FMOSGP3139E-H

List

List.....1

Package outline.....2

Features.....2

Applications.....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

FMOSGP3139E-H

-0.75A -20V P-Channel Enhancement Mode MOSFET ESD Protection

Features

- $-V_{DS}$=20V, $-I_D$=0.75A.
- $R_{DS(ON)}$≤ 510mΩ @$-V_{GS}$=4.5V, $-I_D$=1A.
- $R_{DS(ON)}$≤ 750mΩ @$-V_{GS}$=2.5V, $-I_D$=0.8A.
- P-channel switch with low on-resistance.
- Operated at low logic level gate drive.
- ESD HBM = 1KV as per JESD22 A114.
- Lead-free parts meet RoHS requirements.
- Halogen-free (IEC61249-2-21).

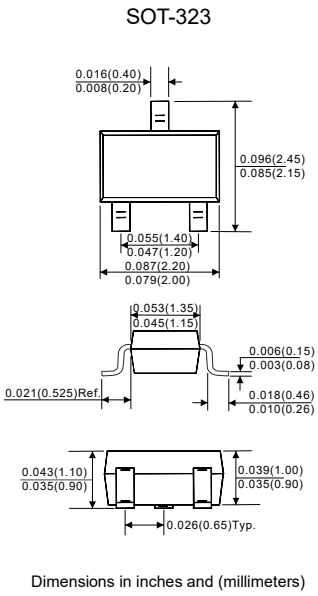
Applications

- Load/ power switching.
- Interfacing and logic switching.
- Battery management for ultra small portable electronics.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, SOT-323.
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026.
- Mounting Position : Any.

Package outline



Dimensions in inches and (millimeters)

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

Parameter	Symbol	Ratings	Unit
Drain-source voltage	$-V_{DS}$	20	V
Gate-source voltage	V_{GS}	±8	V
Continuous drain current	$-I_D$	0.75	A
Pulse drain current (Note1)	$-I_{DM}$	1.2	A
Power dissipation (Note2)	P_D	150	mW
Thermal resistance, junction to ambient (Note1)	$R_{\theta JA}$	833	°C/W
Operating Junction temperature	T_J	+150	°C
Storage temperature range	T_{STG}	-55 to +150	°C

FMOSGP3139E-H

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

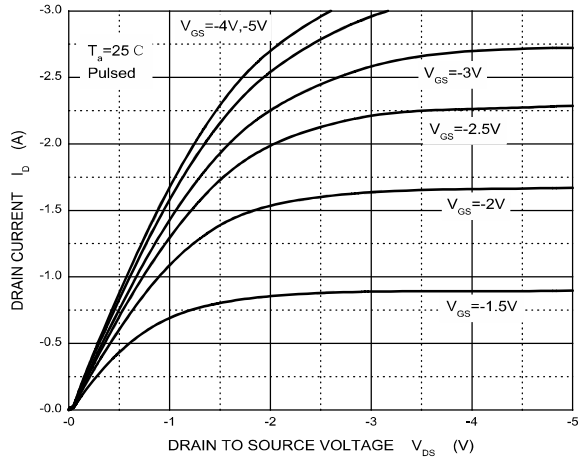
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-source breakdown voltage	$-BV_{DSS}$	$-I_D$=250μA, V_{GS}=0V	20			V
Drain-source leakage current	$-I_{DSS}$	$-V_{DS}$=20V, V_{GS}=0V			1	μA
Gate-source leakage current	I_{GSS}	V_{DS}=±8V, V_{DS}=0V			±20	μA
On characteristics						
Gate threshold voltage (Note3)	$-V_{GS(th)}$	V_{DS}=V_{GS}, $-I_D$=250μA	0.35	0.61	1.1	V
Static drain-source on-resistance (Note3)	$R_{DS(ON)}$	$-V_{GS}$=4.5V, $-I_D$=1.0A		420	510	mΩ
		$-V_{GS}$=2.5V, $-I_D$=0.8A		630	750	
		$-V_{GS}$=1.8V, $-I_D$=0.5A		960		
Forward transconductance	g_{FS}	$-V_{DS}$=10V, $-I_D$=0.54A	0.8			S
Dynamic parameters (Note4)						
Input capacitance	C_{iss}	V_{GS}=0V, $-V_{DS}$=16V, f=1.0MHz		113		pF
Out capacitance	C_{oss}			15		
Reverse transfer capacitance	C_{rss}			9		
Switching parameters (Note4)						
Turn-on delay time	$t_{d(on)}$	$-V_{DS}$=10V, $-V_{GS}$=4.5V, R_G=10Ω, $-I_D$=200mA		9		ns
Rise time	t_r			5.7		
Turn-off delay time	$t_{d(off)}$			32.6		
Fall time	t_f			20.3		
Source-drain diode ratings and characteristics						
Drain-source diode forward voltage (Note3)	$-V_{SD}$	$-I_S$=0.5A , V_{GS}=0V			1.2	V

Note : 1. Repetitive rating: pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at T_A=25°C.
3. Pulse test: pulse width ≤ 300μs, duty cycle≤ 0.5%.
4. These parameters have no way to verify.

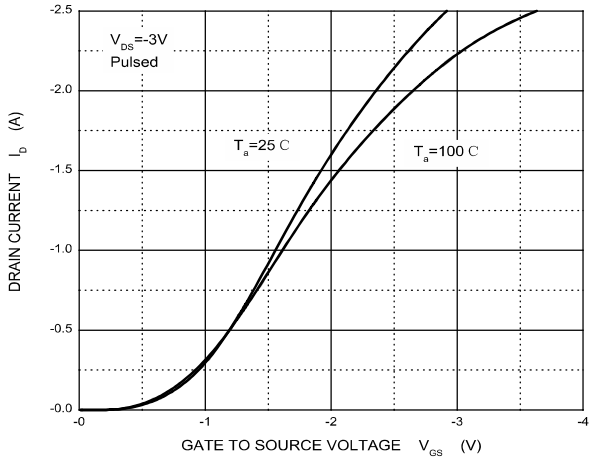
FMOSGP3139E-H

Rating and characteristic curves

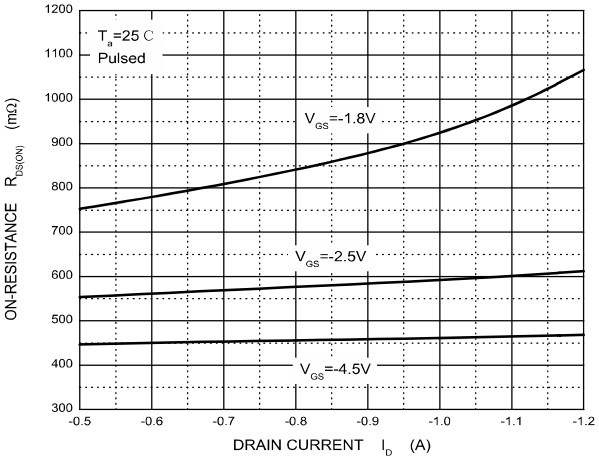
Output Characteristics



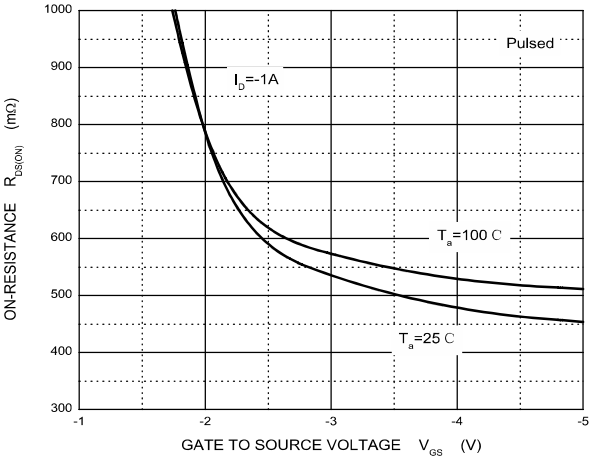
Transfer Characteristics



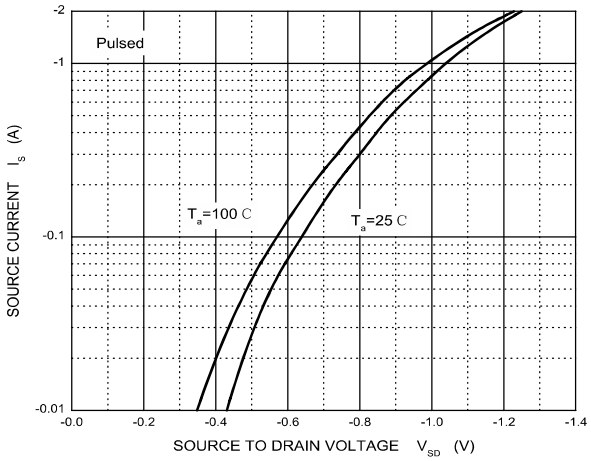
$R_{DS(ON)}$ —— I_D



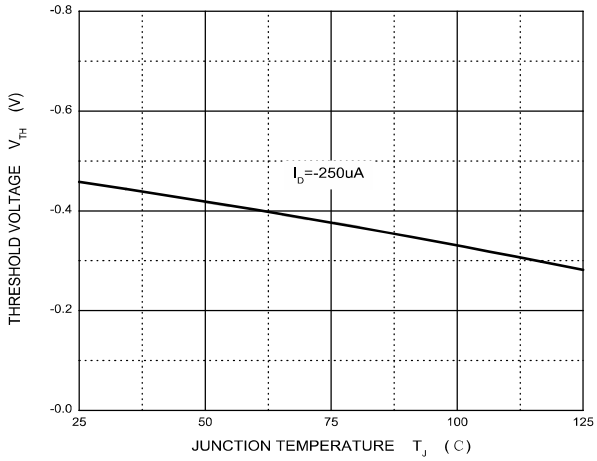
$R_{DS(ON)}$ —— V_{GS}



I_S —— V_{SD}

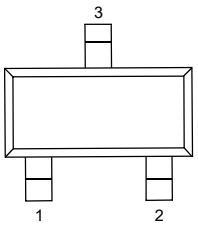
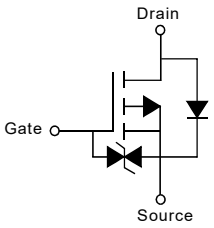


Threshold Voltage



FMOSGP3139E-H

Pinning information

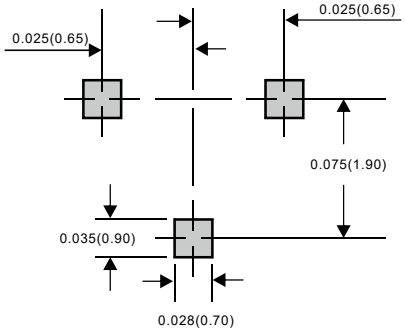
Pin	Simplified outline	Symbol
Pin 1 Gate Pin 2 Source Pin 3 Drain		

Marking

Type number	Marking code
FMOSGP3139E-H	39K

Suggested solder pad layout

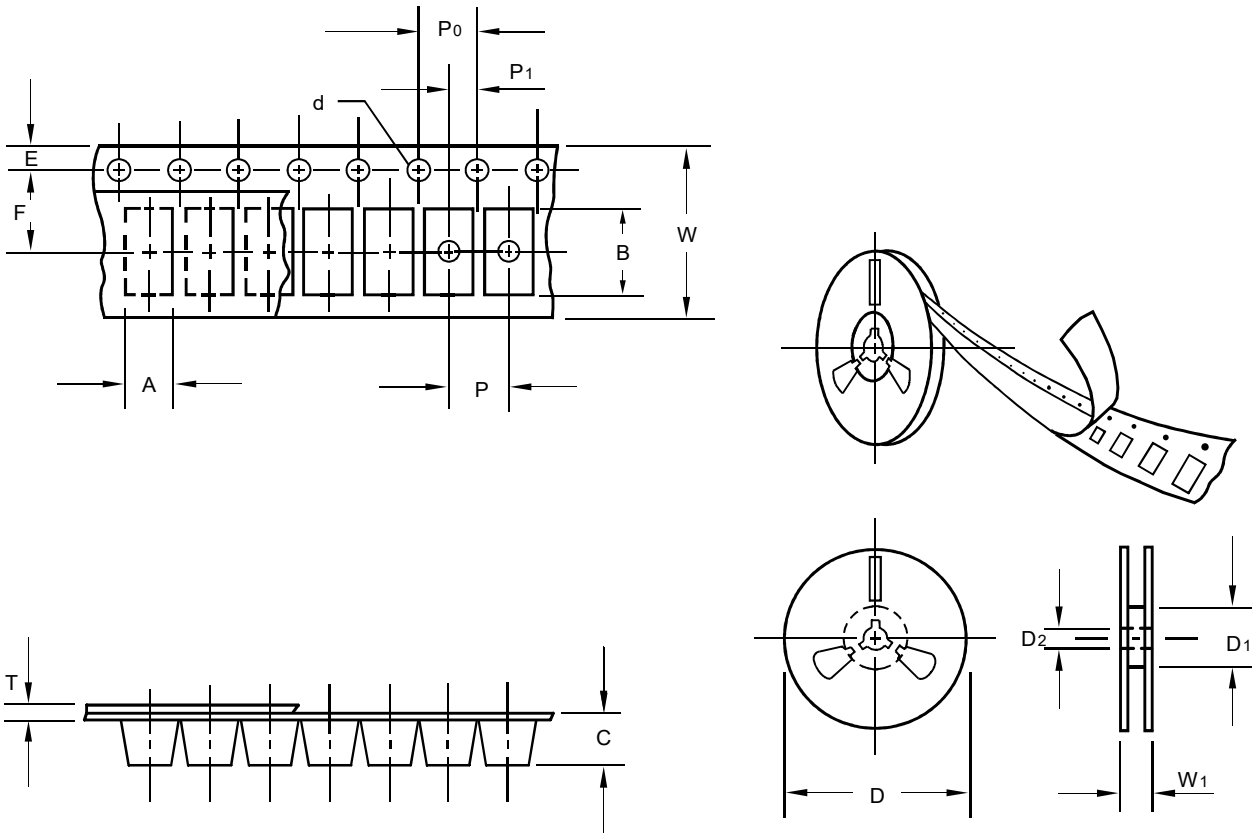
SOT-323



Dimensions in inches and (millimeters)

FMOSGP3139E-H

Packing information



unit:mm

Item	Symbol	Tolerance	SOT-323
Carrier width	A	0.1	2.36
Carrier length	B	0.1	2.40
Carrier depth	C	0.1	1.20
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	62.00
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	11.40

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

FMOSGP3139E-H

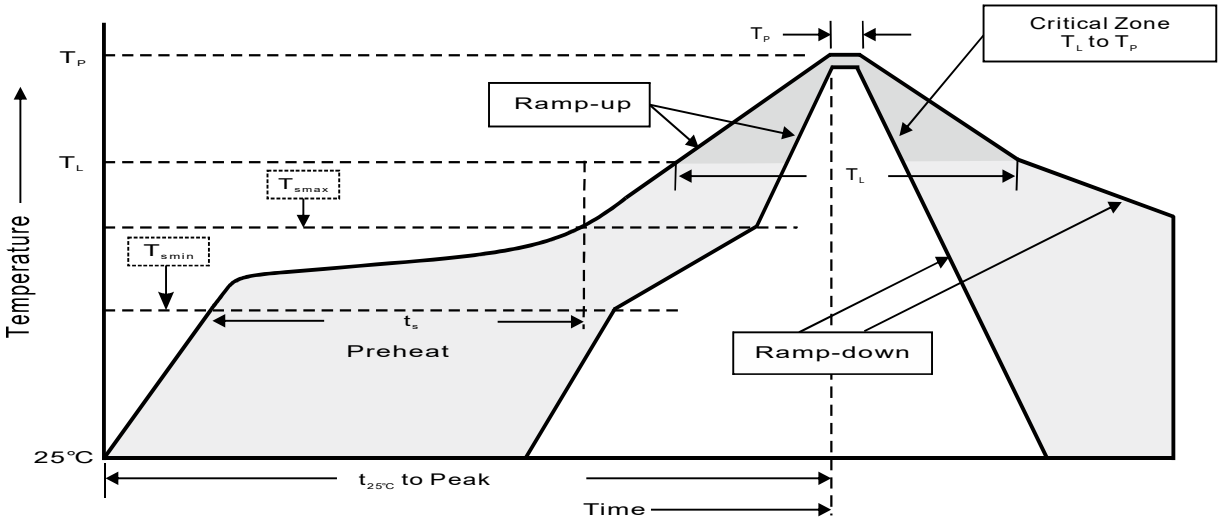
Reel packing

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)
SOT-323	7"	3,000	4.0	30,000	183*183*123	178	382*262*387	240,000

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 ℃/sec
Preheat - Temperature Min (T_{smin}) - Temperature Max (T_{smax}) - Time (Min to Max) (t_s)	 150℃ 200℃ 60 ~ 120 sec
T_{smax} to T_L - Ramp-up rate	 < 3 ℃/sec
Time maintained above : - Temperature (T_L) - Time (T_L)	 217℃ 60 ~ 260 sec
Peak temperature (T_P)	255 ℃ -0/+5℃
Time with 5℃ of actual peak temperature (T_P)	10 ~30 sec
Ramp-down rate	< 6 ℃/sec
Time 25℃ to peak temperature	< 6 minutes