

FMOSAE0P75N02E-H

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

- $V_{DS}=20V$, $I_D = 0.75A$.
- $R_{DS(ON)} \leq 500m\Omega$ @ $V_{GS} = 4.5V$, $I_D = 150mA$.
- $R_{DS(ON)} \leq 700m\Omega$ @ $V_{GS} = 2.5V$, $I_D = 150mA$.
- $R_{DS(ON)} \leq 900m\Omega$ @ $V_{GS} = 1.8V$, $I_D = 150mA$.
- N-channel switch with low on-resistance.
- Operated at low logic level gate drive.
- ESD protected: 1.0KV (Human body model), 0.4KV (Maching model).
- Lead-free parts meet RoHS requirements.
- Halogen-free (IEC61249-2-21).

- Load/power switching and interfacing switching.
- Battery management for ultra-small portable electronics.
- Logic level shift.

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, DFN1006-3 (T1006P3).
- Weight : Approximated 0.8mg.

DFN1006-3
(T1006P3)

Top View Dimensions:

- Overall Width: 0.041(1.05) / 0.037(0.95)
- Overall Height: 0.026(0.65) / 0.022(0.55)
- Pin Pitch (Left): 0.002(0.05)Ref.
- Pin Pitch (Right): 0.002(0.05)Ref.
- Pin Width (Left): 0.012(0.30) / 0.007(0.20)
- Pin Width (Right): 0.012(0.30) / 0.007(0.20) / 0.008(0.20) / 0.004(0.10)
- Pin Spacing (Left): 0.022(0.55) / 0.018(0.45)
- Pin Spacing (Right): 0.014(0.35)Ref.
- Overall Pin Width: 0.026(0.650)Ref.

Bottom View Dimensions:

- Overall Width: 0.022(0.55) / 0.016(0.40)
- Overall Height: 0.002(0.05)Max.

Dimensions in inches and (millimeters)

Parameter	Symbol	Ratings	Unit
Drain-source voltage	V_{DS}	20	V
Gate-source voltage	V_{GS}	± 12	V
Continuous drain current (Note 1)	I_D	0.75	A
Pulse drain current ($t_p=10\mu s$)	I_{DM}	1.8	A
Power dissipation (Note 1)	P_D	275	mW
Thermal resistance, junction to ambient (Note 1)	$R_{\theta JA}$	455	$^{\circ}C/W$
Lead temperature for soldering purposes (1/8" from case for 10seconds)	T_L	260	$^{\circ}C$
Operating Junction temperature	T_J	+150	$^{\circ}C$
Storage temperature range	T_{STG}	-55 to +150	$^{\circ}C$

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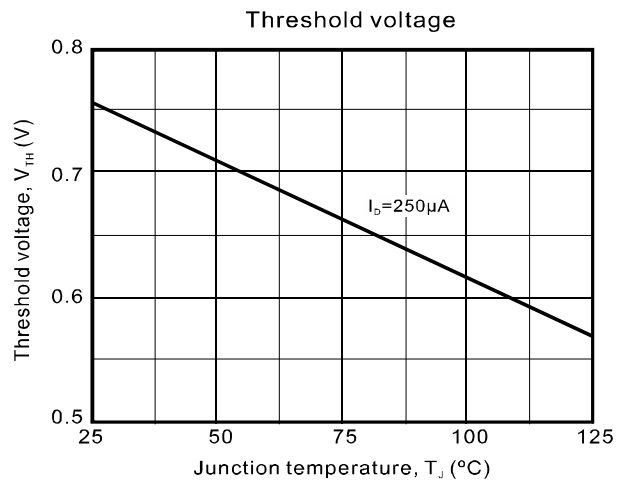
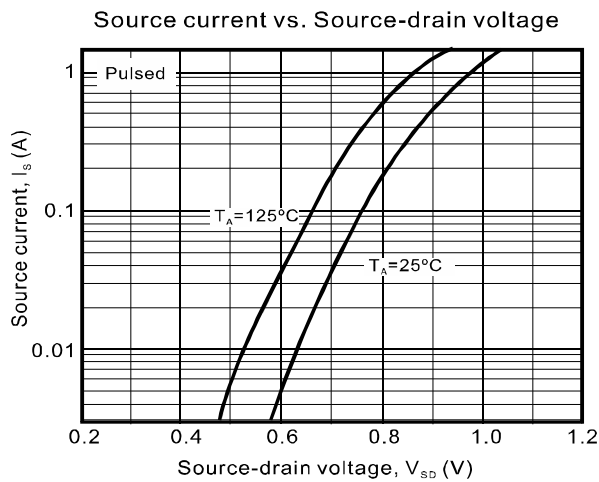
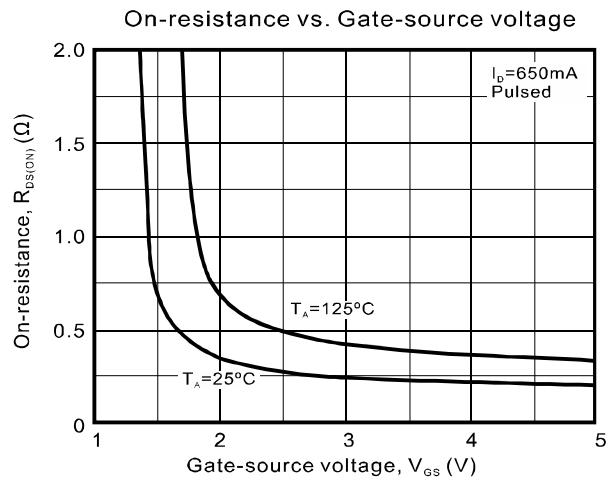
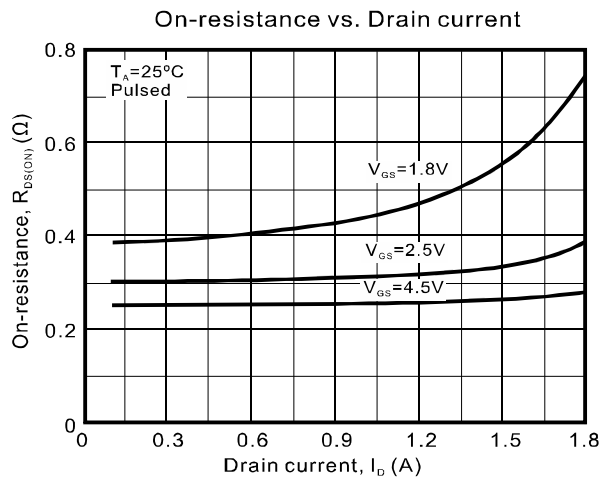
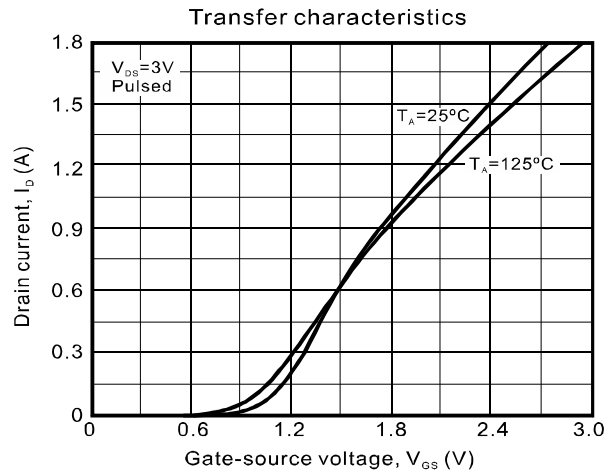
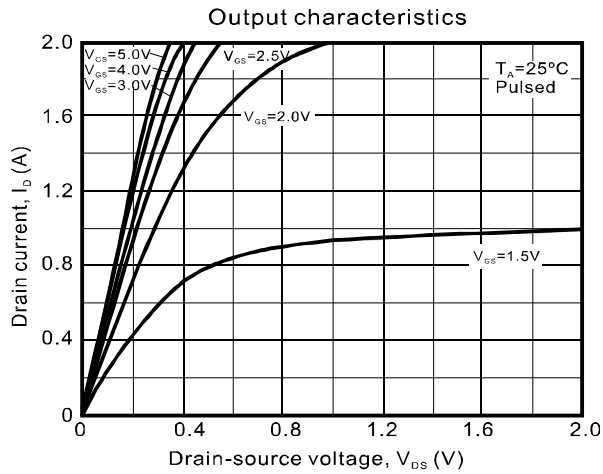
Electrical characteristics (T_A=25°C unless otherwise noted)

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 _{GS} =±10V, V _{DS} =0V			±20	μA
On characteristics						
Gate threshold voltage (note2)	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	0.35	0.75	1.10	V
Static drain-source on-resistance (note2)	R _{DS(ON)}	V _{GS} =4.5V, I _D =150mA		250	500	mΩ
		V _{GS} =2.5V, I _D =150mA		300	700	
		V _{GS} =1.8V, I _D =150mA		370	900	
		V _{GS} =1.5V, I _D =20mA		460		
		V _{GS} =1.2V, I _D =10mA		1200		
Forward transconductance	g _{FS}	V _{DS} =10V, I _D =150mA	150			mS
Dynamic Parameters (note4)						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =16V, f=1.0MHz		79	120	pF
Output capacitance	C _{oss}			13	20	
Reverse transfer capacitance	C _{rss}			9	15	
Switching parameters (note4)						
Turn-on delay time (note3)	t _{d(on)}	V _{GS} =4.5V, V _{DS} =10V, I _D =500mA, R _G =10Ω		6.7		ns
Turn-on rise time (note3)	t _r			4.8		
Turn-off delay time (note3)	t _{d(off)}			17.3		
Turn-off fall time (note3)	t _f			7.4		
Source-drain diode ratings and characteristics						
Drain - source diode forward voltage (note3)	V _{SD}	I _S =0.15A, V _{GS} =0V			1.2	V

Note: 1. Surface mounted on FR4 board using 1 square inch pad size, 1oz copper.
2. Pulse test: pulse width = 300μs, duty cycle ≤ 2%.
3. Switching characteristics are independent of operating junction temperature.
4. Guaranteed by design, not subject to producing.

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Rating and characteristic curves



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Pinning information

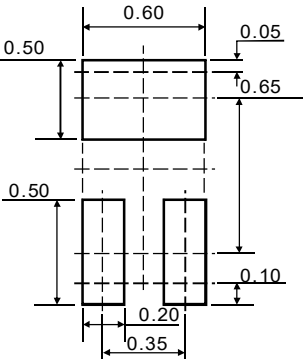
Pin	Simplified outline	Symbol
Pin 1 Source Pin 2 Gate Pin 3 Drain	Top view 1 2 3 Bottom view	Drain Gate Source

Marking

Type number	Marking code
FMOSAE0P75N02E-H	34

Suggested solder pad layout

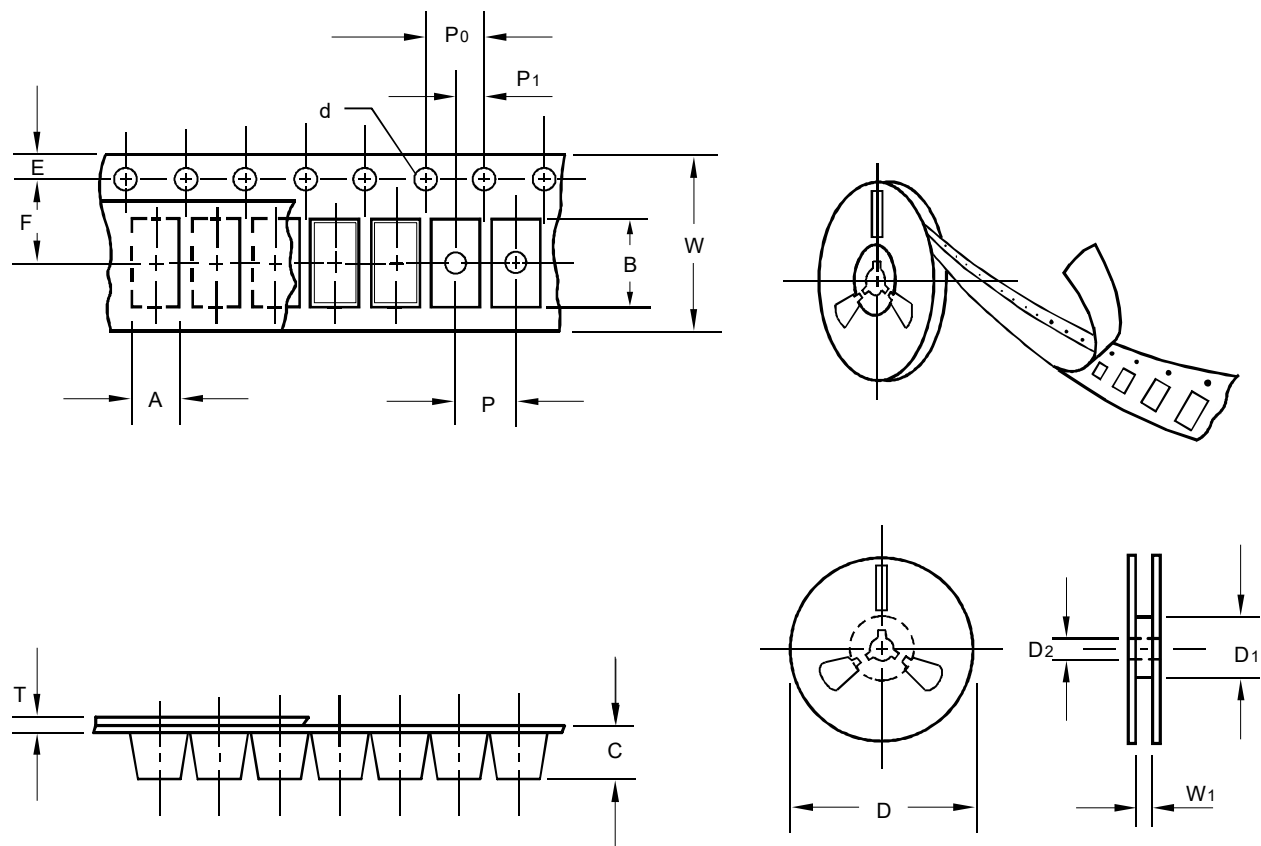
DFN1006-3
(T1006P3)



Dimensions in millimeters

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Packing information



unit:mm

Item	Symbol	Tolerance	DFN1006-3 (T1006P3)
Carrier width	A	0.5	0.66
Carrier length	B	0.5	1.11
Carrier depth	C	0.5	0.66
Sprocket hole	d	0.1	1.55
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	53.50
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	2.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Tape width	W	0.3	8.00
Reel width	W1	1.0	9.50

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

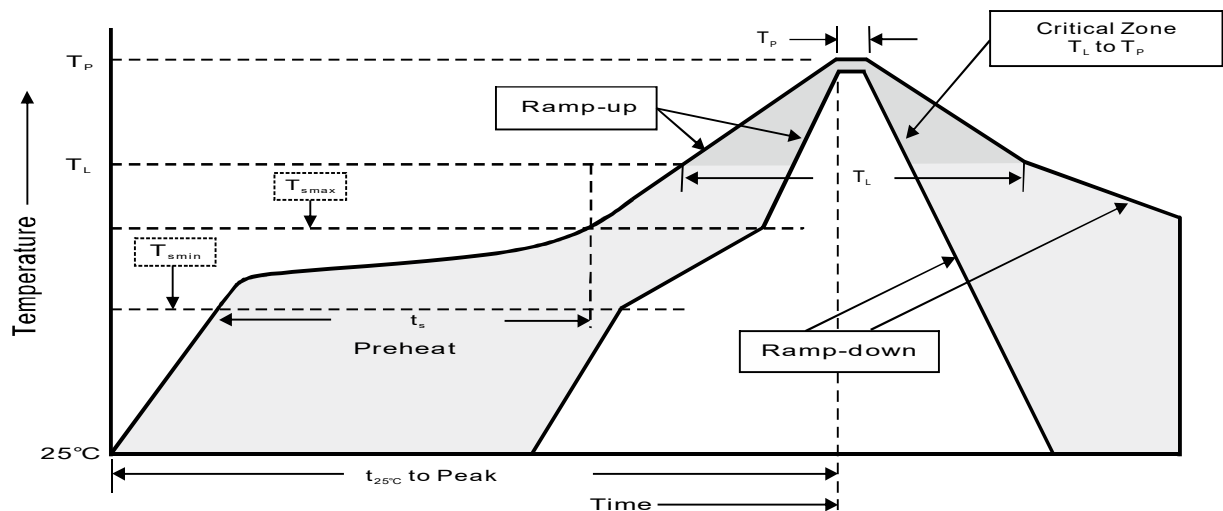
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Reel packing

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)
DFN1006-3 (T1006P3)	7"	10,000	4.0	100,000	183*123*183	178	382*257*387	800,000

Suggested thermal profiles for soldering processes

- Storage environment: Temperature = 5°C ~ 40°C Humidity = 55%, ±25%
- 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_{smin}) - Temperature Max (T_{smax}) - Time (Min to Max) (t_s)	150°C 200°C 60 ~ 120 sec
T_{smax} to T_L - Ramp-up rate	< 3 °C/sec
Time maintained above : - Temperature (T_L) - Time (T_L)	217°C 60 ~ 260 sec
Peak temperature (T_P)	255 °C -0/+5°C
Time with 5°C of actual peak temperature (T_P)	10 ~30 sec
Ramp-down rate	< 6 °C/sec
Time 25°C to peak temperature	< 6 minutes