FMFDN3134E-H

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FMFDN3134E-H

0.63A 20V Dual N Channel General Small Signal MOSFET With ESD Protection

Features

- Low threshold voltage.
- Fast Switching Speed.
- ESD Protected up to 2KV(HBM).
- Lead -free parts meet RoHS requirements.
- Halogen-free (IEC61249-2-21).

Applications

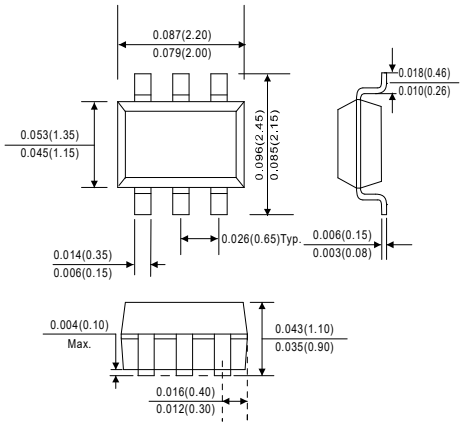
- Load switch for portable devices.
- Voltage controlled small signal switch.

Mechanical data

- Epoxy : UL94-V0 rated flame retardant.
- Case : Molded plastic, SOT-363.
- Terminals : Solder plated, solder able per MIL-STD-750, Method 2026.
- Polarity : See Diagram.
- Weight : Approximated 6mg.

Package outline

SOT-363



Dimensions in inches and (millimeters)

Maximum ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-source voltage	V_{DS}	20	V
Gate-source voltage	V_{GS}	±10	V
Continuous drain current	I_D	0.63	A
Pulsed drain current (Note1)	I_{DM}	2.0	A
Power dissipation (Note2)	P_D	0.21	W
Operating Junction temperature range	T_j	-55 to +150	℃
Storage temperature range	T_{STG}	-55 to +150	℃
Thermal resistance Junction to ambient (Note2)	$R_{\theta JA}$	583	℃/W

Note : 1. Pulse width ≤100us, duty cycle ≤1%, limited by T_j max.

2. Device mounted on FR-4 substrate PC board, 2ozcopper, with 1-inch square copper plate in still air.

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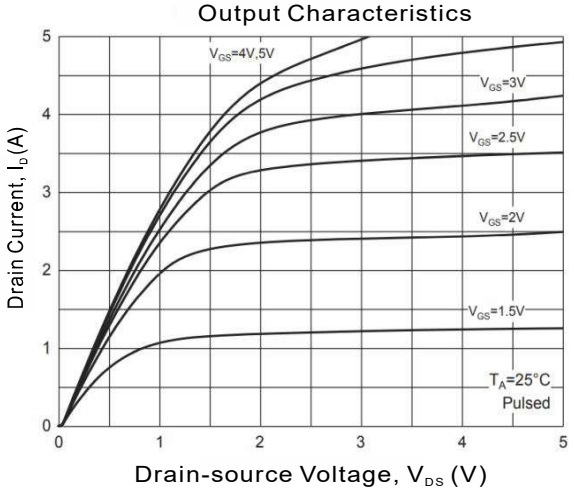
Electrical characteristics (At T_A=25℃ unless otherwise specified)

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			1.0	μA
Gate-source leakage current	I_{GSS}	V_{GS}=±10V, V_{DS}=0V			±10	μA
On characteristics						
Gate threshold voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	0.35	0.54	1.1	V
Drain-source on-resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=0.65A		238	380	mΩ
		V_{GS}=2.5V, I_D=0.55A		298	450	
Forward transconductance	g_{FS}	V_{DS}=10V, I_D=800mA		1.6		S
Gate resistance	R_g	V_{DS}=0V, f=1.0MHZ		13		Ω
Dynamic Parameters						
Input capacitance	C_{iss}	V_{GS}=0V, V_{DS}=16V, f=1.0MHZ		79		pF
Output capacitance	C_{oss}			13		
Reverse transfer capacitance	C_{rss}			9.0		
Switching parameters						
Total gate charge	Q_g	V_{GS}=4.5V, V_{DS}=10V, I_D=0.9A		1.0		nC
Gate to source charge	Q_{gs}			0.28		
Gate to drain charge	Q_{gd}			0.22		
Turn-on delay time	$t_{d(on)}$	V_{DS}=10V, V_{GS}=4.5V, I_D=0.5A, R_G=10Ω		6.7		ns
Rise time	t_r			4.8		
Turn-off delay time	$t_{d(off)}$			17.3		
Fall time	t_f			7.4		
Source-drain diode ratings and characteristics						
Drain - source diode forward voltage	V_{SD}	I_S=150mA, V_{GS}=0V			1.2	V
Reverse recovery time	t_{rr}	I_F=3.6A, di/dt=100A/μs		7.5		ns
Reverse recovery charge	Q_{rr}			2.5		μC

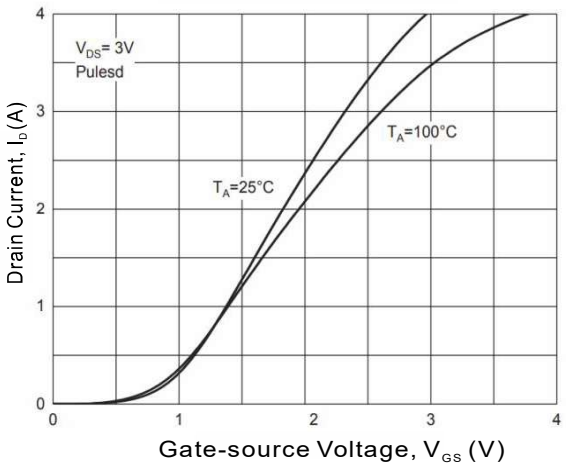
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Rating and characteristic curves

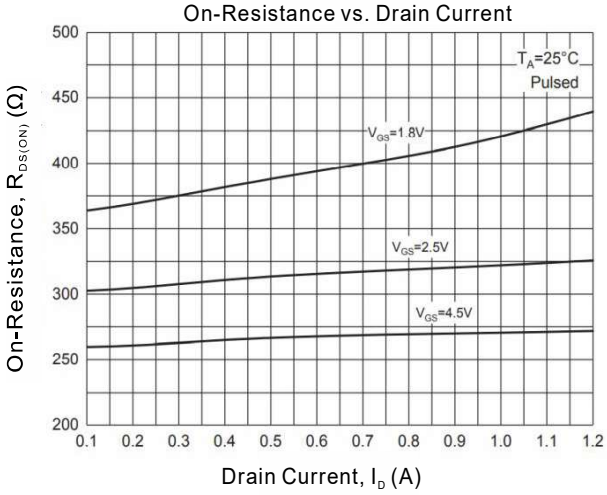
Output Characteristics



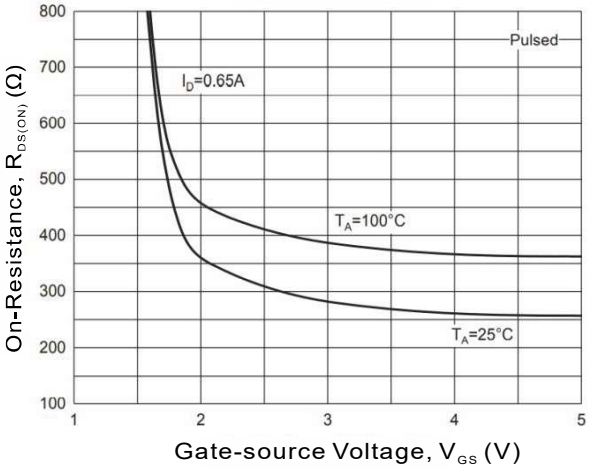
Transfer Characteristics



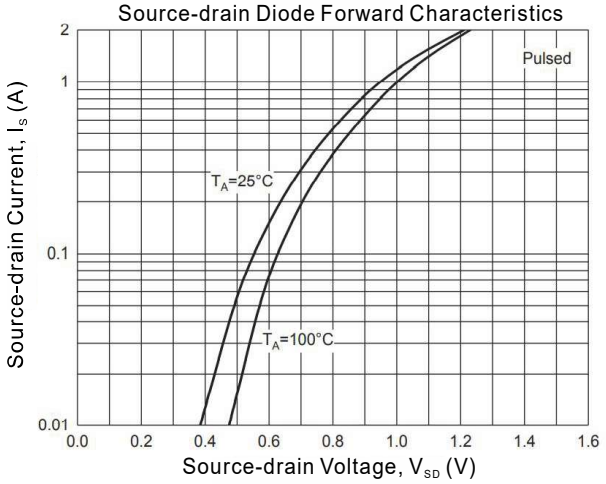
On-Resistance vs. Drain Current



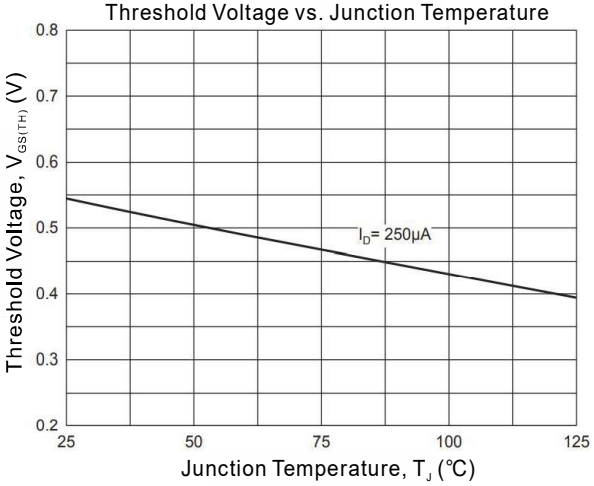
On-Resistance vs. Gate-source Voltage



Source-drain Diode Forward Characteristics

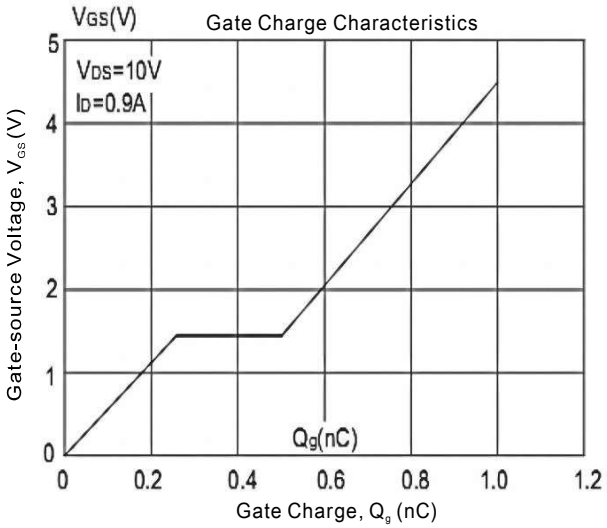


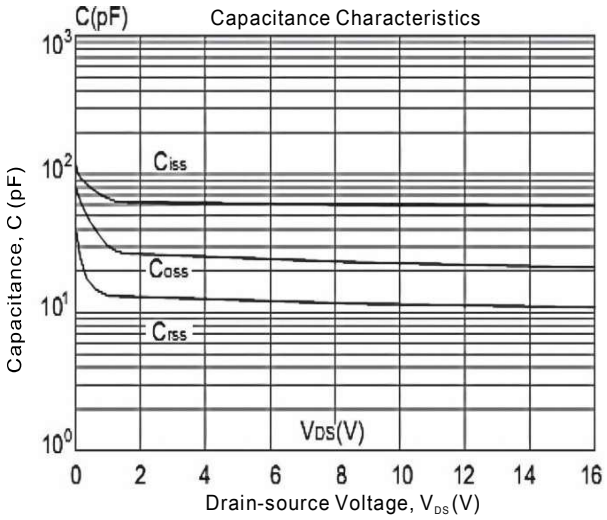
Threshold Voltage vs. Junction Temperature

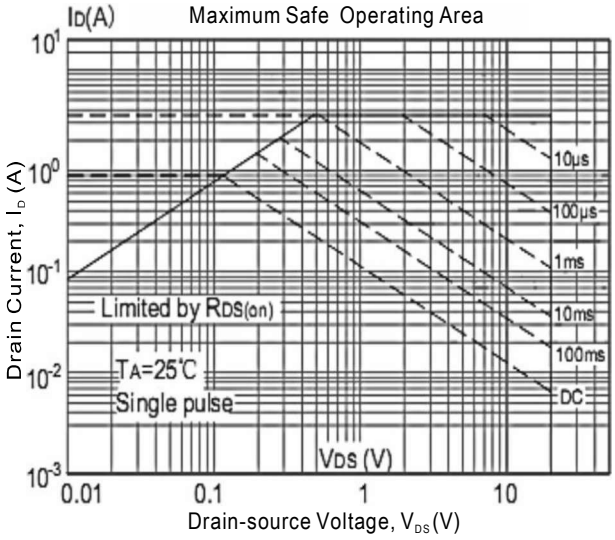


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Rating and characteristic curves

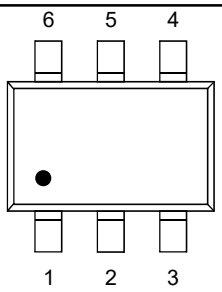
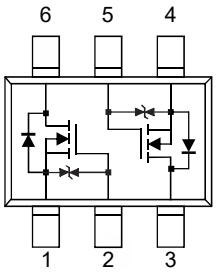






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Pinning information

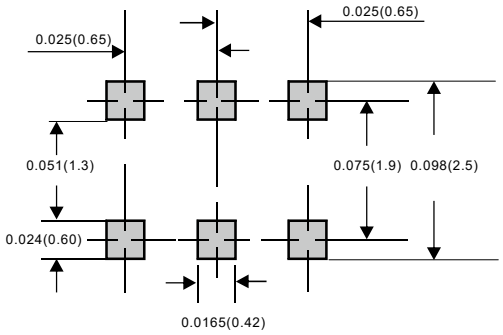
Pin	Simplified outline	Symbol
Pin1 Source 1 Pin2 Gate 1 Pin3 Drain 2 Pin4 Source 2 Pin5 Gate 2 Pin6 Drain 1		

Marking

Type number	Marking code
FMFDN3134E-H	34K

Suggested solder pad layout

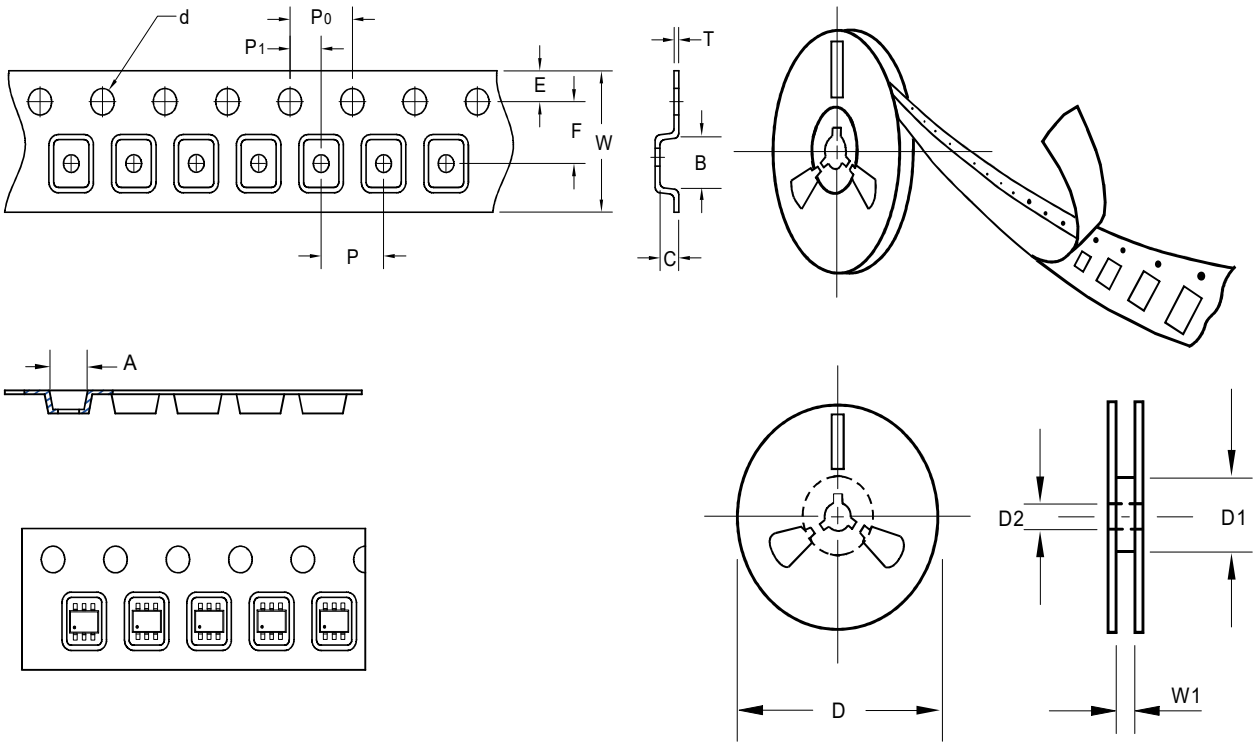
SOT-363



Dimensions in inches and (millimeters)

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Packing information



Unit : mm

Item	Symbol	Tolerance	SOD-363
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
7" Reel outside diameter	D	±1.0	178.0
7" Reel inner diameter	D1	±0.5	62.0
Feed hole diameter	D2	±0.3	13.0
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
Over all tape thinkness	T	±0.1	0.23
Tape width	W	±0.2	8.00
Reel width	W1	±0.2	11.40

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

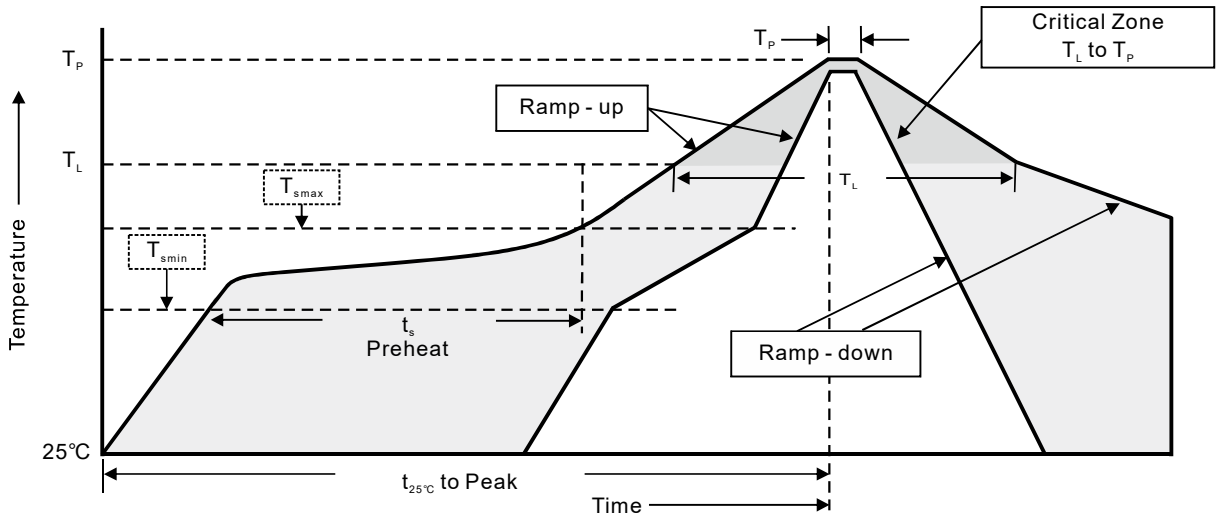
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Reel packing

Package	Units (pcs)			Dimension (Unit : mm³)		
	Reel	Inner Box	Outer Box	Reel DIA,	Inner Box	Outer Box
SOT-363	3,000	30,000	180,000	178 (7")	180 x 120 x 180	390 x 385 x 205

Suggested thermal profiles for soldering processes

1. Storage environment : Temperature = 5℃ ~ 40℃, 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