

2SK2788

Silicon N Channel MOS FET High Speed Power Switching

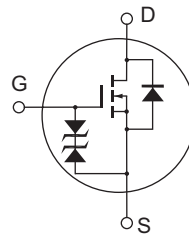
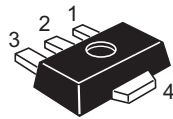
REJ03G1033-0200
(Previous: ADE-208-538)
Rev.2.00
Sep.07,2005

Features

- Low on-resistance
 $R_{DS(on)} = 0.12 \Omega$ typ ($V_{GS} = 10 \text{ V}$, $I_D = 1 \text{ A}$)
- Low drive current
- High speed switching
- 4 V gate drive devices.

Outline

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



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

Note: Marking is "VY"

*UPAK is a trademark of Renesas Technology Corp.

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DS}	60	V
Gate to source voltage	V_{GS}	± 20	V
Drain current	I_D	2	A
Drain peak current	$I_{D(pulse)}^{*1}$	4	A
Body to drain diode reverse drain current	I_{DR}	2	A
Channel dissipation	P_{ch}^{*2}	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

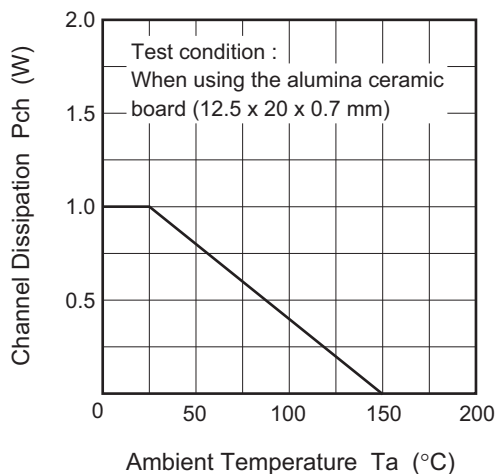
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DS}$	60	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GS}$	± 20	—	—	V	$I_G = \pm 100 \mu A$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 60 \text{ V}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16 \text{ V}$, $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	$I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.12	0.16	Ω	$I_D = 1 \text{ A}$, $V_{GS} = 10 \text{ V}^{*3}$
	$R_{DS(on)}$	—	0.16	0.25	Ω	$I_D = 1 \text{ A}$, $V_{GS} = 4 \text{ V}^{*3}$
Forward transfer admittance	$ y_{fs} $	1.6	2.8	—	S	$I_D = 1 \text{ A}$, $V_{DS} = 10 \text{ V}^{*3}$
Input capacitance	C_{iss}	—	180	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	90	—	pF	
Reverse transfer capacitance	C_{rss}	—	30	—	pF	
Turn-on delay time	$t_{d(on)}$	—	9	—	ns	$V_{GS} = 10 \text{ V}$, $I_D = 1 \text{ A}$, $R_L = 30 \Omega$
Rise time	t_r	—	15	—	ns	
Turn-off delay time	$t_{d(off)}$	—	40	—	ns	
Fall time	t_f	—	35	—	ns	
Body to drain diode forward voltage	V_{DF}	—	0.9	—	V	$I_D = 2 \text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	35	—	ns	$I_F = 2 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 50 \text{ A}/\mu s$

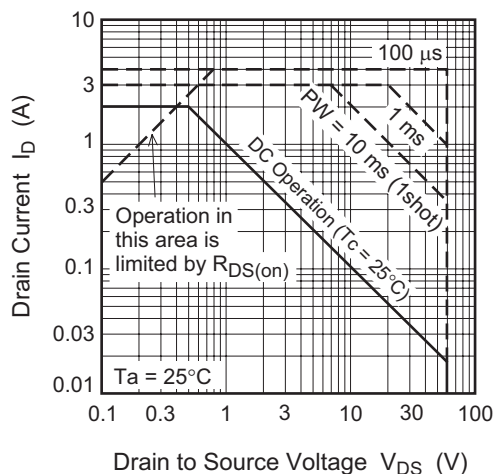
Notes: 3. Pulse test

Main Characteristics

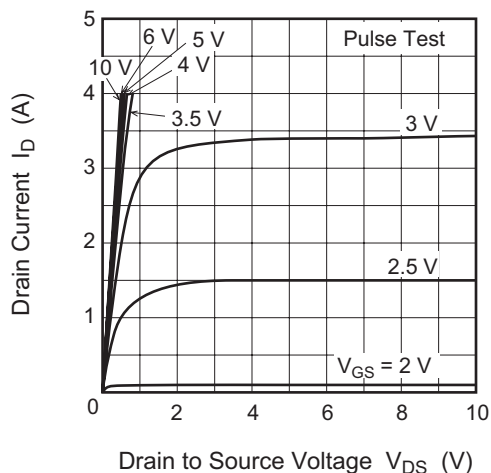
Power vs. Temperature Derating



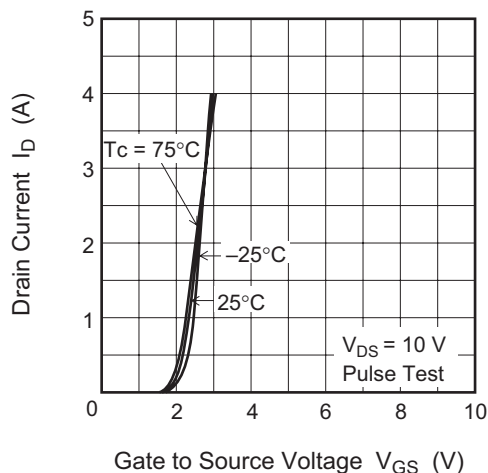
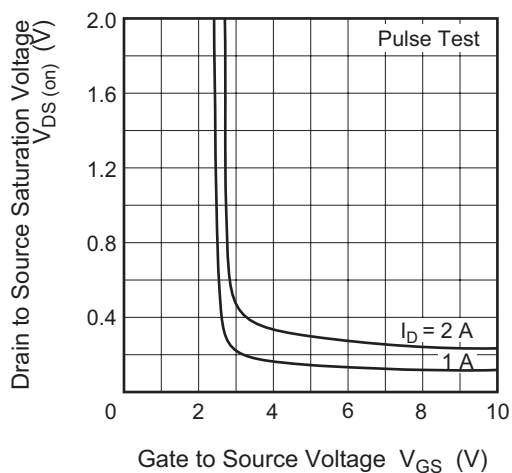
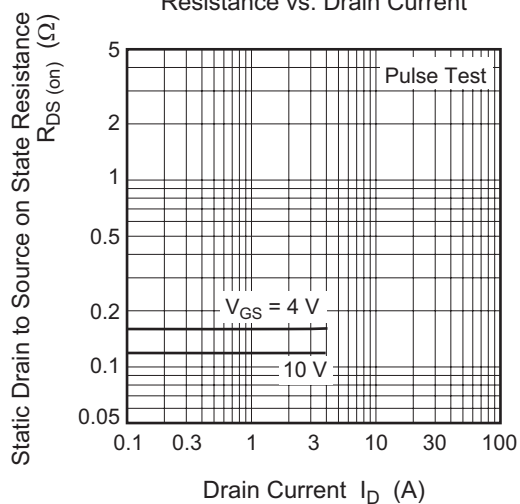
Maximum Safe Operation Area

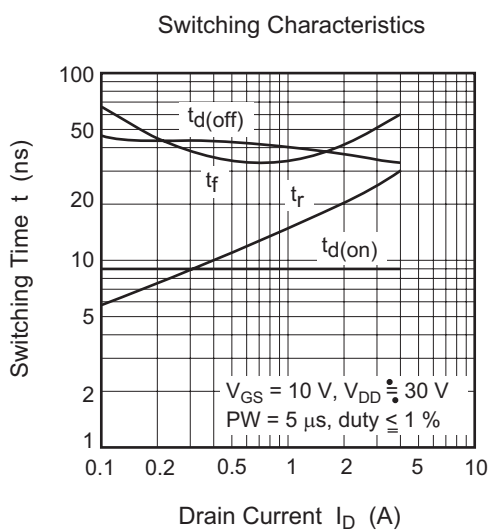
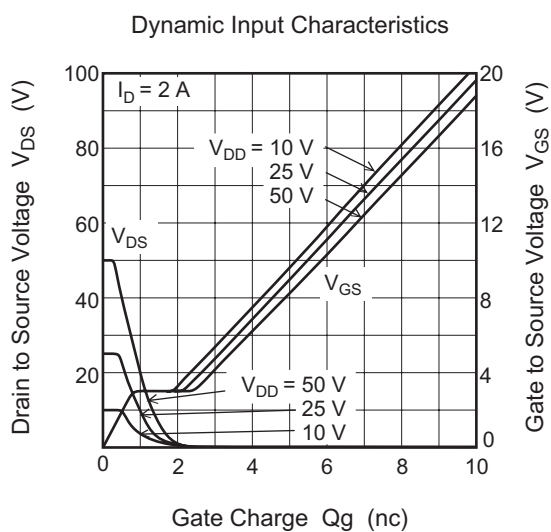
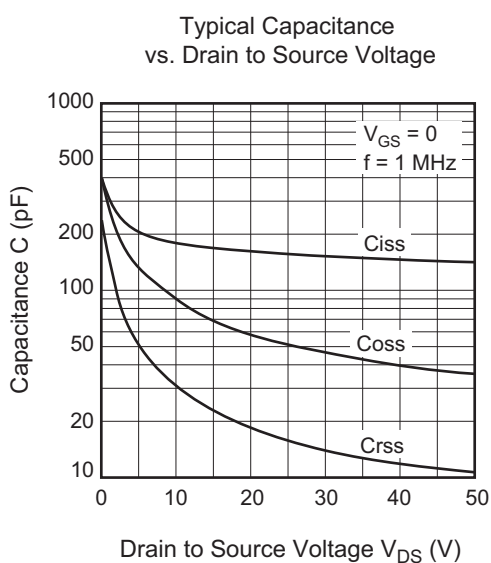
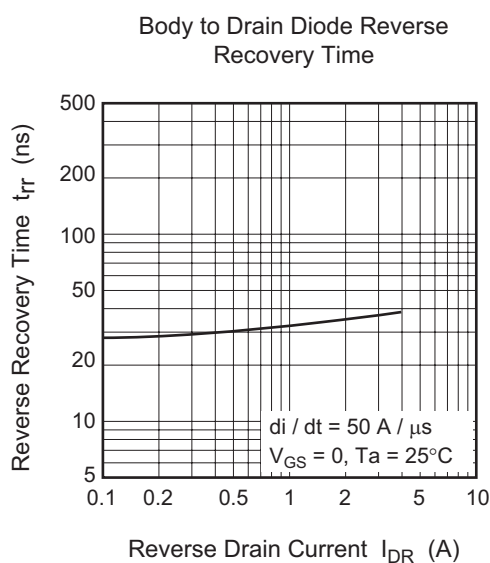
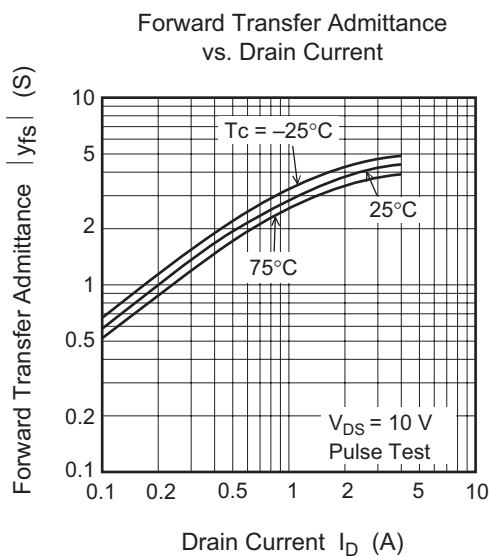
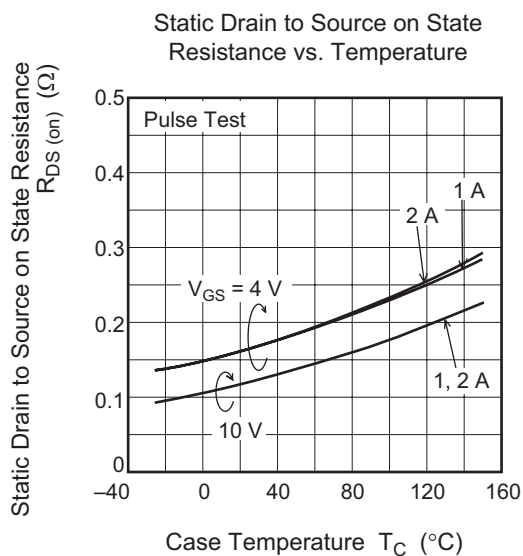


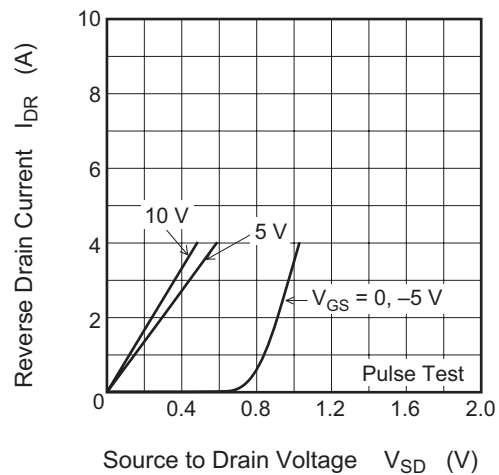
Typical Output Characteristics



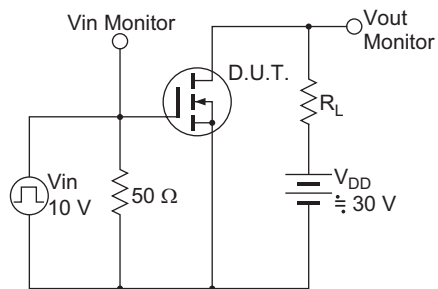
Typical Transfer Characteristics

Drain to Source Saturation Voltage
vs. Gate to Source VoltageStatic Drain to Source on State
Resistance vs. Drain Current

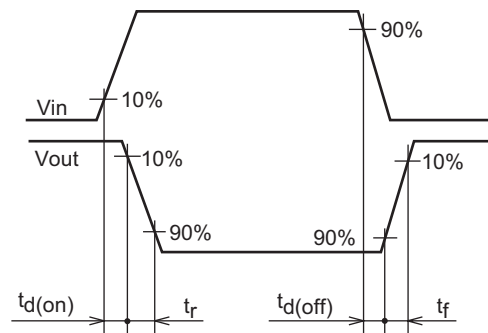


Reverse Drain Current vs.
Source to Drain Voltage

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	

The drawing shows three views of the package:

- Top View:** Overall width is 4.5 ± 0.1 mm. The central circular feature has a diameter of $\phi 1$ mm. The distance from the center to the edge of the package is 1.8 Max mm. The package height is 0.4 mm. The distance from the center to the mounting pads is 2.5 ± 0.1 mm. The mounting pads have a width of 1.5 mm and a length of 0.53 Max mm. The distance between the mounting pads is 3.0 mm. The minimum distance from the package edge to the mounting pads is 0.48 Max mm. The package thickness is 0.8 Min mm. The total length of the package is 4.25 Max mm.
- Side View:** The package height is 1.5 ± 0.1 mm. The distance from the center to the edge of the package is 0.44 Max mm. The package thickness is 0.44 Max mm.
- End View:** The package width is 1.5 mm. The distance from the center to the edge of the package is 0.4 mm. The package thickness is 0.2 mm.

Ordering Information

Part Name	Quantity	Shipping Container
2SK2788VYTL-E	1000 pcs	Taping
2SK2788VYTR-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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