

H5N2512FN

Silicon N Channel MOS FET High Speed Power Switching

REJ03G1767-0100

Rev.1.00

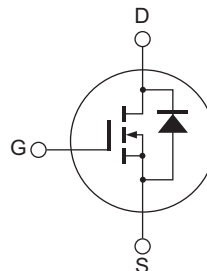
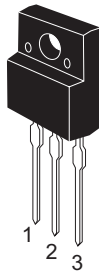
Jul 02, 2009

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 _{DSS}	250	V
Gate to source voltage	V _{GSS}	±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 ≤ 10 μs, duty cycle ≤ 1%
 2. Value at Tc = 25°C
 3. T_{ch} ≤ 150°C

Electrical Characteristics

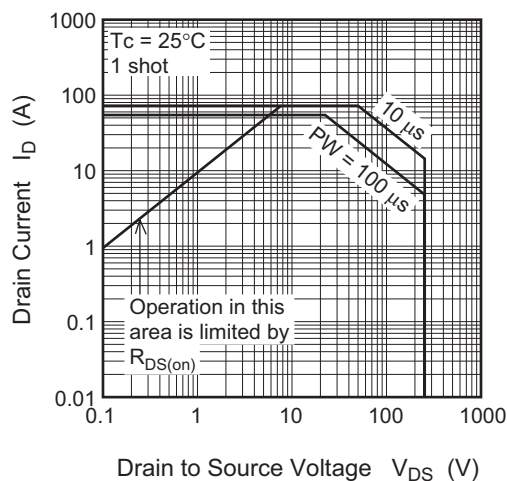
(Ta = 25°C)

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	

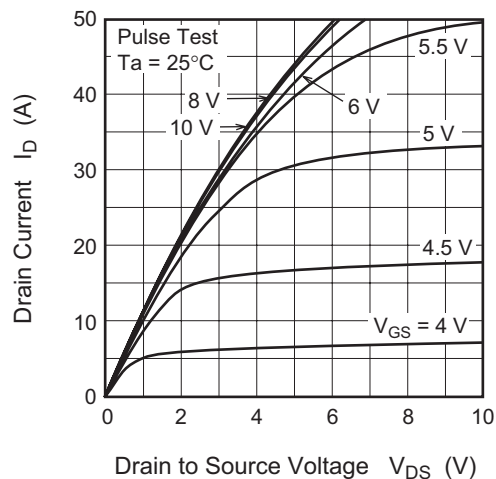
Notes: 4. Pulse test

Main Characteristics

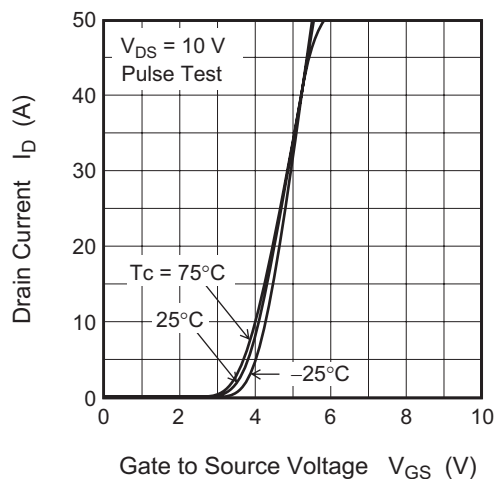
Maximum Safe Operation Area



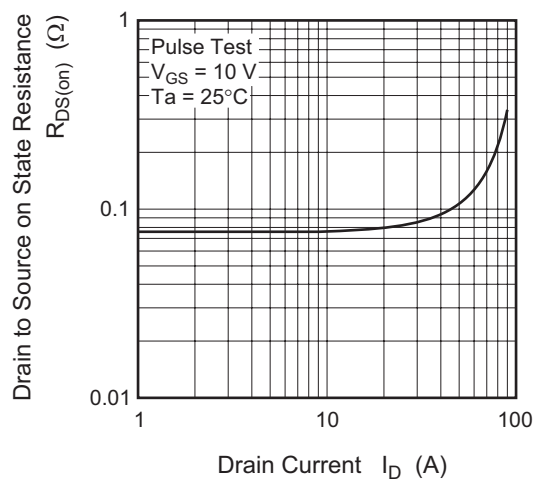
Typical Output Characteristics



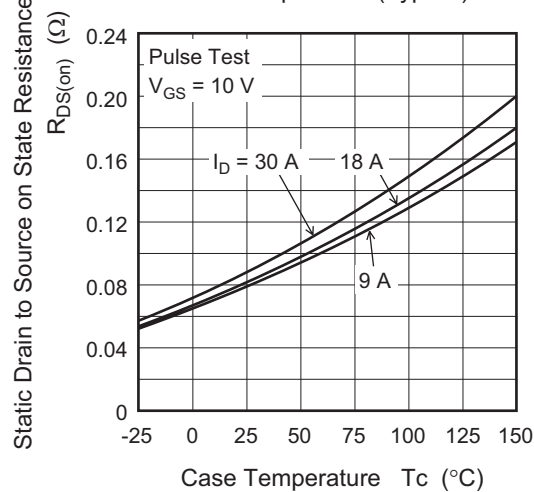
Typical Transfer Characteristics



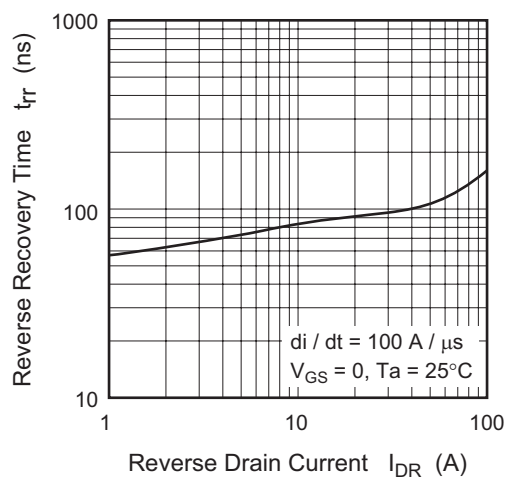
Static Drain to Source on State Resistance vs. Drain Current (Typical)

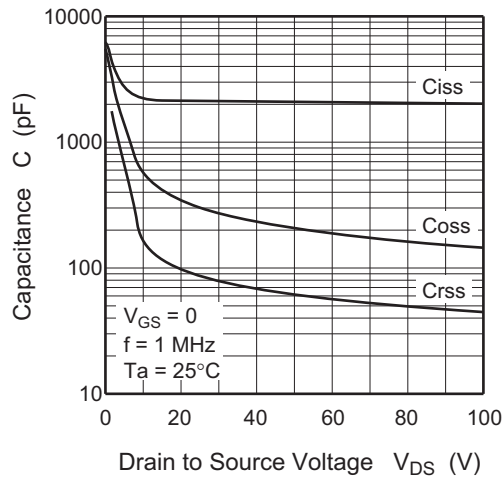


Static Drain to Source on State Resistance vs. Temperature (Typical)

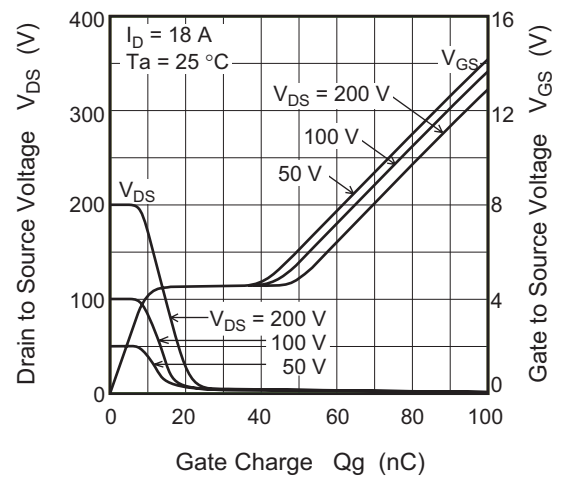
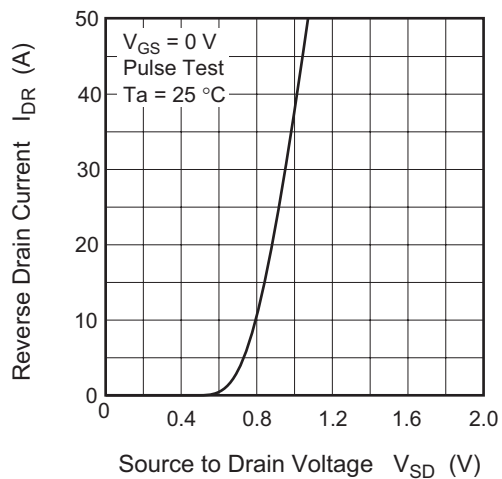
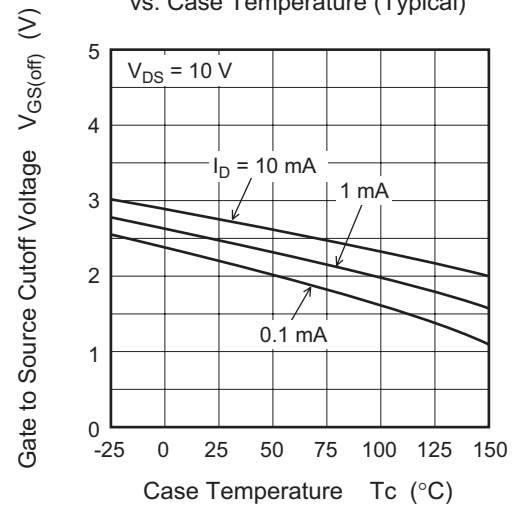


Body-Drain Diode Reverse Recovery Time (Typical)

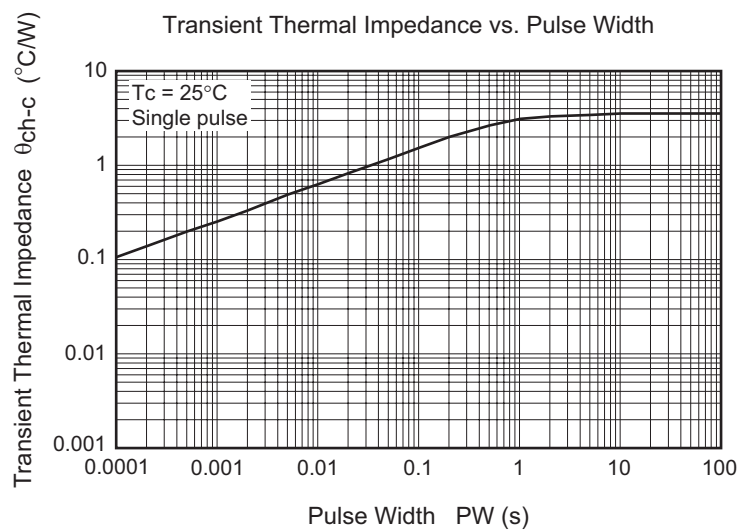


Typical Capacitance vs.
Drain to Source Voltage

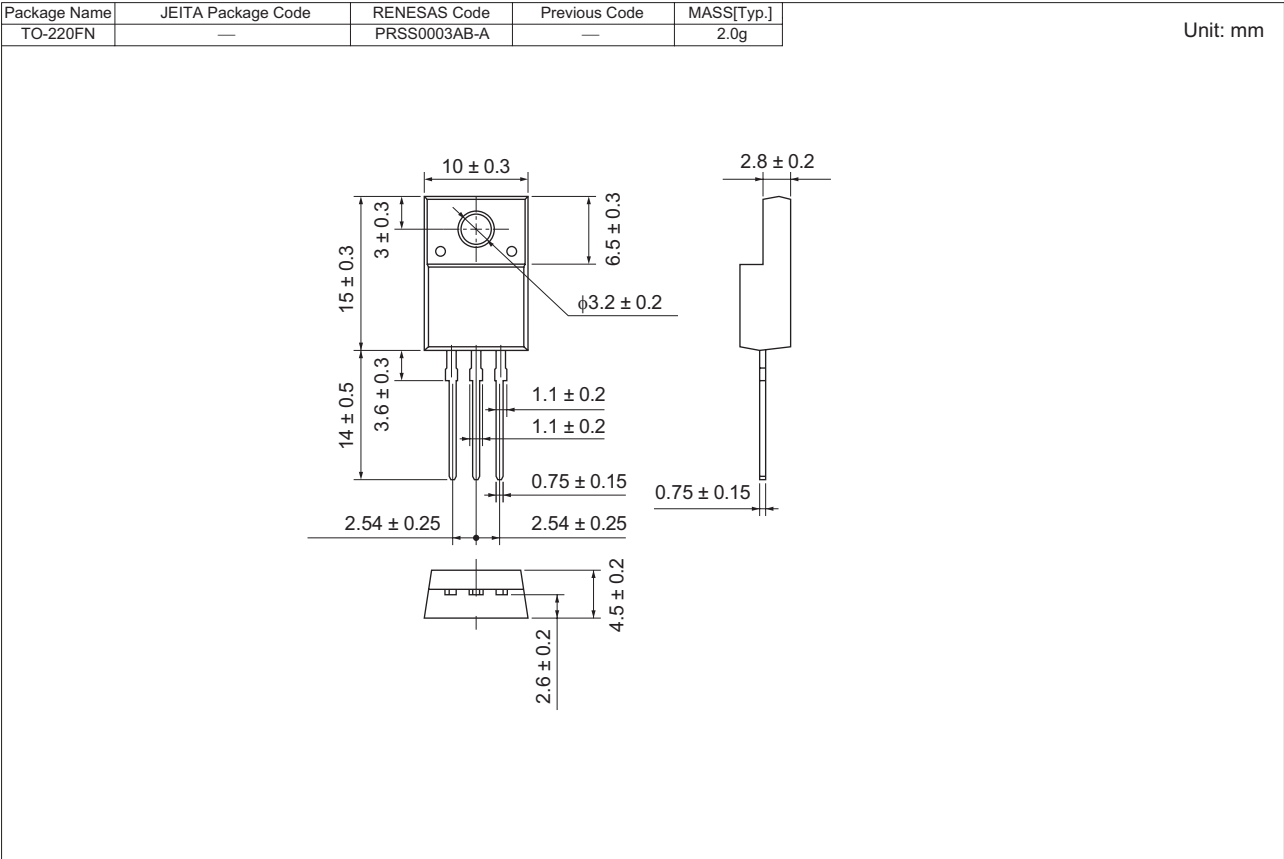
Dynamic Input Characteristics (Typical)

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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