

# ATM2602NSG

## Dual N-Channel Enhancement Mode Power MOSFET

Drain-Source Voltage: 20V    Continuous Drain Current: 3A

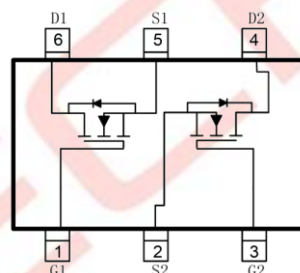
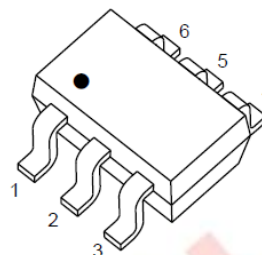
### Features

- ◆ Trench FET Power MOSFET
- ◆ Excellent  $R_{DS(on)}$  and Low Gate Charge
- ◆  $R_{DS(on)} < 65m\Omega$  ( $V_{GS}=4.5V$ )
- ◆  $R_{DS(on)} < 85m\Omega$  ( $V_{GS}=2.5V$ )

### Application

- ◆ Driver for Relay, Solenoid, Motor, LED etc.
- ◆ Power supply converters circuit
- ◆ Load/Power Switching for portable device

SOT-23-6L



### Absolute maximum ratings ( $T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current	$I_D$	3	A
Plused Drain Current	$I_{DM}$	10	A
Power Dissipation	$P_D$	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	83.3	$^{\circ}C/W$
Junction Temperature	$T_J$	150	$^{\circ}C$
Storage Temperature	$T_{STG}$	-55~ +150	$^{\circ}C$

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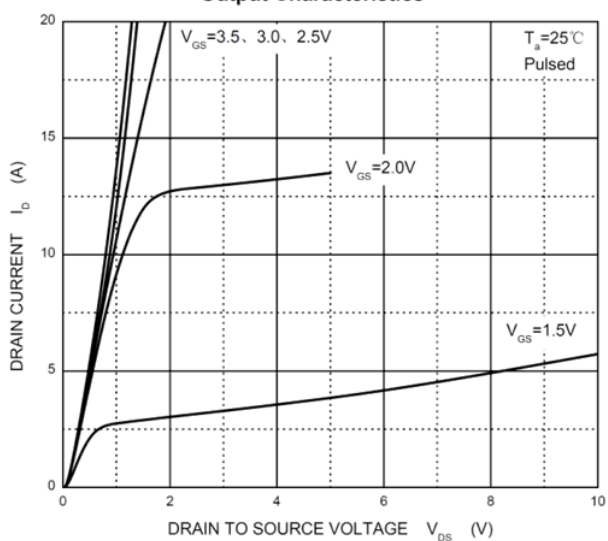
## Electrical characteristics (T<sub>A</sub>=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	20			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> = 0V			1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> = 0V			±0.1	μA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.4		1	V
Drain-source on-resistance <sup>1)</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 3A			65	mΩ
		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 2A			85	
Dynamic characteristics						
Input Capacitance <sup>2)</sup>	C <sub>iss</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1MHz		300		pF
Output Capacitance <sup>2)</sup>	C <sub>oss</sub>			120		pF
Reverse Transfer Capacitance <sup>2)</sup>	C <sub>rss</sub>			80		pF
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =3.6A		4.0	10	nC
Gate-source charge	Q <sub>gs</sub>			0.65		nC
Gate-drain charge	Q <sub>gd</sub>			1.5		nC
Switching Characteristics <sup>2)</sup>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =10V, R <sub>L</sub> =5.5Ω, I <sub>D</sub> =3.6A V <sub>GEN</sub> =4.5V, R <sub>g</sub> =6Ω		7	15	ns
Turn-on rise time	t <sub>r</sub>			55	80	ns
Turn-off delay time	t <sub>d(off)</sub>			16	60	ns
Turn-off fall time	t <sub>f</sub>			10	25	ns
Source-Drain Diode characteristics						
Diode Forward voltage	V <sub>DS</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =0.94A		0.76	1.2	V

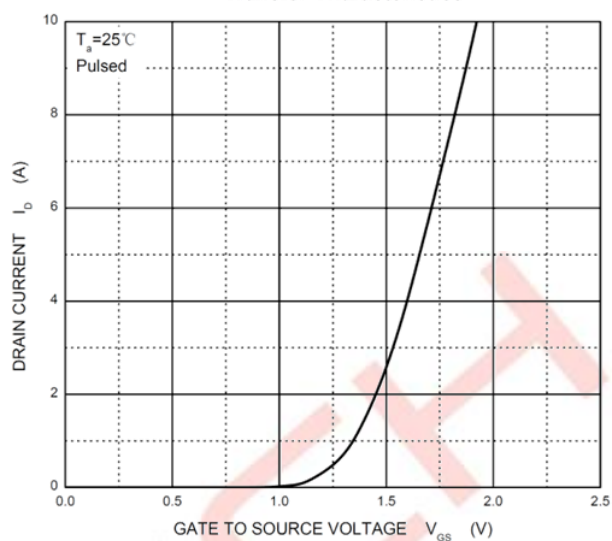
### Notes:

- 1) Pulse Test: Pulse width ≤ 300μs, duty cycle ≤ 2%.
- 2) These parameters have no way to verify.

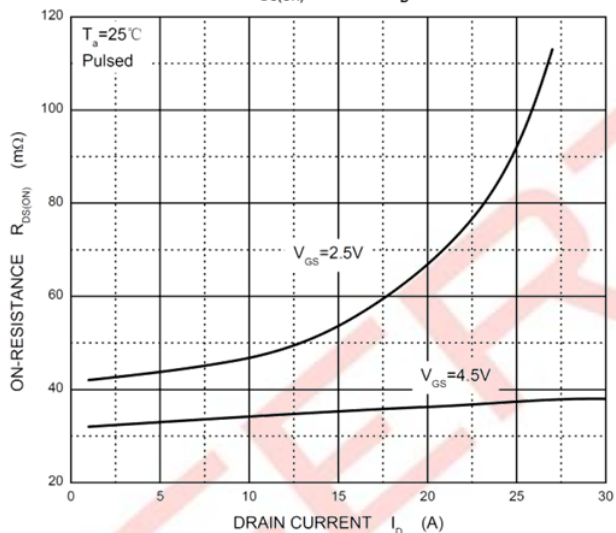
Output Characteristics



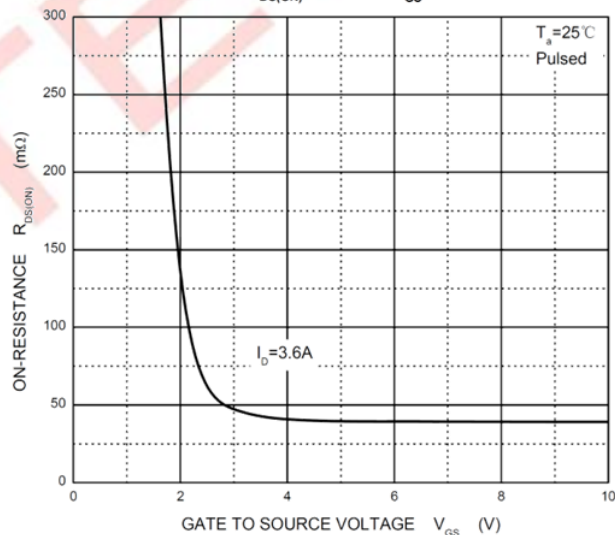
Transfer Characteristics



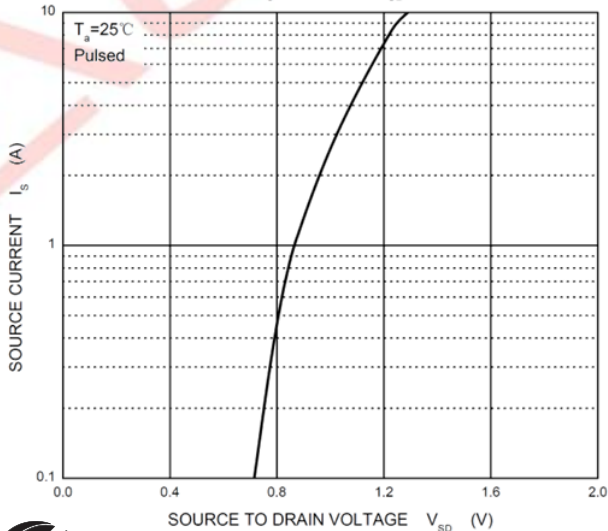
$R_{DS(ON)}$  —  $I_D$



$R_{DS(ON)}$  —  $V_{GS}$



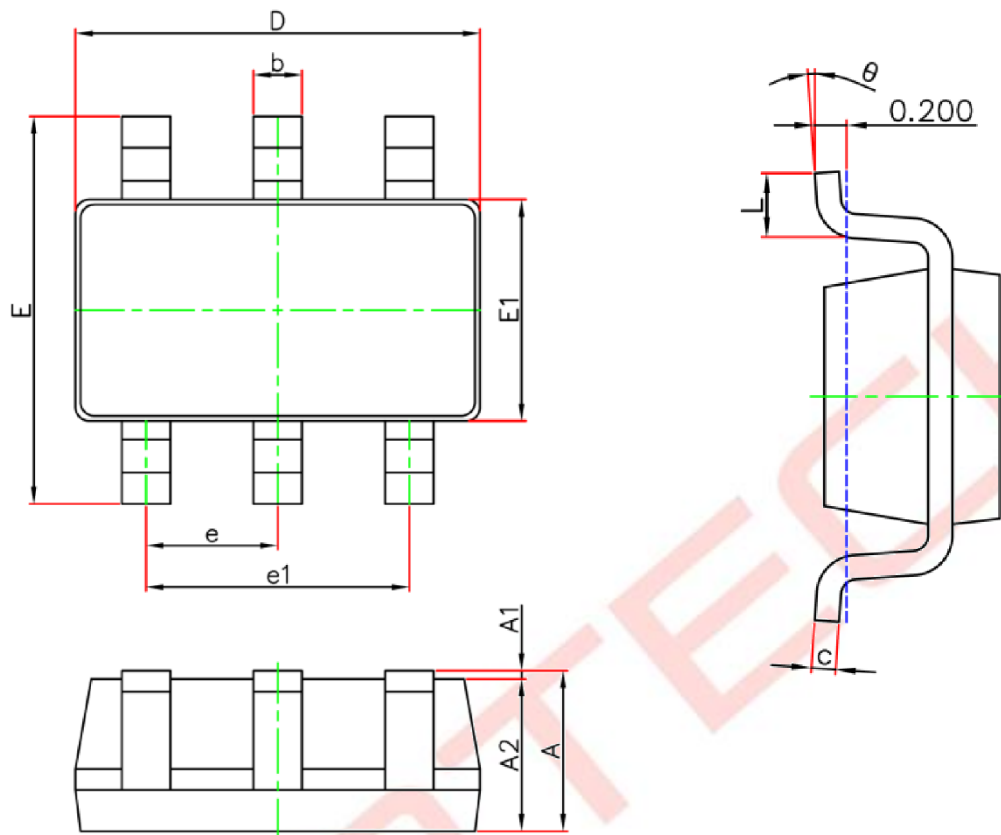
$I_S$  —  $V_{SD}$



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## Package Outline

SOT-23-6L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
$\theta$	0°	8°	0°	8°