

FMOS3404

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FMOS3404

30V N-Channel Enhancement Mode MOSFET

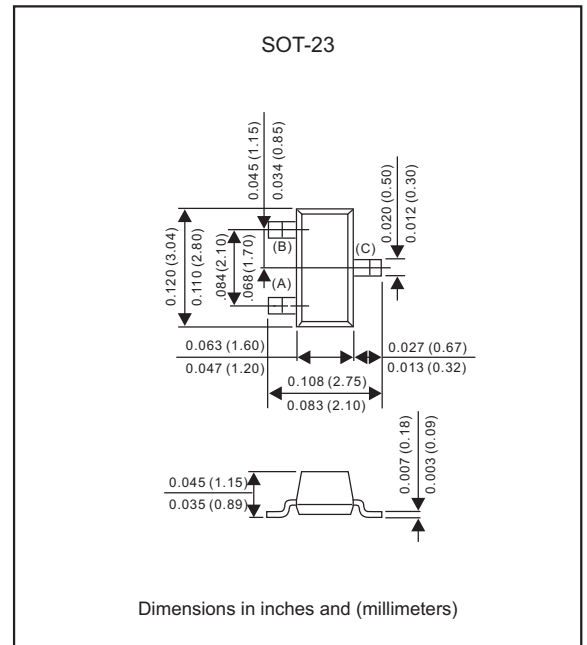
Features

- The FMOS3404 use advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for use as a load switch or in Pwm applications. The source leads are separated to allow a Kelvin connection to the source, which may be used to bypass the source inductance.
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen-free part, ex. FMOS3404-H.

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 ($t \leq 10s$)	I_D			5.8	A
Pulsed drain current (note 1)	I_{DM}			30	A
Gate-source voltage	V_{GS}			± 20	V
Power dissipation	P_D			350	mW
Thermal resistance junction to ambient	$R_{\theta JA}$		357		$^{\circ}C/W$
Operation junction temperature range	T_J	-55		+150	$^{\circ}C$
Storage temperature range	T_{STG}	-55		+150	$^{\circ}C$

Note 1: Repetitive rating : Pulse width limited by maximum junction temperature.

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

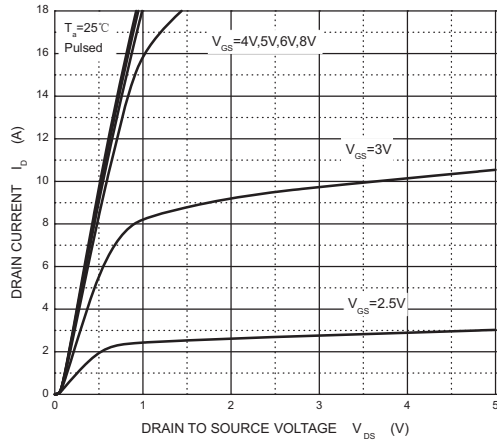
PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{GS} = 0V, I_D = 250\mu A$	$V_{(BR)DSS}$	30			V
Zero gate voltage drain current	$V_{DS} = 30V, V_{GS} = 0V$	I_{DSS}			1.0	μA
Gate-source leakage current	$V_{GS} = \pm 20V, V_{DS} = 0V$	I_{GSS}			± 100	nA
Gate threshold voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	$V_{GS(th)}$	1.0	1.4	3.0	V
Drain-source on-resistance (note 1)	$V_{GS} = 10V, I_D = 5.8A$ $V_{GS} = 4.5V, I_D = 4.8A$	$R_{DS(on)}$		23 31	30 42	m Ω
Forward transconductance (note 1)	$V_{DS} = 5V, I_D = 5.8A$	g_{FS}	5.0			S
Diode forward voltage	$I_S = 1.0A, V_{GS} = 0V$	V_{SD}			1.0	V
DYNAMIC PARAMETERS(note 2)						
Input capacitance	$V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$	C_{iss}			820	pF
Output capacitance		C_{oss}		118		
Reverse transfer capacitance		C_{rss}		85		
Gate resistance	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$	R_G			1.5	Ω
SWITCHING PARAMETERS(note 2)						
Turn-on delay time	$V_{GS} = 10V, V_{DS} = 15V,$ $R_L = 2.6\Omega, R_{GEN} = 3\Omega$	$t_{d(on)}$			6.5	ns
Turn-on rise time		t_r		3.1		
Turn-off delay time		$t_{d(off)}$		15.1		
Turn-off fall time		t_f		2.7		

Notes :

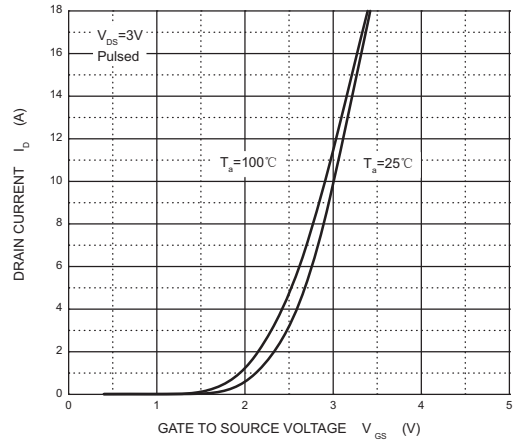
1. Pulse Test : Pulse width $\leq 300\mu s$, duty cycle $\leq 0.5\%$.
2. These parameters have no way to verify.

Rating and characteristic curves (FMOS3404)

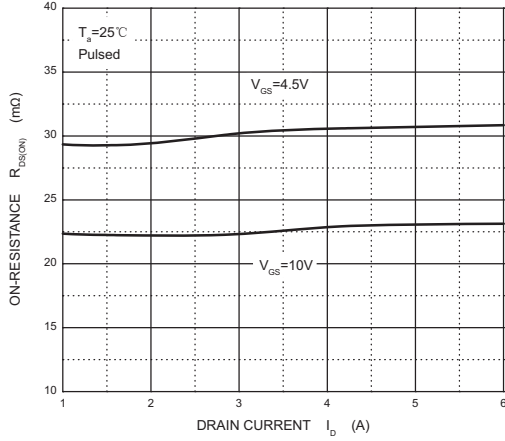
Output Characteristics



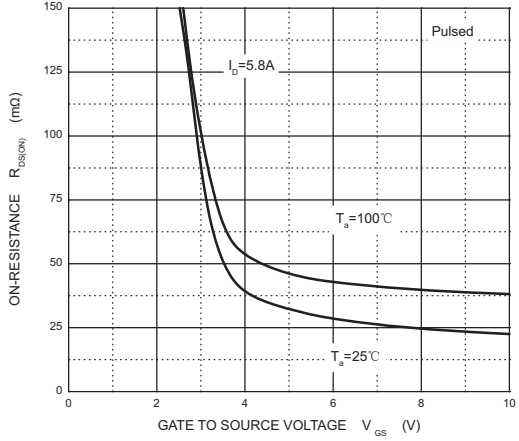
Transfer Characteristics



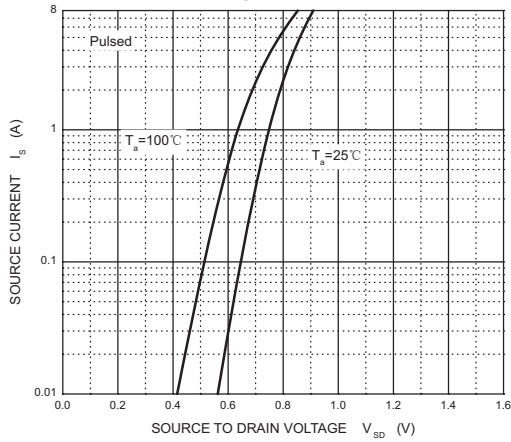
$R_{DS(ON)} - I_D$



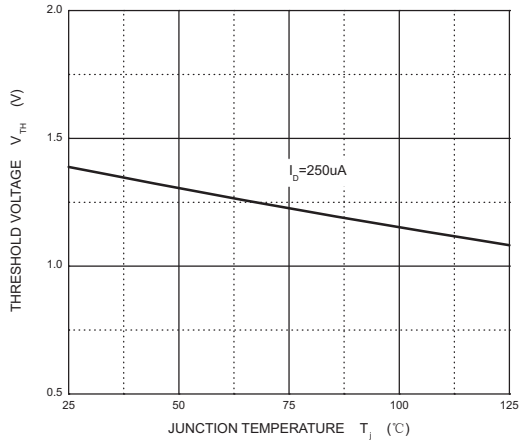
$R_{DS(ON)} - V_{GS}$



$I_S - V_{SD}$

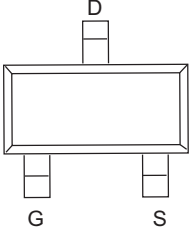
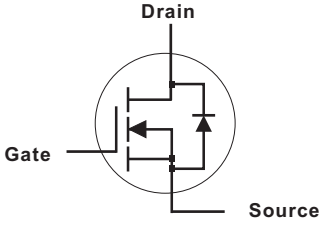


Threshold Voltage



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Pinning information

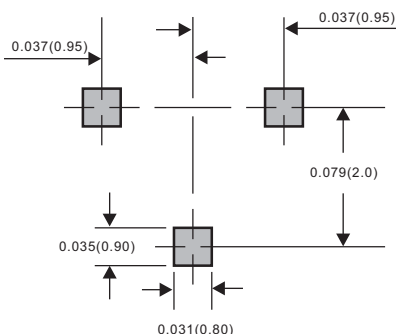
Pin	Simplified outline	Symbol
PinD Drain PinG Gate PinS Source		

Marking

Type number	Marking code
FMOS3404	R4

Suggested solder pad layout

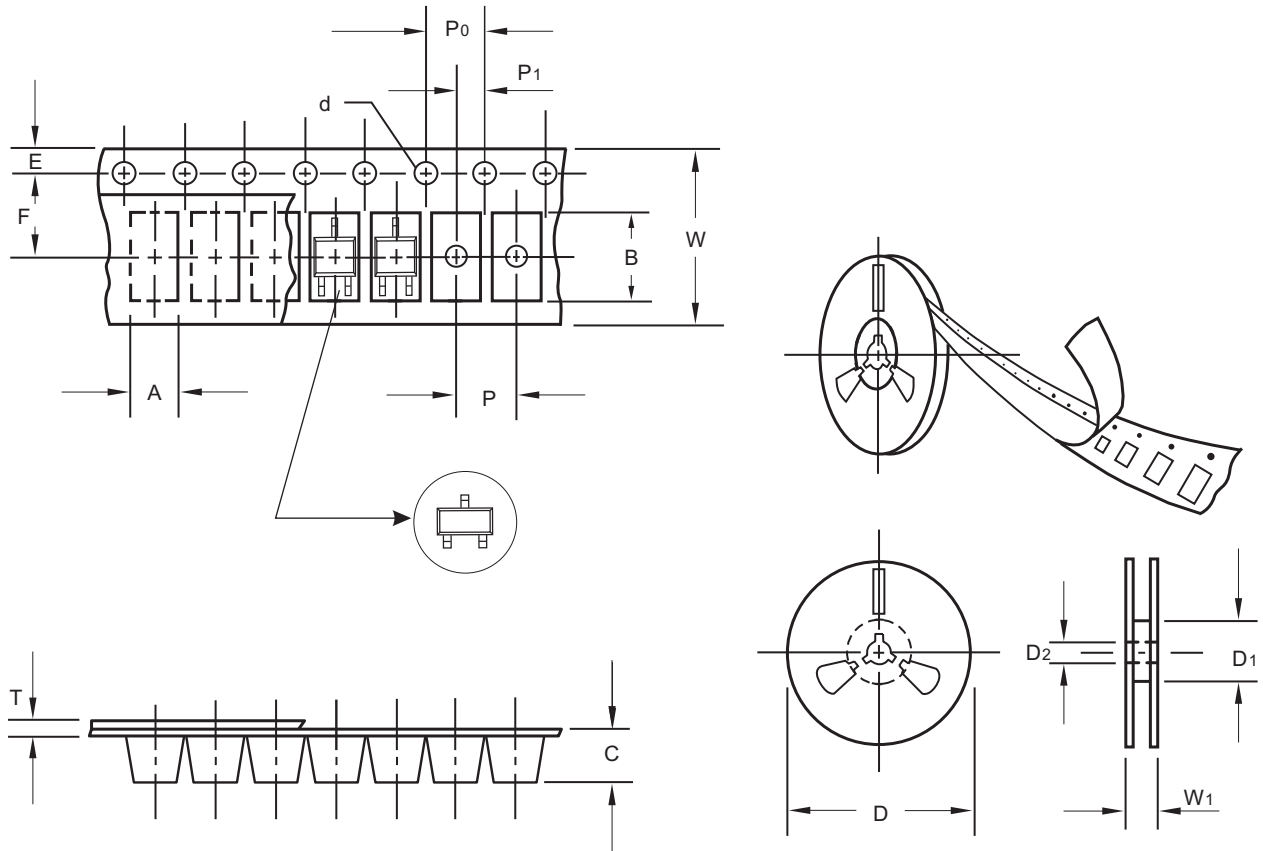
SOT-23



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	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.

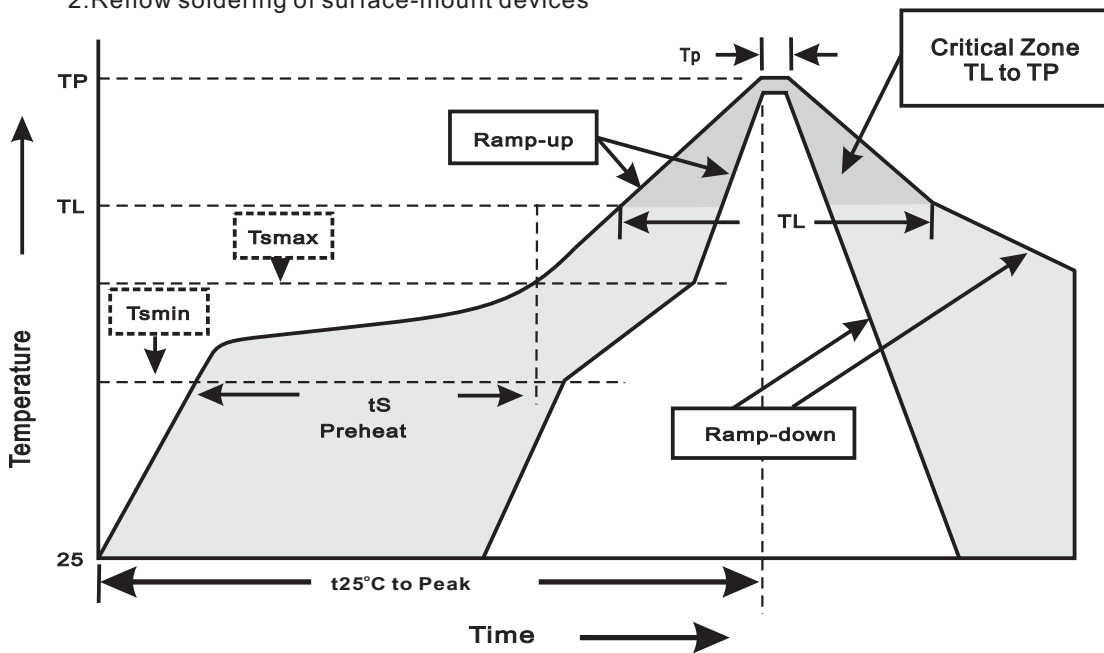
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Reel packing

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(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