FMOSAB35P03-H

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-35A -30V P-Channel
Enhancement Mode Power MOSFET

Features

- V_{DS}= -30V, I_D= -35A.
- $R_{DS(ON)}$≤ 10.5 mΩ, @V_{GS}= -20V, I_D=- 12A.
- $R_{DS(ON)}$≤ 12.5 mΩ, @V_{GS}= -10V, I_D= -10V.
- $R_{DS(ON)}$≤ 16.5 mΩ, @V_{GS}= -6V, I_D= -8V.
- $R_{DS(ON)}$≤ 25 mΩ, @V_{GS}= -4.5V, I_D= -8V.
- High density cell design for low on-resistance.
- High speed switching.
- Lead-free parts meet RoHS requirements.
- Halogen-free (IEC61249-2-21).

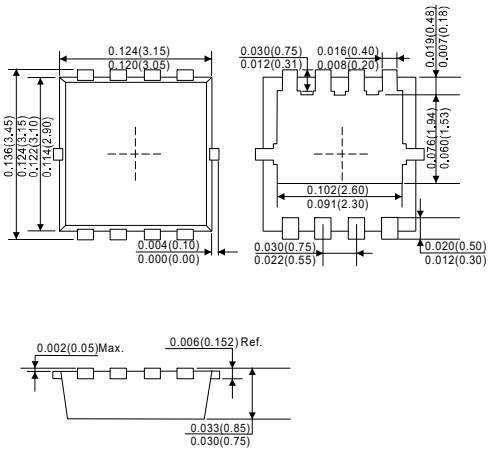
Applications

- Battery protection.
- Load switch.
- Power management.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, T3333P8.
- Weight : Approximated 20mg.

Package outline



Dimensions in inches and (millimeters)

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

Parameter	Symbol	Ratings	Units
Drain-Source voltage	$-V_{DS}$	30	V
Gate-Source voltage	V_{GS}	±25	V
Continuous drain current	$-I_D$	35	A
Pulsed drain current (Note1)	$-I_{DM}$	140	A
Single pulsed avalanche energy (Note2)	E_{AS}	105	mJ
Power dissipation	P_D	30	W
Thermal resistance,Junction to ambient (steady state)	$R_{\theta JA}$	39	°C/W
Operating junction temperature range	T_J	-55 to +150	°C
Storage temperature range	T_{STG}	-55 to +150	°C

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Electrical characteristics (At T_J=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	30			V
Drain-Source leakage current	$-I_{DSS}$	$-V_{DS}$=25V, V_{GS}=0V, T_C=25°C			1	μA
Gate-Source leakage current	I_{GSS}	V_{GS}=±25V, V_{DS}=0V			±100	nA
On characteristics						
Gate threshold voltage	$-V_{GS(th)}$	V_{DS}=V_{GS}, $-I_D$=250μA	1.2	1.7	2.8	V
Static drain-source on-resistance	$R_{DS(ON)}$	$-V_{GS}$=20V, $-I_D$=12A		9	10.5	mΩ
		$-V_{GS}$=10V, $-I_D$=10A		9.3	12.5	
		$-V_{GS}$=6V, $-I_D$=8A		12.3	16.5	
		$-V_{GS}$=4.5V, $-I_D$=8A		16	25	
Dynamic characteristics						
Input capacitance	C_{iss}	$-V_{DS}$=15V, V_{GS}=0V, f=1.0MHz		2152		pF
Output capacitance	C_{oss}			308		
Reverse transfer capacitance	C_{rss}			242		
Switching characteristics						
Total gate charge	Q_g	$-V_{GS}$=10V, $-V_{DS}$=15V, $-I_D$=12A		40.1		nC
Gate-Source charge	Q_{gs}			8.4		
Gate-Drain Charge	Q_{gd}			8.6		
Turn-on delay time	$t_{d(on)}$	$-V_{DS}$=15V, $-V_{GS}$=10V, R_G=2.5Ω $-I_D$=1A		8		ns
Turn-on rise time	t_r			19		
Turn-off delay time	$t_{d(off)}$			75		
Turn-off fall time	t_f			46		
Drain-Source diode characteristics and maximum ratings						
Drain-Source diode forward voltage	$-V_{SD}$	V_{GS}=0V, $-I_S$=12A		0.8	1.2	V
Body diode reverse recovery time	t_{rr}	$-I_F$=12A,dI/dt=100A/μs		18		ns
Body diode reverse recovery charge	Q_{rr}			7.8		nC

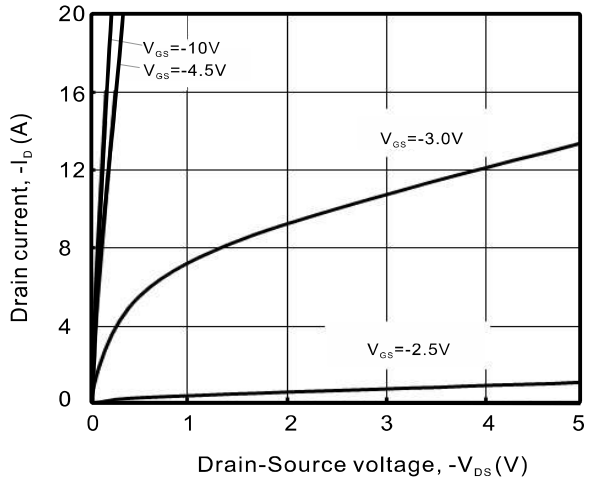
Notes : 1. Pulse test: pulse width≤ 300μs, duty cycle ≤ 2%.

2. $R_{\theta JA}$ is the sum of the junction-lead and lead-ambient thermal resistance, where the lead thermal resistance, where the lead thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JL}$ is guaranteed by design, while $R_{\theta JA}$ is determined by the board design. The maximum rating presented here is based on mounting on a $1in^2$ pad of 2oz copper.

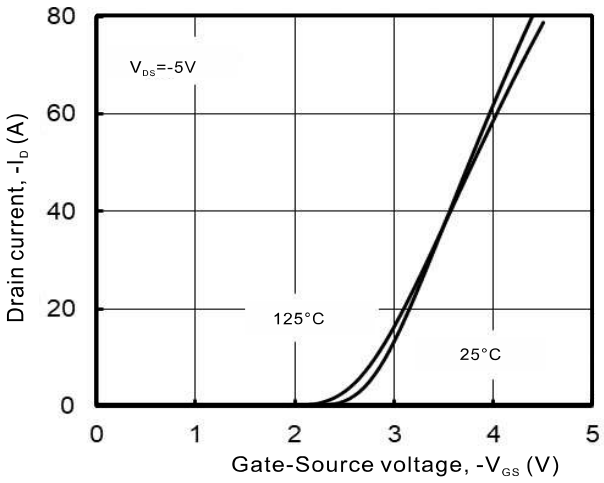
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Rating and characteristic curves

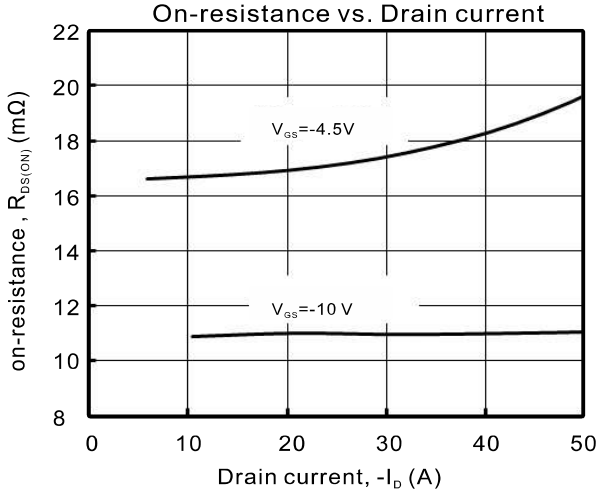
Output characteristics



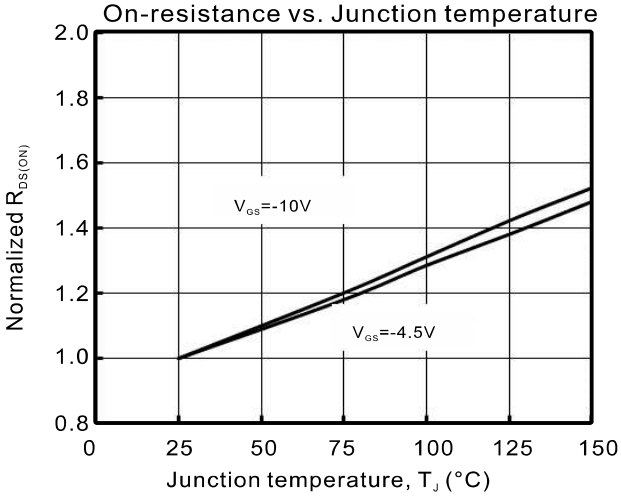
Transfer characteristics



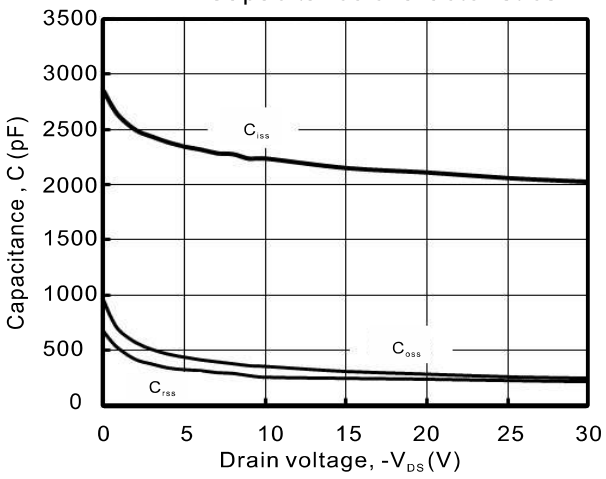
On-resistance vs. Drain current



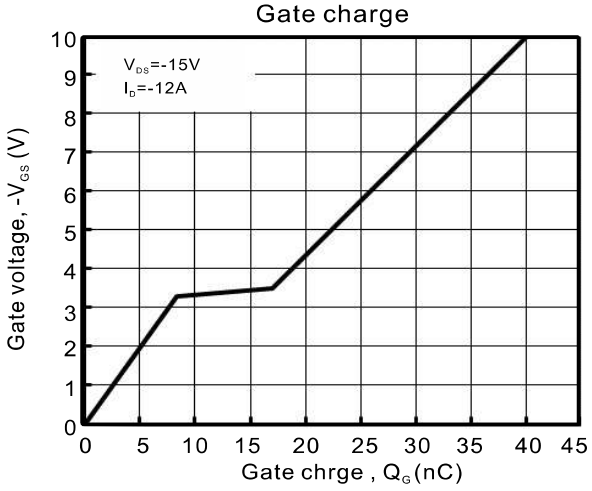
On-resistance vs. Junction temperature



Capacitance characteristics



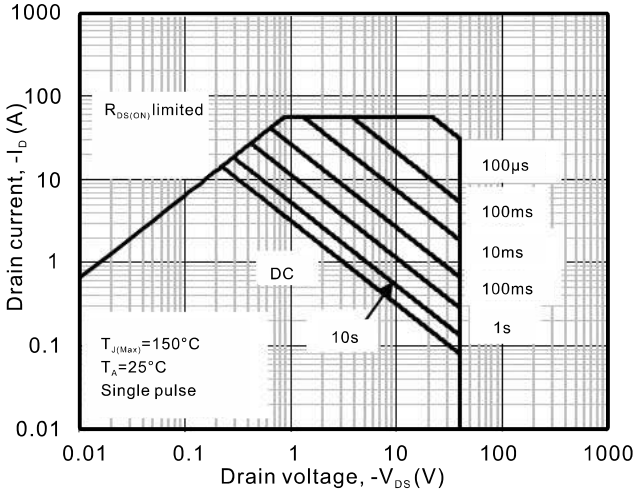
Gate charge



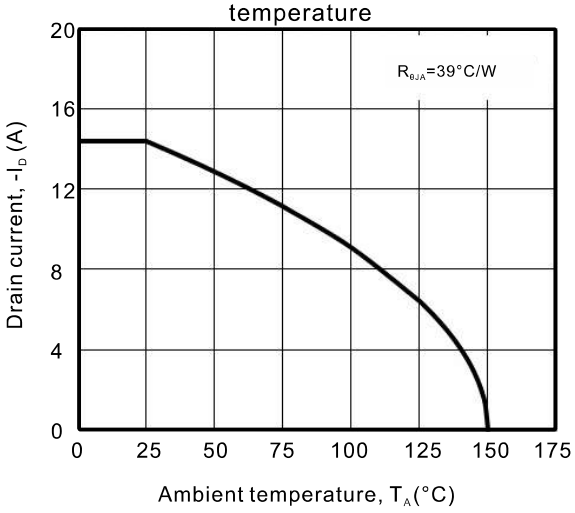
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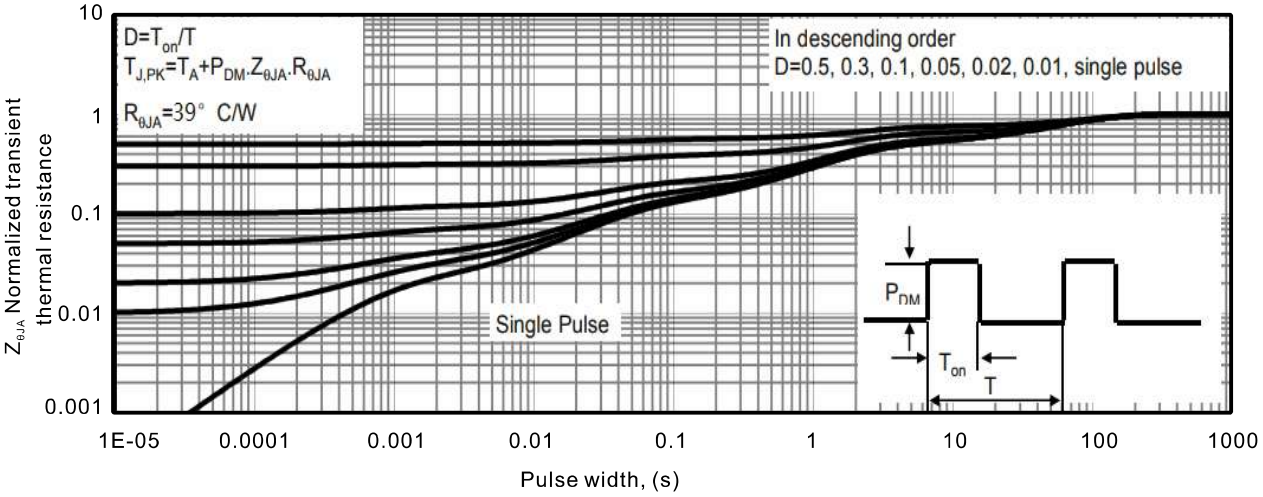
Rating and characteristic curves

Safe operation area



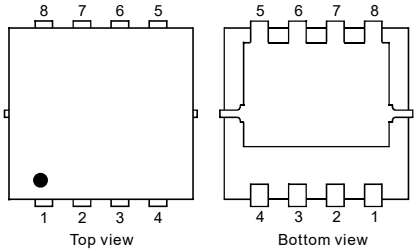
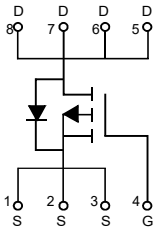
Maximum continuous drain current vs. Ambient temperature





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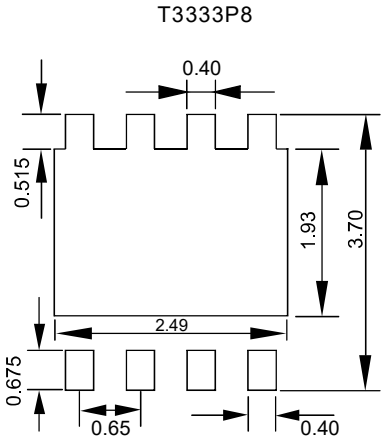
Pinning information

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

Marking

Type number	Marking code
FMOSAB35P03-H	35P03

Suggested solder pad layout



Note:

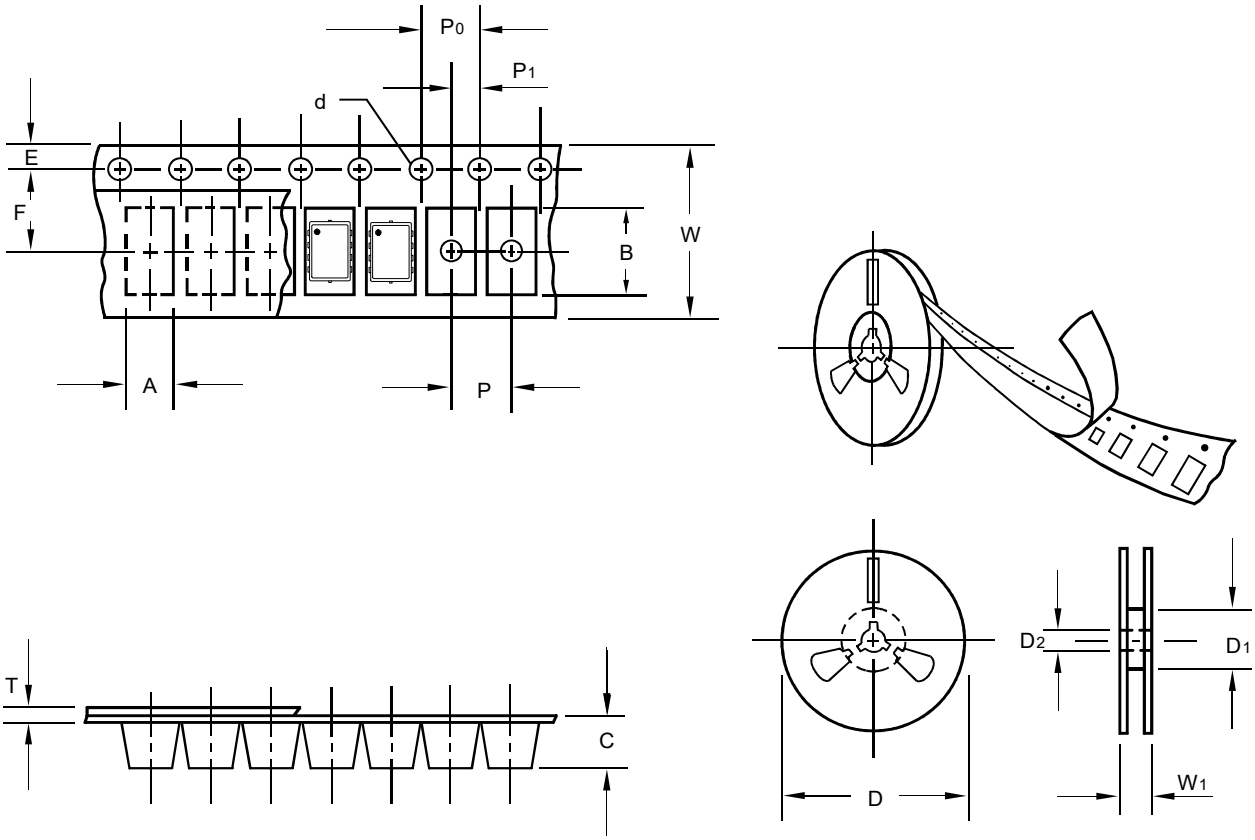
1.Controlling dimension:in millimeters.

2.General tolerance:±0.05mm.

3.The pad layout is for reference purposes only.

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Packing information



unit:mm

Item	Symbol	Tolerance	T3333P8
Carrier width	A	0.5	3.55
Carrier length	B	0.5	3.55
Carrier depth	C	0.5	1.10
Sprocket hole	d	0.3	1.50
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D_1	min	99.00
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	0.5	0.23
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.

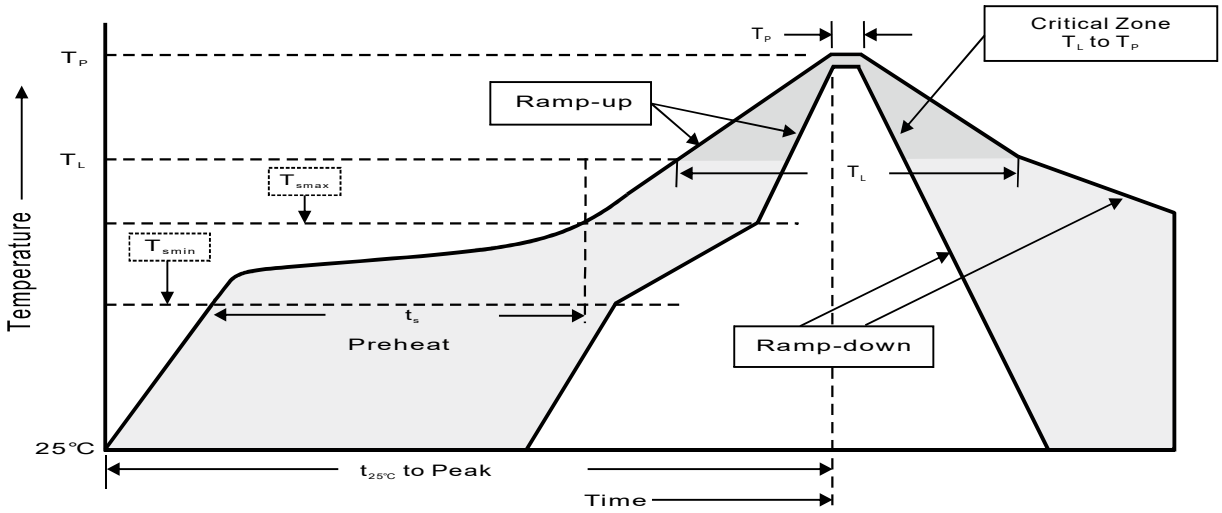
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Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	REEL DIA, (m/m)
T3333P8	13"	5,000	8.0	330

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