

FMOSAV16DN03

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FMOSAV16DN03

16A 30V Dual N-Channel Enhancement Mode Power MOSFET

Features

- $V_{DS}=30V$, $I_D=16A$.
- $R_{DS(ON)} \leq 18m\Omega$, @ $V_{GS}=10V$, $I_D=10A$.
- $R_{DS(ON)} \leq 24m\Omega$, @ $V_{GS}=4.5V$, $I_D=8A$.
- Fast switching speed.
- Reliable and rugged.
- 100% UIS tested.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex.FMOSAV16DN03-H.

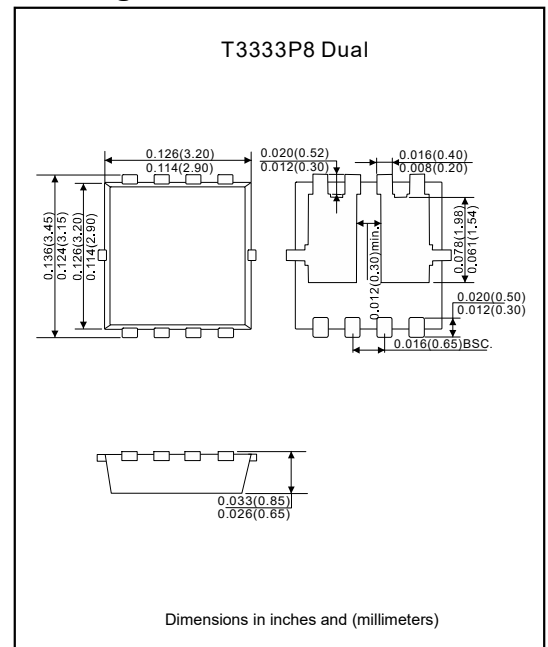
Applications

- Portable equipment.
- Battery powered system.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, T3333P8 Dual.
- Mounting Position : Any.

Package outline



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

Parameter	Symbol	Ratings	Unit
Drain-source voltage	V_{DS}	30	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain Current	I_D	16	A
		10	
Pulsed drain current tested (Note 1)	I_{DM}	28	A
Avalanche current, single pulse (Note 2)	I_{AS}	12	A
Avalanche energy, single pulse (Note 2)	E_{AS}	7.2	mJ
Power dissipation	P_D	7.8	W
		3.1	
Thermal resistance junction to ambient (Note 3) (Steady state)	$R_{\theta JA}$	100	$^\circ C/W$
Thermal resistance Junction to case (Steady state)	$R_{\theta JC}$	16	$^\circ C/W$
Operating Junction temperature	T_J	+150	$^\circ C$
Storage temperature range	T_{STG}	-55 to +150	$^\circ C$

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

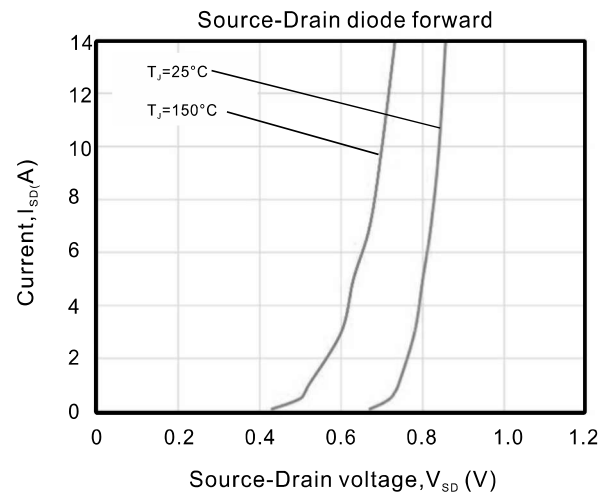
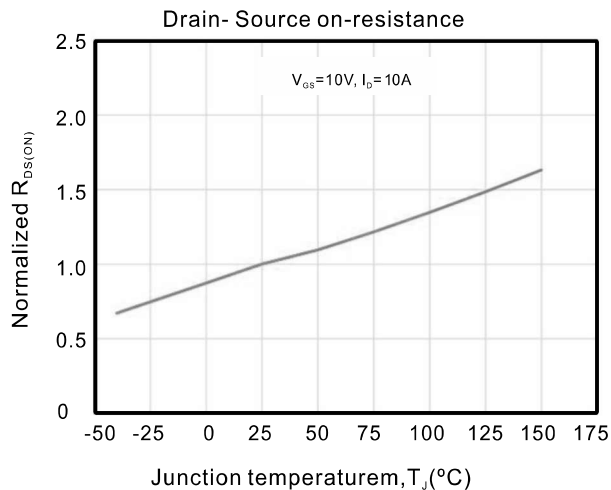
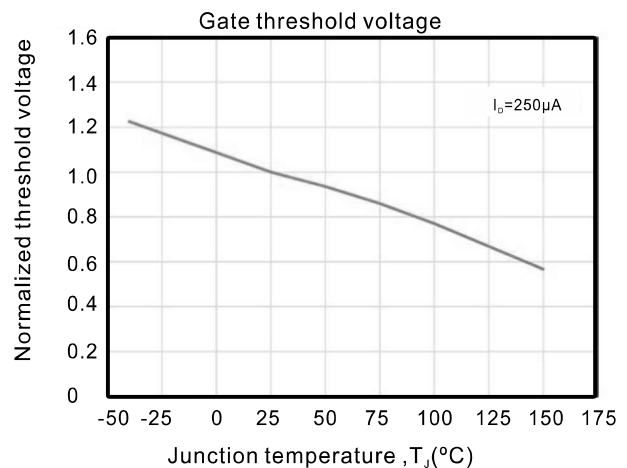
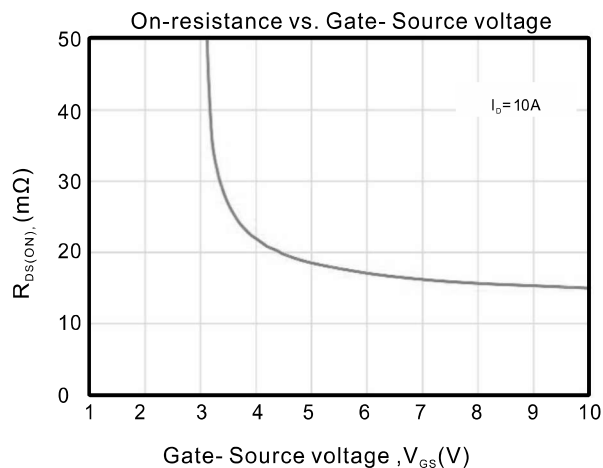
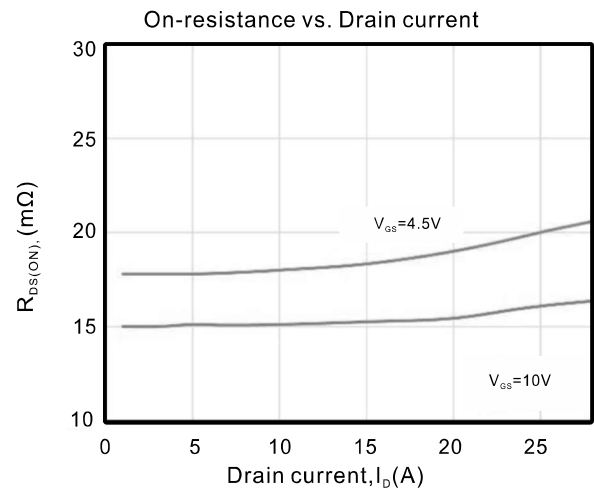
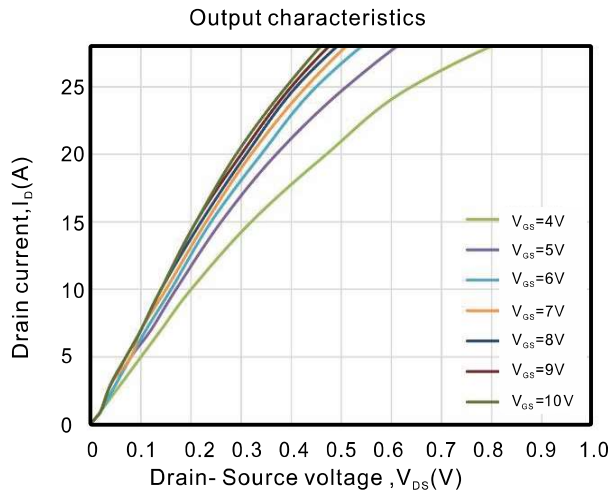
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static parameters						
Drain-source breakdown voltage	$I_D=250\mu A, V_{GS}=0V$	BV_{DSS}	30			V
Drain-source leakage current	$V_{DS}=24V, V_{GS}=0V$	I_{DSS}			1	μA
Gate-source leakage current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}			± 100	nA
On characteristics						
Gate threshold voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	$V_{GS(TH)}$	1	1.5	2	V
Static drain-source on-resistance (Note 4)	$V_{GS}=10V, I_D=10A$	$R_{DS(ON)}$		15	18	m Ω
	$V_{GS}=4.5V, I_D=8A$			18	24	
Forward trans conductance	$V_{DS}=5V, I_D=5A$	g_{FS}		8		S
Dynamic parameters (Note 5)						
Gate resistance	$V_{GS}=0V, V_{DS}=0V, f=1.0MHz$	R_G		3		Ω
Input capacitance	$V_{GS}=0V, V_{DS}=15V, f=1.0MHz$	C_{iss}		500		pF
Out capacitance		C_{oss}		62		
Reverse transfer capacitance		C_{rss}		53		
Switching parameters						
Total gate charge	$V_{GS}=4.5V, V_{DS}=15V, I_D=10A$	Q_g		8.5		nC
	$V_{GS}=10V, V_{DS}=15V, I_D=10A$			15.2		
Gate to source charge		Q_{gs}		1.3		
Gate to drain charge		Q_{gd}		4.7		
Turn-on delay time	$V_{DS}=15V, V_{GS}=10V, I_D=1A, R_G=6\Omega$	$t_{d(on)}$		3.1		ns
Rise time		t_r		21.5		
Turn-off delay time		$t_{d(off)}$		25		
Fall time		t_f		18.1		
Source-drain diode ratings and characteristics						
Drain-source diode forward voltage (Note4)	$I_S=5A, V_{GS}=0V$	V_{SD}		0.7	1.1	V
Body diode reverse recovery time	$I_F=1A, V_R=15V, dI_F/dt=100A/\mu s$	t_{rr}		9		ns
Body diode reverse recovery charge		Q_{rr}		3		nC

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

2. E_{AS} condition: starting $T_J=25^{\circ}\text{C}$, $V_{DS}=15\text{V}$, $V_G=10\text{V}$, $R_G=25\Omega$, $L=0.5\text{mH}$, $I_{AS}=9\text{A}$.3. $R_{\theta JA}$ is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB.4. Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 0.5\%$

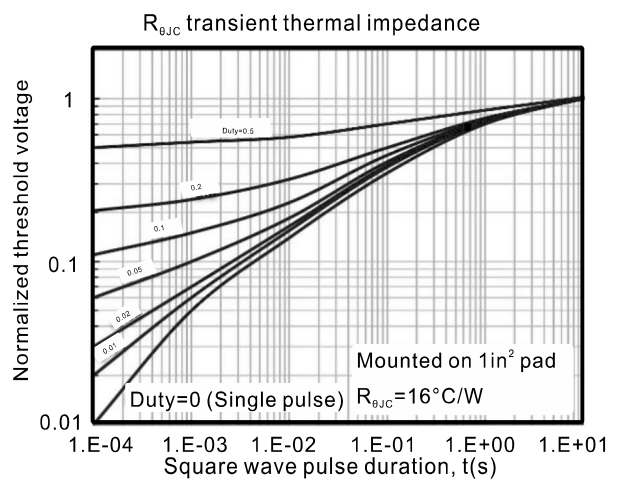
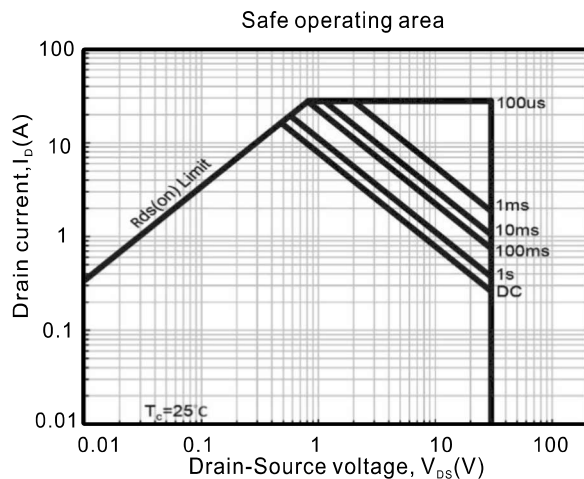
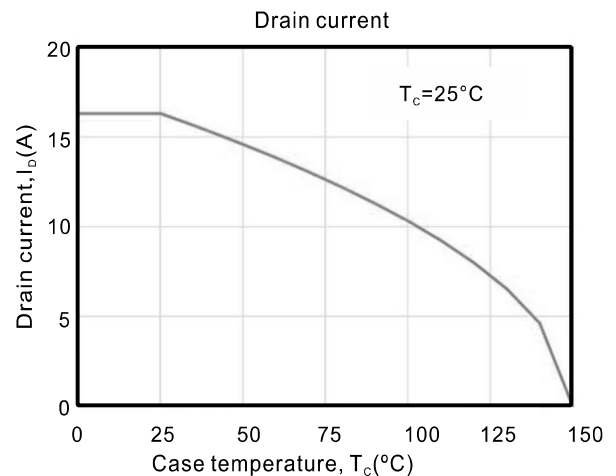
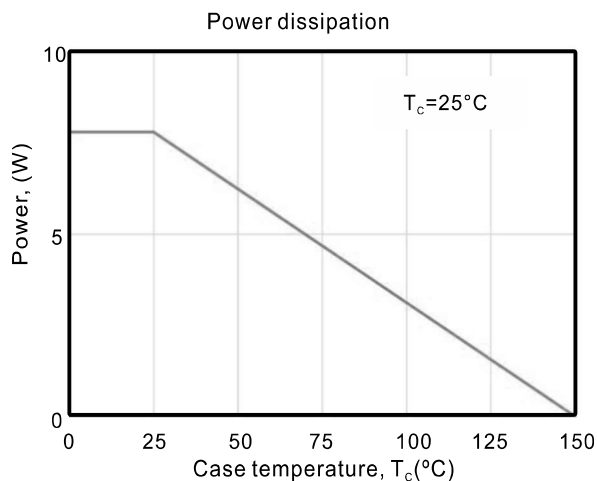
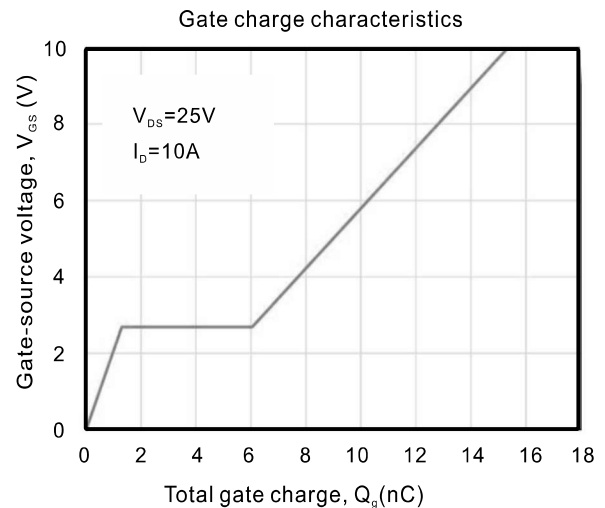
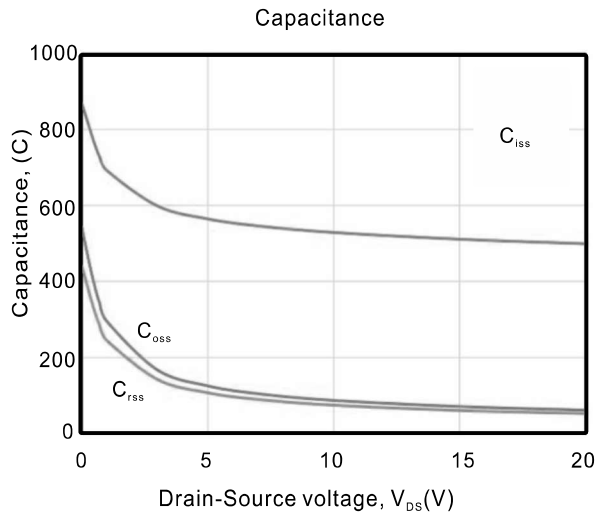
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Rating and characteristic curves



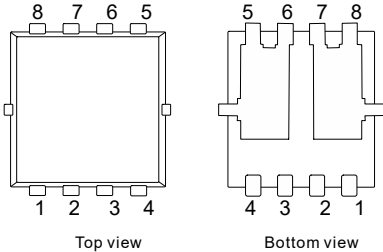
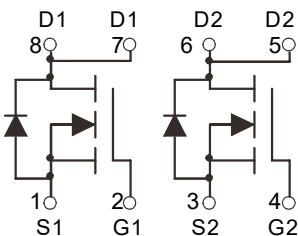
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Rating and characteristic curves

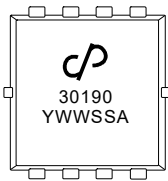


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Pinning information

Pin		Simplified outline	Symbol
Pin 1	Source 1		
Pin 2	Gate 1		
Pin 3	Source 2		
Pin 4	Gate 2		
Pin 5,6	Drain2		
Pin 7,8	Drain1		

Marking

Type number	Marking Code
FMOSAV16DN03	

* YWW: Wafer lot code
Y:Year
W:Week
SS:Sequence
A:Assy.code

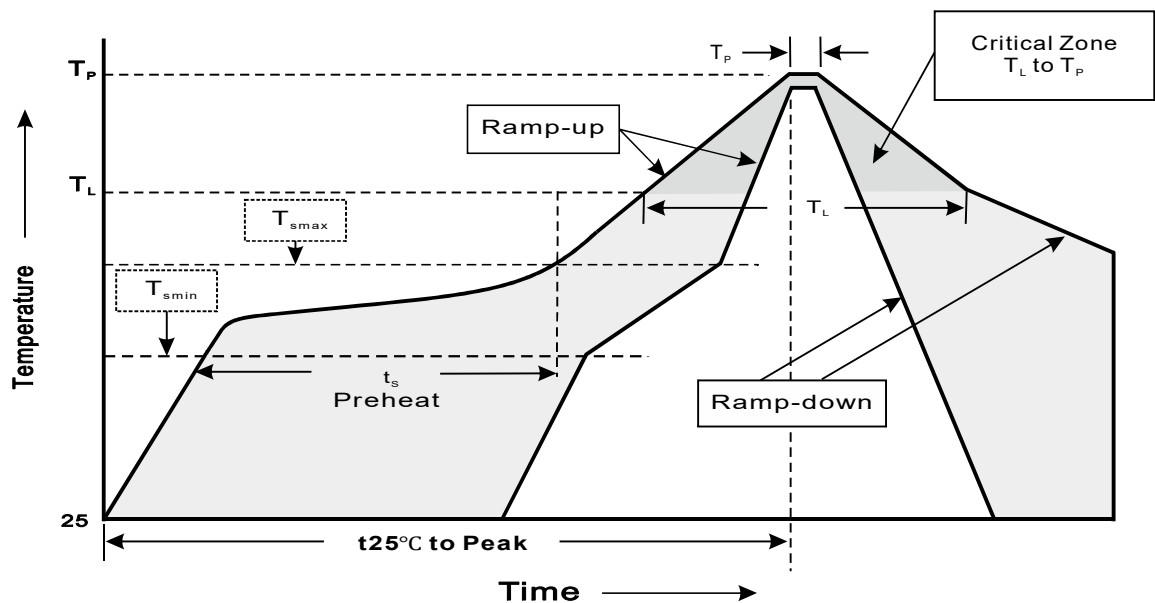
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Reel packing

PACKAGE	Outline	REEL SIZE	Reel (pcs)
T3333P8 Dual	Taping	13 inch	5000

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