FMOS3400A-Q1

List

FMOS3400A-Q1

30V N-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.
- Qualified to AEC-Q101 standards for high reliability.
- Suffix "-H" dinicates Halogen-free part, ex.FMOS3400A-Q1-H.

Application

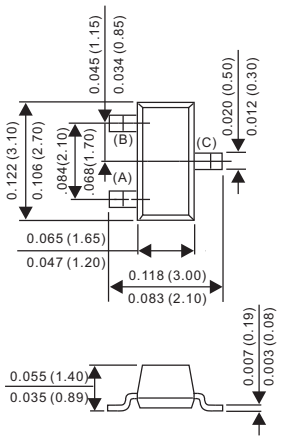
- Load/Power switching.
- Interfacing switching.

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

SOT-23



Dimensions in inches and (millimeters)

Maximum ratings (AT T_A =25 °C unless otherwise noted)

PARAMETER	Symbol	MIN.	TYP.	MAX.	UNIT
Drain-source voltage	V_{DS}			30	V
Continuous drain current	I_D			5.8	A
Drain current-pulsed (note 1)	I_{DM}			30	A
Gate-source voltage	V_{GS}			±12	V
Power dissipation	P_D			400	mW
Thermal resistance junction to ambient (note 2)	$R_{\theta JA}$		313		°C/W
Operation junction temperature range	T_J	-55		+150	°C
Storage temperature range	T_{STG}	-55		+150	°C

Note :

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 5 sec.

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

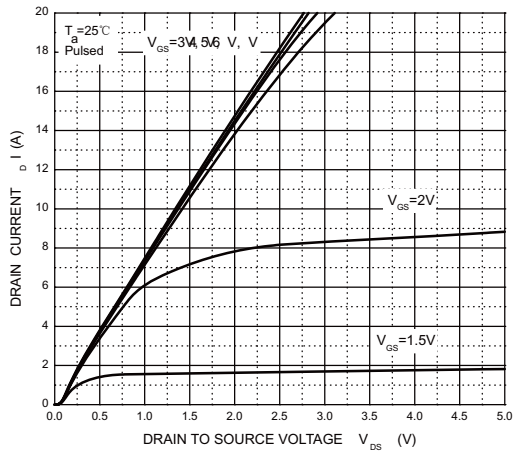
PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Off characteristics						
Drain-source breakdown voltage	V_{GS} = 0V, I_D = 250uA	$V_{(BR)DSS}$	30			V
Zero gate voltage drain current	V_{DS} = 24V, V_{GS} = 0V	I_{DSS}			1.0	μA
Gate-source leakage current	V_{GS} = ±12V, V_{DS} = 0V	I_{GSS}			±100	nA
On characteristics (note 1)						
Gate threshold voltage	V_{DS} = V_{GS}, I_D = 250uA	$V_{GS(th)}$	0.6		1.5	V
Drain-source on-resistance	V_{GS} = 10V, I_D = 5.8A V_{GS} = 4.5V, I_D = 5.0A	$R_{DS(ON)}$			35 40	mΩ
Forward tranconductance	V_{DS} = 5.0V, I_D = 5A	g_{FS}	8.0			S
Dynamic characteristics (note 2)						
Intput capacitance	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz	Ciss			1155	pF
Output capacitance		Coss		108		
Reverse transfer capacitance		Crss		84		
Gate resistance	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz	R_G			3.6	Ω
Switching characteristics (note 2)						
Turn-on delay time	V_{GS} = 10V, V_{DS} = 15V, R_L = 2.7Ω, R_{GEN} = 3.0Ω	td(on)			5.0	ns
Turn-on rise time		tr			7.0	
Turn-off delay time		td(off)			40	
Turn-off fall time		tf			6.0	
Drain source diode characteristics and maximum ratings						
Diode forward voltage (note 1)	I_S = 1.0A, V_{GS} = 0V	V_{SD}			1.0	V

Notes:

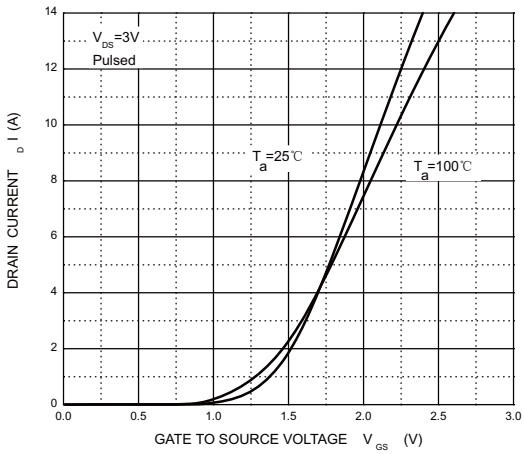
1. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.

Rating and characteristic curves (FMOS3400A-Q1)

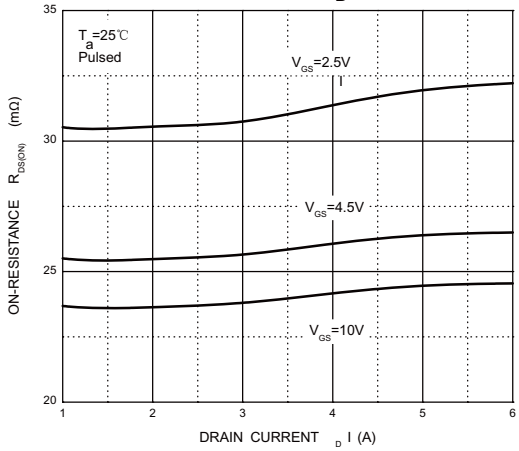
Output Characteristics



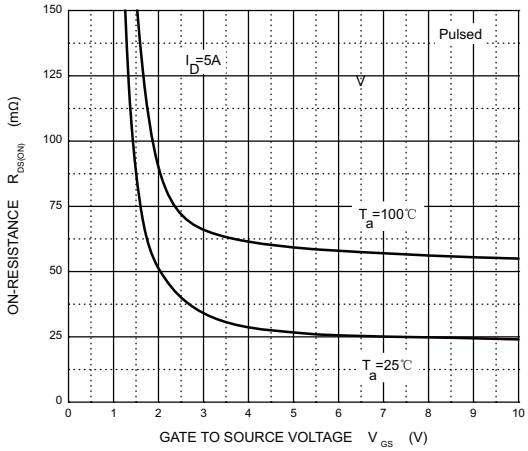
Transfer Characteristics



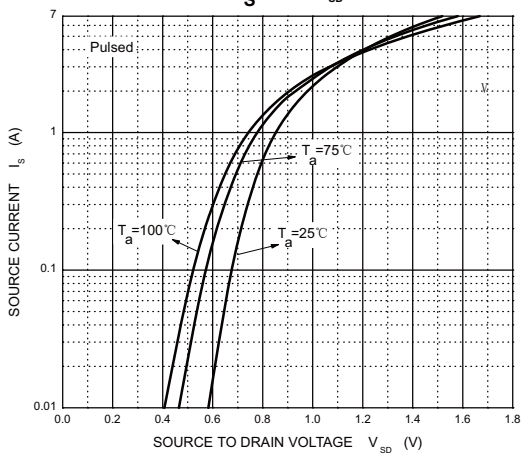
$R_{DS(ON)}$ — D



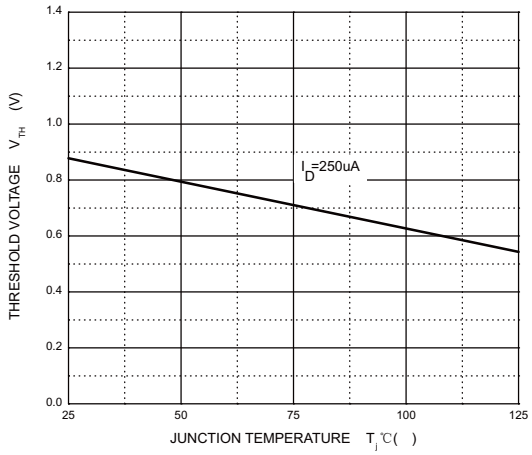
$R_{DS(ON)}$ — GS



I_S — SD



Threshold Voltage



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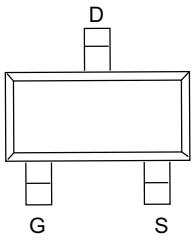
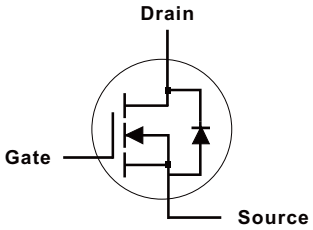
Pinning information

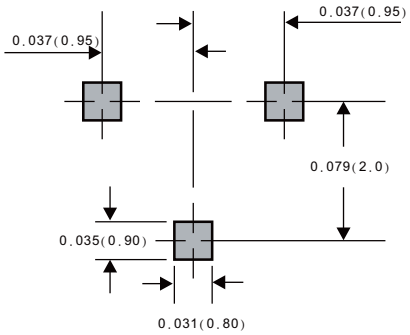
Pin	Simplified outline	Symbol
Pin D Drain Pin G Gate Pin S Source		

Marking

Type number	Marking code
FMOS3400A-Q1	3400

Suggested solder pad layout

SOT-23



Dimensions in inches and(millimeters)

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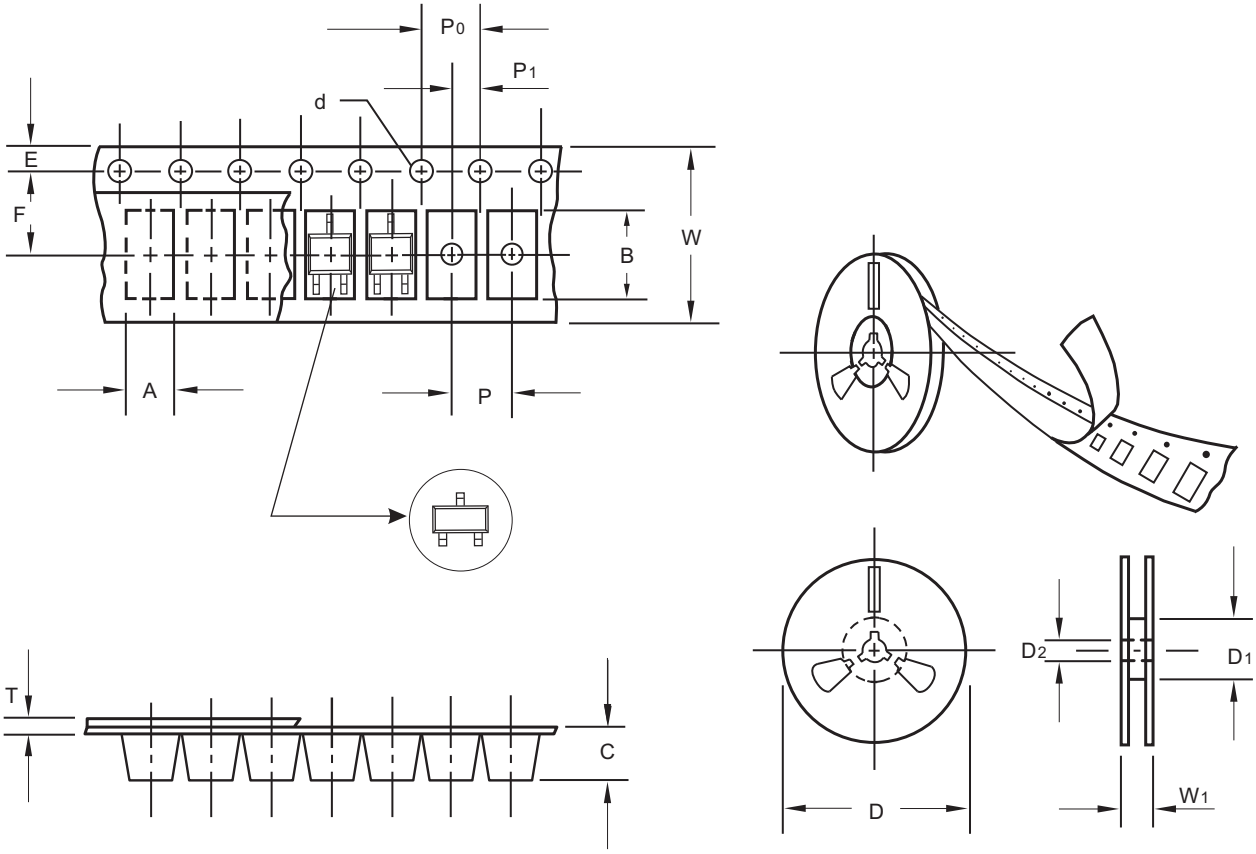
Packing information



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	55.00
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	12.0

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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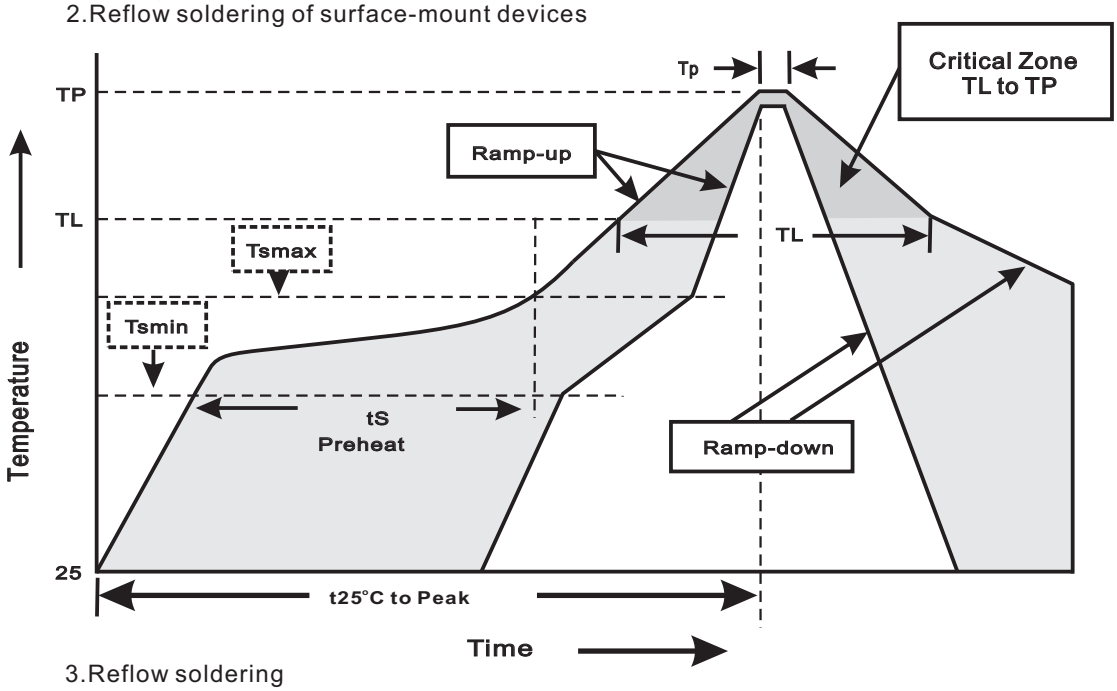
Reel packing

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(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax 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