

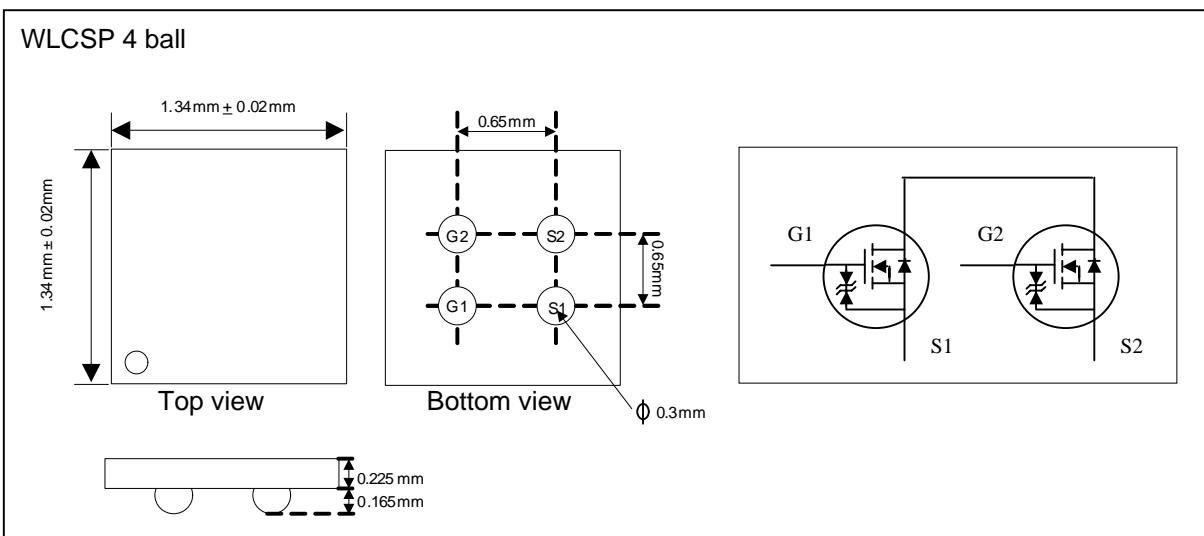


- ▼ Capable of 2.5V Gate Drive
- ▼ Ultra-small Package Outline
- ▼ Protection Diode Built-in
- ▼ RoHS Compliant & Halogen-Free

V_{SSS}	24V
$R_{SS(ON)}$	38m Ω
I_S	6A

Description

AP2904 series are from Advanced Power innovated design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for the load switch, charge switch, battery switch for portable application.



Absolute Maximum Ratings @ $T_J=25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{SSS}		24	V
V_{GSS}		±12	V
I_S	Source Current ³	6	A
I_{SM}	Pulsed Source Current ¹	45	A
$P_D @ T_A=25^\circ\text{C}$	Total Power Dissipation ³	1.25	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Junction Temperature	-55 to 150	°C



AP2904EC4

Electrical Characteristics @T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V(BR) _{SSS}	Source-Source Breakdown Voltage	V _{GS} =0V, I _S =250uA	24	-	-	V
R _{SS(ON)}	Static Source-Source On-Resistance ²	V _{GS} =4.5V, I _S =1A	23	29	38	mΩ
		V _{GS} =4V, I _S =1A	24	30	39	mΩ
		V _{GS} =3.1V, I _S =1A	26	33	44	mΩ
		V _{GS} =2.5V, I _S =1A	30	37	49	mΩ
V _{GS(off)}	Cutoff Voltage	V _{SS} =10V, I _S =1mA	0.4	-	1.3	V
y _{fs}	Forward Transfer Admittance	V _{SS} =5V, I _S =2.25A	-	15	-	S
I _{SSS}	Zero Gate Voltage Source Current	V _{SS} =20V, V _{GS} =0V	-	-	10	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±12V, V _{SS} =0V	-	-	±30	uA
t _{d(on)}	Turn-on Delay Time	V _{SS} =20V	-	1	-	us
t _r	Rise Time	I _S =2.25A	-	5	-	us
t _{d(off)}	Turn-off Delay Time	V _{GS} =4V	-	12	-	us
t _f	Fall Time		-	8	-	us
Q _g	Total Gate Charge	V _{SS} =20V, V _{GS} =4V, I _S =4.5A	-	13	-	nC
V _{F(S-S)}	Forward Source-Source Voltage ²	I _S =1.5A, V _{GS} =0V	-	-	1.2	V

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in² 2oz copper pad of FR4 board, t ≤ 5s

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

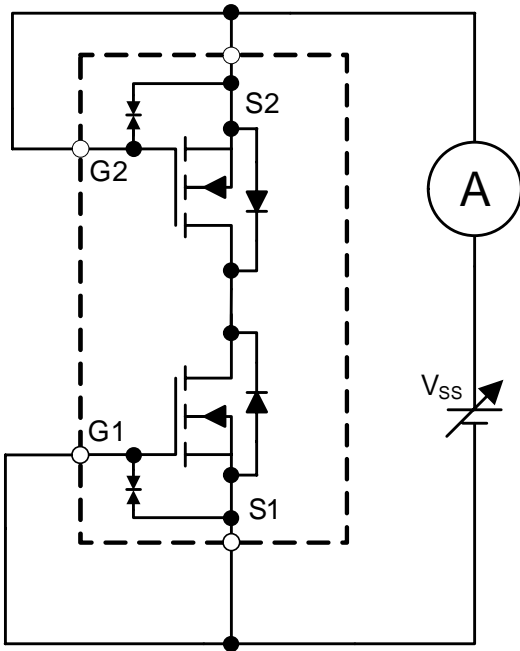
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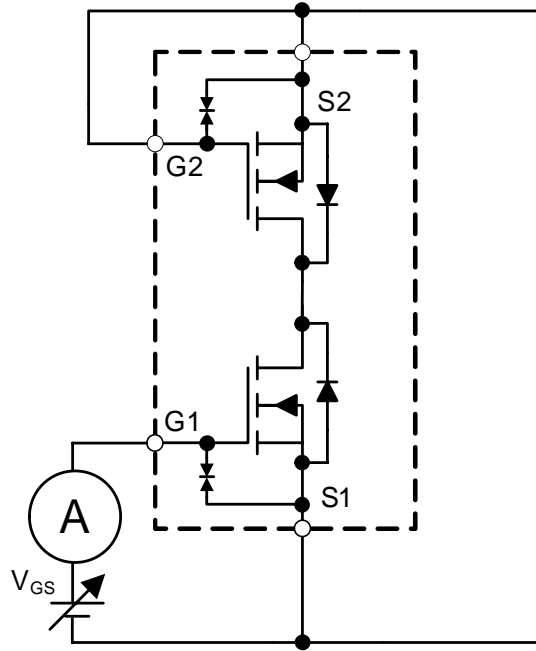


Test Circuits are Example of Measuring Channel-1 (unless otherwise specified)

When Ch-1 is measured, Gate and Source of Ch-2 are short-circuitd.

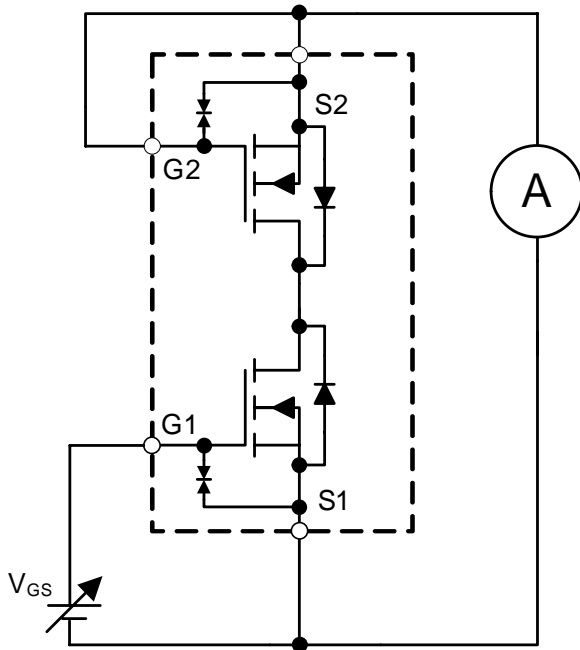


TEST CIRCUIT : I_{SSS}

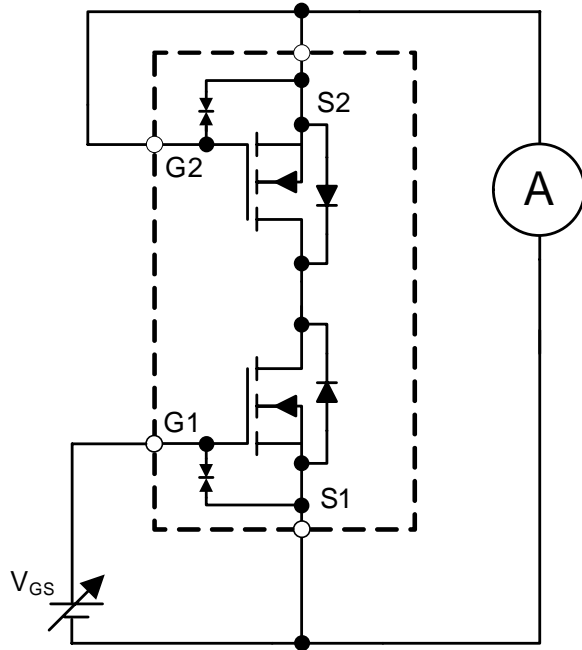


TEST CIRCUIT : I_{GSS}

When Ch-1 is measured, Gate and Source of Ch-2 are short-circuitd.



TEST CIRCUIT : $V_{GS(off)}$



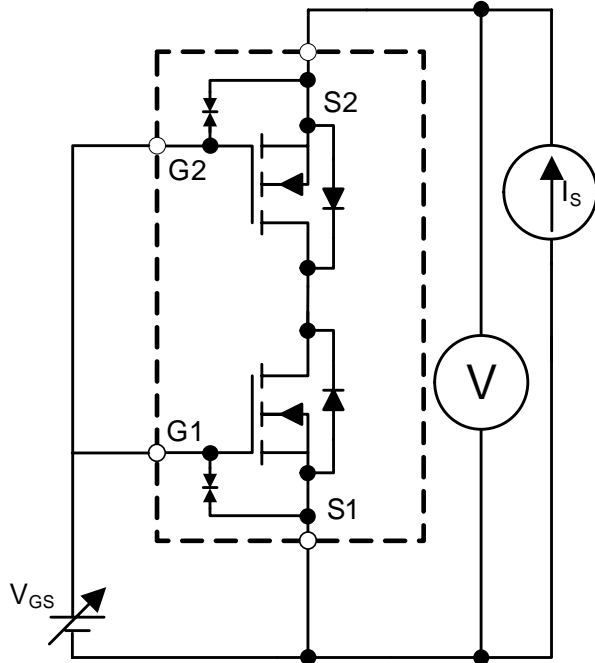
TEST CIRCUIT : $|y_{fs}|$



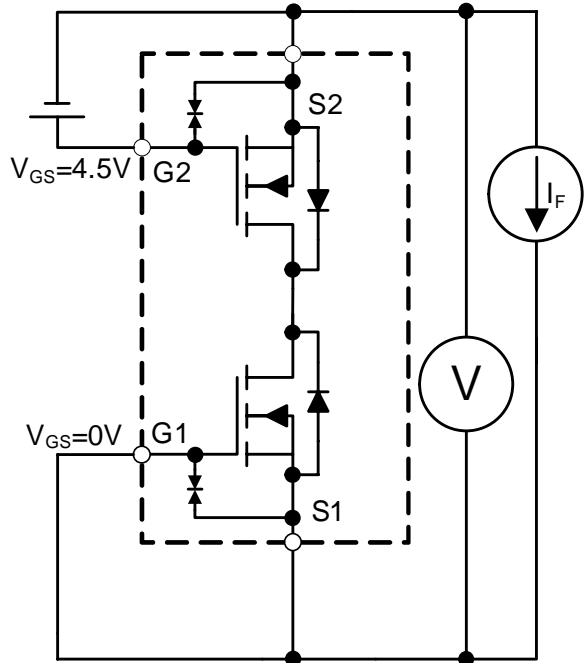
AP2904EC4

Test Circuits are Example of Measuring Channel-1 (unless otherwise specified)

When Ch-1 is measured, +4.5V is added to V_{GS} of Ch-2

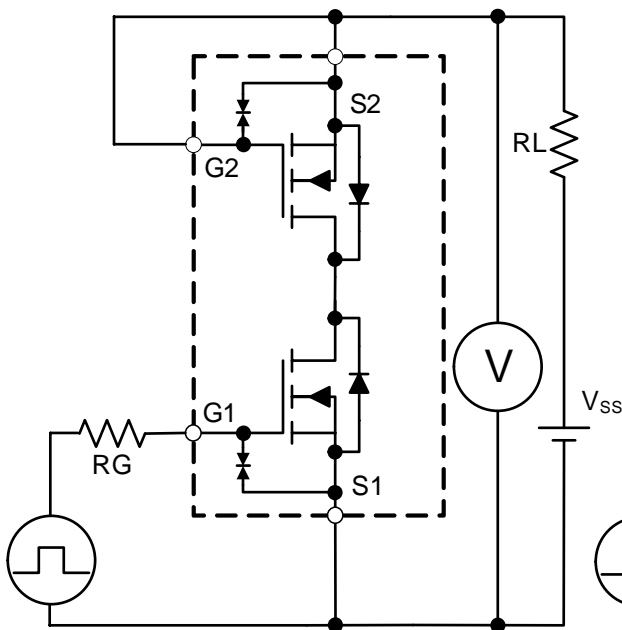


TEST CIRCUIT : $R_{SS(ON)}$



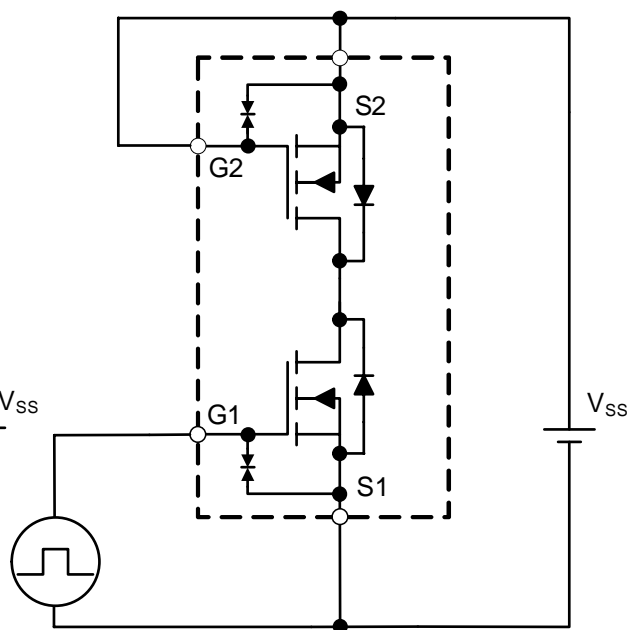
TEST CIRCUIT : $V_{F(S-S)}$

When Ch-1 is measured, Gate and Source of Ch-2 are short-circuited.



TEST CIRCUIT : Switching Time

When Ch-1 is measured, Gate and Source of Ch-2 are short-circuited.



TEST CIRCUIT : Gate Charge

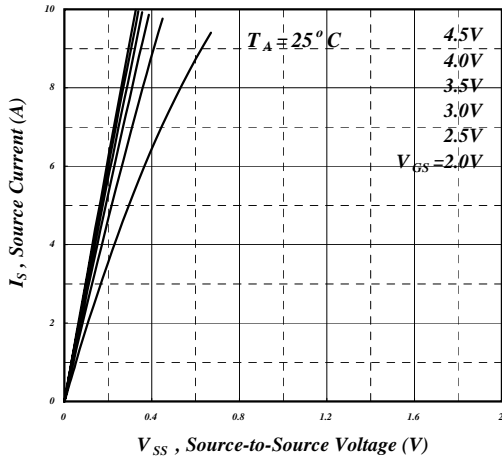


Fig 1. Typical Output Characteristics

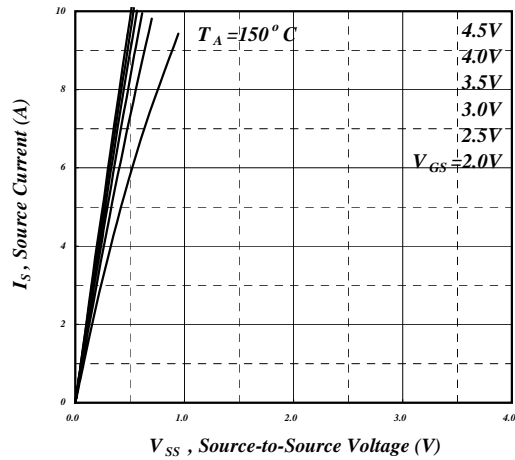


Fig 2. Typical Output Characteristics

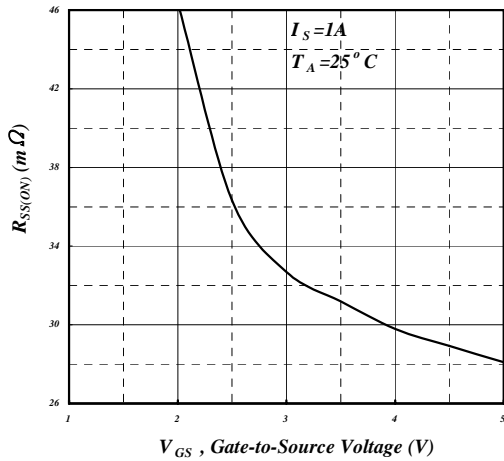


Fig 3. Static Source-to-Source On-Resistance v.s. Gate Voltage

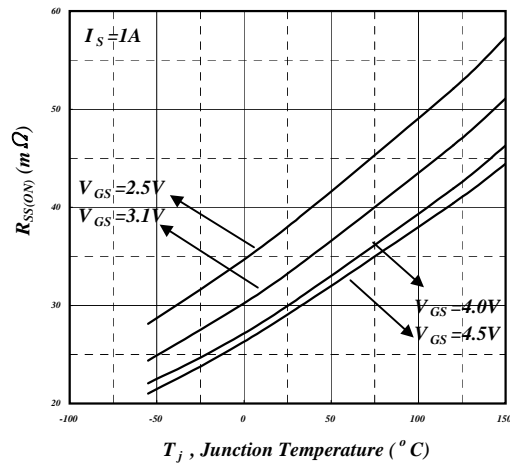


Fig 4. Typ. Source-to-Source on State Resistance v.s. Junction Temperature

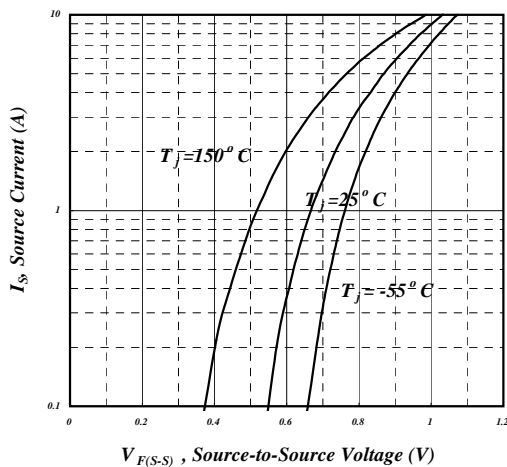


Fig 5. Forward Characteristic of Reverse Diode

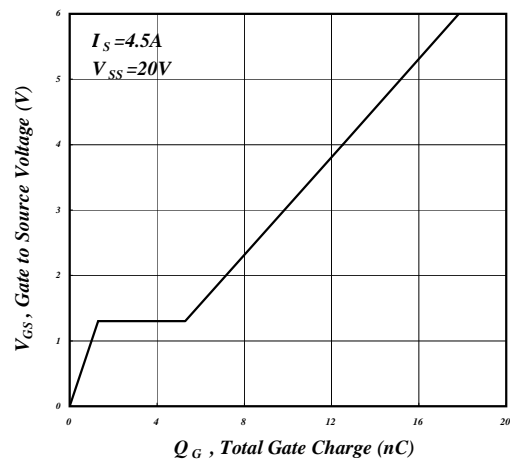


Fig 6. Gate Charge Characteristics

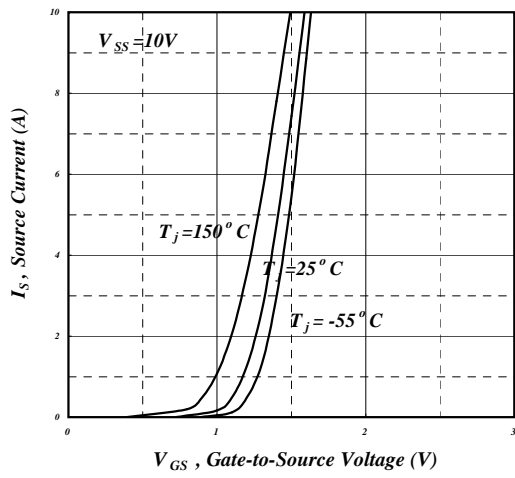


Fig 7. Transfer Characteristics



MARKING INFORMATION

