

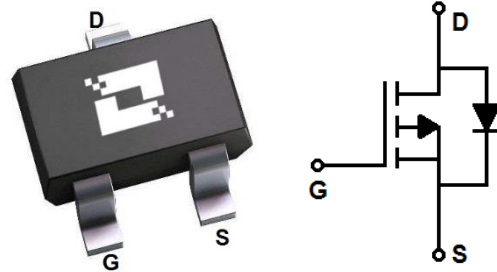
**Features**

- Low  $R_{DS(on)}$  @  $V_{GS}=-4.5V$
- -2.5V Logic Level Control
- P Channel SOT523 Package
- Pb-Free, RoHS Compliant

$V_{(BR)DSS}$	$R_{DS(ON)}$ Typ	$I_D$ Max
-20V	125m $\Omega$ @ -4.5V	-1.5A
	142m $\Omega$ @ -3.3V	

**Applications**

- High-side Load Switch
- Switching Circuits
- High Speed line Driver
- Relay Driver

**Order Information**

**SOT523**

Product	Package	Marking	Packing
DWZ2621	SOT523	P3	3000PCS/Reel

**Absolute Maximum Ratings**

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

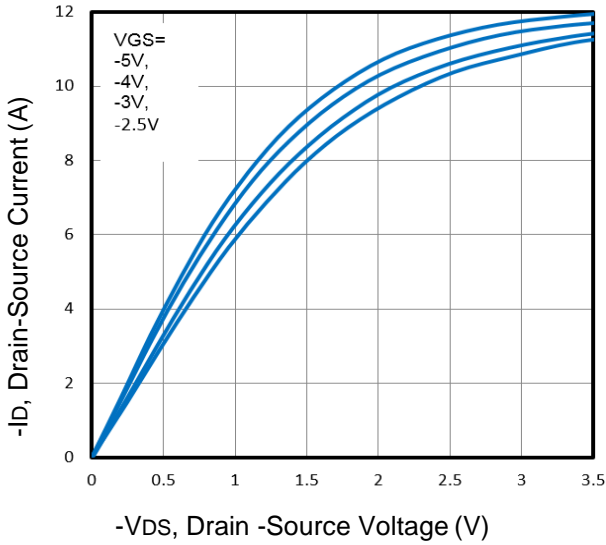
Symbol	Parameter	Rating	Unit
<b>Common Ratings (<math>T_A=25^\circ\text{C}</math> Unless Otherwise Noted)</b>			
$V_{GS}$	Gate-Source Voltage	$\pm 10$	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	-20	V
$T_J$	Maximum Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-50 to 150	$^\circ\text{C}$
<b>Mounted on Large Heat Sink</b>			
$I_{DM}$	Pulse Drain Current Tested①	$T_A=25^\circ\text{C}$	-6.0 A
$I_D$	Continuous Drain Current	$T_A=25^\circ\text{C}$	-1.5 A
		$T_A=70^\circ\text{C}$	-1.2 A
$P_D$	Maximum Power Dissipation	$T_A=25^\circ\text{C}$	0.3 W
		$T_A=70^\circ\text{C}$	0.24 W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	400	$^\circ\text{C/W}$

Symbol	Parameter	Condition	Min	Typ	Max	Unit
<b>Static Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V I <sub>D</sub> =-250μA	-20	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current(T <sub>A</sub> =25°C)	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V	-	-	-1	μA
	Zero Gate Voltage Drain Current(T <sub>A</sub> =125°C)	V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V	-	-	-100	nA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V	-	-	±100	nA
V <sub>GS(TH)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-0.35	-0.6	-1.0	V
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance②	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-0.75A	-	125	200	mΩ
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance②	V <sub>GS</sub> =-3.3V, I <sub>D</sub> =-0.5A	-	142	230	mΩ
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance②	V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-0.3A	-	170	250	mΩ
<b>Dynamic Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-10V, V <sub>GS</sub> =0V, f=1MHz	-	216	-	pF
C <sub>oss</sub>	Output Capacitance		-	29	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	21	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =-10V I <sub>D</sub> =-0.5A, V <sub>GS</sub> =-4.5V	-	2.2	-	nC
Q <sub>gs</sub>	Gate Source Charge		-	0.6	-	nC
Q <sub>gd</sub>	Gate Drain Charge		-	0.5	-	nC
<b>Switching Characteristics</b>						
t <sub>d(on)</sub>	Turn on Delay Time	V <sub>DD</sub> =-10V, I <sub>D</sub> =-0.5A, R <sub>G</sub> =3.3Ω, V <sub>GS</sub> =-4.5V	-	16	-	ns
t <sub>r</sub>	Turn on Rise Time		-	32	-	ns
t <sub>d(off)</sub>	Turn Off Delay Time		-	85	-	ns
t <sub>f</sub>	Turn Off Fall Time		-	68	-	ns
<b>Source Drain Diode Characteristics</b>						
V <sub>SD</sub>	Forward on voltage②	T <sub>J</sub> =25°C, I <sub>SD</sub> =-0.3A, V <sub>GS</sub> =0V	-	-0.82	-1.2	V

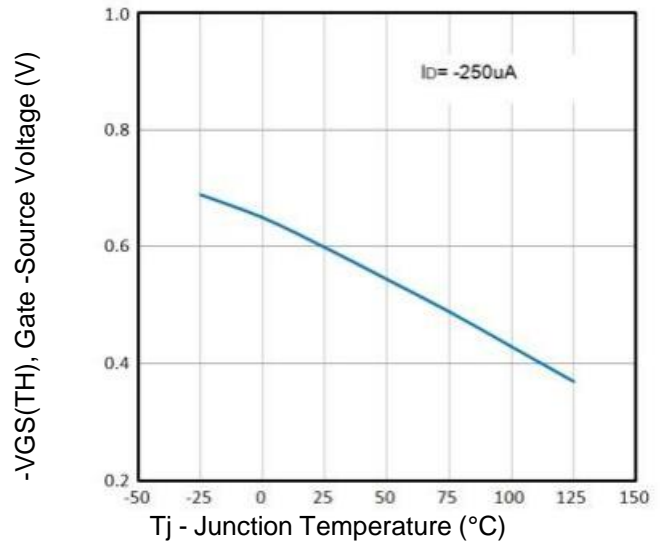
Notes:

- ① Pulse width limited by maximum allowable junction temperature  
 ② Pulse test ; Pulse width≤300μs, duty cycle≤2%.

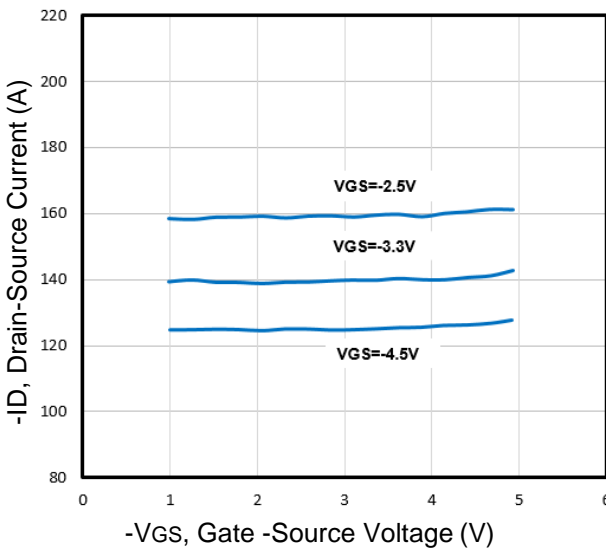
**Typical Characteristics**



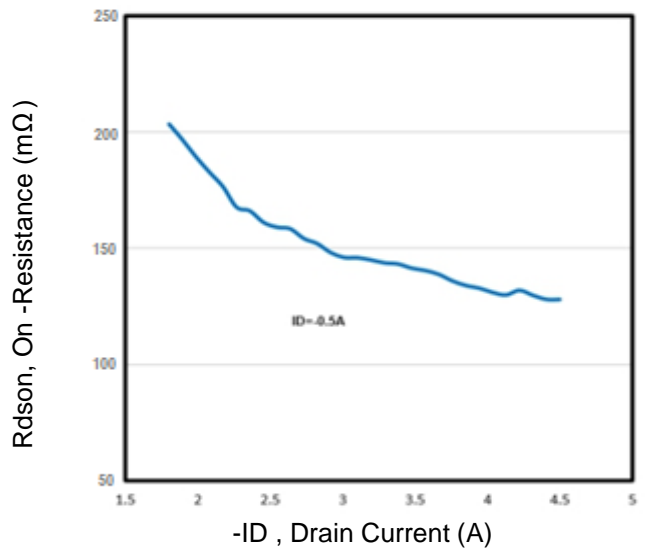
**Fig1.** Typical Output Characteristics



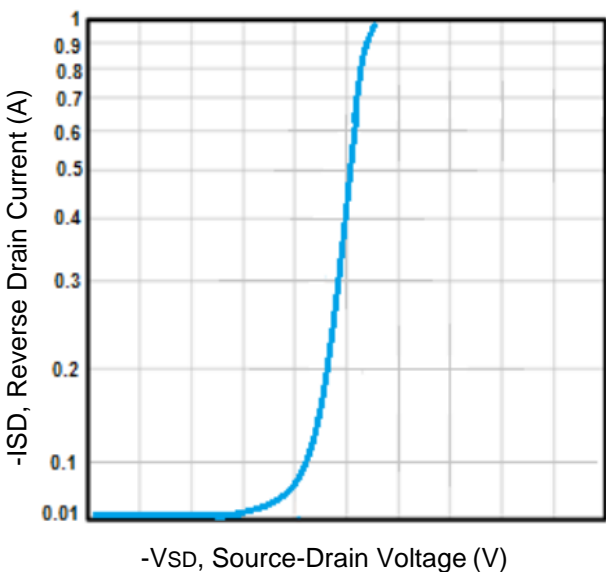
**Fig2.** Normalized Threshold Voltage Vs. Temperature



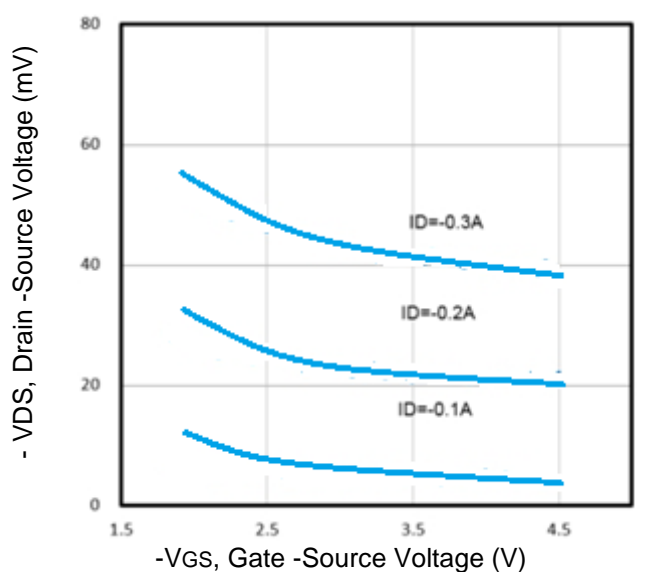
**Fig3.** Typical Transfer Characteristics



**Fig4.** On-Resistance vs. Drain Current and Gate

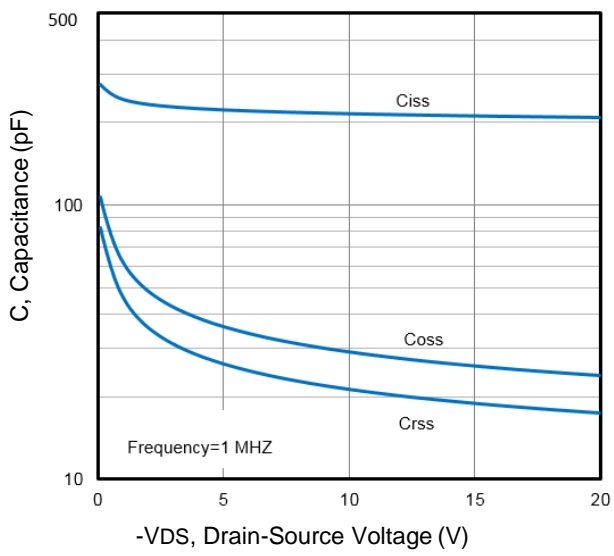


**Fig5.** Typical Source-Drain Diode Forward Voltage

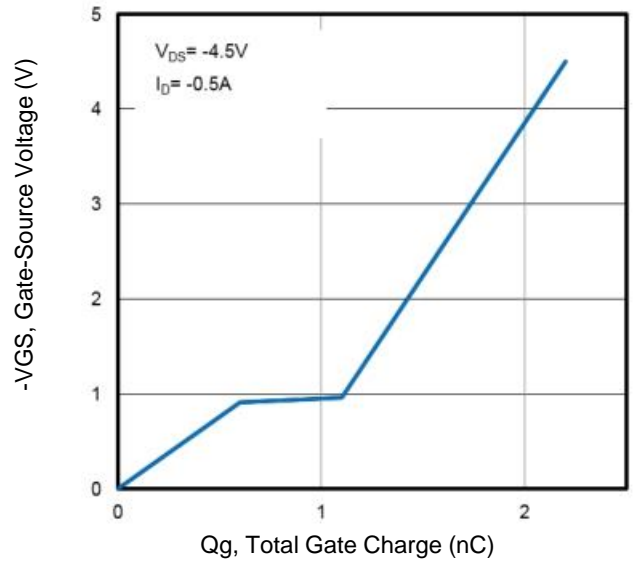


**Fig6.** Drain-Source Voltage vs Gate-Source Voltage

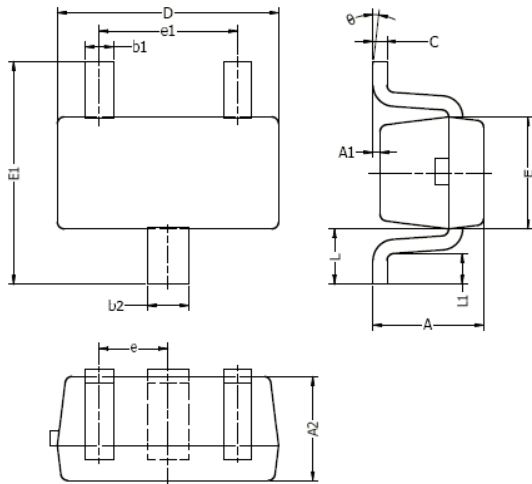
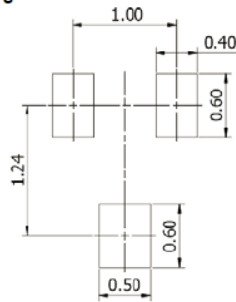
**Typical Characteristics**



**Fig7.** Typical Capacitance Vs. Drain-Source Voltage



**Fig8.** Typical Gate Charge Vs. Gate-Source Voltage

**SOT523 Mechanical Data**

**Typical Soldering Pattern:**


DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.70	0.90	0.028	0.035
A1	0.00	0.10	0.000	0.004
A2	0.70	0.80	0.028	0.031
b1	0.15	0.25	0.006	0.010
b2	0.25	0.35	0.010	0.014
c	0.10	0.20	0.004	0.008
D	1.50	1.70	0.059	0.067
E	0.70	0.90	0.028	0.035
E1	1.45	1.75	0.057	0.069
e	0.50 TYP.		0.020 TYP.	
e1	0.90	1.10	0.035	0.043
L	0.40 REF.		0.016 REF.	
L1	0.10	0.30	0.004	0.012
$\theta$	0°	8°	0°	8°

**NOTES:**

1. Above package outline conforms to JEITA EAIJ ED-7500A SC-75A.
2. Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.

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