

FMOS3401A

List

List..... 1

Package outline..... 2

Features..... 2

Mechanical data..... 2

Maximum ratings 2

Electrical characteristics..... 3

Rating and characteristic curves..... 4

Pinning information..... 5

Marking..... 5

Suggested solder pad layout..... 5

Packing information..... 6

Reel packing..... 7

Suggested thermal profiles for soldering processes..... 7

FMOS3401A

30V P-Channel Enhancement Mode MOSFET

Features

- High dense cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen-free part, ex.FMOS3401A-H.

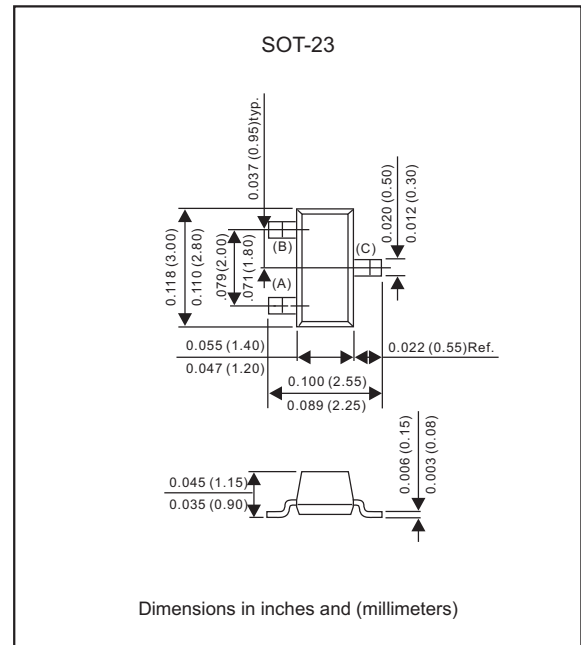
Application

- Load switch for portable devices
- DC/DC converter

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-23
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.008 gram

Package outline



Maximum ratings (AT $T_A=25^{\circ}C$ unless otherwise noted)

PARAMETER	Symbol	MIN.	TYP.	MAX.	UNIT
Drain-source voltage	V_{DS}			-30	V
Continuous drain current	I_D			-4.2	A
Gate-source voltage	V_{GS}			± 12	V
Power dissipation	P_D			400	mW
Thermal resistance junction to ambient($t < 5s$)	$R_{\theta JA}$		313		$^{\circ}C/W$
Operation junction temperature range	T_J	-55		+150	$^{\circ}C$
Storage temperature range	T_{STG}	-55		+150	$^{\circ}C$

FMOS3401A

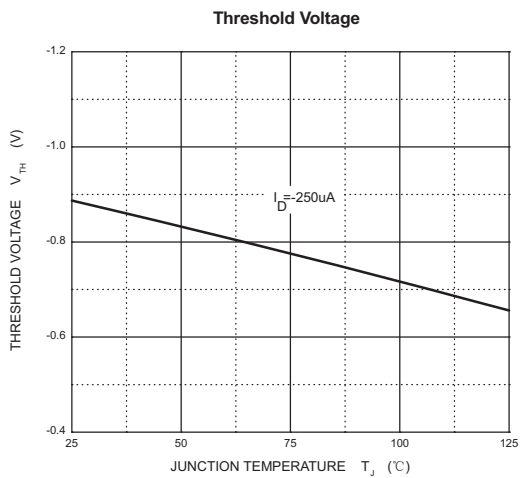
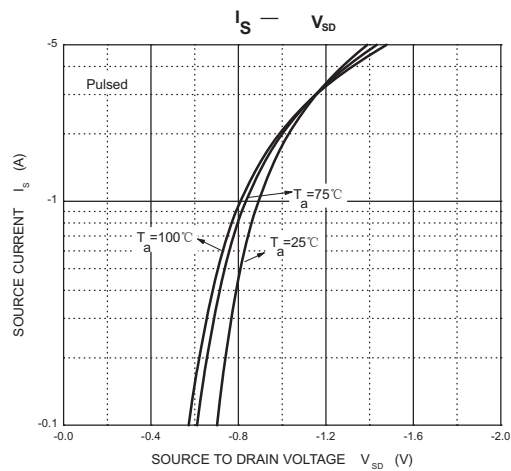
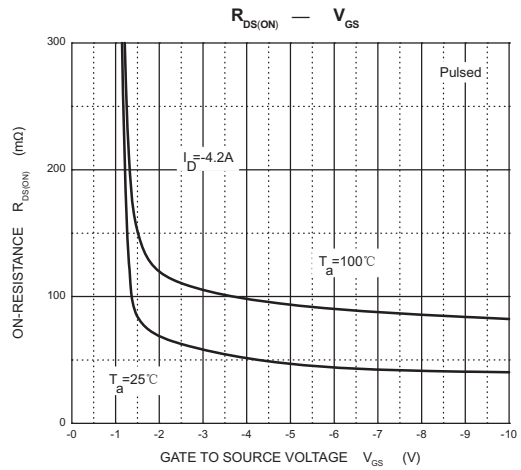
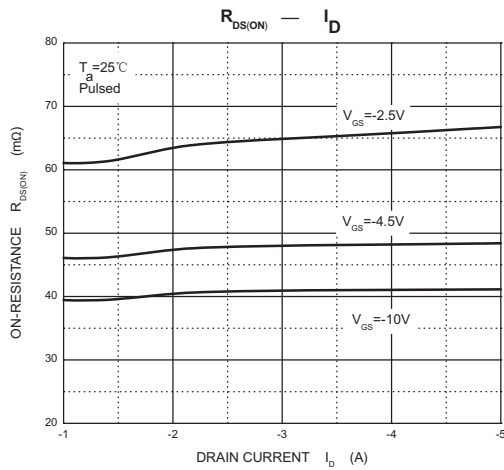
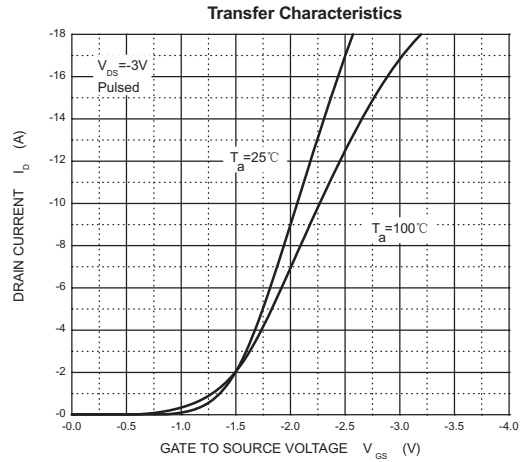
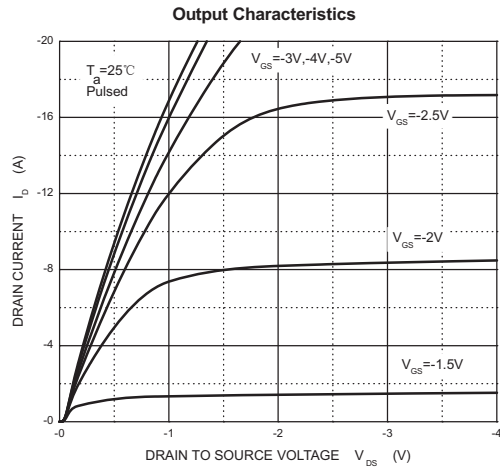
Electrical characteristics (At $T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Off characteristics						
Drain-source breakdown voltage	$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$	$V_{(BR)DSS}$	-30			V
Zero gate voltage drain current	$V_{DS} = -24\text{V}, V_{GS} = 0\text{V}$	I_{DSS}			-1.0	μA
Gate-source leakage current	$V_{GS} = \pm 12\text{V}, V_{DS} = 0\text{V}$	I_{GSS}			± 100	nA
On characteristics						
Gate threshold voltage	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	$V_{GS(th)}$	-0.7		-1.3	V
Drain-source on-resistance (note 1)	$V_{GS} = -10\text{V}, I_D = -4.2\text{A}$ $V_{GS} = -4.5\text{V}, I_D = -4.0\text{A}$ $V_{GS} = -2.5\text{V}, I_D = -1.0\text{A}$	$R_{DS(on)}$		41 47 61	60 70 85	m Ω
Forward transconductance (note 1)	$V_{DS} = -5.0\text{V}, I_D = -5.0\text{A}$	g_{FS}	7.0			S
Dynamic characteristics (note 2)						
Input capacitance	$V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$	C_{iss}		1050		pF
Output capacitance		C_{oss}		127		
Reverse transfer capacitance		C_{rss}		85		
Switching characteristics (note 2)						
Turn-on delay time	$V_{GS} = -10\text{V}, V_{DS} = -15\text{V},$ $R_L = 3.6\Omega, R_{GEN} = 6.0\Omega$	$t_{d(on)}$			6.5	ns
Turn-on rise time		t_r			3.5	
Turn-off delay time		$t_{d(off)}$			40	
Turn-off fall time		t_f			13	
Drain-source diode characteristics and maximum ratings						
Diode forward voltage (note 1)	$I_S = -1.0\text{A}, V_{GS} = 0\text{V}$	V_{SD}			-1.0	V

Notes :

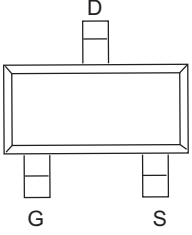
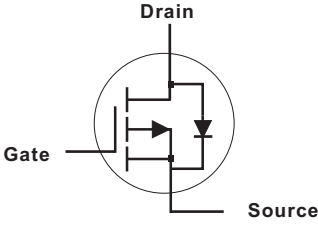
1. Pulse test : pulse width $\leq 300\mu\text{s}$, duty cycles $\leq 2\%$.
2. These parameters have no way to verify.

Rating and characteristic curves (FMOS3401A)



FMOS3401A

Pinning information

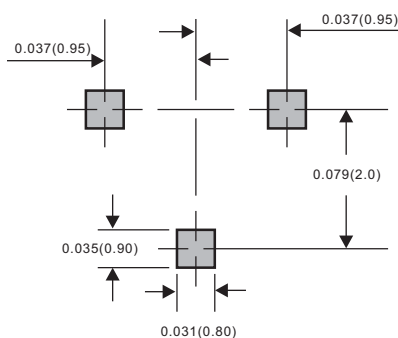
Pin	Simplified outline	Symbol
PinD Drain PinG Gate PinS Source		

Marking

Type number	Marking code
FMOS3401A	R1A

Suggested solder pad layout

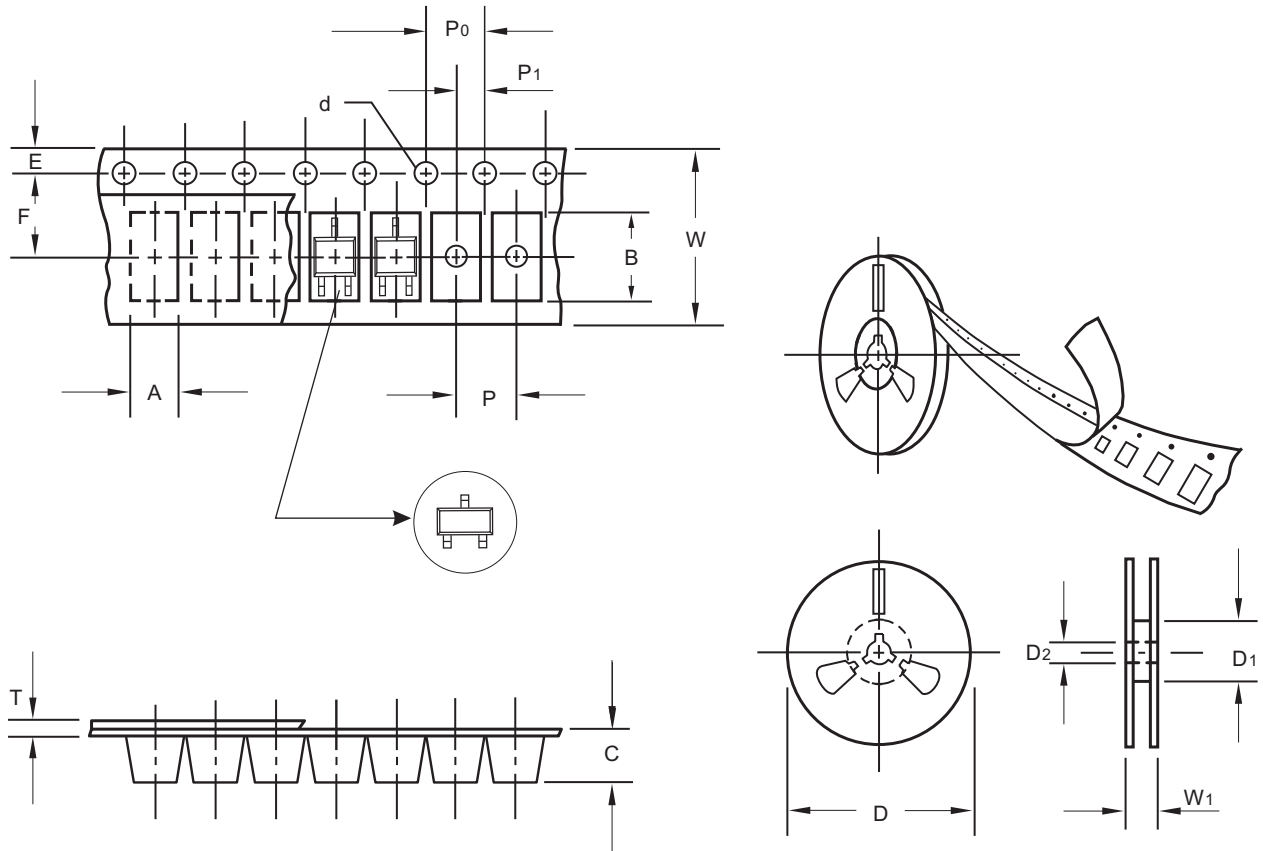
SOT-23



Dimensions in inches and (millimeters)

FMOS3401A

Packing information



unit:mm

Item	Symbol	Tolerance	SOT-23
Carrier width	A	0.1	3.15
Carrier length	B	0.1	2.77
Carrier depth	C	0.1	1.22
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D ₁	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D ₁	min	54.40
Feed hole diameter	D ₂	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P ₀	0.1	4.00
Embossment center	P ₁	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W ₁	1.0	9.50

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

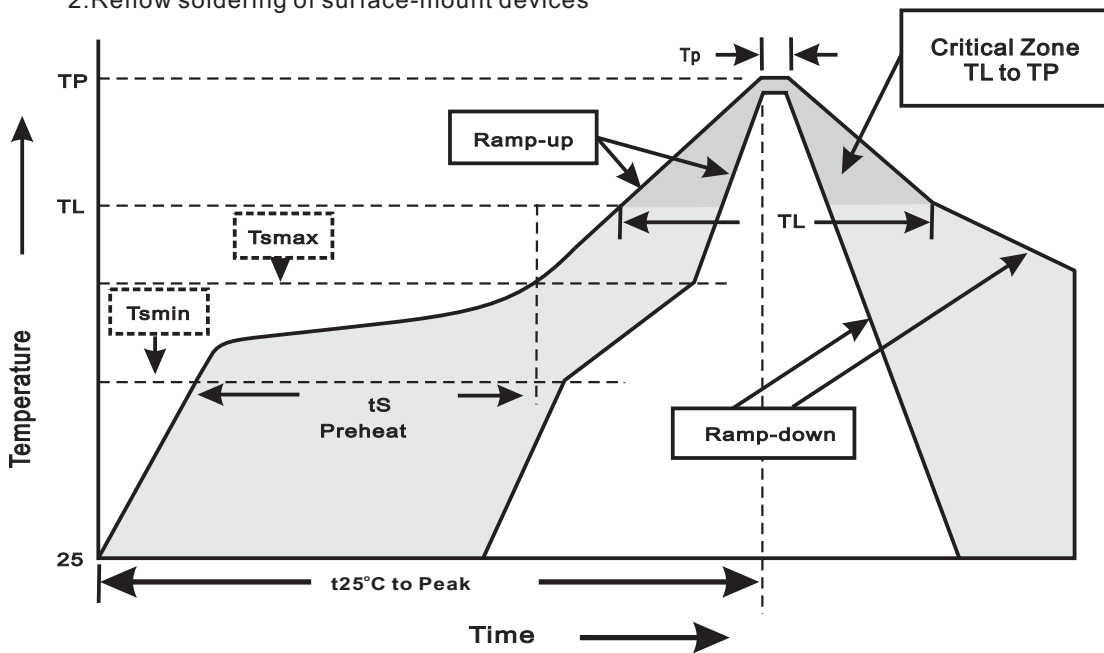
FMOS3401A

Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOT-23	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	11.6

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3°C/sec
Preheat -Temperature Min(T _{min}) -Temperature Max(T _{max}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{max} to T _L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T _L) -Time(t _L)	217°C 60~260sec
Peak Temperature(T _P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t _P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes