

2SK2978

Silicon N Channel MOS FET
High Speed Power Switching

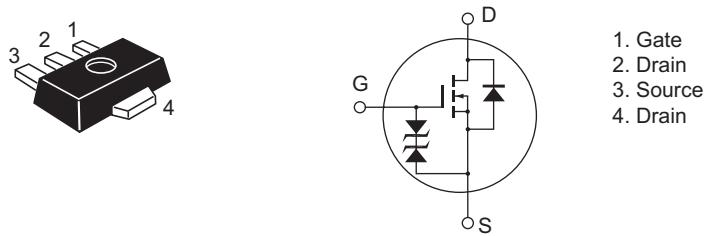
REJ03G1060-0500
(Previous: ADE-208-659C)
Rev.5.00
Sep.07,2005

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 ®)



Note: Marking is "ZY"

*UPAK is a trademark of Renesas Technology Corp.

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 ≤ 10μs, duty cycle ≤ 1 %

2. When using the alumina ceramic board (12.5 x 20 x 0.7 mm)

Electrical Characteristics

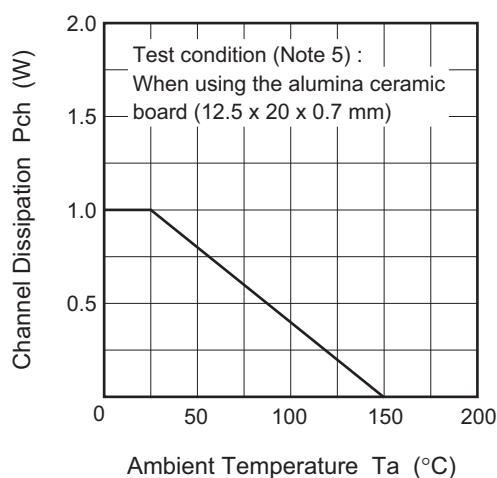
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR)DSS}	20	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source breakdown voltage	V _{(BR)GSS}	±10	—	—	V	I _G = ±100 μA, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	10	μA	V _{DS} = 20 V, V _{GS} = 0
Gate to source leak current	I _{GSS}	—	—	±10	μA	V _{GS} = ±8 V, V _{DS} = 0
Gate to source cutoff voltage	V _{GS(off)}	0.5	—	1.5	V	I _D = 1 mA, V _{DS} = 10 V
Static drain to source on state resistance	R _{DS(on)}	—	0.09	0.12	Ω	I _D = 1.5 A, V _{GS} = 4 V ^{Note3}
Static drain to source on state resistance	R _{DS(on)}	—	0.12	0.20	Ω	I _D = 1.5 A, V _{GS} = 2.5 V ^{Note3}
Forward transfer admittance	y _{fs}	3.0	5.0	—	S	I _D = 1.5 A, V _{DS} = 10 V ^{Note3}
Input capacitance	C _{iss}	—	260	—	pF	V _{DS} = 10 V, V _{GS} = 0, f = 1 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 V, I _D = 1.5 A, R _L = 6.67 Ω
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 A, V _{GS} = 0
Body-drain diode reverse recovery time	t _{rr}	—	75	—	ns	I _F = 2.5 A, V _{GS} = 0 di _F / dt = 50 A/ μs

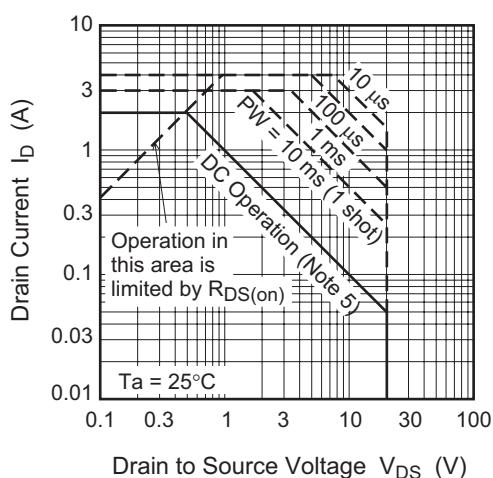
Note: 3. Pulse test

Main Characteristics

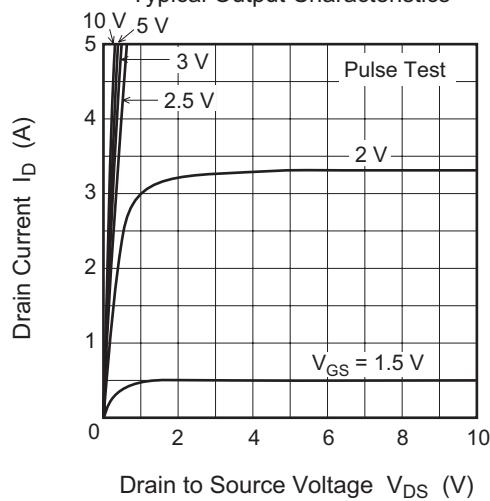
Power vs. Temperature Derating



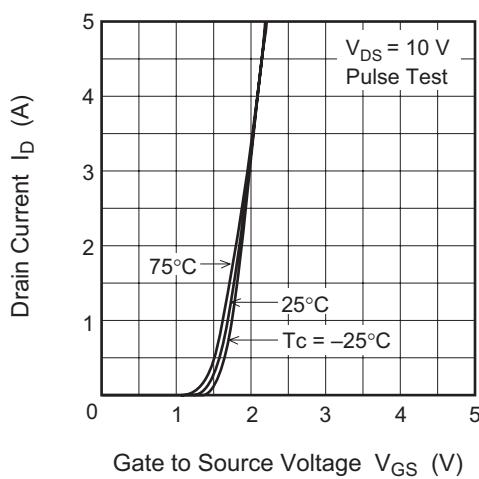
Maximum Safe Operation Area



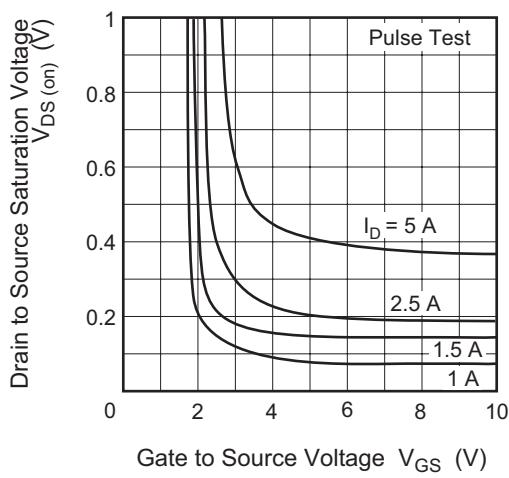
Typical Output Characteristics



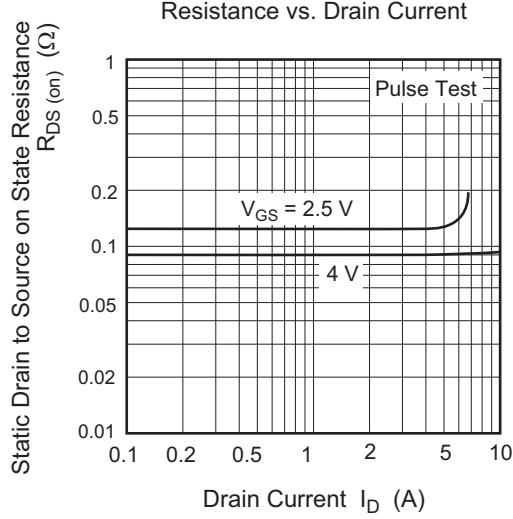
Typical Transfer Characteristics

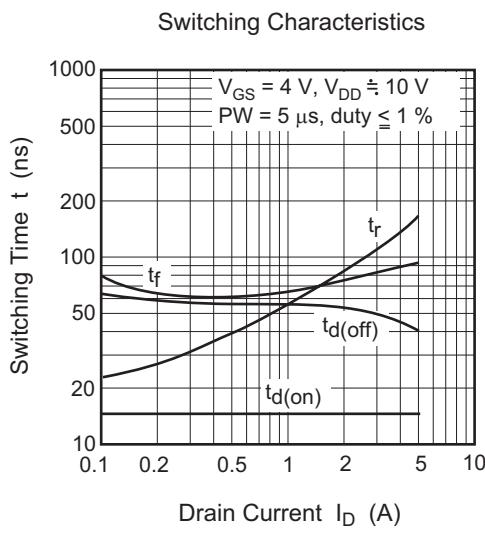
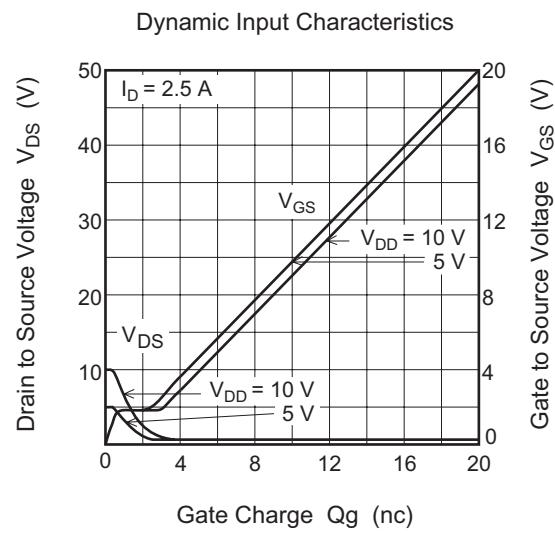
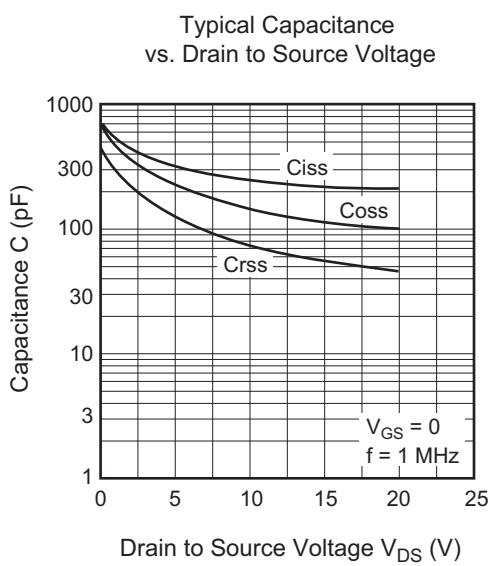
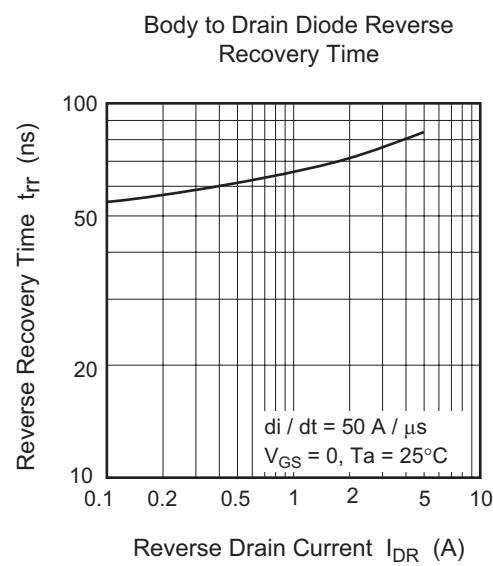
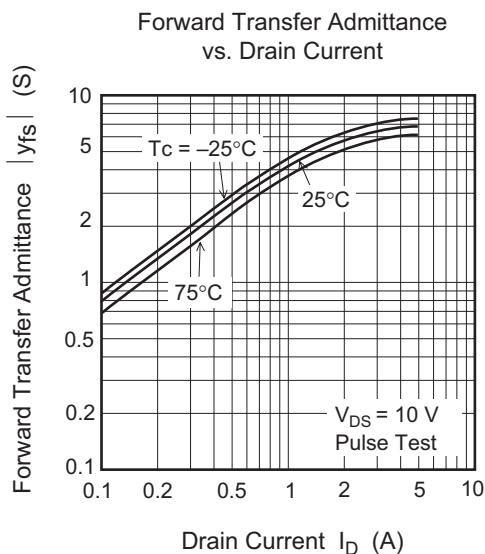
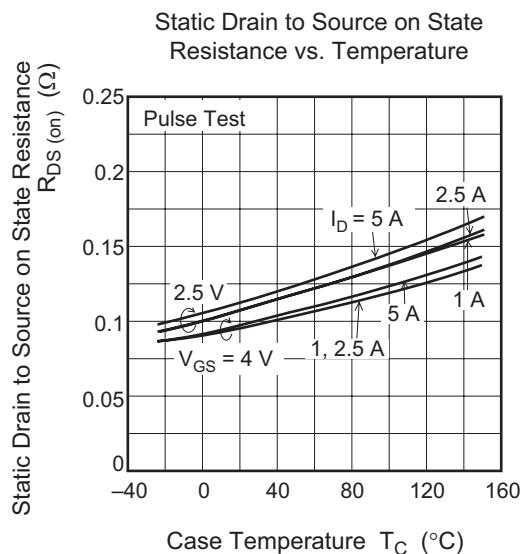


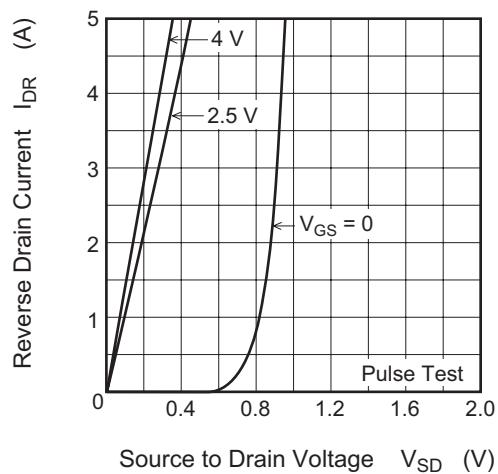
Drain to Source Saturation Voltage vs. Gate to Source Voltage



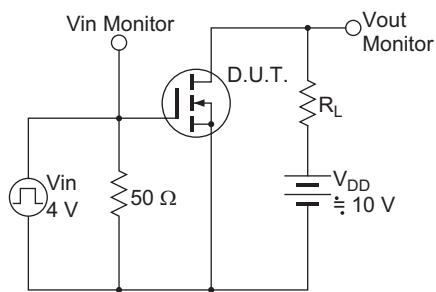
Static Drain to Source on State Resistance vs. Drain Current



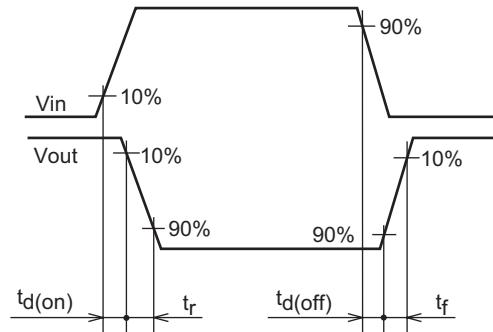


Reverse Drain Current vs.
Source to Drain Voltage

Switching Time Test Circuit

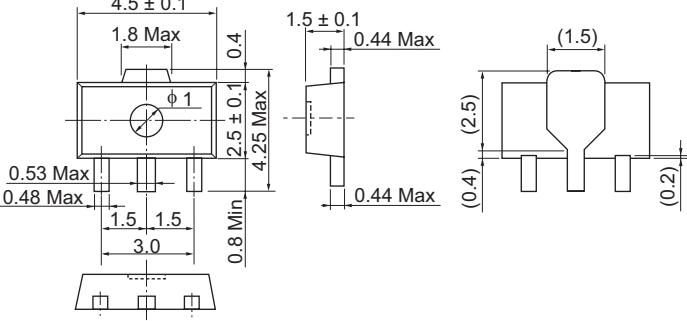


Waveform



Package Dimensions

JEITA Package Code	RENESAS Code	Package Name	MASS(Typ.)	Unit: mm
SC-62	PLZZ0004CA-A	UPAK / UPAKV	0.050g	



Ordering Information

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

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