FMOSTHAC62N06-H

List

FMOSTHAC62N06-H

62A 60V N-Channel Trench Enhancement Mode Power MOSFET

Features

- V_{DS}=60V, I_D=62A.
- $R_{DS(ON)}$ ≤ 14mΩ, @ V_{GS}=10V, I_D=30A.
- $R_{DS(ON)}$ ≤ 18mΩ, @ V_{GS}=4.5V, I_D=20A.
- High-speed switching characteristics.
- Low gate charge and low on-resistance.
- 100% E_{AS} and 100% R_g test .
- Lead-free parts meet RoHS requirements.
- Halogen-free (IEC61249-2-21).

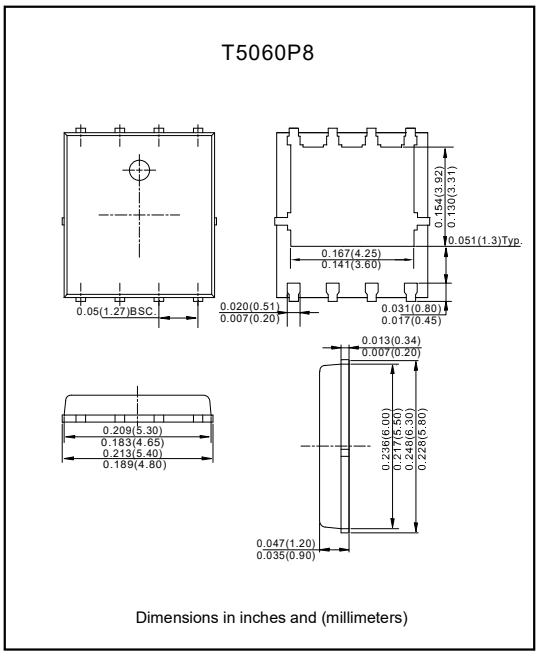
Applications

- High voltage H-bridge PWM motor drive.
- AC-DC switching power supply.
- DC-DC power converter.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic,T5060P8.
- Mounting Position : Any.

Package outline



Dimensions in inches and (millimeters)

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

Parameter	Symbol	Ratings	Unit
Drain-source voltage	V_{DS}	60	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current (T_C=25°C)	I_D	62	A
Pulsed drain current (Note1)	I_{DM}	80	A
Avalanche current (Note2)	I_{AS}	24	A
Single pulse avalanche energy (Note2)	E_{AS}	42	mJ
Power dissipation (T_C=25°C)	P_D	2.5	W
Thermal resistance Junction to ambient (Note3)	$R_{\theta JA}$	50	°C/W
Thermal resistance Junction to case (Note3)	$R_{\theta JC}$	3.12	°C/W
Operating Junction temperature	T_J	+150	°C
Storage temperature range	T_{STG}	-55 to +150	°C

Note:1.Pulse test: pulse width ≤ 100μs, duty cycle ≤ 2%, repetitive rating, pulse width limited by junction temperature T_{J_max}=150°C.

2.Limited by T_{J_Max}, starting T_J=25°C, L=0.1mH, I_{AS}=18A, V_{GS}=10V.

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

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Electrical characteristics (At 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	60			V
Drain-source leakage current	I_{DSS}	V_{DS}=60V			1	μA
Gate-source leakage current	I_{GSS}	V_{GS}=±20V			±100	nA
On characteristics						
Gate threshold voltage	$V_{GS(TH)}$	V_{GS}=10V, I_D=250μA	1		2.5	V
Static drain-source on-resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=30A		10	14	mΩ
		V_{GS}=4.5V,I_D=20A		13	18	
Gate resistance	g_{FS}	V_{DS}=2V, I_D=10A		30		S
Dynamic parameters						
Input capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		2150		pF
Out capacitance	C_{oss}			130		
Reverse transfer capacitance	C_{rss}			90		
Gate resistance	R_g	V_{DS}=0V, f=1.0MHz		1.6		Ω
Switching parameters						
Total gate charge	Q_g	V_{GS}=10V, V_{DS}=30V, I_D=10A		40		nC
		V_{GS}=4.5V, V_{DS}=30V, I_D=10A		20		
Gate to source charge	Q_{gs}	V_{GS}=10V, V_{DS}=50V, I_D=40A		5.8		
Gate to drain charge	Q_{gd}			8		
Turn-on delay time	$t_{d(on)}$	V_{DS}=30V, V_{GS}=10V, R_G=6Ω, I_D=10A		4		ns
Rise time	t_r			7		
Turn-off delay time	$t_{d(off)}$			20		
Fall time	t_f			8		
Source-drain diode ratings and characteristics						
Drain-source diode forward voltage	V_{SD}	I_S=1A, V_{GS}=0V,			1	V
Reverse recovery time	t_{rr}	I_F=10A, di/dt=100A/μs		8		ns
Reverse recovery charge	Q_{rr}			15		nC

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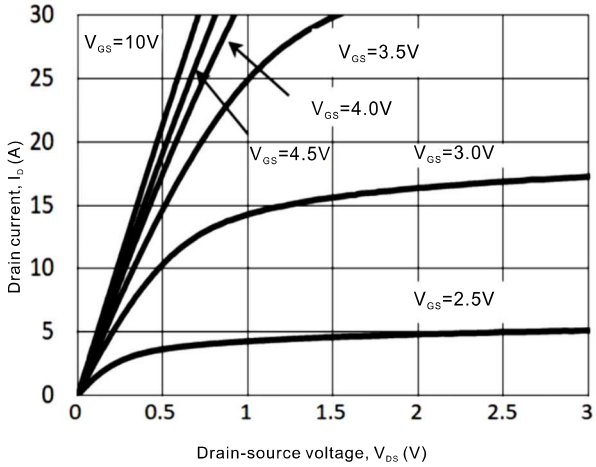
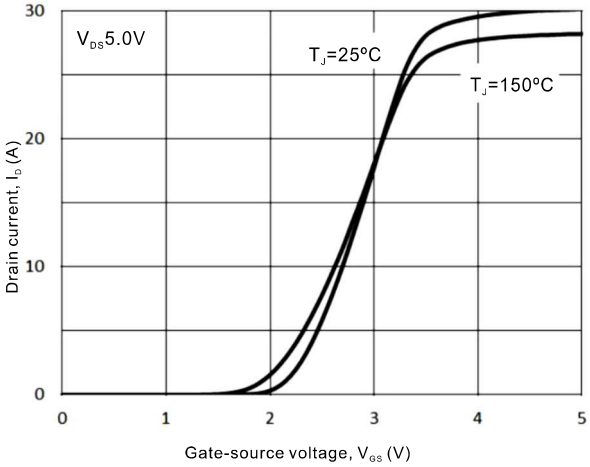
Rating and characteristic curves

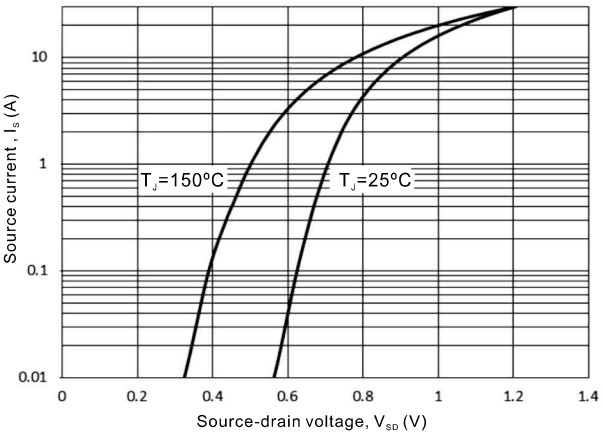
Typical output characteristics



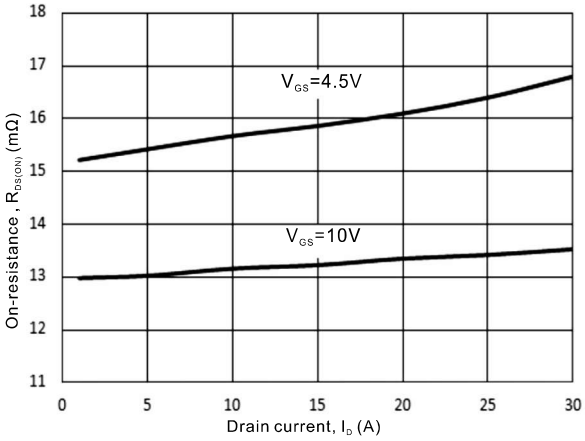
Typical transfer characteristics



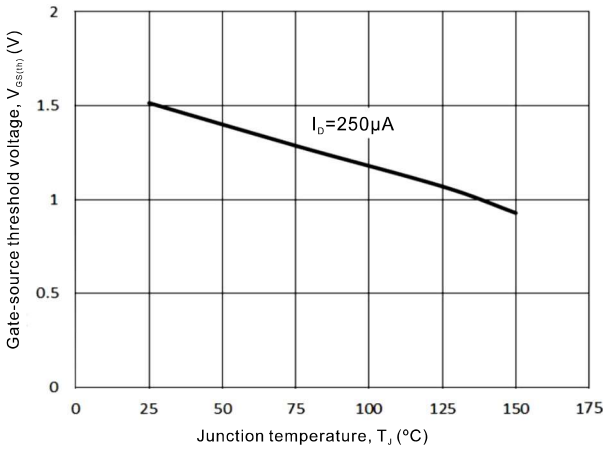
Diode forward voltage vs. source current



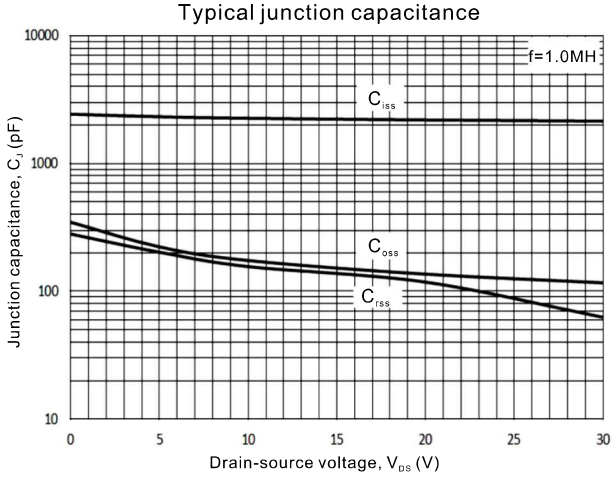
Typical on-resistance vs. Drain current



Gate threshold voltage variaiton vs. Junction temperature



Typical junction capacitance



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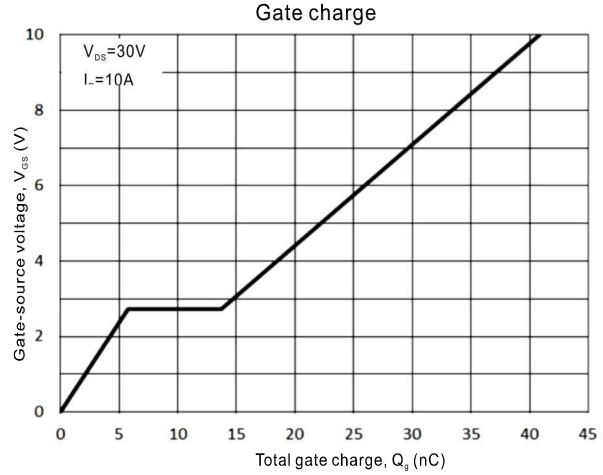
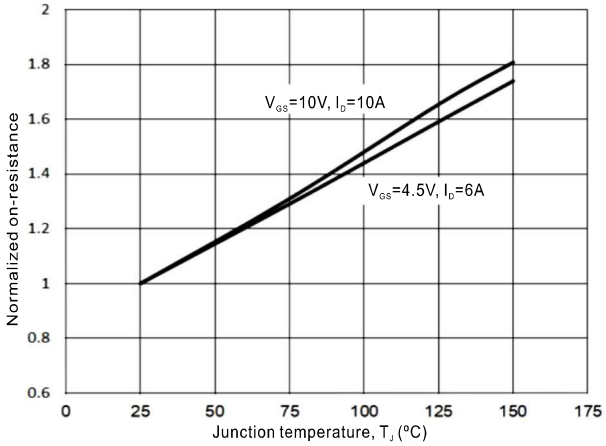
Rating and characteristic curves

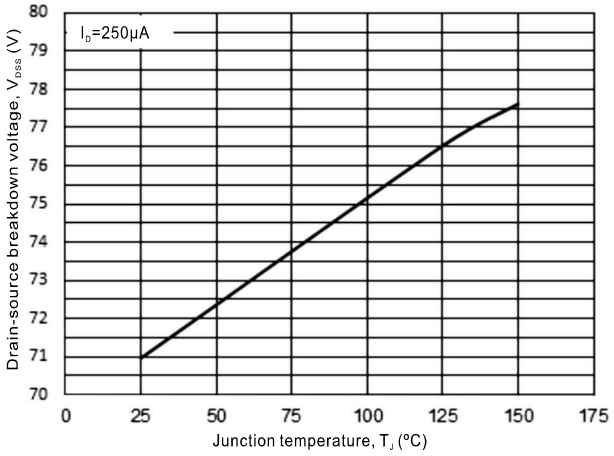
Gate charge



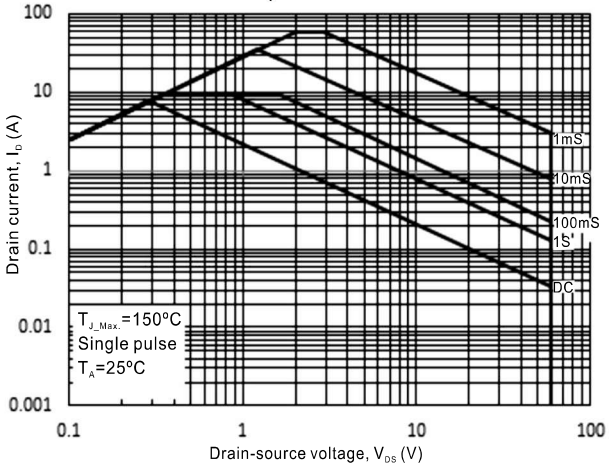
On-resistance vs. Junction temperature



Drain-source breakdown voltage vs. Junction temperature



Safe operation area



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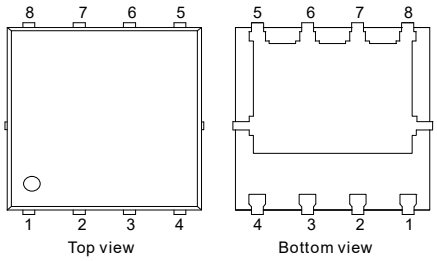
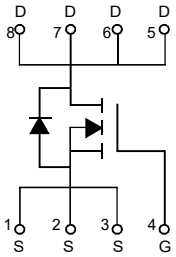
Pinning information

Pin	Simplified outline	Symbol
Pin 1, 2, 3, Source Pin 4 Gate Pin 5, 6, 7, 8 Drain		

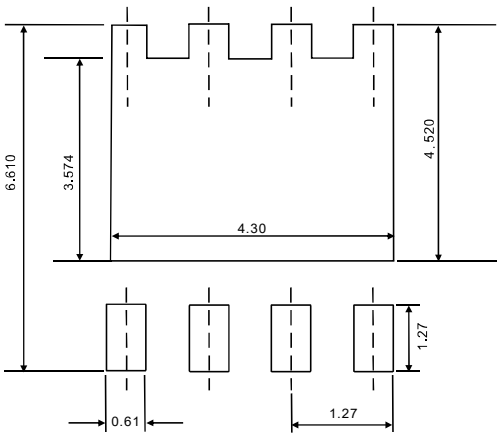
Marking

Type number	Marking code
FMOSTHAC62N06-H	112N06 YWWXXX

*YWW:Wafer lot code
XXX:Assy. code

Suggested solder pad layout

T5060P8



Note:
1. Controlling dimension: in millimeters.
2. General tolerance: ±0.1mm
3. The pad layout is for reference purposes only.

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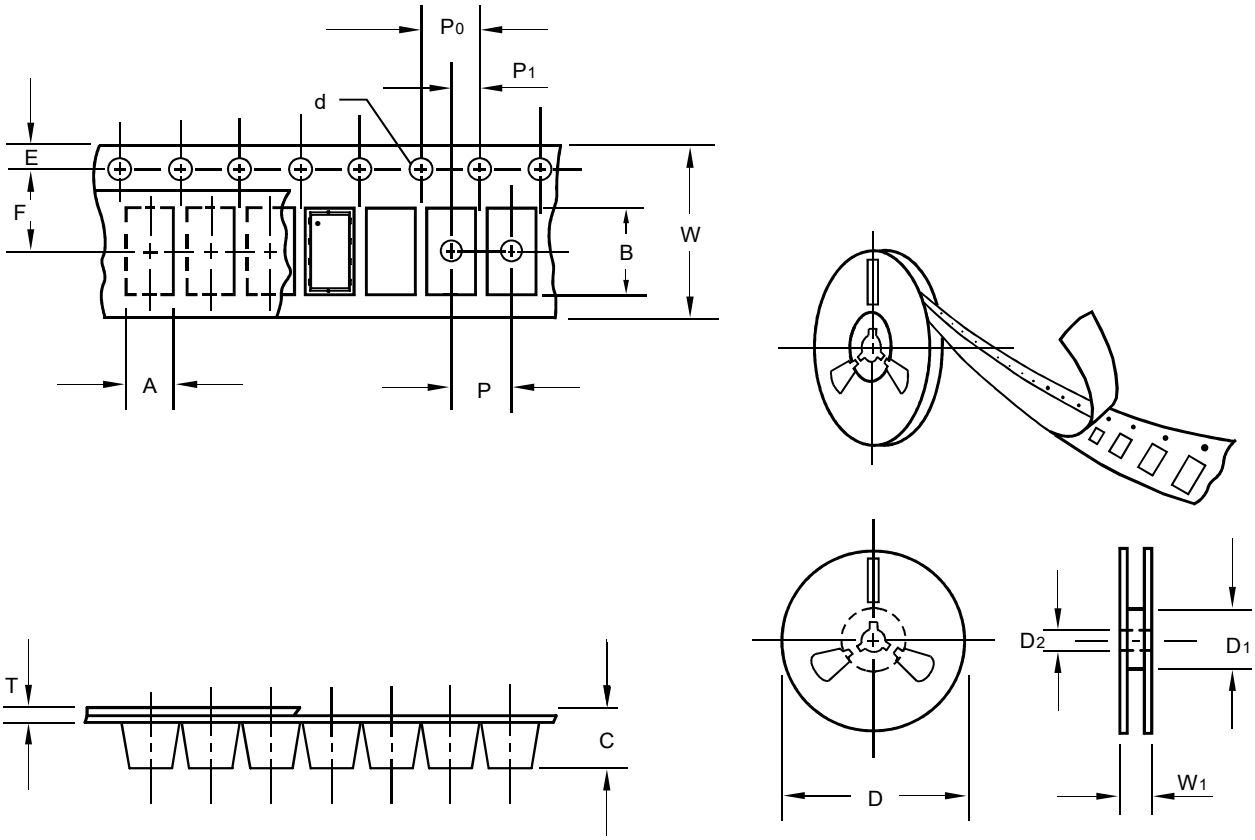
Packing information



unit:mm

Item	Symbol	Tolerance	T5060P8
Carrier width	A	0.3	6.50
Carrier length	B	0.3	5.28
Carrier depth	C	0.3	2.00
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	330.00
7" Reel outside diameter	D	2.0	-
7" Reel inner diameter	D_1	min	-
Feed hole diameter	D_2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.50
Punch hole pitch	P	0.1	8.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.30
Tape width	W	0.3	12.00
Reel width	W_1	3.0	17.60

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

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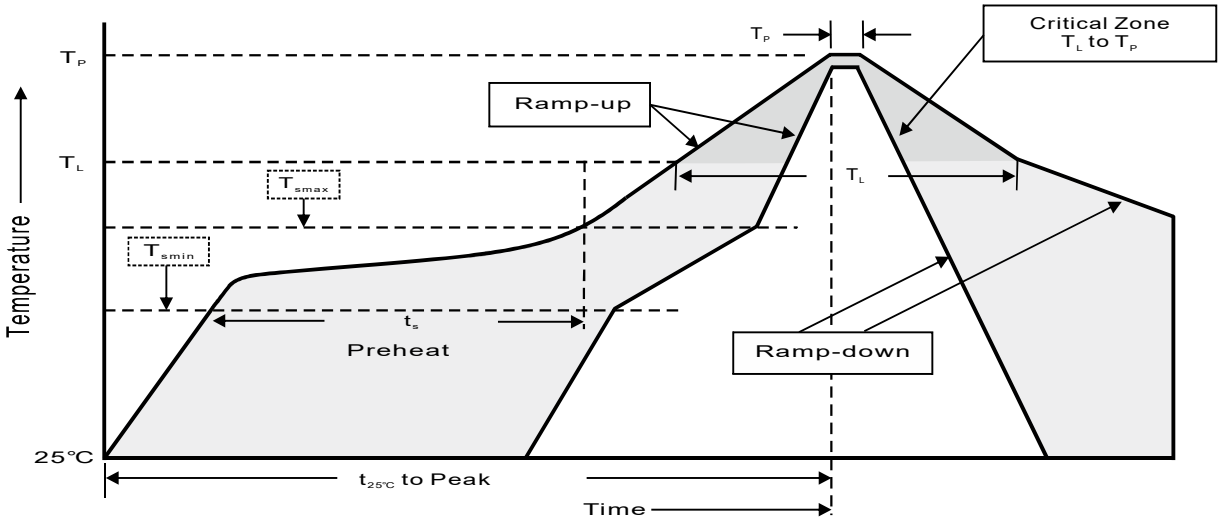
Reel packing

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)
T5060P8	13"	5,000	4.0	10,000	335*335*38	330	350*350*360	80,000

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