FMOS3407-Q1

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

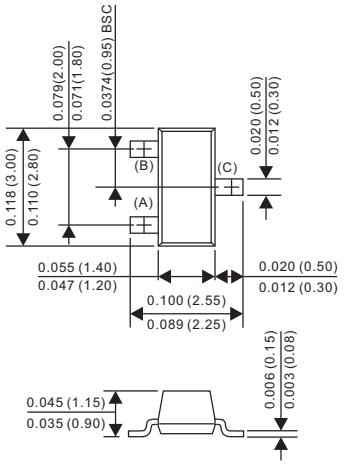
FMOS3407-Q1

-4.1A, -30V P-Channel Enhancement Mode MOSFET

Features

- $-V_{DS}$=30V, $-I_D$=4.1A
- $R_{DS(ON)}$ < 60mΩ, @$-V_{GS}$= 10V, $-I_D$ = 4.1A.
- $R_{DS(ON)}$ < 87mΩ, @$-V_{GS}$= 4.5V, $-I_D$=3A.
- High power and current handing capability.
- Surface mount package.
- Lead-free parts meet RoHS requirements.
- Qualified to AEC-Q101 standards for high reliability.
- Suffix "-H" indicates Halogen-free part, ex.FMOS3407-Q1-H.

SOT-23



Dimensions in inches and (millimeters)

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

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

Parameter	Symbol	Ratings	Unit
Drain-source voltage	$-V_{DS}$	30	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current	$-I_D$	4.1	A
Power dissipation	P_D	350	mW
Operating Junction temperature range	T_j	+150	℃
Storage temperature range	T_{STG}	-55 to +150	℃
Thermal resistance junction to ambient	$R_{\theta JA}$	357	℃/W

FMOS3407-Q1

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

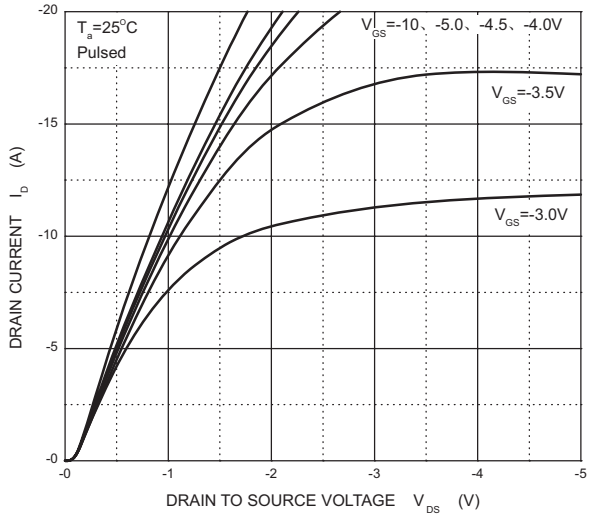
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-source breakdown voltage	$-BV_{DSS}$	$-I_D$=250μA, V_{GS}=0V	30			V
Drain-source leakage current	$-I_{DSS}$	$-V_{DS}$=24V, V_{GS}=0V			1	μA
Gate-source leakage current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
On characteristics						
Gate threshold voltage	$-V_{GS(TH)}$	V_{DS}=V_{GS}, $-I_D$=250μA	1.0		3.0	V
Forward tranconductance (Note 1)	g_{FS}	$-V_{DS}$=5V, $-I_D$=4A	5.5			S
Static drain-source on-resistance (Note 1)	$R_{DS(ON)}$	$-V_{GS}$=10V, $-I_D$=4.1A			60	mΩ
		$-V_{GS}$=4.5V, $-I_D$=3A			87	
Dynamic Parameters (Note 2)						
Input capacitance	C_{iss}	V_{GS}=0V, $-V_{DS}$=15V, f=1.0MHZ		700		pF
Output capacitance	C_{oss}			120		
Reverse transfer capacitance	C_{rss}			75		
Switching parameters (Note 2)						
Turn-on delay time	$t_{d(on)}$	$-V_{DS}$=15V, $-V_{GS}$=10V, R_G=3Ω, R_L=3,6Ω		8.6		ns
Rise time	t_r			5.0		
Turn-off delay time	$t_{d(off)}$			28.2		
Fall time	t_f			13.5		
Source-drain diode ratings and characteristics						
Drain - source diode forward voltage (Note 1)	$-V_{SD}$	$-I_S$=1A, V_{GS}=0V			1.0	V

Note :

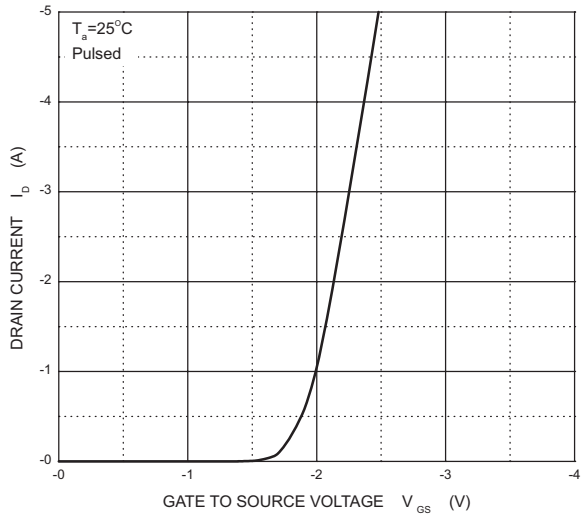
1. Pulse test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. These parameters have no way to verify.

Rating and characteristic curves (FMOS3407-Q1)

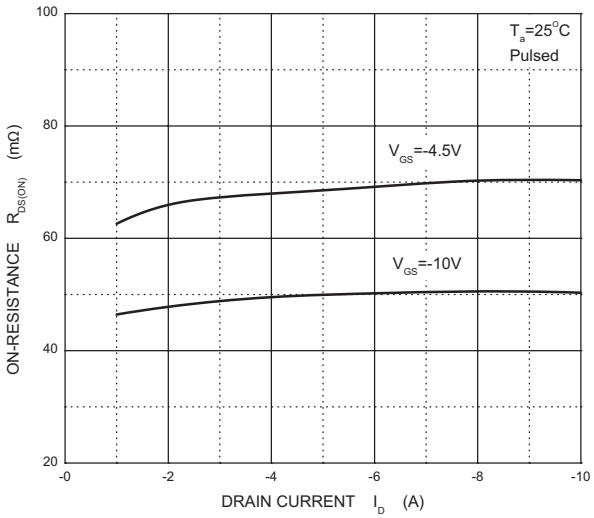
Output Characteristics



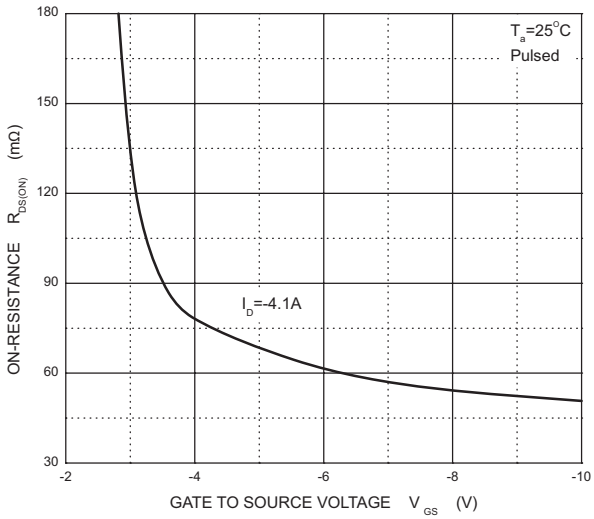
Transfer Characteristics



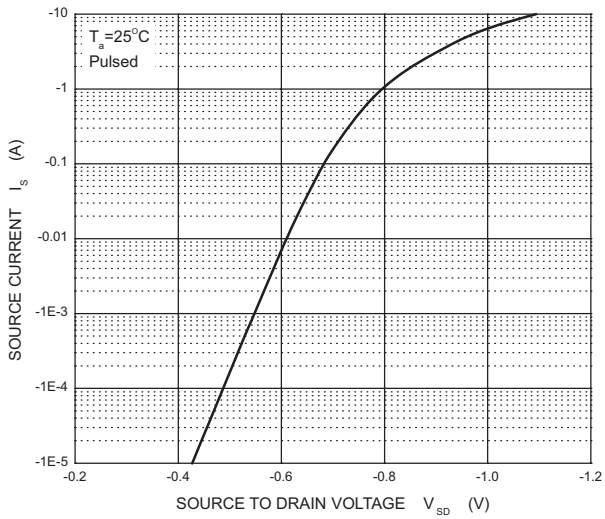
$R_{DS(ON)}$ —— I_D



$R_{DS(ON)}$ —— V_{GS}

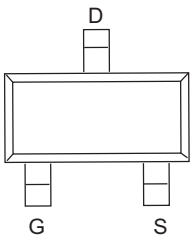
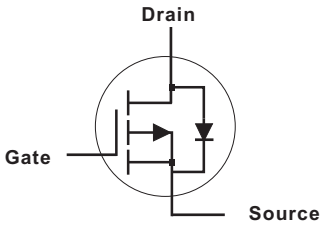


I_S —— V_{SD}



FMOS3407-Q1

Pinning information

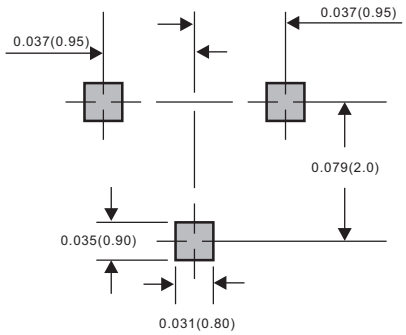
Pin	Simplified outline	Symbol
PinD Drain PinG Gate PinS Source		

Marking

Type number	Marking code
FMOS3407-Q1	3407

Suggested solder pad layout

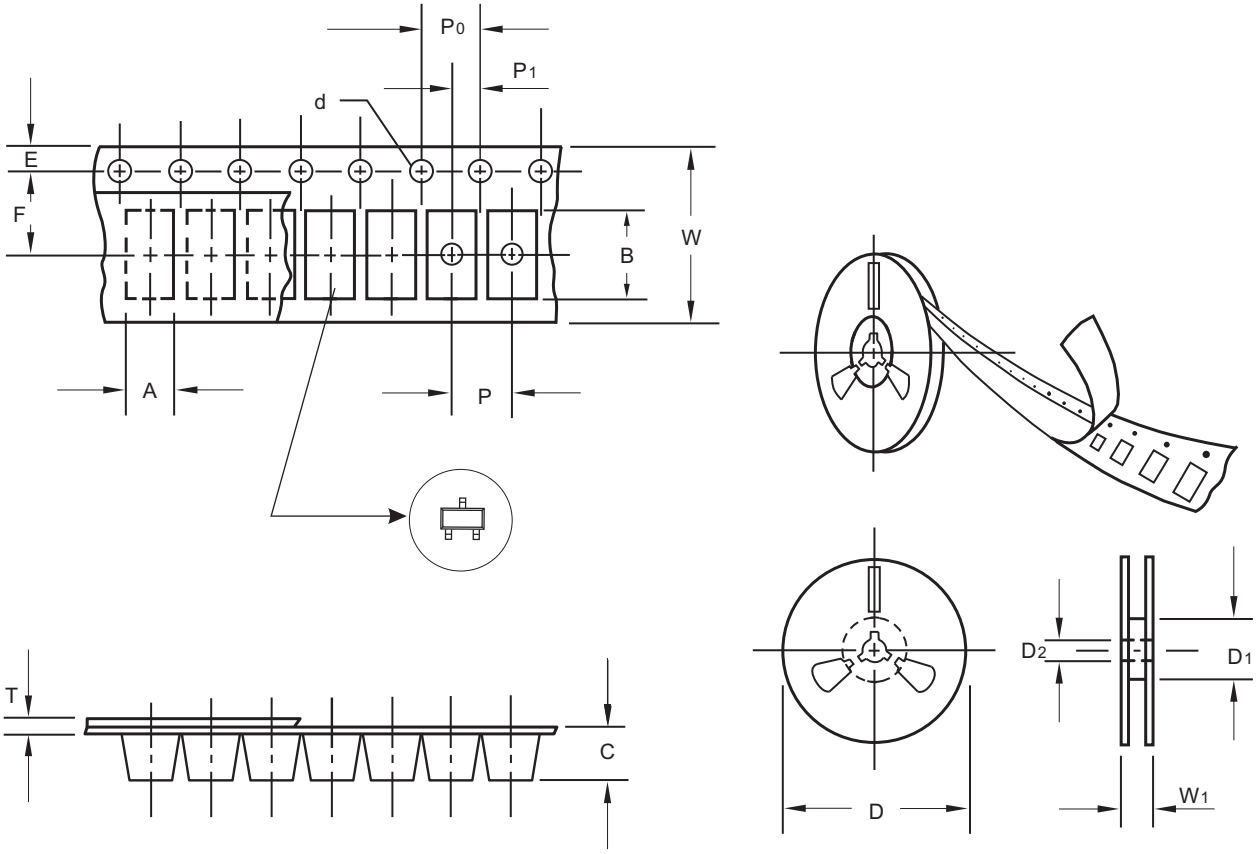
SOT-23



Dimensions in inches and (millimeters)

FMOS3407-Q1

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.

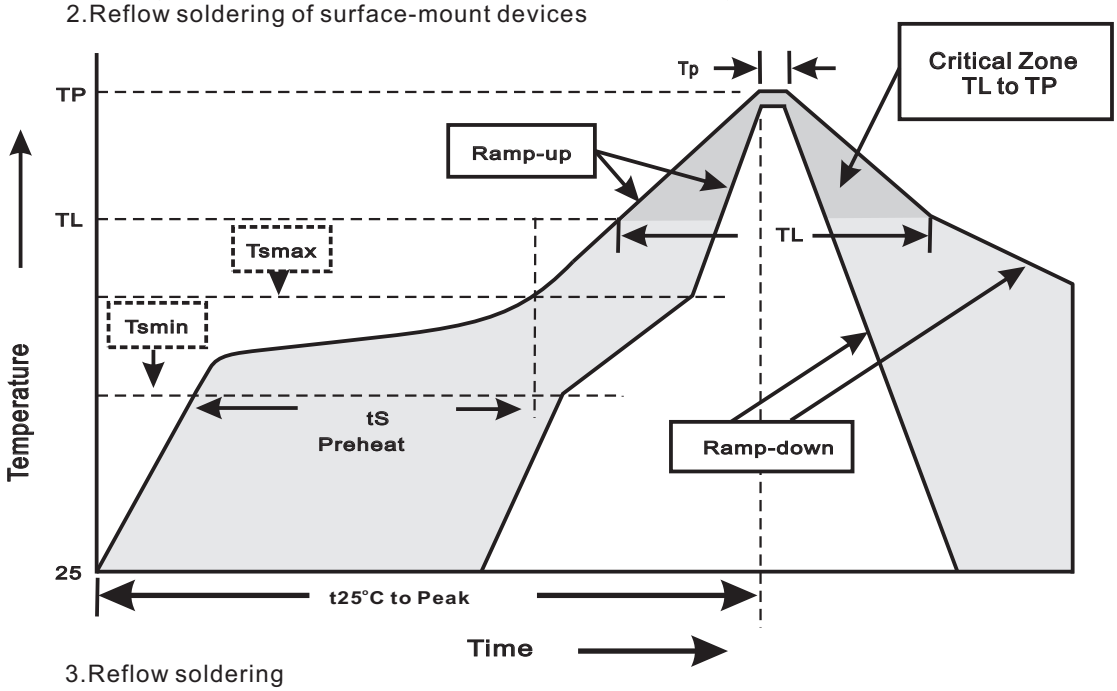
FMOS3407-Q1

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