

2SK2978

Silicon N Channel MOS FET High Speed Power Switching

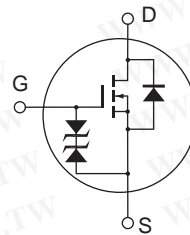
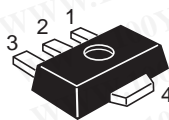
REJ03G1060-0500
(Previous: ADE-208-659C)
Rev.5.00
Sep.07,2005

Features

- Low on-resistance
 $R_{DS(on)} = 0.09 \Omega$ typ. ($V_{GS} = 4 V, I_D = 1.5 A$)
- Low drive current
- High speed switching
- 2.5 V gate drive devices.

Outline

RENESAS Package code: PLZZ0004CA-A
(Package name: UPAK[®])



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

Note: Marking is "ZY"

*UPAK is a trademark of Renesas Technology Corp.

勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-34970699
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[Http://www.100y.com.tw](http://www.100y.com.tw)

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	20	V
Gate to source voltage	V_{GSS}	±10	V
Drain current	I_D	2.5	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	5	A
Body-drain diode reverse drain current	I_{DR}	2.5	A
Channel dissipation	P_{ch} ^{Note2}	1	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. When using the alumina ceramic board (12.5 x 20 x 0.7 mm)

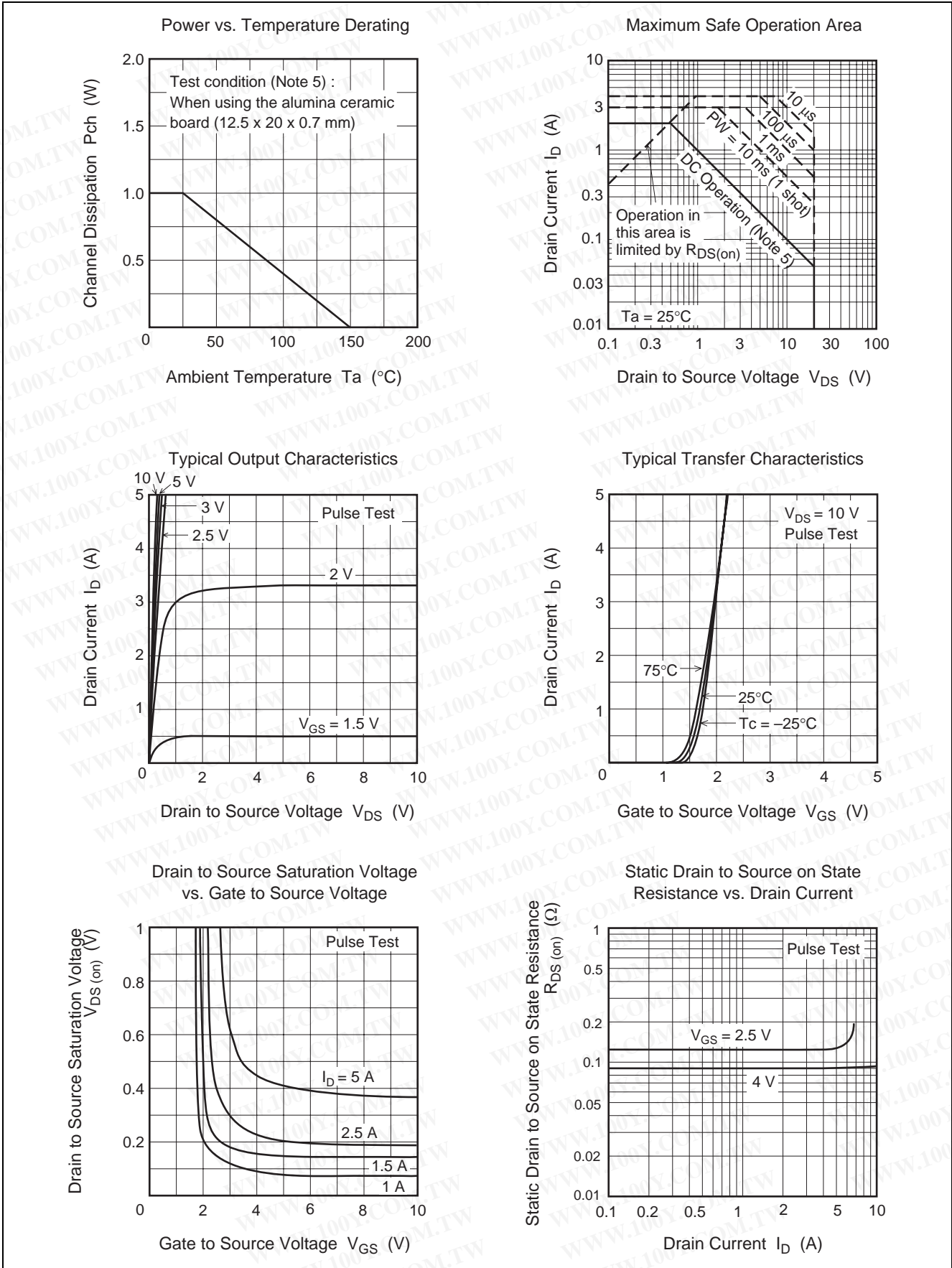
Electrical Characteristics

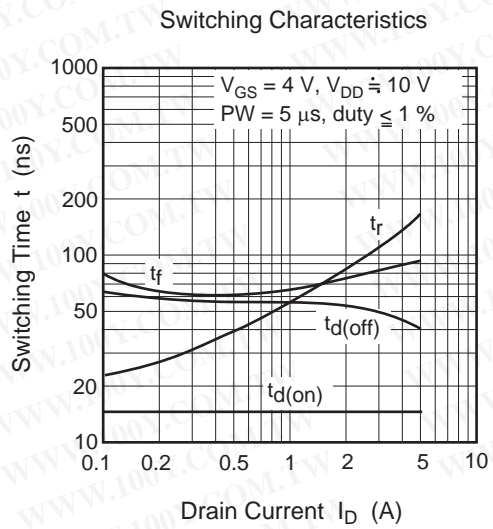
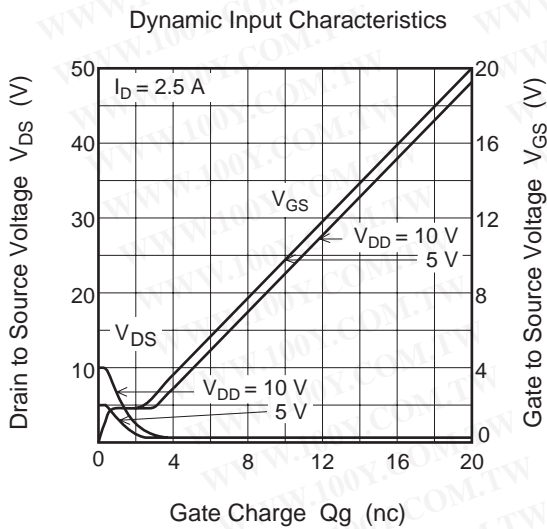
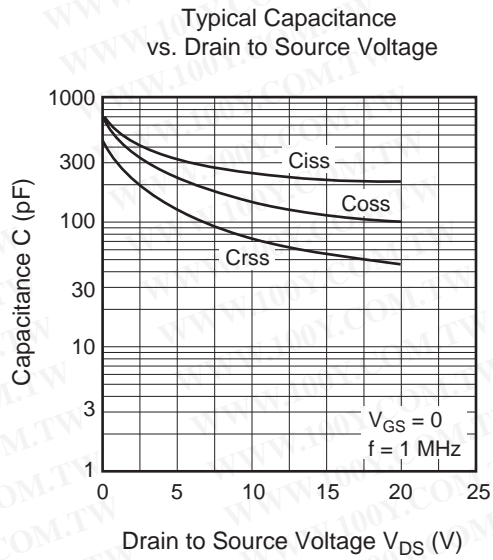
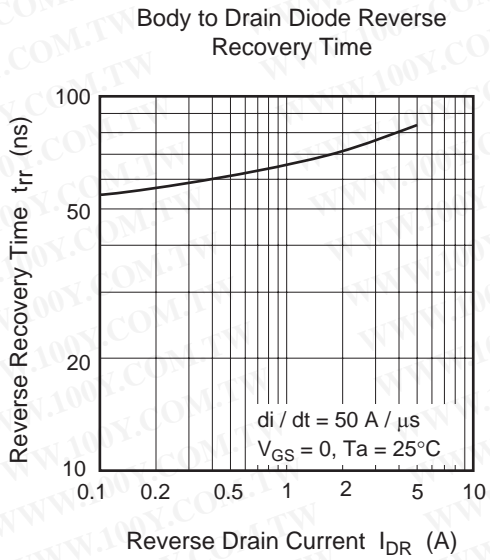
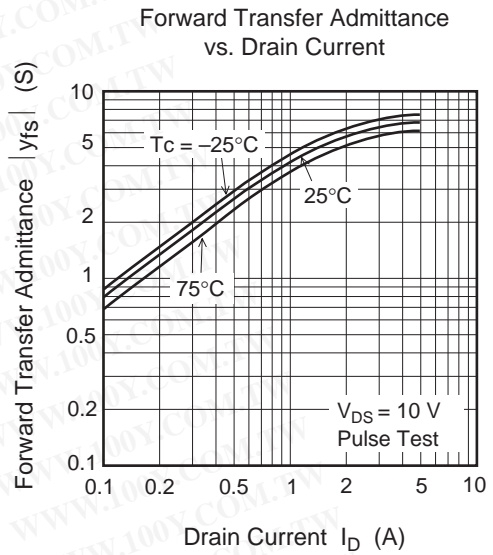
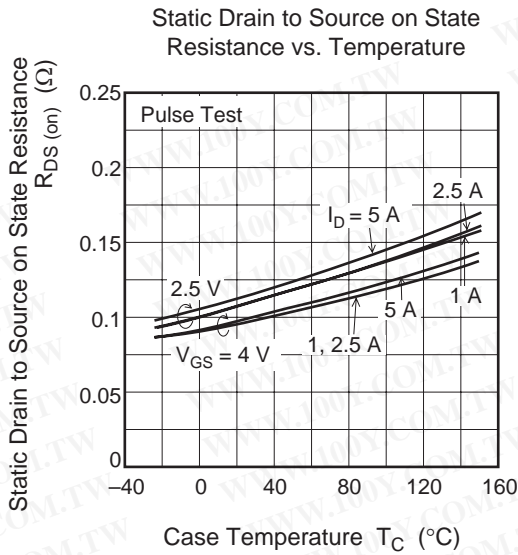
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	20	—	—	V	$I_D = 10\text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±10	—	—	V	$I_G = \pm 100\ \mu A$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 20\text{ V}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 8\text{ V}$, $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	0.5	—	1.5	V	$I_D = 1\text{ mA}$, $V_{DS} = 10\text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.09	0.12	Ω	$I_D = 1.5\text{ A}$, $V_{GS} = 4\text{ V}$ ^{Note3}
Static drain to source on state resistance	$R_{DS(on)}$	—	0.12	0.20	Ω	$I_D = 1.5\text{ A}$, $V_{GS} = 2.5\text{ V}$ ^{Note3}
Forward transfer admittance	$ y_{fs} $	3.0	5.0	—	S	$I_D = 1.5\text{ A}$, $V_{DS} = 10\text{ V}$ ^{Note3}
Input capacitance	C_{iss}	—	260	—	pF	$V_{DS} = 10\text{ V}$, $V_{GS} = 0$, $f = 1\text{ MHz}$
Output capacitance	C_{oss}	—	150	—	pF	
Reverse transfer capacitance	C_{rss}	—	75	—	pF	
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	$V_{GS} = 4\text{ V}$, $I_D = 1.5\text{ A}$, $R_L = 6.67\ \Omega$
Rise time	t_r	—	70	—	ns	
Turn-off delay time	$t_{d(off)}$	—	55	—	ns	
Fall time	t_f	—	70	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.9	—	V	$I_F = 2.5\text{ A}$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	75	—	ns	$I_F = 2.5\text{ A}$, $V_{GS} = 0$ $di_F/dt = 50\text{ A}/\mu s$

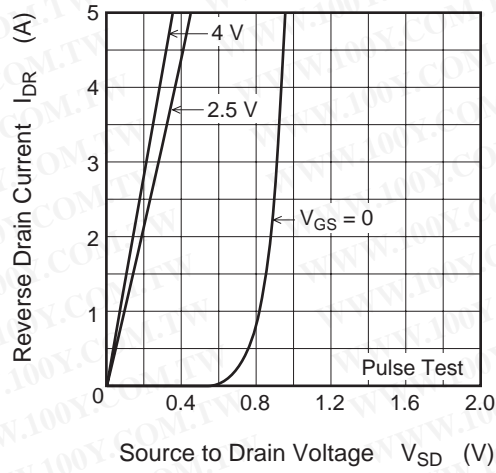
Note: 3. Pulse test

Main Characteristics

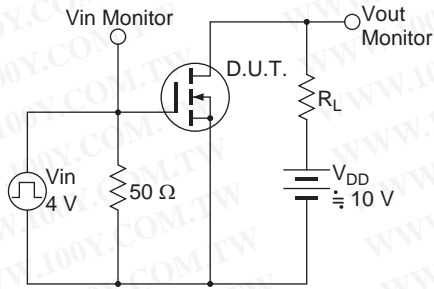




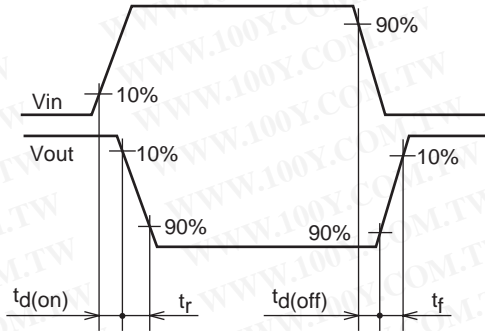
Reverse Drain Current vs. Source to Drain Voltage



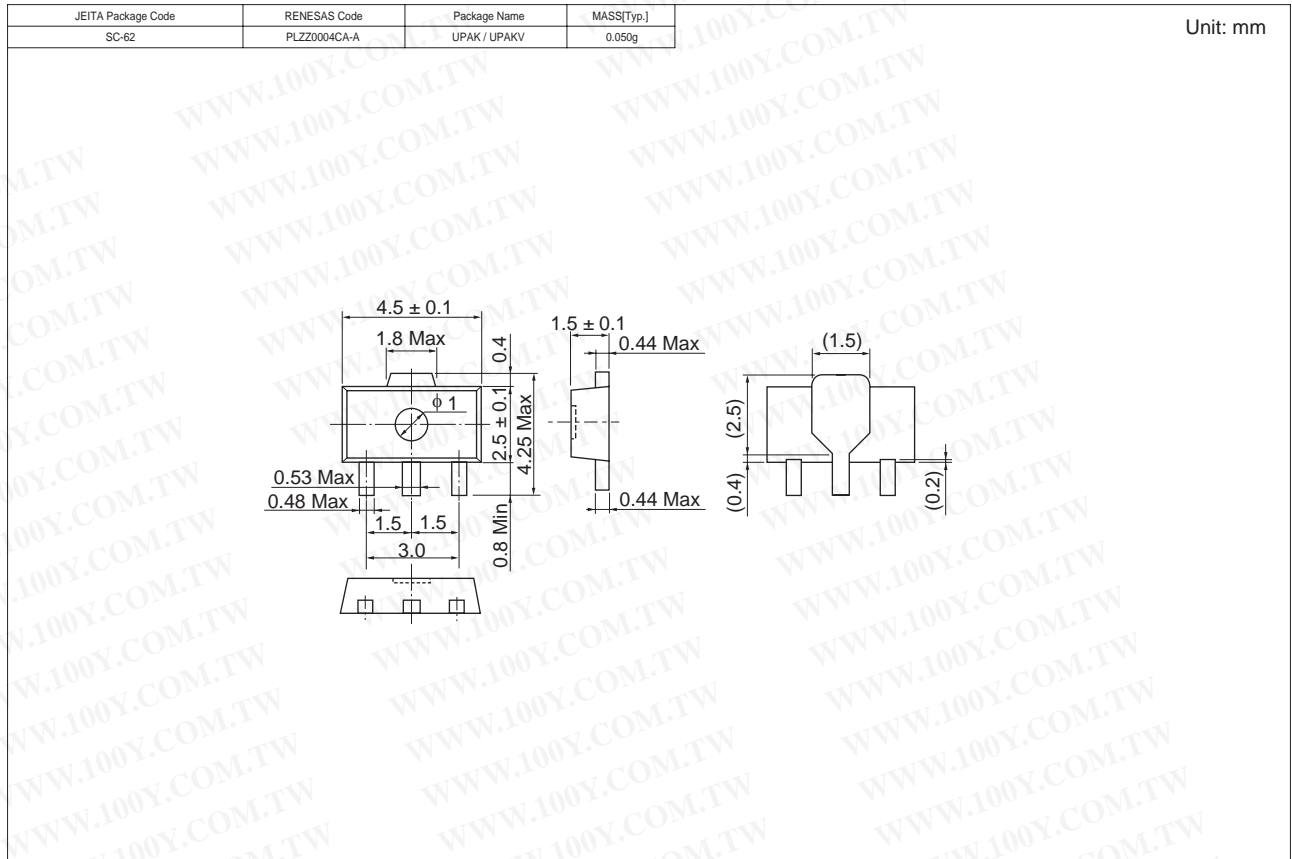
Switching Time Test Circuit



Waveform



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SK2978ZYTL-E	1000 pcs	Taping
2SK2978ZYTR-E	1000 pcs	Taping

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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