

SOT-23 Plastic-Encapsulate MOSFETS

AO3404 N-Channel Enhancement Mode MOSFET

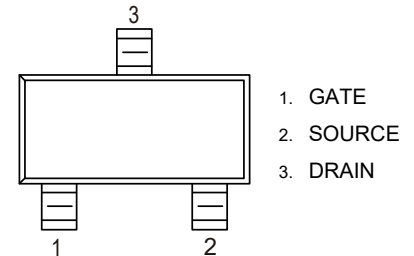
SOT-23



$V_{DS} = 30V$ $I_D = 6.0A$
 $R_{DS(ON)MAX} = 25m\Omega @ V_{GS} = 10V$

Features

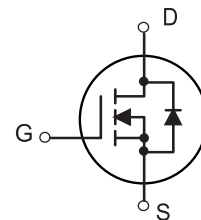
- Improved dv/dt capability
- Fast switching
- Green Device Available



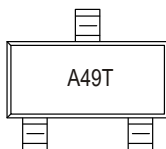
Application

- MB / VGA / Vcore
- Load Switch
- Hand-Held Instrument

Equivalent Circuit



Marking



A49T= Device code

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V_{DS}	30	V	
Gate-Source Voltage	V_{GS}	±20	V	
Continuous Drain Current	I_D	$T_A = 25^\circ C$	6.0	A
		$T_A = 100 C$	3.8	A
Drain Current-Pulsed (Note1)	I_{DM}	23	A	
Maximum Power Dissipation	P_D	1.4	W	
Junction Temperature and Storage Temperature	T_J & T_{stg}	-55 to 150	°C	
Thermal Resistance From Junction To Ambient ($t \leq 5s$)	$R_{\theta JA}$	80	°C/W	

Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	30	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V, T _J =25°C	-	-	1	μA
		V _{DS} =24V, V _{GS} =0V, T _J =125°C	-	-	10	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	1.0	1.6	2.5	V
V _{GS(th)} Temperature Coefficient	Δ V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	-	-4	-	mV/°C
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =5.5A	-	18	25	mΩ
		V _{GS} =4.5V, I _D =4A	-	27	40	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =5.5A	-	15	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, F=1.0MHz	-	345	-	pF
Output Capacitance	C _{OSS}		-	55	-	pF
Reverse Transfer Capacitance	C _{RSS}		-	32	-	pF
Switching Characteristics (Note 4)						
Turn-on Delay Time (Note 2, 3)	t _{d(on)}	V _{DD} =15V, I _D =1A V _{GS} =10V, R _G =6Ω	-	2.8	-	nS
Turn-on Rise Time (Note 2, 3)	t _r		-	7.2	-	nS
Turn-Off Delay Time (Note 2, 3)	t _{d(off)}		-	15.8	-	nS
Turn-Off Fall Time (Note 2, 3)	t _f		-	4.6	-	nS
Total Gate Charge (Note 2, 3)	Q _g	V _{DS} =15V, I _D =6A, V _{GS} =4.5V	-	4.1	-	nC
Gate-Source Charge (Note 2, 3)	Q _{GS}		-	1	-	nC
Gate-Drain Charge (Note 2, 3)	Q _{GD}		-	2.1	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V, I _S =1.0A	-	-	1.0	V
Diode continuous forward current	I _S	V _G =V _D =0V, Force Current	-	-	6.0	A
Diode pulse current	I _{SM}		-	-	23	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%.
4. Guaranteed by design, not subject to production

Typical Electrical and Thermal Characteristics

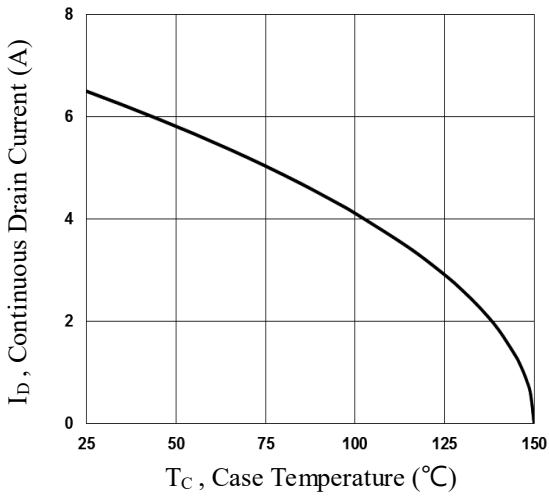


Fig.1 Continuous Drain Current vs. T_C

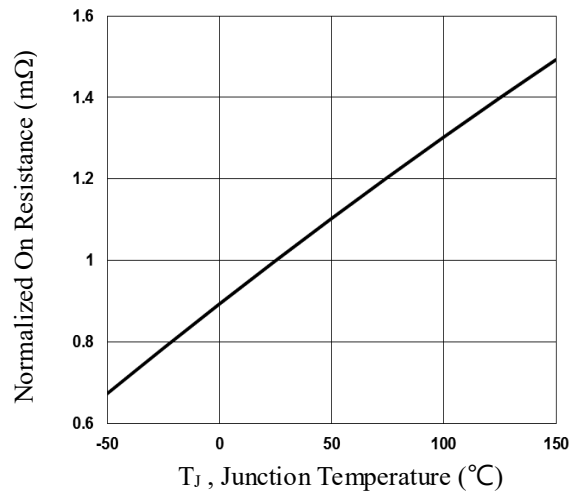


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

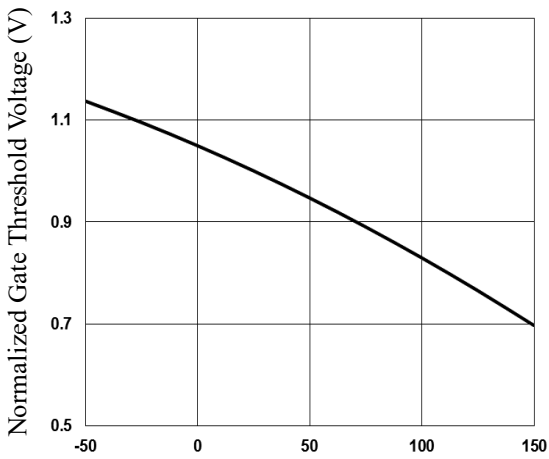


Fig.3 Normalized V_{th} vs. T_J

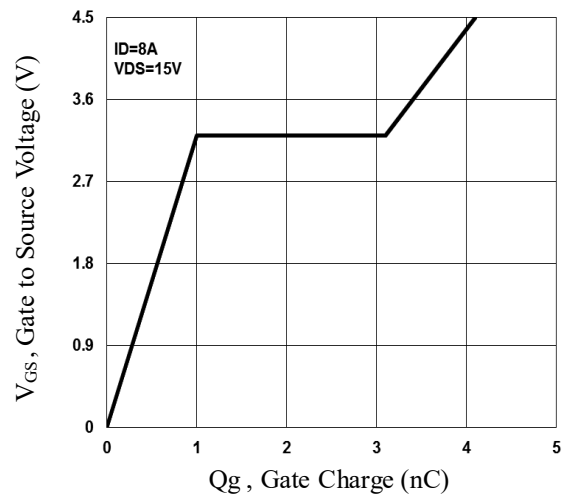


Fig.4 Gate Charge Waveform

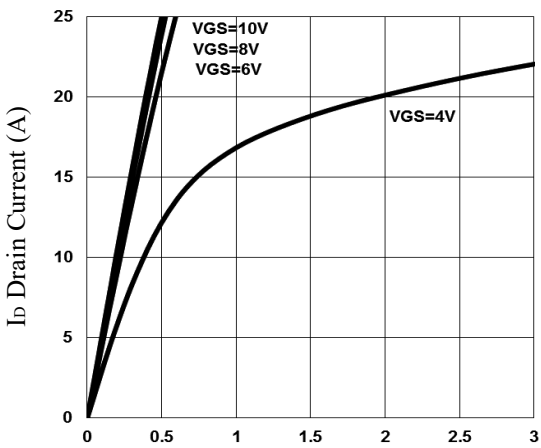


Fig.5 On Region Characteristics

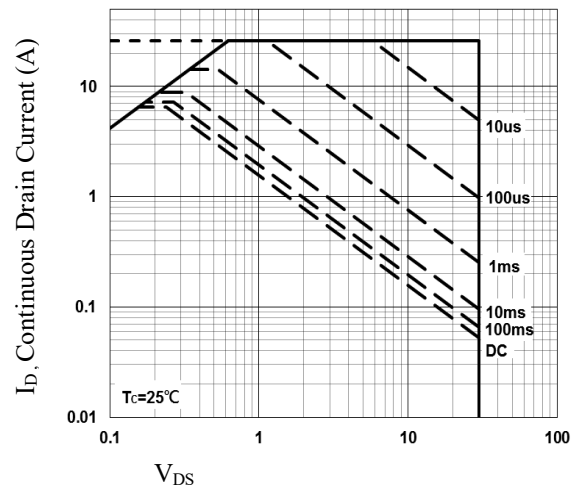


Fig.6 Maximum Safe Operation Area

Typical Electrical and Thermal Characteristics

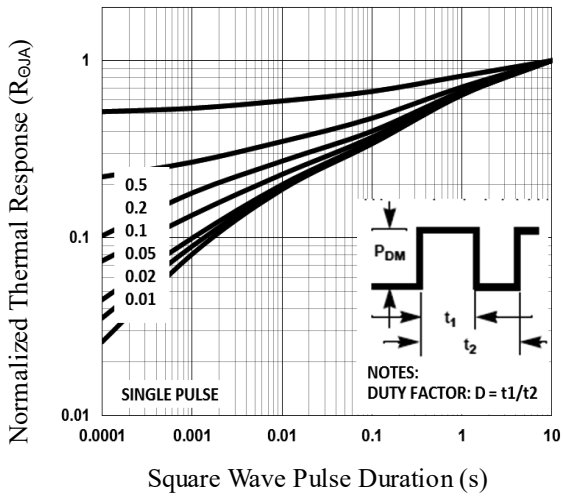


Fig.7 Normalized Transient Response

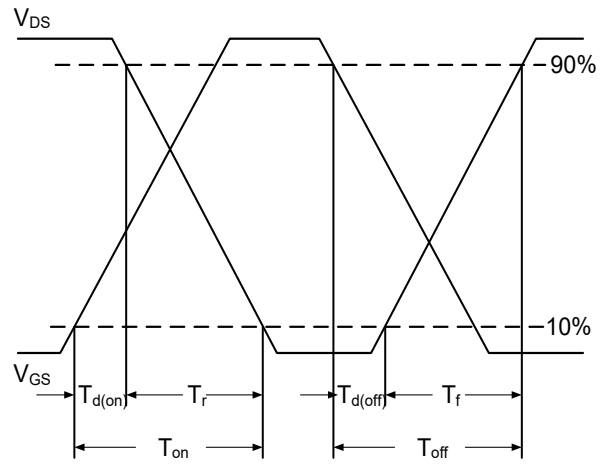
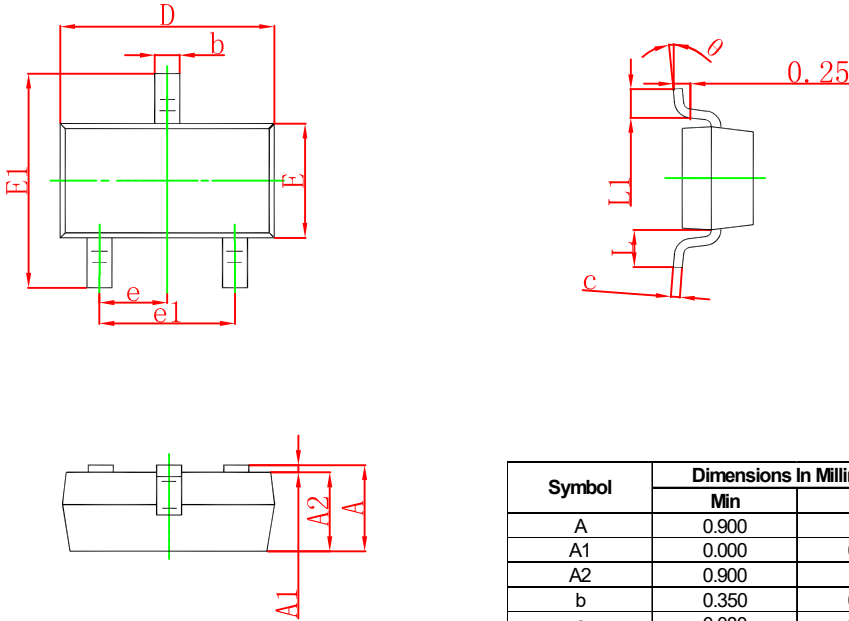


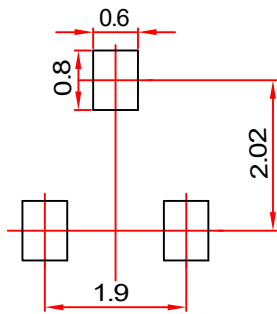
Fig.8 Switching Time Waveform

SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.400	0.035	0.055
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.350	0.500	0.014	0.020
c	0.080	0.190	0.003	0.007
D	2.700	3.100	0.106	0.122
E	1.200	1.650	0.047	0.065
E1	2.200	3.000	0.087	0.118
e	0.950 TYP		0.037 TYP	
e1	1.780	2.040	0.070	0.080
L	0.550 REF		0.022 REF	
L1	0.200	0.500	0.008	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



- Note:
1. Controlling dimension: in/millimeters.
 2. General tolerance: ±0.05mm.
 3. The pad layout is for reference purposes only.

Package and Ordering Information

Package	Outline	Reel Size	Reel DIA. (mm)	Q'TY/Reel (pcs)
SOT-23	TAPING	7"	330	3000