

FMOS3134AK

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FMOS3134AK

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

Features

- $V_{DS}=20V, I_D=0.75A.$
- $R_{DS(ON)} \leq 380m\Omega, @V_{GS}=4.5V, I_D=0.65A.$
- $R_{DS(ON)} \leq 450m\Omega, @V_{GS}=2.5V, I_D=0.55A.$
- $R_{DS(ON)} \leq 800m\Omega, @V_{GS}=1.8V, I_D=0.45A.$
- Voltage controlled small signal switch.
- Low input capacitance and low input/ output leakage.
- Fast switching.
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen-free part, ex.FMOS3134AK-H.

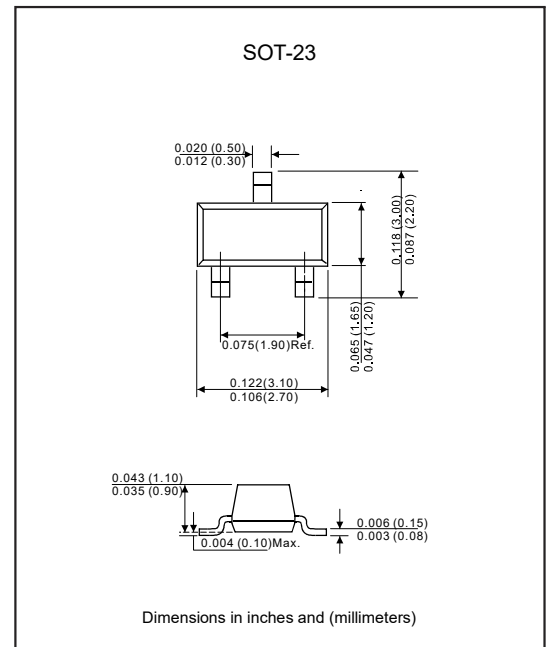
Application

- Load switch, and video monitor.
- PWM application.
- Power management.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, SOP8 (SOP-08).
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026.
- Mounting Position : Any.

Package outline



Maximum Ratings (At $T_a=25^\circ C$ Unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain source voltage	V_{DS}	20	V
Gate source voltage	V_{GS}	± 12	V
Drain current continuous	I_D	$T_c=25^\circ C$	0.75
		$T_c=70^\circ C$	0.5
Pulsed drain current (Note 1)	I_{DM}	3.0	A
Power dissipation	P_D	0.35	W
Thermal resistance, junction to ambient	$R_{\theta JA}$	357	$^\circ C/W$
Maximum lead temperature for soldering purposes, 1/8" from case for 5seconds	T_L	300	$^\circ C$
Operating junction temperature	T_J	+150	$^\circ C$
Storage temperature range	T_{STG}	-55 to +150	$^\circ C$

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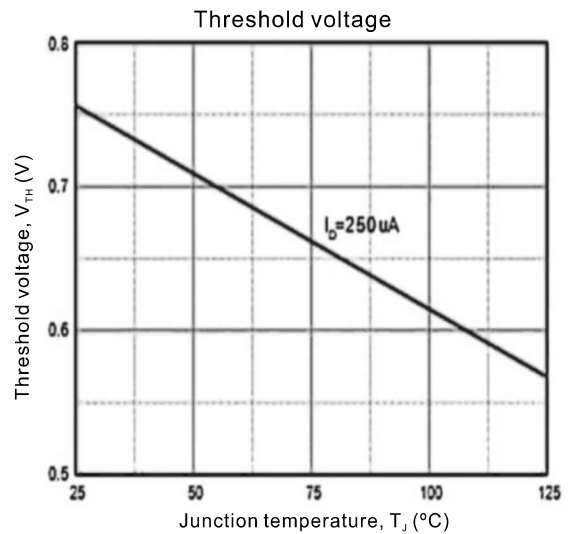
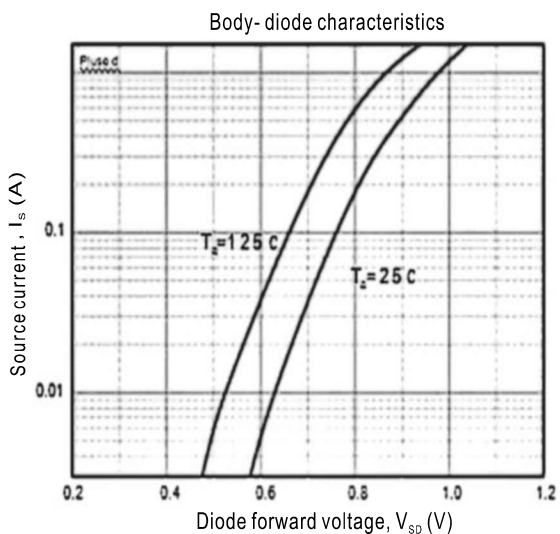
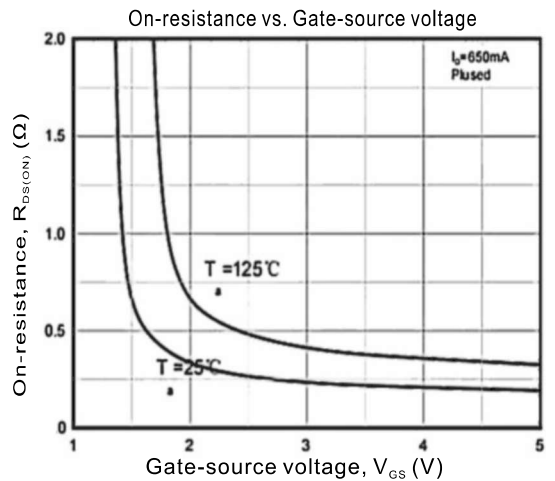
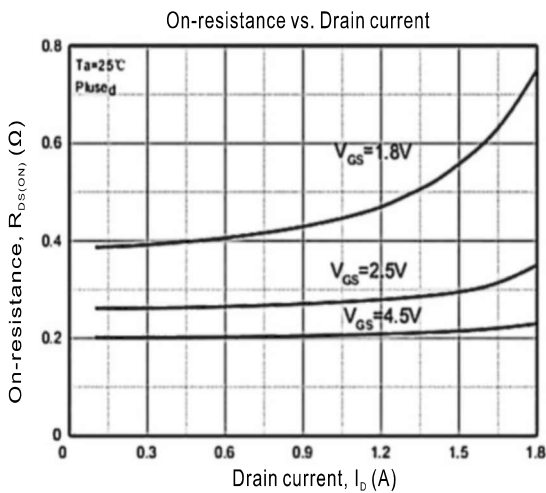
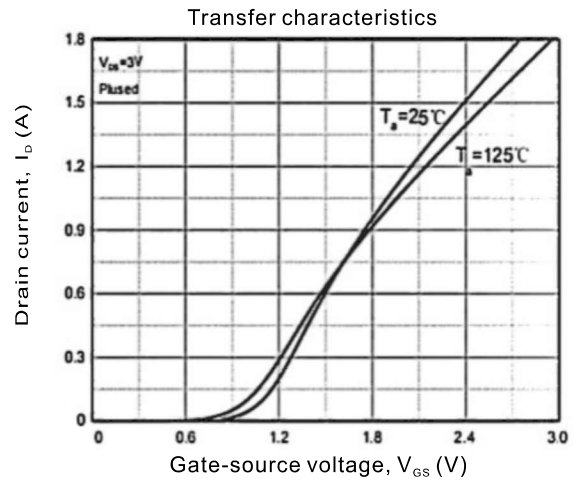
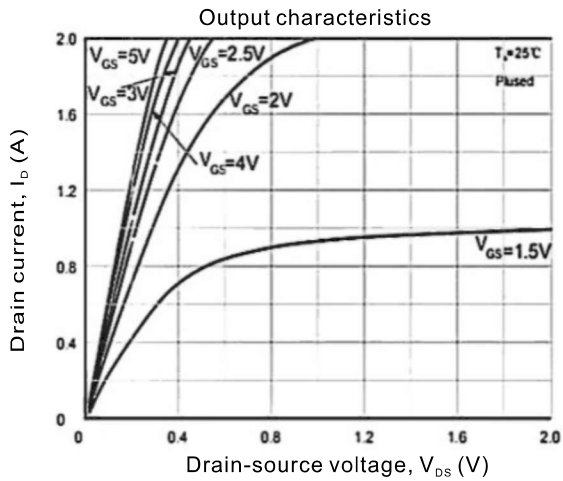
Electrical characteristics (At $T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Off characteristics						
Drain-Source breakdown voltage	BV_{DSS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	20			V
Drain-Source leakage current	I_{DSS}	$V_{DS}=20\text{V}$, $V_{GS}=0\text{V}$			1	μA
		$V_{DS}=16\text{V}$, $T_C=125^\circ\text{C}$			10	
Gate-Source leakage current	I_{GSS}	$V_{GS}=\pm 10\text{V}$, $V_{DS}=0\text{V}$			± 20	μA
On characteristics						
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	0.5		0.75	V
Static drain-source on-resistance	$R_{DS(ON)}$	$V_{GS}=4.5\text{V}$, $I_D=0.65\text{A}$		180	380	m Ω
		$V_{GS}=2.5\text{V}$, $I_D=0.55\text{A}$		260	450	
		$V_{GS}=1.8\text{V}$, $I_D=0.45\text{A}$		390	800	
Forward transconductance	g_{FS}	$V_{DS}=10\text{V}$, $I_D=0.8\text{A}$	1			S
Dynamic characteristics						
Input capacitance	C_{iss}	$V_{DS}=16\text{V}$, $V_{GS}=0\text{V}$, $f=1.0\text{MHz}$			120	pF
Output capacitance	C_{oss}				20	
Reverse transfer capacitance	C_{rss}				15	
Switching characteristics						
Total gate charge	Q_g	$V_{GS}=4.5\text{V}$, $V_{DS}=10\text{V}$, $I_D=0.5\text{A}$		0.8		nC
Gate-Source charge	Q_{gs}			0.3		
Gate-Drain Charge	Q_{gd}			0.15		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=10\text{V}$, $V_{GS}=4.5\text{V}$, $R_G=610\Omega$, $I_D=0.5\text{A}$		6.7		ns
Turn-on rise time	t_r			4.8		
Turn-off delay time	$t_{d(off)}$			17.3		
Turn-off fall time	t_f			7.4		
Drain-Source diode characteristics and maximum ratings						
Drain-Source diode forward voltage	V_{SD}	$I_S=0.5\text{A}$, $V_{GS}=0\text{V}$, $T_J=25^\circ\text{C}$			1.2	V
Maximum continuous drain-source forward current	I_S				0.75	A
Maximum pulsed drain-source forward current	I_{SM}				3.0	A

Notes : 1. Repetitive rating: pulse width limited by maximum junction temperature.

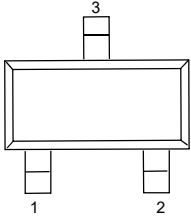
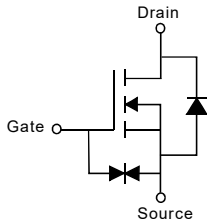
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Rating and Characteristic Curves



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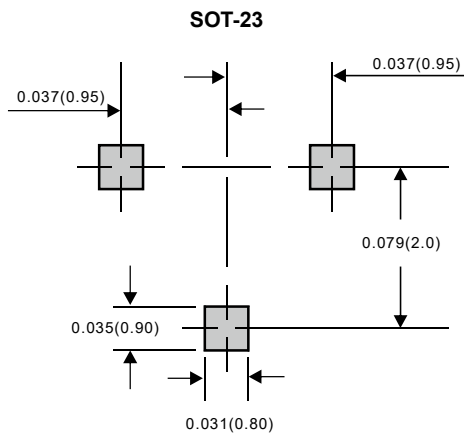
Pinning information

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

Marking

Type number	Marking code
FMOS3134AK	3134K

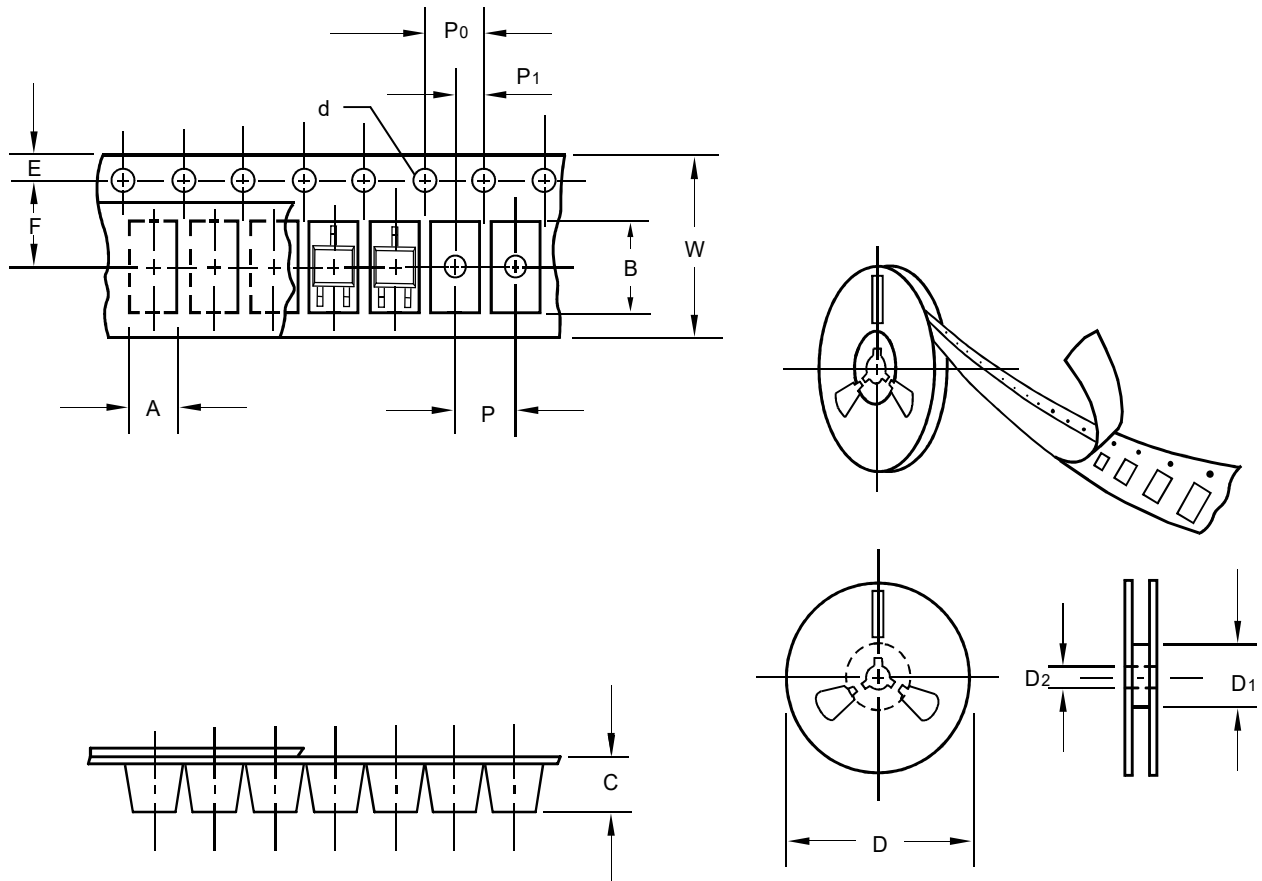
Suggested solder pad layout



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	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	50.00
Feed hole diameter	D2	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	P0	0.1	4.00
Embossment center	P1	0.1	2.00

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

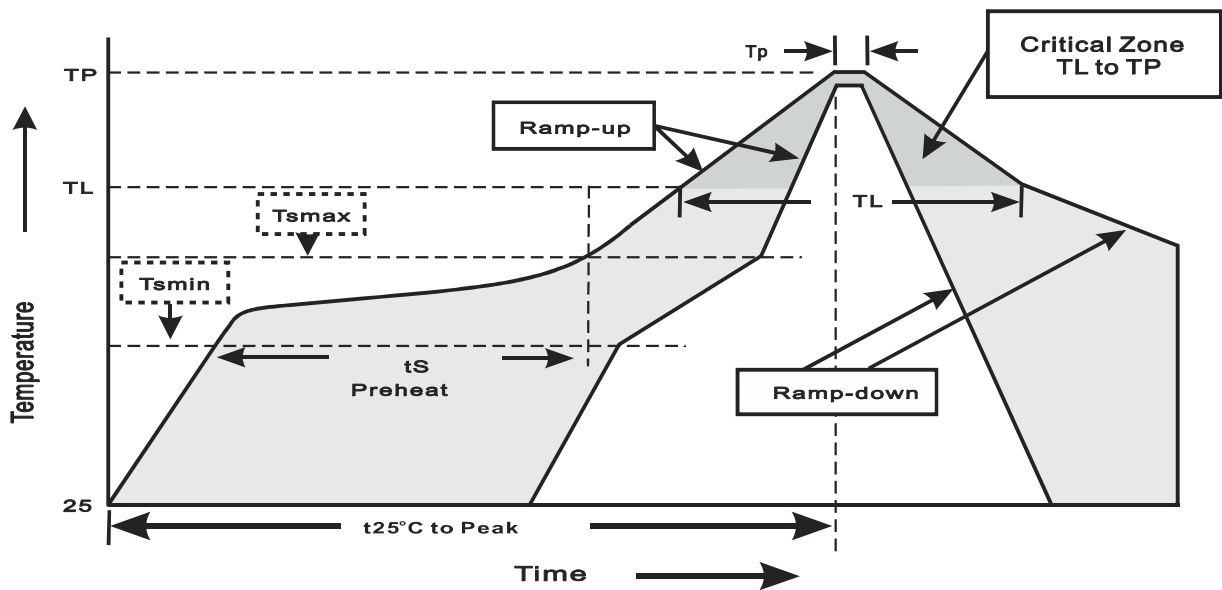
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Reel packing

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)
SOT-23	7"	3,000	4.0	30,000	183*123*183	178	382*257*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(TL to TP)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(ts)	150°C 200°C 60~120sec
Tsmax to TL -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(TL) -Time(tL)	217°C 60~260sec
Peak Temperature(TP)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(tp)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes