

# ATM3003PSA

## P- Enhancement Field Effect Transistor

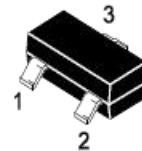
Drain-Source Voltage: -30V

Drain Current: -3A

### Features

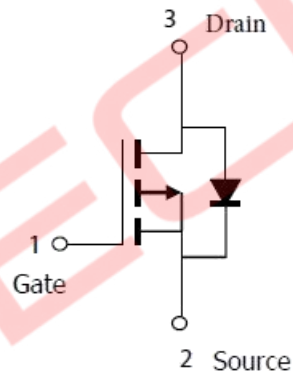
- ◆ Low gate charge and  $R_{DS(ON)}$
- ◆ Low reverse transfer capacitances
- ◆  $R_{DS(ON)} = 75m\Omega(Typ.) @ V_{GS} = -4.5V$
- ◆  $R_{DS(ON)} = 58m\Omega(Typ.) @ V_{GS} = -10V$

SOT-23



Marking:P33

1 Gate 2 Source 3 Drain



### Application

- ◆ DC/DC Converter
- ◆ Load Switch

### Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$-V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$-I_D$	3	A
Pulsed Drain Current <sup>Note1</sup>	$-I_{DM}$	12	A
Power Dissipation	$P_D$	1.04	W
Junction Temperature	$T_J$	150	°C
Storage Temperature	$T_{STG}$	-55~ +150	°C
<b>Thermal Characteristics</b>			
Parameter	Symbol	Typ.	Unit
Maximum Junction-to-Ambient <sup>Note2</sup>	$R_{\theta JA}$	120	°C/W

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	30			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V			1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V			±100	nA
Gate threshold voltage <sup>Note3</sup>	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	1		3	V
Drain-source on-resistance <sup>Note 3</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -3.2A		58	70	mΩ
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2.5A		75	95	
<b>Dynamic characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V, f=1MHz		460		pF
Output Capacitance	C <sub>oss</sub>			74		
Reverse Transfer Capacitance	C <sub>rss</sub>			23		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> = -10V, I <sub>D</sub> = -1.7A		14		nC
Total Gate Charge	Q <sub>g</sub>			6.8		
Gate-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -1.7A		2.8		nC
Gate-Drain Charge	Q <sub>gd</sub>			2.3		
Gate Resistance	R <sub>g</sub>	f=1MHZ		3.5		Ω
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = -15V, V <sub>GEN</sub> = -10V, R <sub>L</sub> = 6Ω		33		ns
Turn-on rise time	t <sub>r</sub>			39		
Turn-off delay time	t <sub>d(off)</sub>			17		
Turn-off fall time	t <sub>f</sub>			5		
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage	V <sub>DS</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = -1.0A		-0.8	-1.2	V

Notes:

- 1) Repetitive rating: Pulse width limited by junction temperature.
- 2) Surface mounted on FR4 board, t ≤ 10s.
- 3) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤ 2%.

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## Characteristics Curves

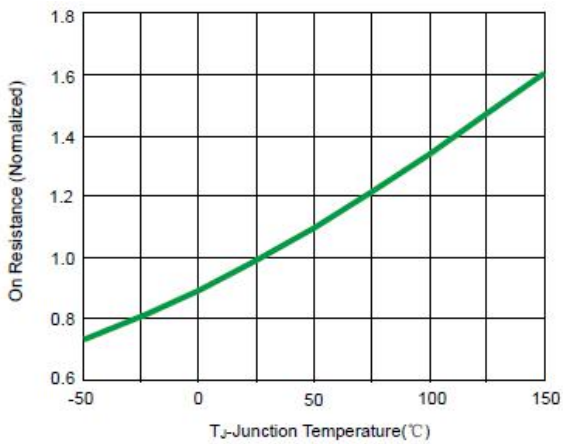


Fig 1. On Resistance vs. Junction Temperature

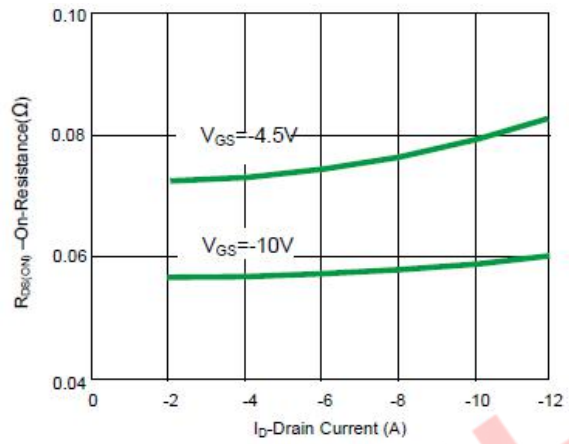


Fig 2. On-Resistance vs. Drain Current

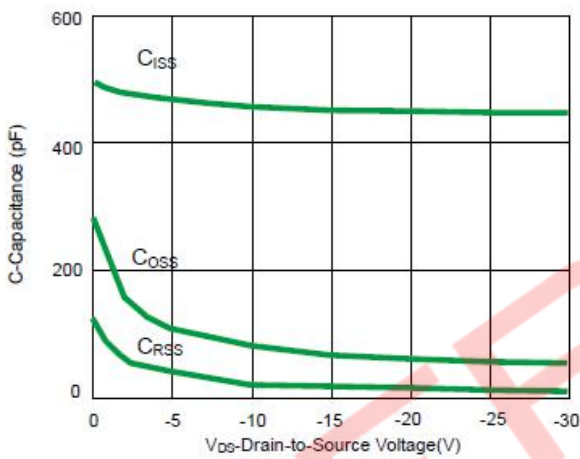


Fig 3. Capacitance

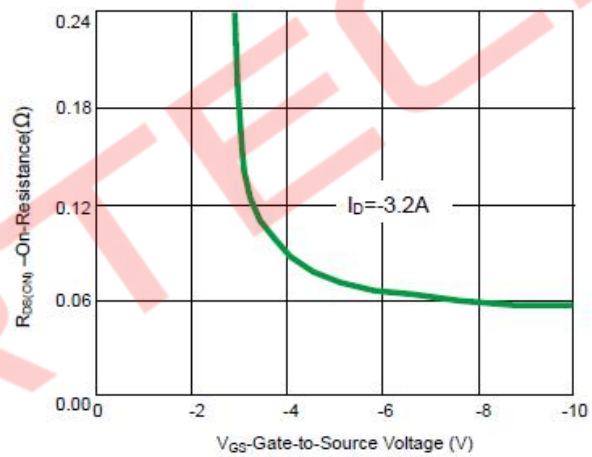


Fig 4. On-Resistance vs. Gate-to-Source Voltage

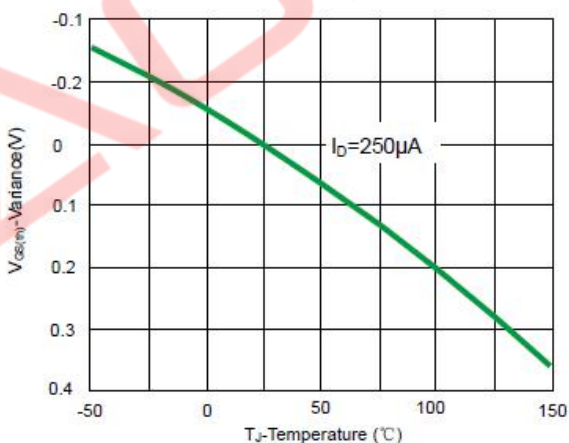


Fig 5. Threshold Voltage

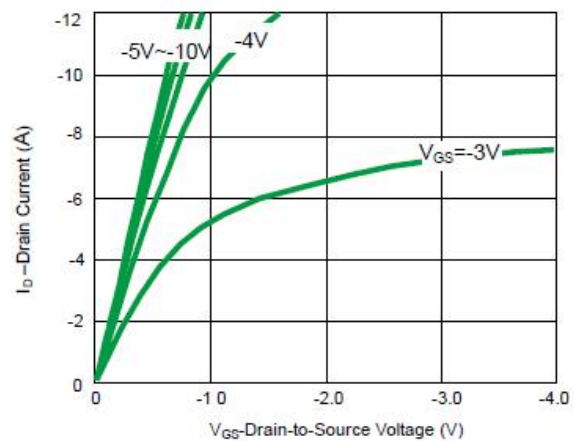
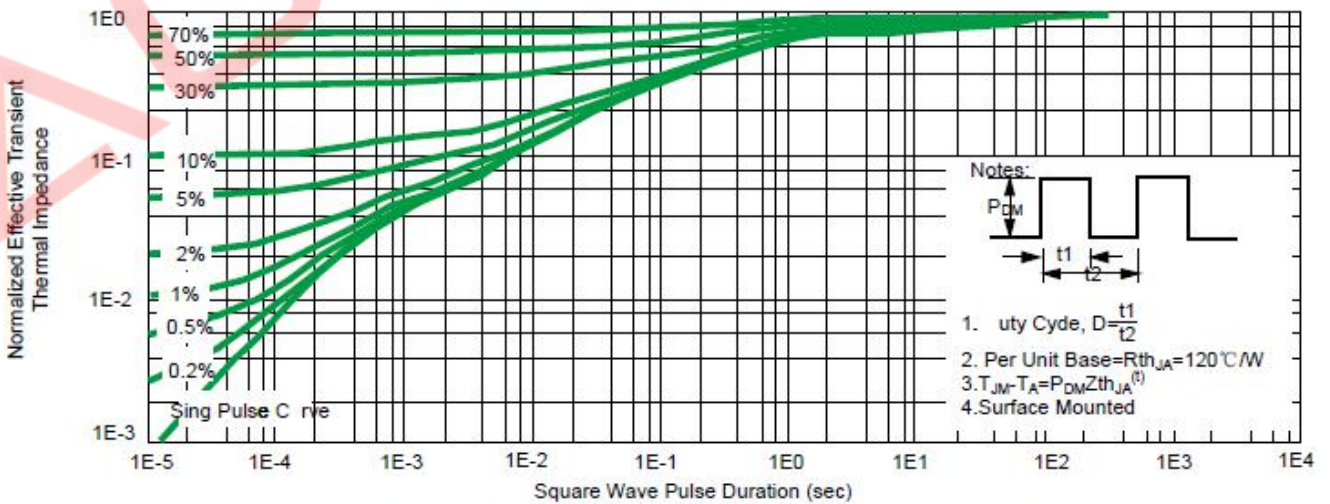
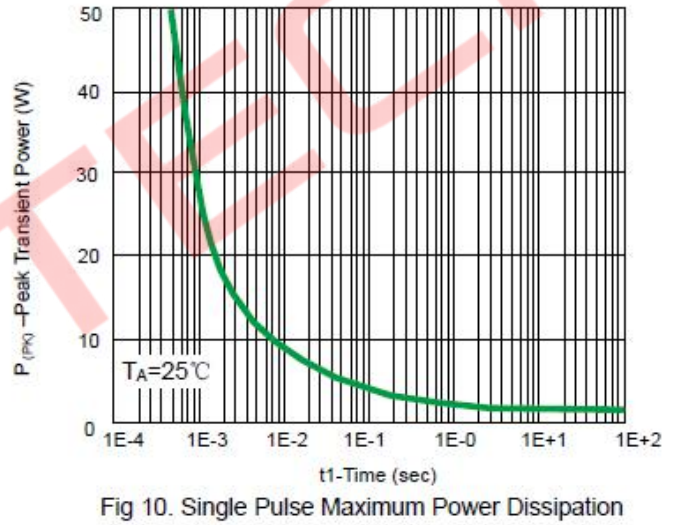
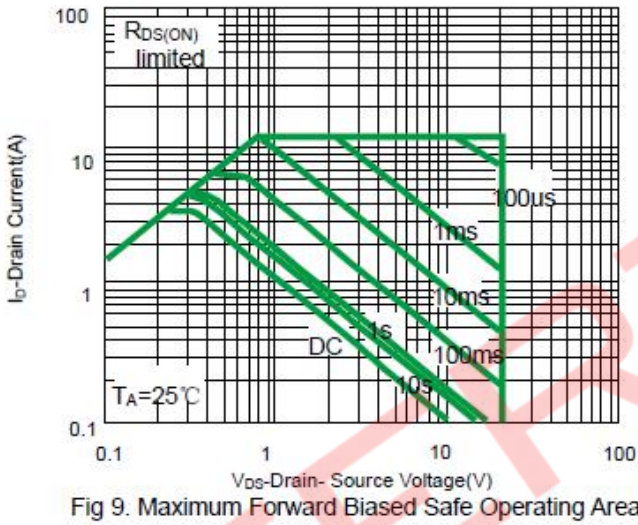
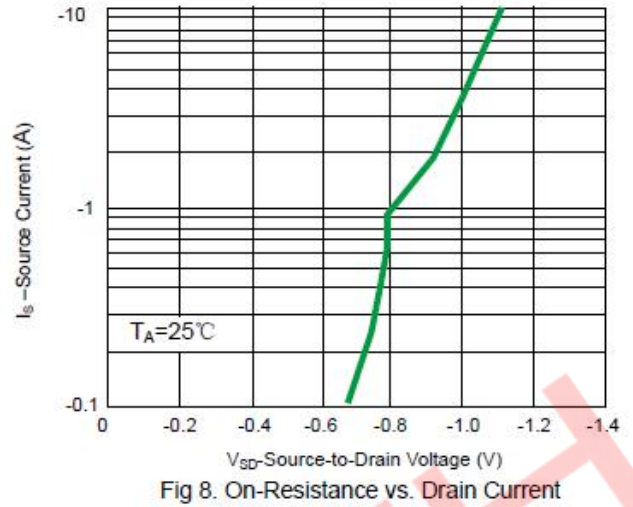
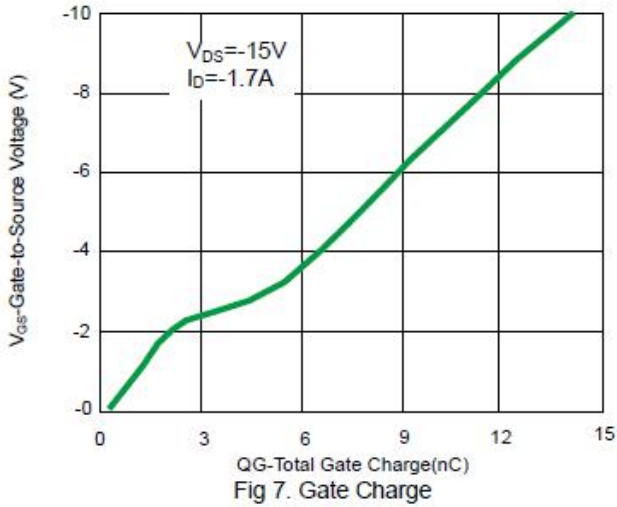


Fig 6. On-Region Characteristics

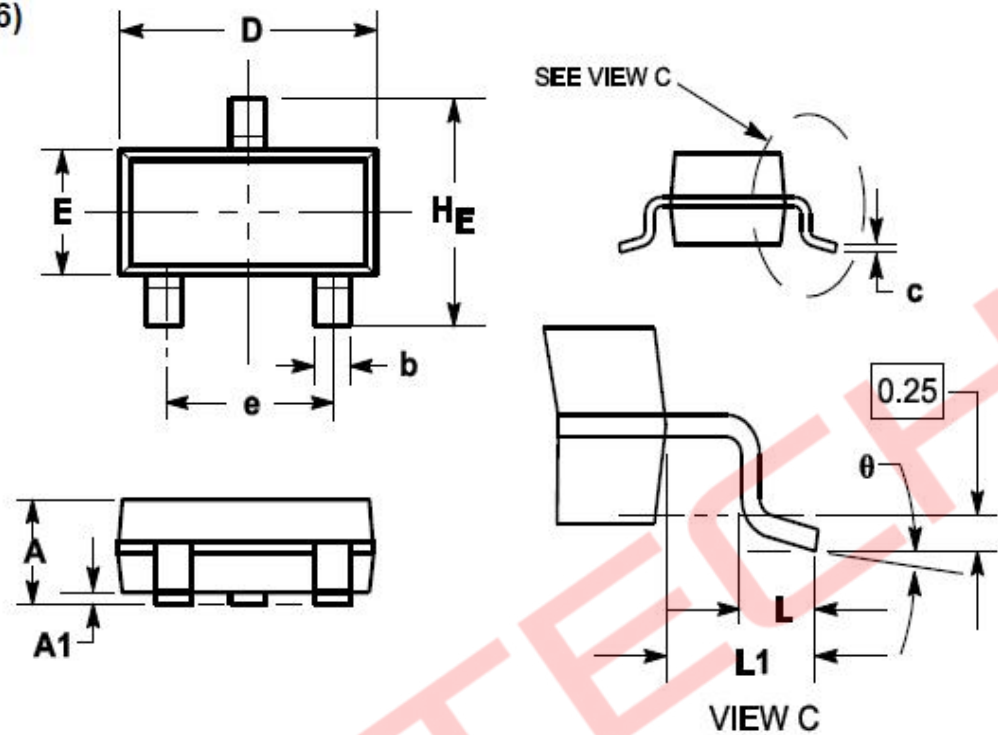
# ATM3003PSA



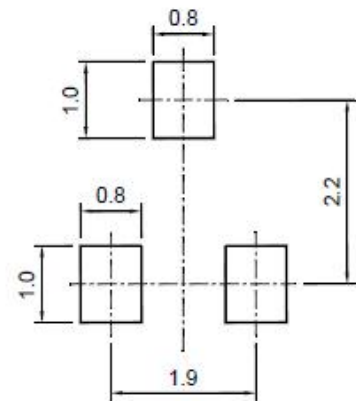
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## Package Outline

SOT-23 (TO-236)



Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.900	1.025	1.150
A1	0.000	0.050	0.100
b	0.300	0.400	0.500
c	0.080	0.115	0.150
D	2.800	2.900	3.000
E	1.200	1.300	1.400
HE	2.250	2.400	2.550
e	1.800	1.900	2.000
L1	0.550REF		
L	0.300		0.500
θ	0°		8°



SOT-23 (TO-236)

Recommended Soldering Pad

## Ordering Information

Device	Package	Shipping
ATM3003PSA	SOT-23	3000PCS/T&R(7 inch)

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