

2SK2959

Silicon N Channel MOS FET High Speed Power Switching

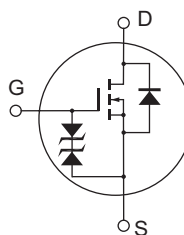
REJ03G1059-0500
(Previous: ADE-208-569C)
Rev.5.00
Sep 07, 2005

Features

- Low on-resistance
 $R_{DS(on)} = 7 \text{ m}\Omega$ typ.
- 4 V gate drive devices.
- High speed switching

Outline

RENESAS Package code: PRSS0004AC-A
(Package name: TO-220AB)



1. Gate
2. Drain
(Flange)
3. Source

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	30	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	50	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	200	A
Body-drain diode reverse drain current	I_{DR}	50	A
Channel dissipation	P_{ch} ^{Note2}	75	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 $T_c = 25^\circ C$

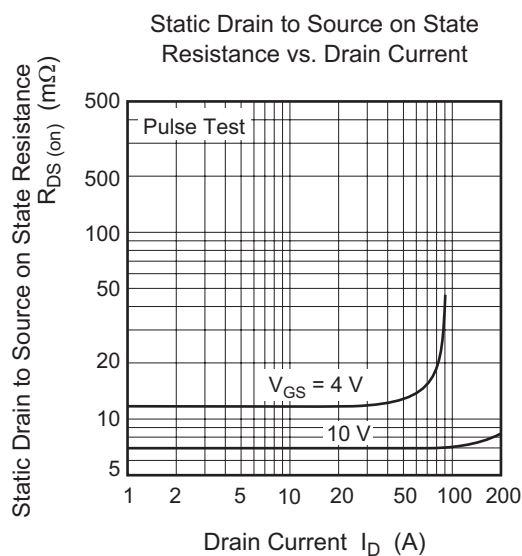
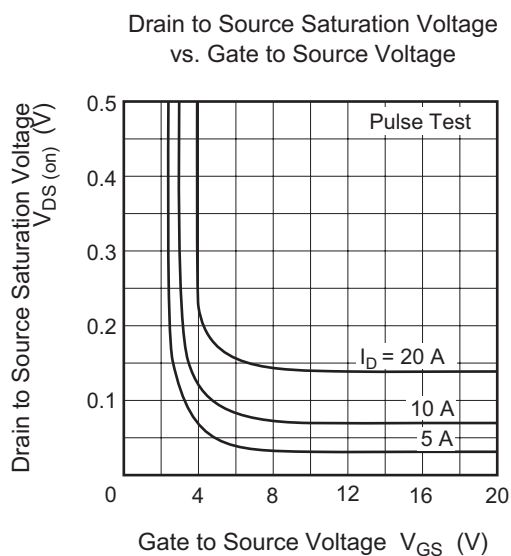
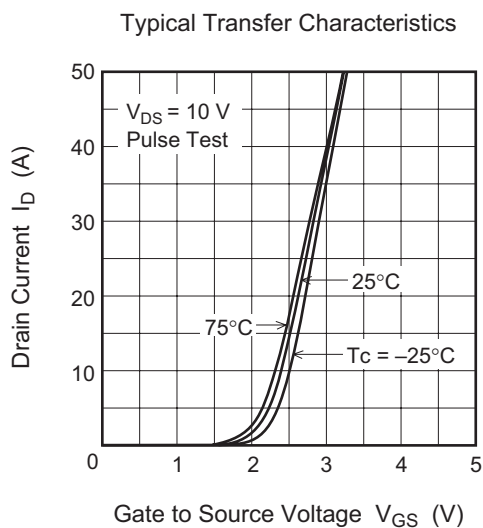
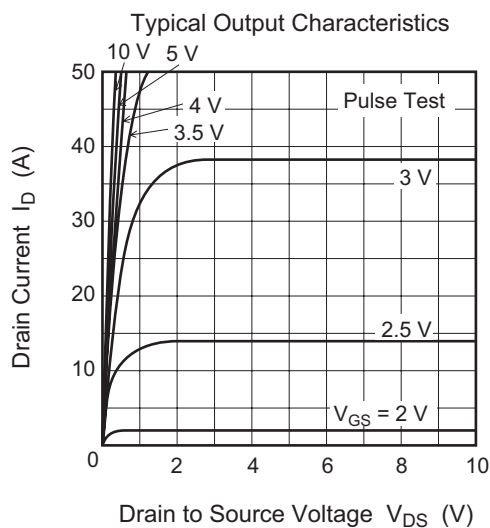
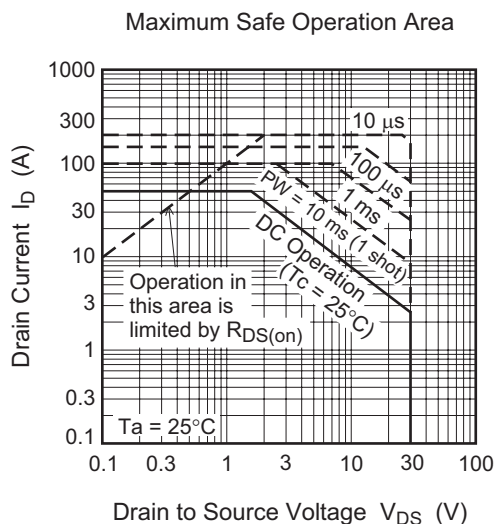
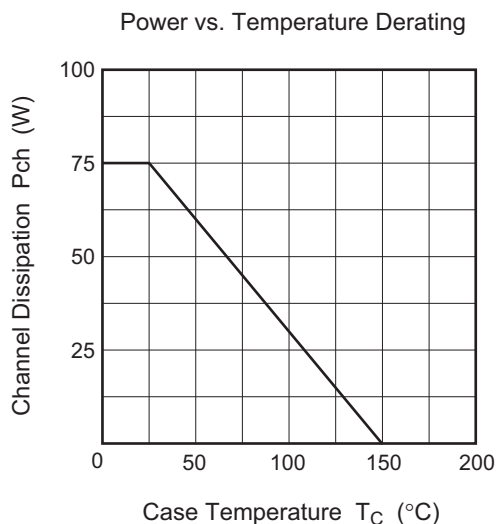
Electrical Characteristics

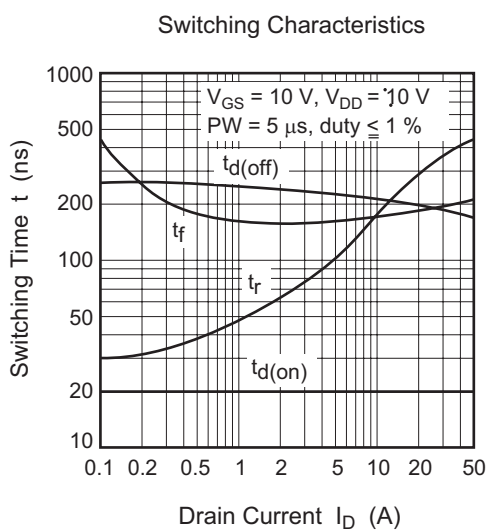
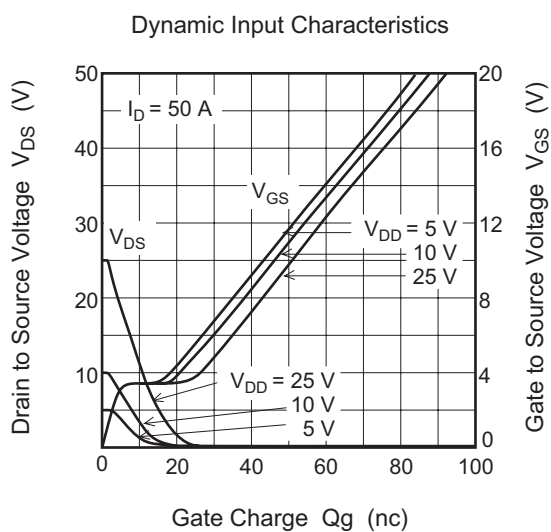
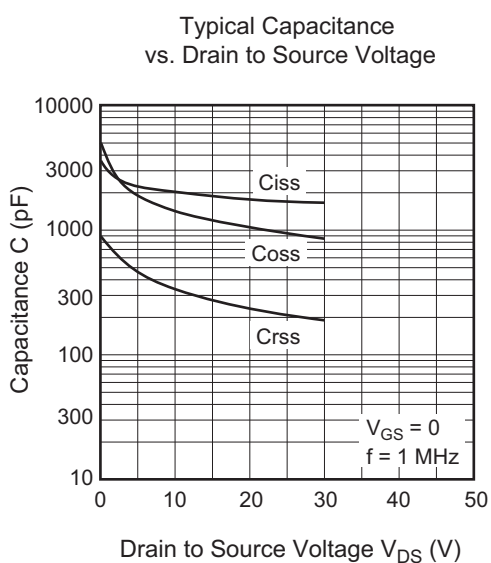
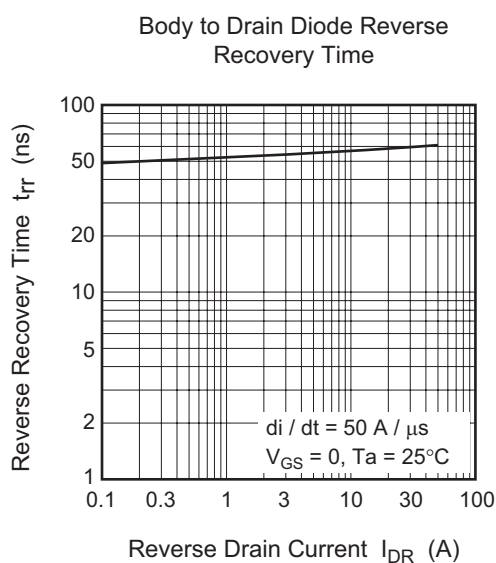
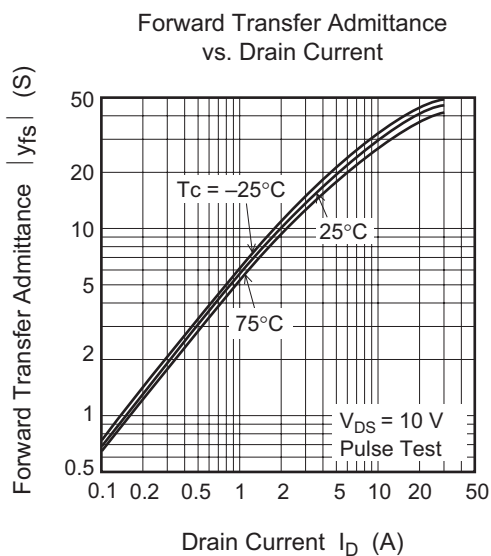
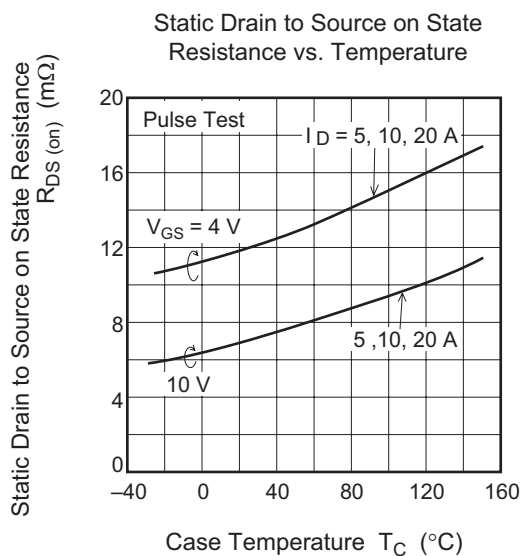
(Ta = 25°C)

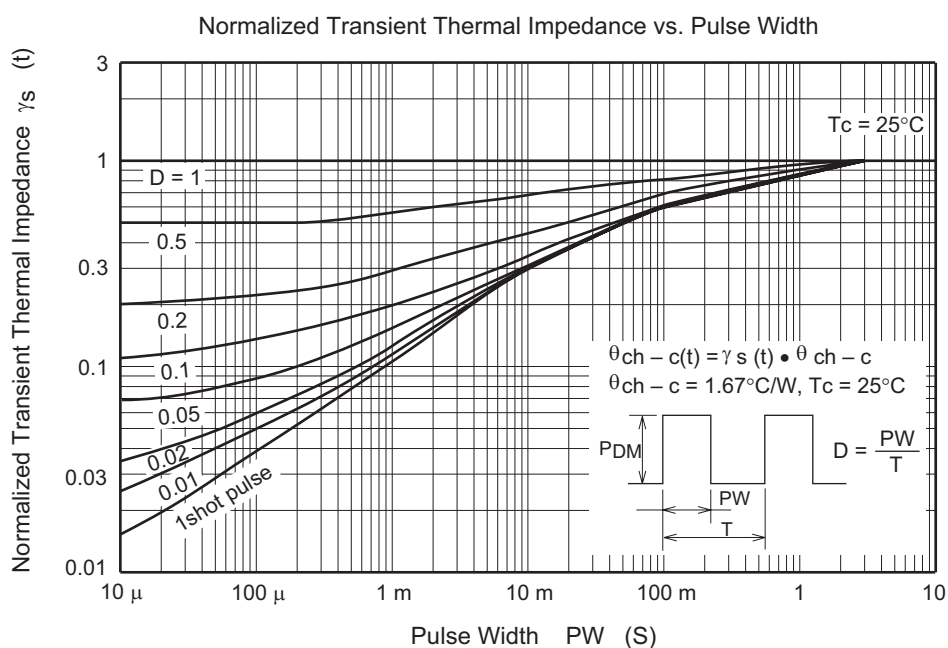
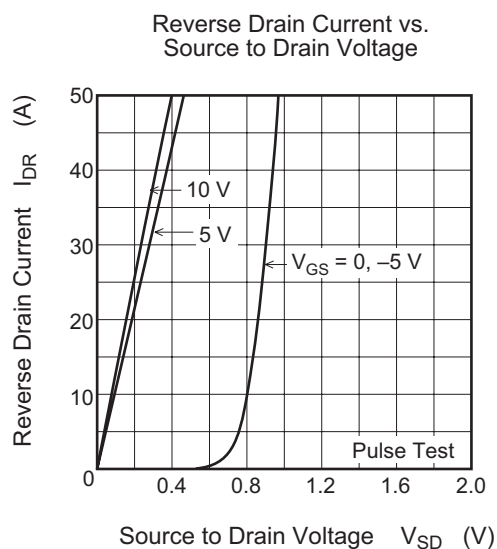
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 10m A$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100 \mu A$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 30 V$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 16 V$, $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	$I_D = 1 mA$, $V_{DS} = 10 V$
Static drain to source on state resistance	$R_{DS(on)}$	—	7.0	10	$m\Omega$	$I_D = 25 A$, $V_{GS} = 10 V$ ^{Note3}
	$R_{DS(on)}$	—	12	18	$m\Omega$	$I_D = 25 A$, $V_{GS} = 4 V$ ^{Note3}
Forward transfer admittance	$ y_{fs} $	25	45	—	S	$I_D = 25 A$, $V_{DS} = 10 V$ ^{Note3}
Input capacitance	C_{iss}	—	2000	—	pF	$V_{DS} = 10 V$, $V_{GS} = 0$, $f = 1 MHz$
Output capacitance	C_{oss}	—	1500	—	pF	
Reverse transfer capacitance	C_{rss}	—	350	—	pF	
Turn-on delay time	$t_{d(on)}$	—	20	—	ns	$V_{GS} = 10 V$, $I_D = 25 A$, $R_L = 0.4 \Omega$
Rise time	t_r	—	330	—	ns	
Turn-off delay time	$t_{d(off)}$	—	190	—	ns	
Fall time	t_f	—	190	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.95	—	V	$I_F = 50A$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	60	—	ns	$I_F = 50A$, $V_{GS} = 0$ $di_F/dt = 50 A/\mu s$

Note: 3. Pulse test

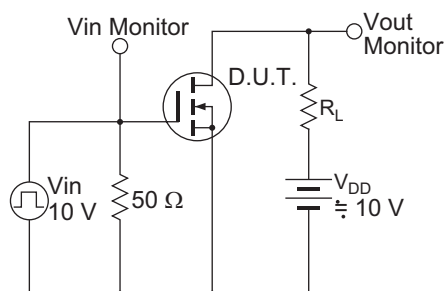
Main Characteristics



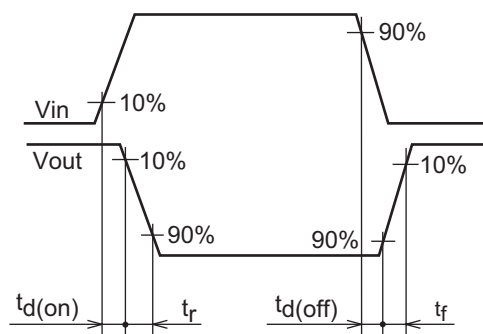




Switching Time Test Circuit



Waveform



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