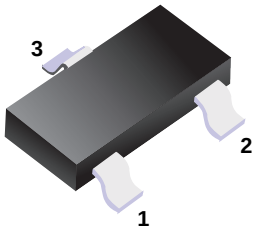
SI2302

N- Enhancement Mode Field Effect Transistor

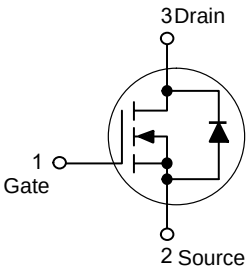


1. Gate
2. Source
3. Drain

■ Features

- Fast Switching
- Low Gate Charge and $R_{DS(on)}$
- High power and current handing capability

■ Simplified outline(SOT-23)



■ Applications

- Battery protection
- Load switch
- Power management

■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous	I_D	2	A
Maximum Power Dissipation	P_D	0.9	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃
Thermal Resistance,Junction-to-Ambient Note 2	$R_{\theta JA}$	139	℃/W

DAYA SEMICONDUCTOR

RoHS COMPLIANT Pb Pb-Free

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■ Electrical Characteristics Ta = 25℃

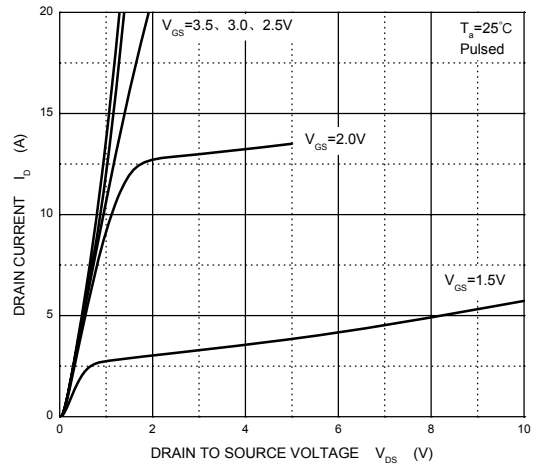
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V I_D=250μA	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V,V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	0.4	0.75	1.2	V
Drain-Source On-State Resistance Note3	$R_{DS(ON)}$	V_{GS}=2.5V, I_D=1A	-	45	80	mΩ
		V_{GS}=4.5V, I_D=2A	-	35	50	mΩ
Forward Transconductance Note3	g_{FS}	V_{DS}=5V,I_D=2A	-	5	-	S
Dynamic Characteristics						
Input Capacitance	C_{lss}	V_{DS}=10V,V_{GS}=0V, f=1.0MHz	-	260	-	pF
Output Capacitance	C_{oss}		-	48	-	pF
Reverse Transfer Capacitance	C_{rss}		-	27	-	pF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=10V, R_L=3.3Ω V_{GS}=4.5V,R_{GEN}=6Ω	-	2.5	-	nS
Turn-on Rise Time	t_r		-	3.2	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	21	-	nS
Turn-Off Fall Time	t_f		-	3	-	nS
Total Gate Charge	Q_g	V_{DS}=10V,I_D=2A, V_{GS}=4.5V	-	2.9	5	nC
Gate-Source Charge	Q_{gs}		-	0.4	-	nC
Gate-Drain Charge	Q_{gd}		-	0.6	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage Note 3	V_{SD}	V_{GS}=0V,I_S=2A	-	-	1.2	V
Diode Forward Current Note 2	I_S		-	-	2	A

Notes:

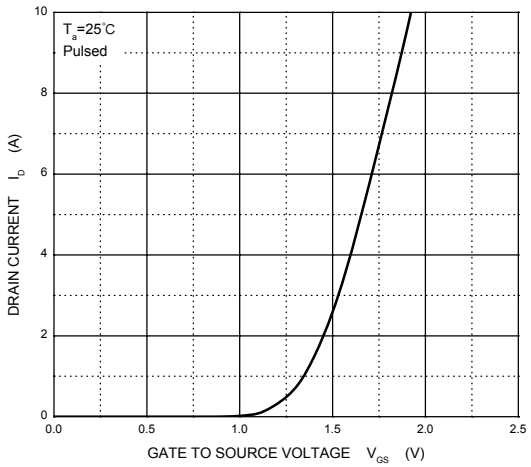
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

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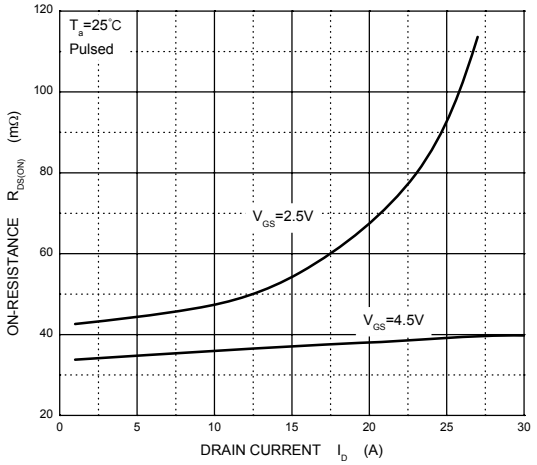
Output Characteristics



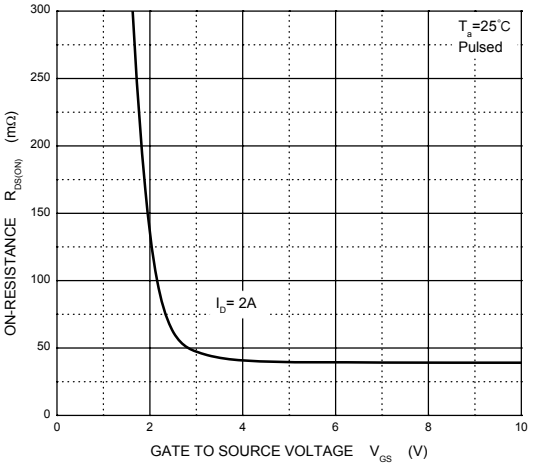
Transfer Characteristics



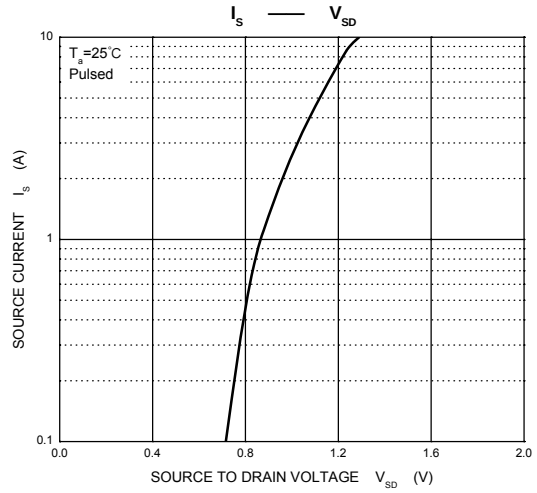
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}

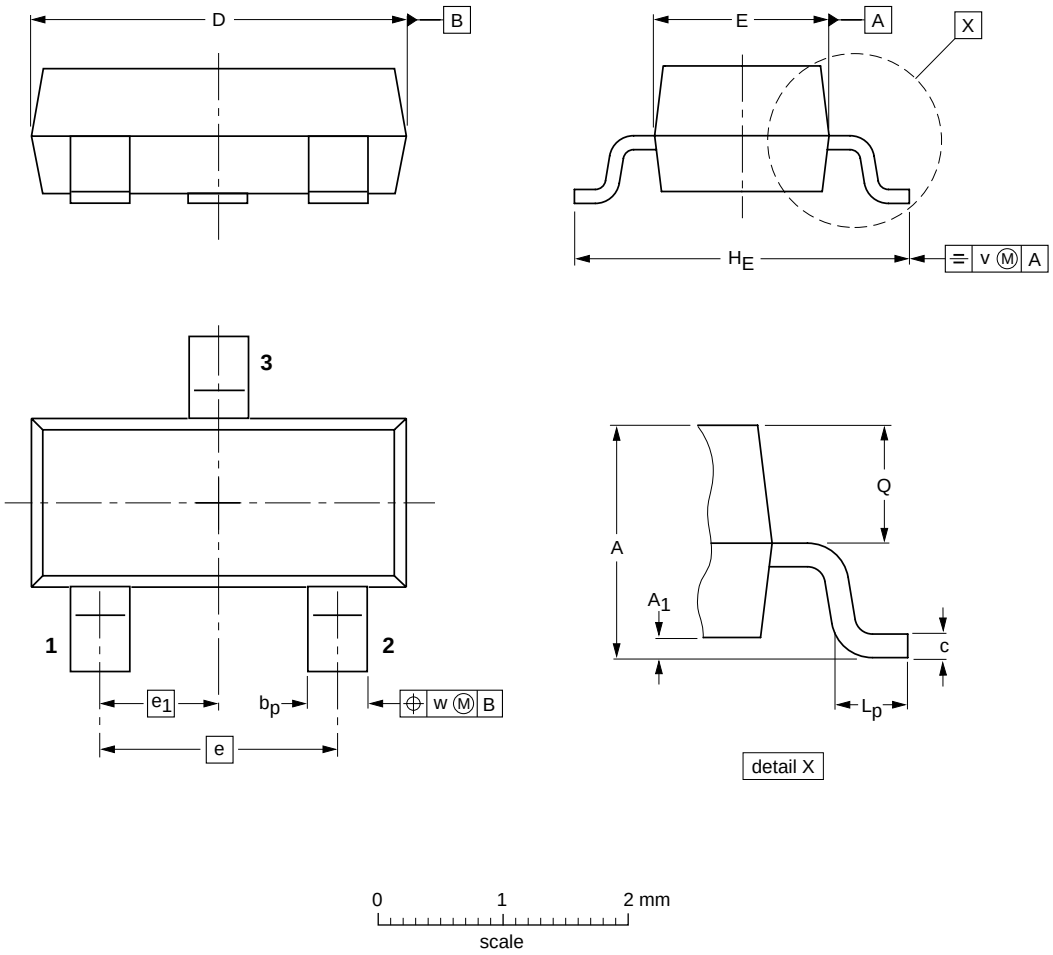


I_S — V_{SD}



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■ SOT-23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1