

FMOSAB30P04A-Q1-H

List

List.....	1
Package outline.....	2
Features.....	2
Application.....	2
Mechanical data.....	2
Maximum ratings	2
Electrical characteristics.....	3
Rating and characteristic curves.....	4~5
Pinning information.....	6
Marking.....	6
Suggested solder pad layout.....	6
Packing information.....	7
Reel packing.....	8
Suggested thermal profiles for soldering processes.....	8

FMOSAB30P04A-Q1-H

-30A -40V P-Channel Enhancement Mode Power MOSFET

Features

- $-V_{DS} = 40V$, $-I_D = 30A$.
- $R_{DS(ON)} \leq 13m\Omega$, @ $-V_{GS} = 10V$, $-I_D = 20A$.
- $R_{DS(ON)} \leq 19m\Omega$, @ $-V_{GS} = 4.5V$, $-I_D = 10A$.
- Advanced trench technology.
- Excellent $R_{DS(ON)}$ and low gate charge.
- 100% UIS and ΔV_{ds} tested.
- Qualified to AEC-Q101 standards for high reliability.
- Lead-free parts meet RoHS requirements.

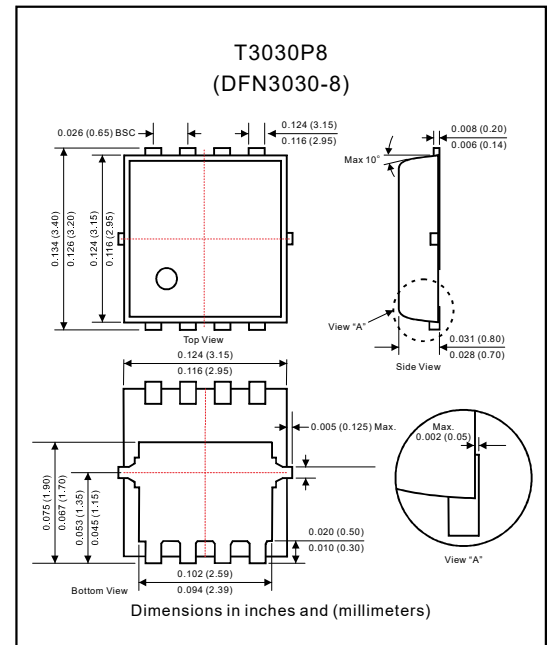
Application

- PWM application.
- Load switch.
- Power management.

Mechanical data

- Epoxy: UL94-V0 rated flame retardant.
- Case : Molded plastic, T3030P8 (DFN3030-8).
- Mounting Position : Any.

Package outline



Maximum ratings (At $T_c = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-source voltage	$-V_{DS}$	40	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain current	$-I_D$	30	A
($T_c = 100^\circ C$)		20	
Pulsed drain current (Note1)	$-I_{DM}$	120	A
Single pulse avalanche energy (Note2)	E_{AS}	110	mJ
Power dissipation (Note4)	P_D	20	W
Thermal resistance junction to case	$R_{\theta JC}$	6.3	$^\circ C/W$
Operating junction temperature	T_J	+175	$^\circ C$
Storage temperature range	T_{STG}	-55 to +175	$^\circ C$

FMOSAB30P04A-Q1-H

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

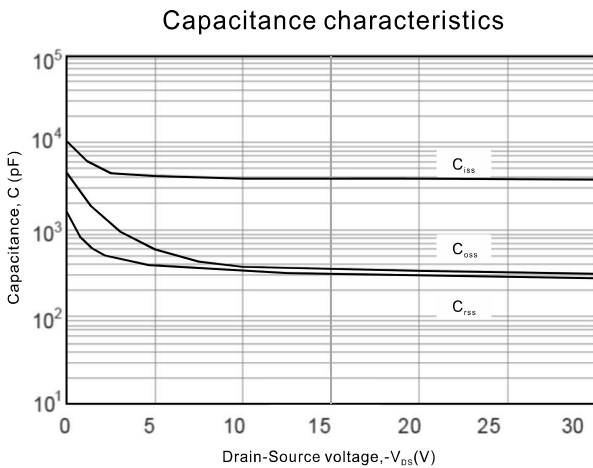
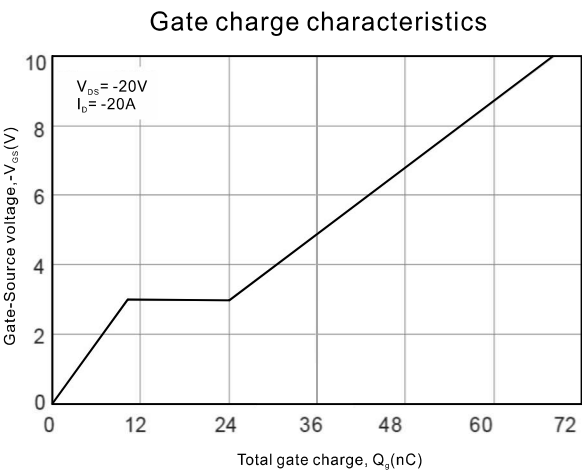
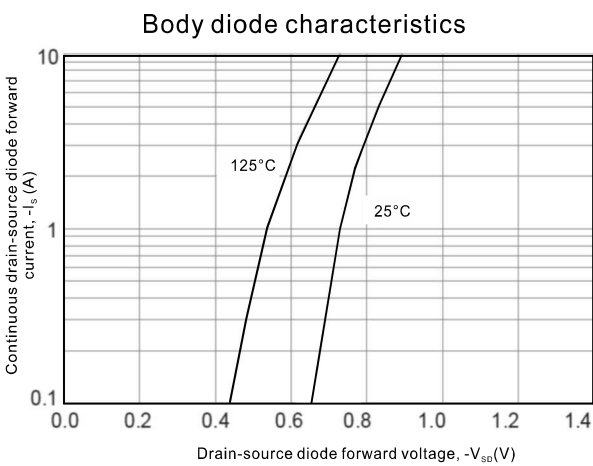
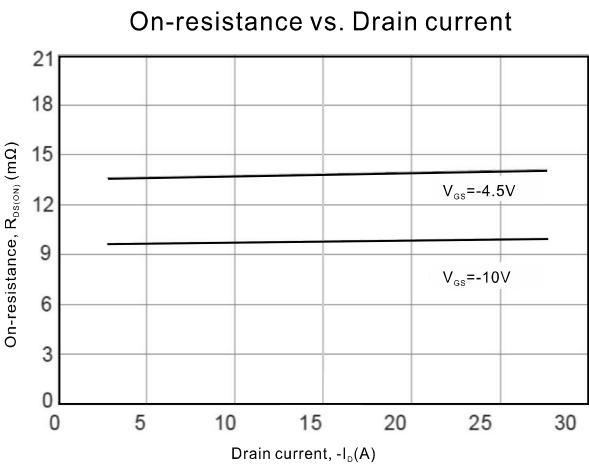
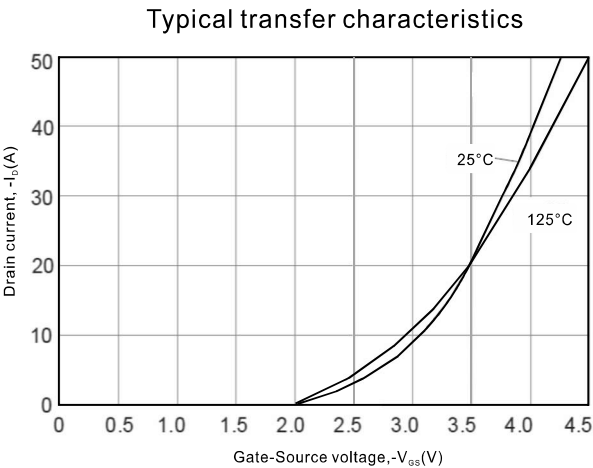
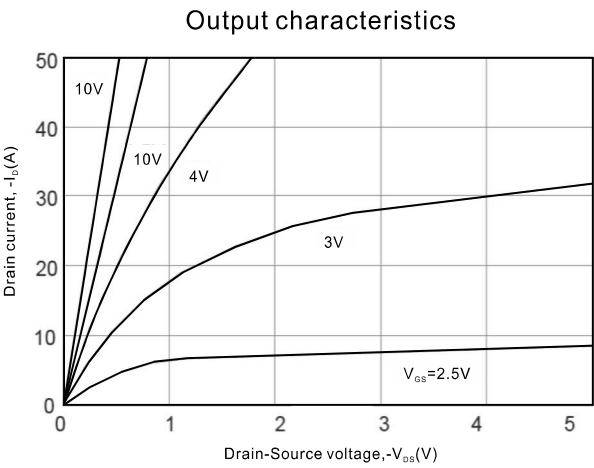
Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-source breakdown voltage	$-I_D=250\mu A, V_{GS}=0V$	$-BV_{DSS}$	40			V
Drain-source leakage current	$-V_{DS}=40V, V_{GS}=0V$	$-I_{DSS}$			1	μA
Gate-source leakage current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}			± 100	nA
On characteristics						
Gate threshold voltage	$V_{GS}=V_{DS}, -I_D=250\mu A$	$-V_{GS(TH)}$	1	1.5	2.5	V
Drain-Source on-state resistance (Note3)	$-V_{GS}=10V, -I_D=20A$	$R_{DS(ON)}$		10.3	13	m Ω
	$-V_{GS}=4.5V, -I_D=10A$			13.6	19	
Dynamic parameters						
Input capacitance	$V_{GS}=0V, -V_{DS}=20V, f=1.0MHz$	C_{iss}		3700		pF
Out capacitance		C_{oss}		340		
Reverse transfer capacitance		C_{rss}		290		
Switching parameters						
Total gate charge	$-V_{GS}=10V, -V_{DS}=20V, -I_D=20A$	Q_g		68		nC
Gate to source charge		Q_{gs}		10		
Gate to drain charge		Q_{gd}		14		
Turn-on delay time	$-V_{DD}=20V, -V_{GS}=10V, R_G=2.4\Omega, -I_D=20A$	$t_{d(on)}$		10		ns
Rise time		t_r		82		
Turn-off delay time		$t_{d(off)}$		93		
Fall time		t_f		74		
Source-drain diode ratings and characteristics						
Drain-source diode forward voltage	$V_{GS}=0V, -I_S=30A$	$-V_{SD}$		0.8	1.2	V
Continuous drain-source diode forward current		$-I_S$			30	A
Pulse drain-source diode forward current		$-I_{SM}$			120	A
Body diode reverse recovery time	$V_{GS}=0V, -I_S=30A, dI/dt=100A/\mu s$	t_{rr}		20		nS
Body diode reverse recovery charge		Q_{rr}		13		nC

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

2. E_{AS} condition: $T_J=25^{\circ}\text{C}$, $-V_{DS}=20\text{V}$, $-V_G=10\text{V}$, $L=0.5\text{mH}$, $R_G=25\Omega$, $-I_{AS}=21\text{A}$.3. Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.4. $R_{\theta JC}$ is measured with the device mounted on a minimum recommended pad of 2oz copper FR4 PCS.

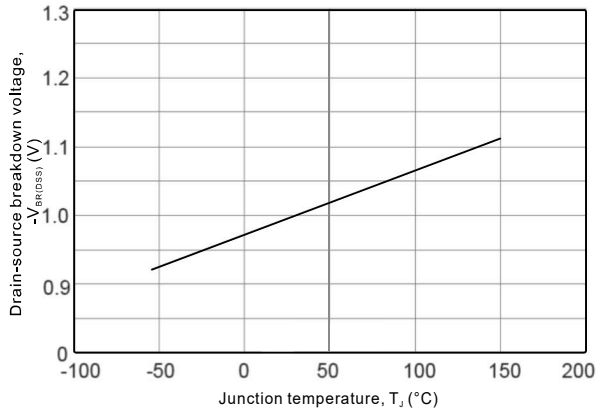
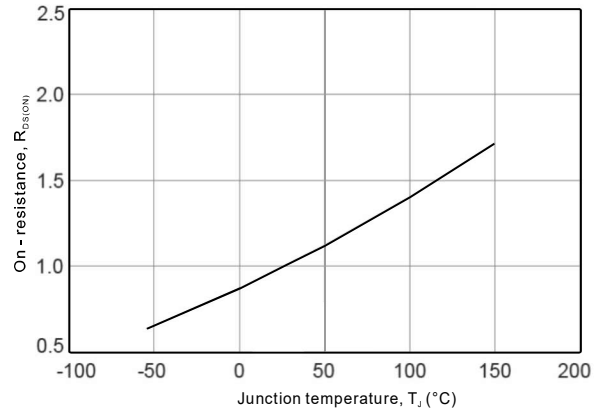
FMOSAB30P04A-Q1-H

Rating and characteristic curves

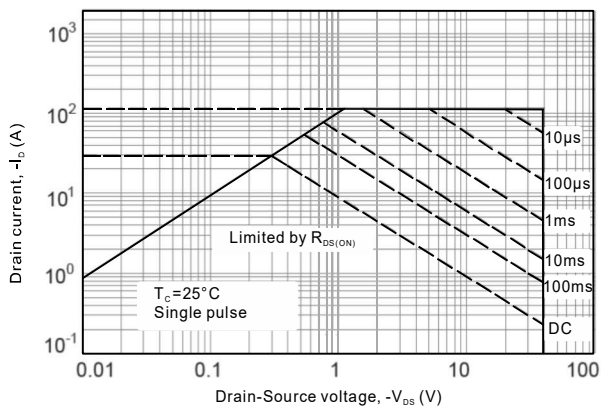
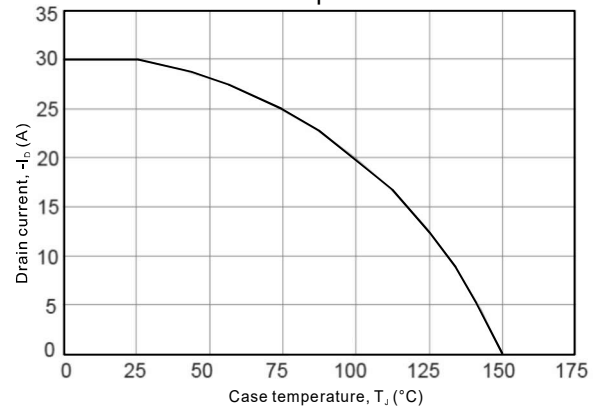
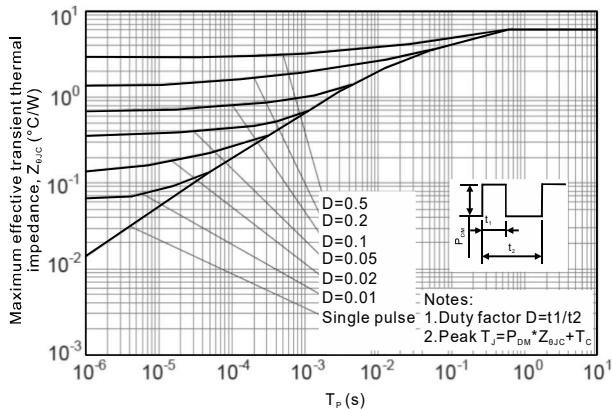


FMOSAB30P04A-Q1-H

Rating and characteristic curves

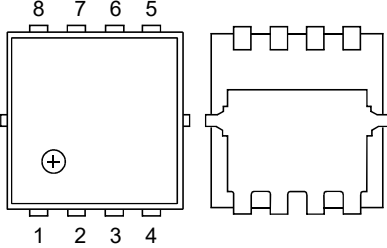
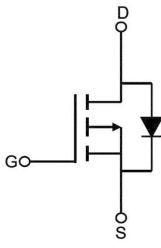
Normalized breakdown voltage vs.
Junction temperatureNormalized on-resistance vs.
Junction temperature

Maximum safe operating area

Maximum continuous drain current vs.
Case temperatureMaximum effective transient thermal
impedance, Junction-case

FMOSAB30P04A-Q1-H

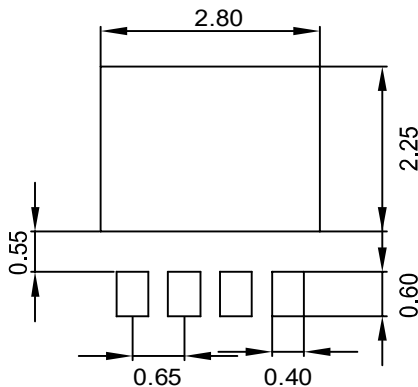
Pinning information

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

Marking

Type number	Marking code
FMOSAG30P04A-Q1-H	Q130P04A

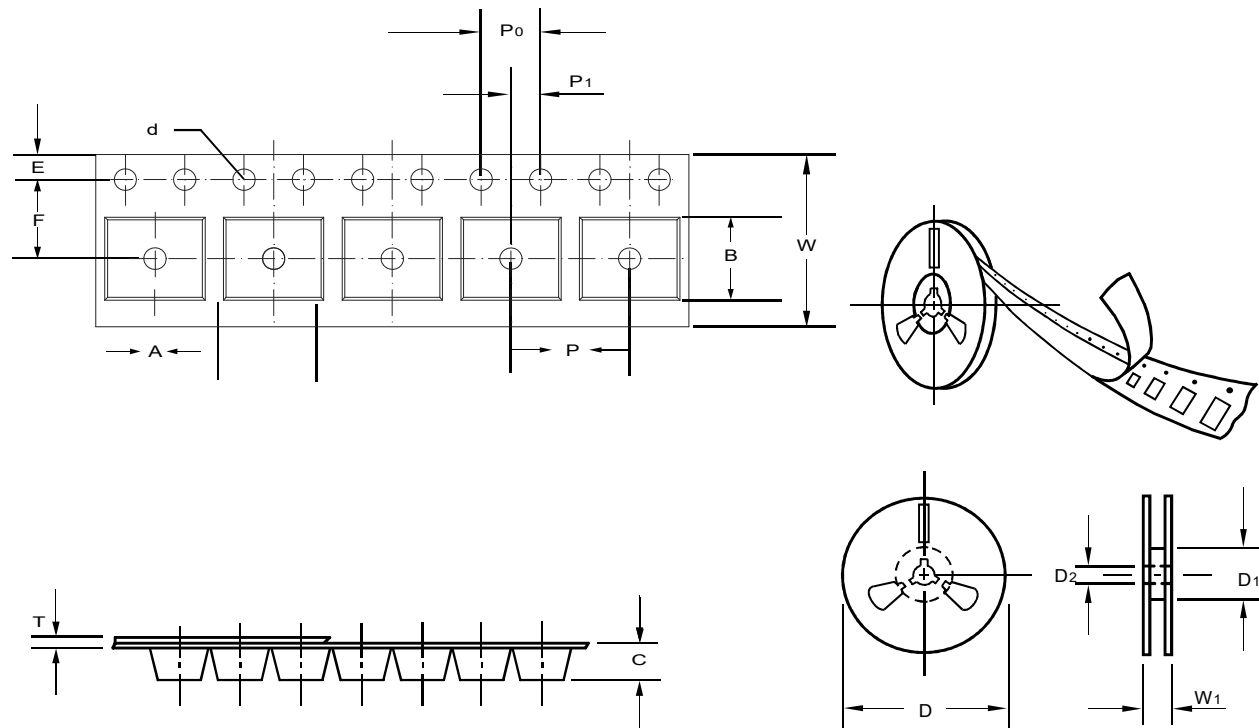
Suggested solder pad layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

FMOSAB30P04A-Q1-H

Packing information



unit:mm

Item	Symbol	Tolerance	T3030P8 (DFN3030-8)
Carrier width	A	0.1	3.5
Carrier length	B	0.1	3.5
Carrier depth	C	0.1	1.1
Sprocket hole	d	0.1	1.55
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D1	min	100.00
7" Reel outside diameter	D	2.0	-
7" Reel inner diameter	D1	min	-
Feed hole diameter	D2	0.5	13.0
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.5
Punch hole pitch	P	0.1	8.0
Sprocket hole pitch	P0	0.1	4.0
Embossment center	P1	0.1	2.0
Overall tape thickness	T	0.05	0.25
Tape width	W	0.3	12.0
Reel width	W1	1.0	13.0

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

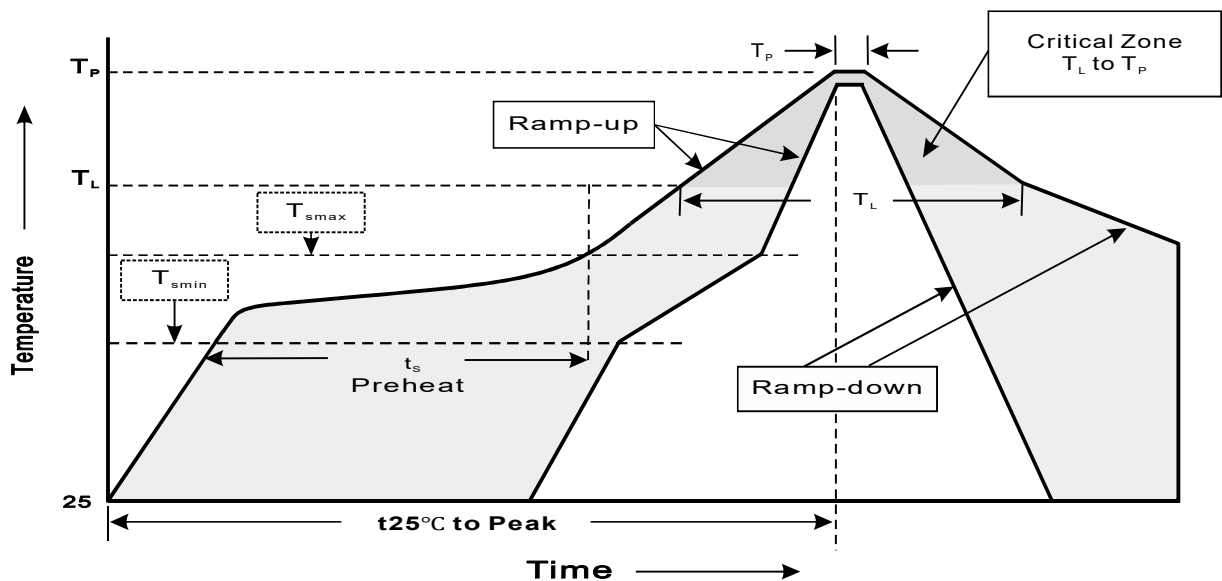
FMOSAB30P04A-Q1-H

Reel packing

Device	Outline	Package	Reel Size	Reel (PCS)	Per Carton (PCS)
FMOSAG30P04A-Q1-H	TAPING	T3030P8	13inch	5,000	50,000

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°C/sec
Preheat -Temperature Min (T _{smin}) -Temperature Max (T _{smax}) -Time (min to max) (t _s)	150°C 200°C 60 ~ 120sec
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 within 5°C of actual peak Temperature(T _p)	10 ~ 30sec
Ramp-down rate	< 6°C/sec
Time 25°C to peak temperature	< 6 minutes