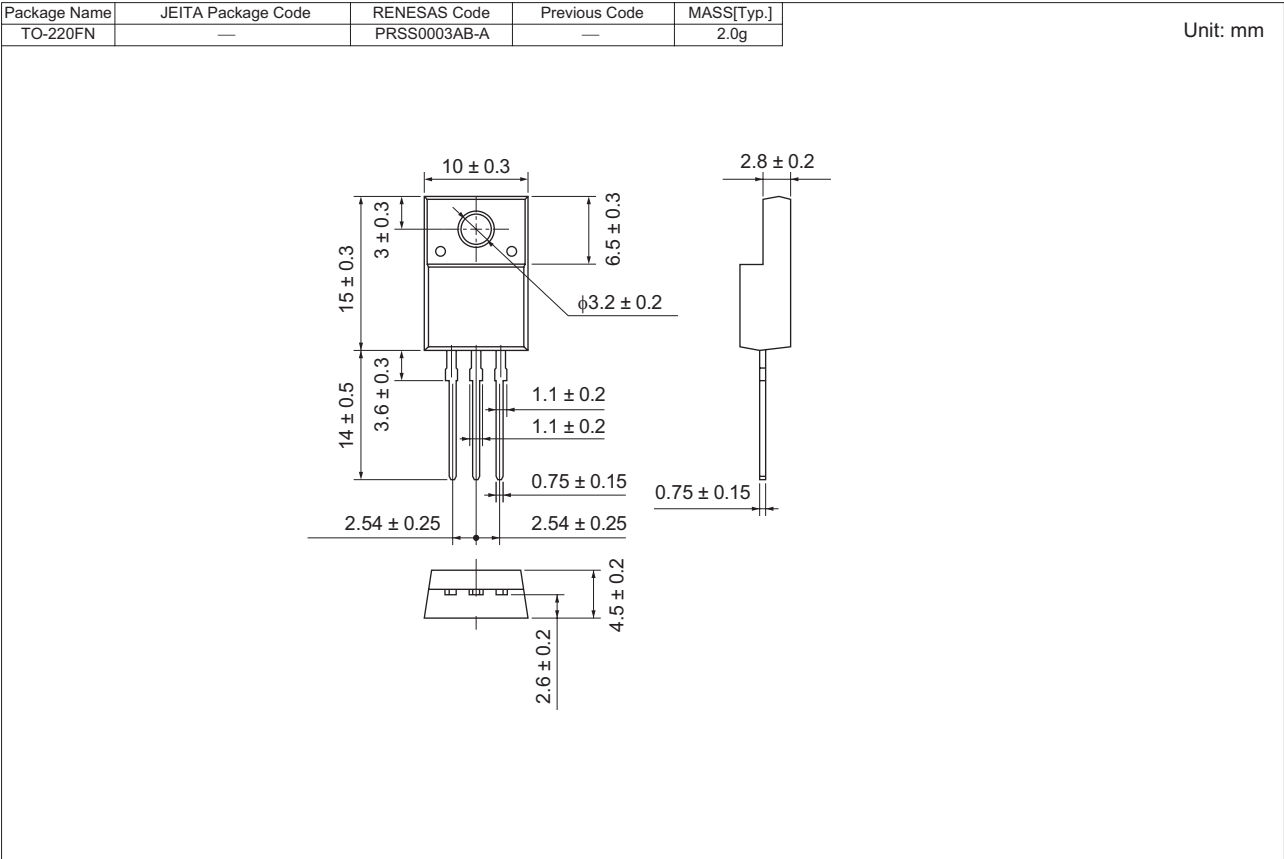
Dynamic Input Characteristics (Typical)

Reverse Drain Current vs.
Source to Drain Voltage (Typical)Gate to Source Cutoff Voltage
vs. Case Temperature (Typical)

Transient Thermal Impedance vs. Pulse Width



Package Dimensions



Ordering Information

Part No.	Quantity	Shipping Container
H5N2512FN-E	1050 pcs	Box (Tube)

Notes:

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Renesas Technology America, Inc.
450 Holger Way, San Jose, CA 95134-1368, U.S.A
Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

Renesas Technology Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

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

Renesas Technology Hong Kong Ltd.
7th Floor, North Tower, World Finance Centre, Harbour City, Canton Road, Tsimshatsui, Kowloon, Hong Kong
Tel: <852> 2265-6688, Fax: <852> 2377-3473

Renesas Technology Taiwan Co., Ltd.
10th Floor, No.99, Fushing North Road, Taipei, Taiwan
Tel: <886> (2) 2715-2888, Fax: <886> (2) 3518-3399

Renesas Technology Singapore Pte. Ltd.
1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632
Tel: <65> 6213-0200, Fax: <65> 6278-8001

Renesas Technology Korea Co., Ltd.
Kukje Center Bldg. 18th Fl., 191, 2-ka, Hangang-ro, Yongsan-ku, Seoul 140-702, Korea
Tel: <82> (2) 796-3115, Fax: <82> (2) 796-2145

Renesas Technology Malaysia Sdn. Bhd
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: <603> 7955-9390, Fax: <603> 7955-9510