

ATM3003PSA

P- Enhancement Field Effect Transistor

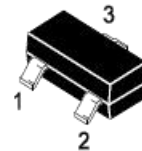
Drain-Source Voltage: -30V

Drain Current: -3A

Features

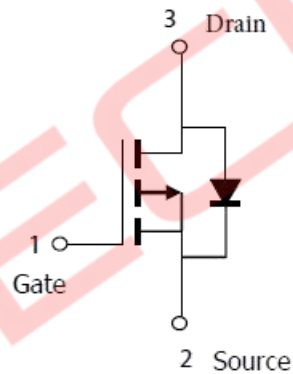
- ◆ Low gate charge and $R_{DS(ON)}$
- ◆ Low reverse transfer capacitances
- ◆ $R_{DS(ON)} = 75m\Omega(Typ.) @ V_{GS} = -4.5V$
- ◆ $R_{DS(ON)} = 58m\Omega(Typ.) @ V_{GS} = -10V$

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}	± 20	V
Continuous Drain Current	$-I_D$	3	A
Pulsed Drain Current ^{Note1}	$-I_{DM}$	12	A
Power Dissipation	P_D	1.04	W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55~ +150	°C
Thermal Characteristics			
Parameter	Symbol	Typ.	Unit
Maximum Junction-to-Ambient ^{Note2}	$R_{\theta JA}$	120	°C/W

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Electrical characteristics (T_A=25 °C, unless otherwise noted)

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

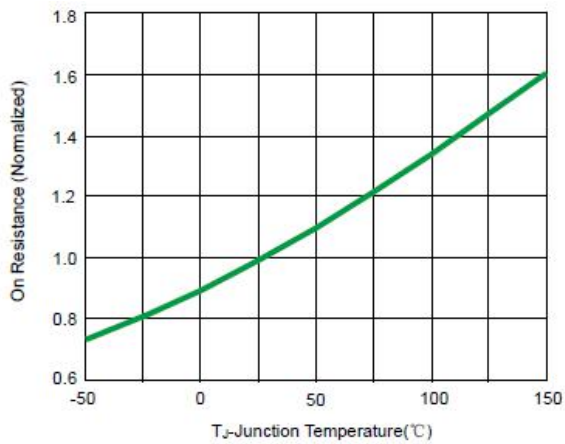


Fig 1. On Resistance vs. Junction Temperature

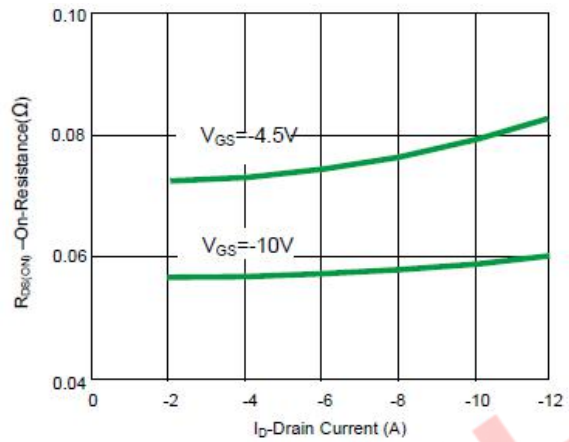


Fig 2. On-Resistance vs. Drain Current

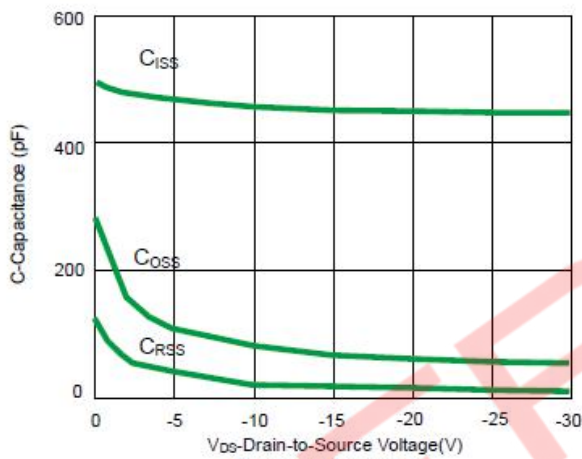


Fig 3. Capacitance

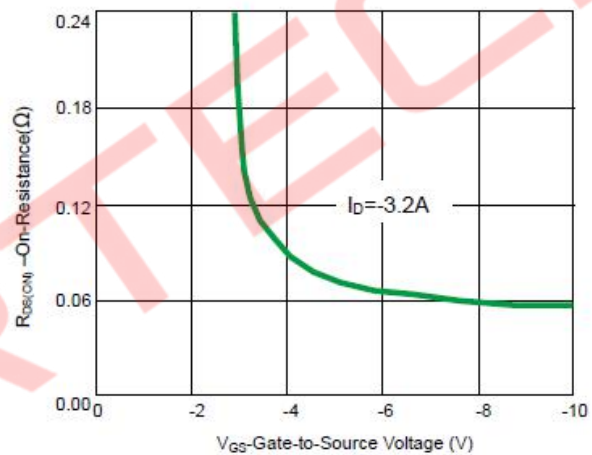


Fig 4. On-Resistance vs. Gate-to-Source Voltage

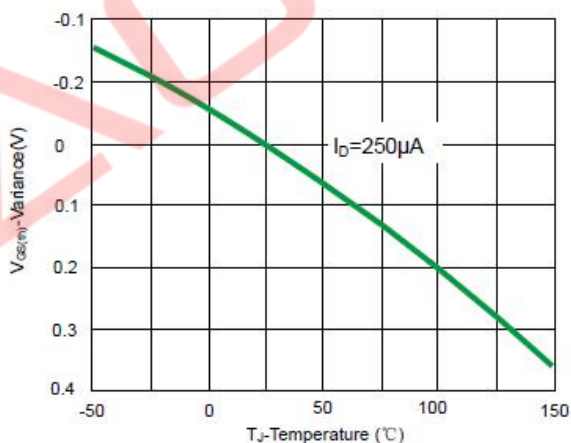


Fig 5. Threshold Voltage

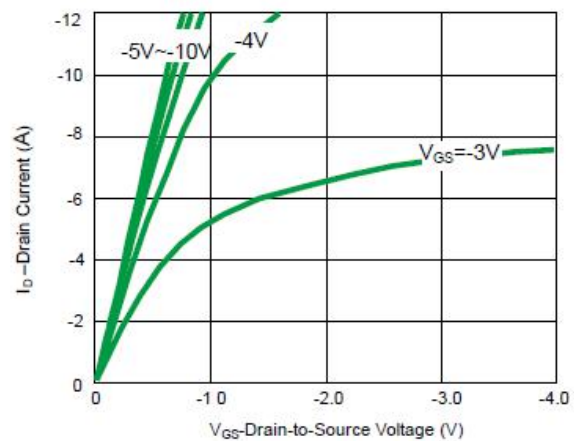
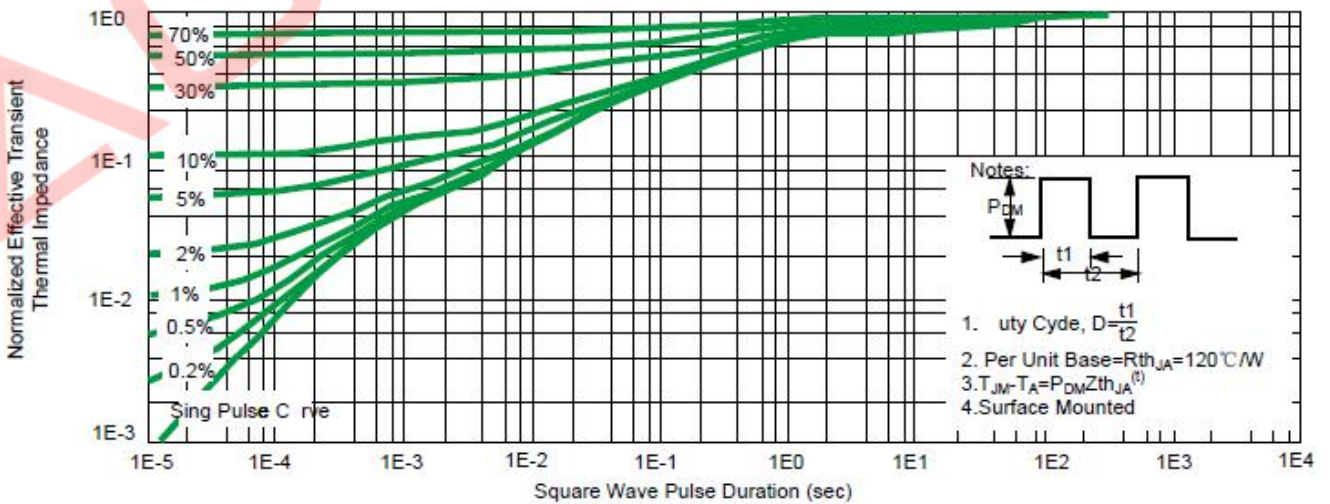
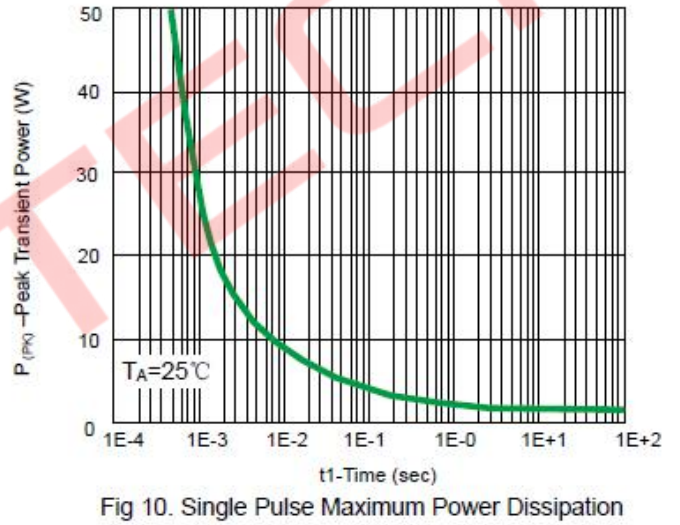
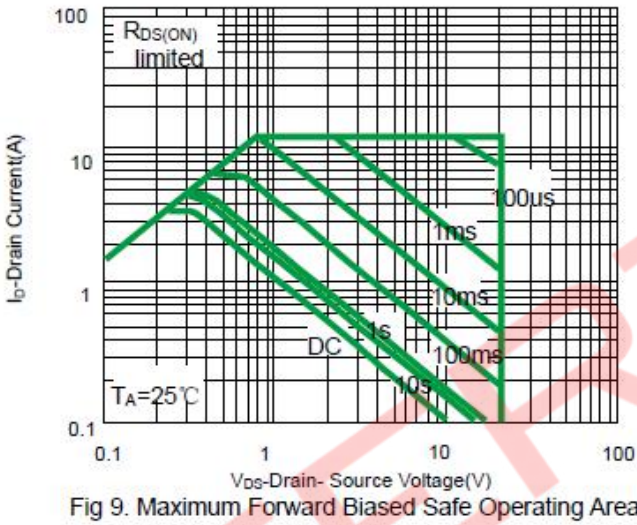
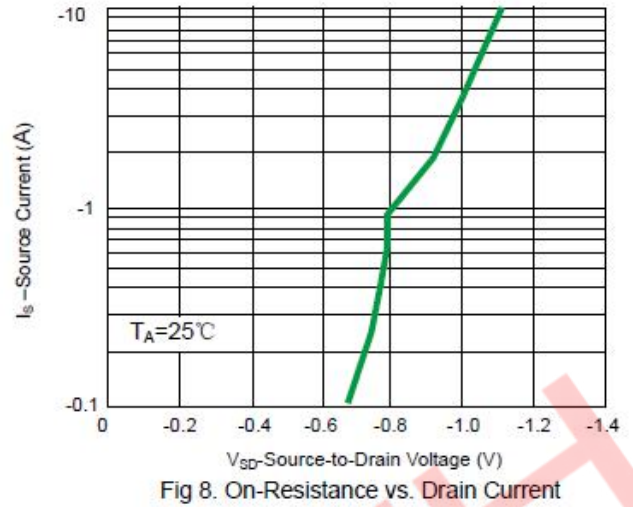
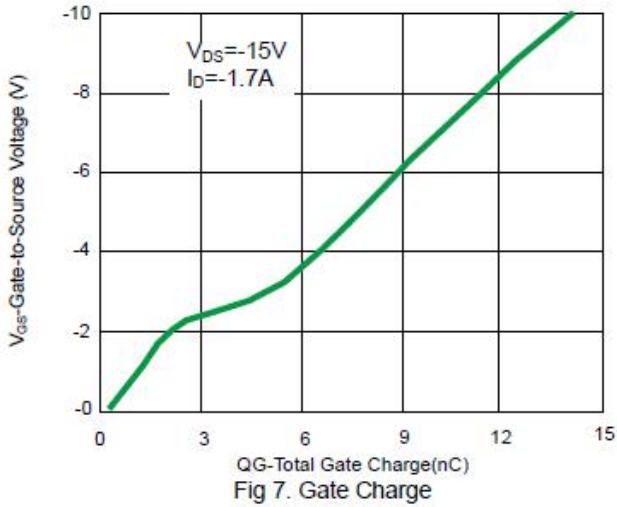


Fig 6. On-Region Characteristics

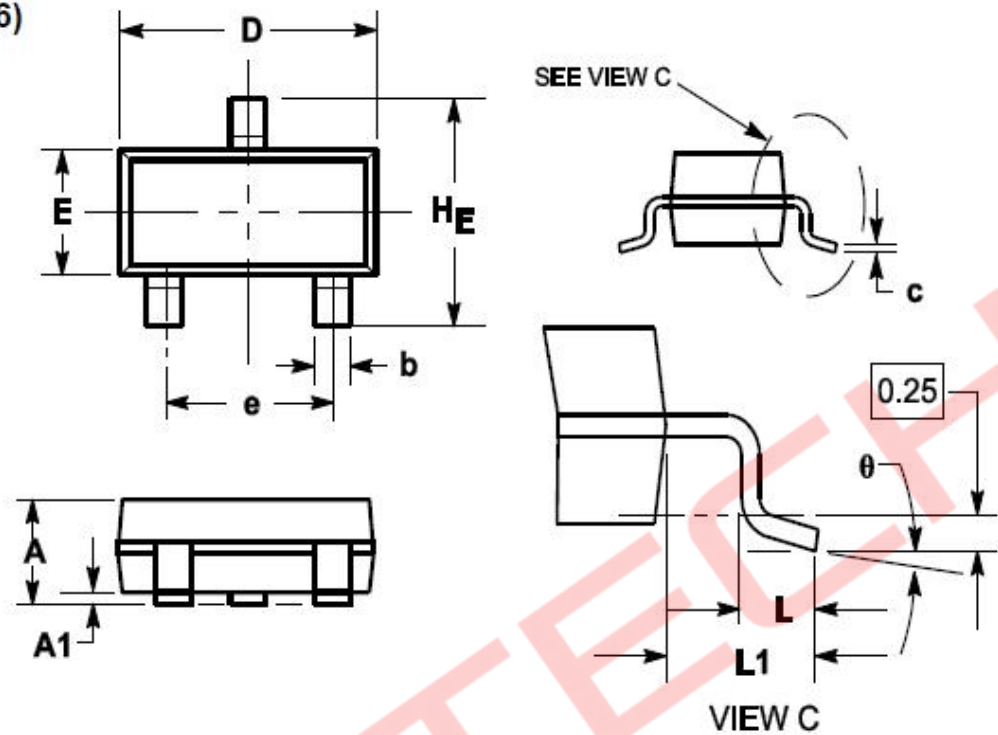
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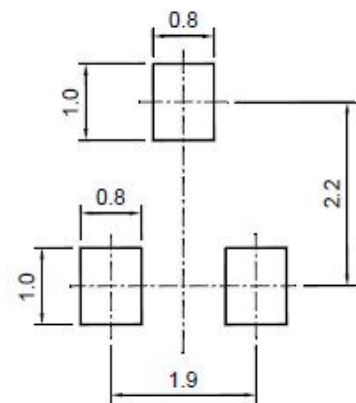
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Package Outline

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
theta	0°		8°



SOT-23 (TO-236)

Recommended Soldering Pad

Ordering Information

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