

## N-Channel Enhancement Mode Field Effect Transistor

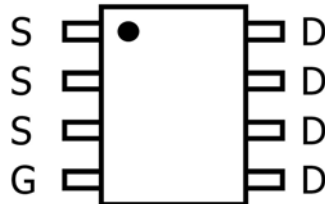
### ● Features

- N-channel, normal level
- Very low on-resistance  $R_{DS(on)}$
- 150 °C operating temperature
- Pb-free lead plating; RoHS compliant
- Qualified according to JEDEC for target application
- Ideal for high-frequency switching and synchronous rectification

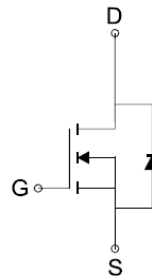
### ● Product Summary

$V_{DS}$	$V_{GS}$	Test Conditions	$R_{DS(on)}$
60V	$\pm 20V$	5A@ $V_{GS}=10V$	35mR
		4.5A@ $V_{GS}=4V5$	40mR

### ● Pin Configurations(TO252)



Top View



N-Channel MOSFET

### ● Absolute Maximum Ratings $T_A=25^{\circ}C$ unless otherwise noted

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DSS}$	60	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous	5 <sup>(1A)</sup> 20 <sup>(1B)</sup>	A
	Pulse	$I_{DM}$	
Total Power Dissipation <sup>(note1)</sup>	$P_D$	0.8 <sup>(1A)</sup> 25 <sup>(1B)</sup>	W
		Operating and Storage Junction Temperature Range	

#### Notes

- 1A、Surface Mounted on 1x1FR4 Board.
- 1B、Pulse width limited maximum junction temperature Pulse test:  $PW \leq 300 \mu s$  duty cycle  $\leq 2\%$
- 2、The value of  $P_D$  is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^{\circ}C$ . The value in any given application depends on the user's specific board design. The current rating is based on the DC thermal resistance rating and PCB layout: A. Minimum footprint; B. With additional heat sink.
- 3、Repetitive rating, pulse width limited by junction temperature

# FS2246

## ● Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter <sup>(note2)</sup>	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain–Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	60	--	--	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 60\text{ V}, V_{GS} = 0\text{ V}$	--	--	1	$\mu\text{A}$
Gate–Body Leakage	$I_{GSS}$	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$	--	--	$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	1	1.4	3	V
Static Drain–Source On–Resistance	$R_{DS(ON)}$	$V_{GS} = 10\text{ V}, I_D = 5.0\text{ A}$	--	35	41	mR
		$V_{GS} = 4.5\text{ V}, I_D = 4.5\text{ A}$	--	40	55	
Input Capacitance	$C_{ISS}$	$V_{DS} = 10\text{ V}, V_{GS} = 0\text{ V},$ $F = 1\text{ MHz}$	--	1180	--	$\mu\text{F}$
Output Capacitance	$C_{OSS}$		--	170	--	
Reverse Transfer Capacitance	$C_{RSS}$		--	100	--	
Turn–On Delay Time	$T_{D(ON)}$	$V_{GS}=10\text{V}, V_{DS}=30\text{V},$ $R_L=5.4\text{R},$ $R_{GEN}=3\text{R}, I_D=5.5\text{A}$	--	--	25	nS
Turn–On Rise Time	$T_R$		--	--	70	
Turn–Off Delay Time	$T_{D(OFF)}$		--	--	300	
Turn–Off Fall Time	$T_F$		--	--	150	
Diode Forward Voltage	$V_{SD}$		$V_{GS} = 0\text{ V}, I_S = 2\text{ A}$	0.5	0.77	

1. The value of PD is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^\circ\text{C}$ . The value in any given application depends on the user's specific board design. The current rating is based on the DC thermal resistance rating and PCB layout: A. Minimum footprint; B. With additional heat sink.
2. Repetitive rating, pulse width limited by junction temperature

● **TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

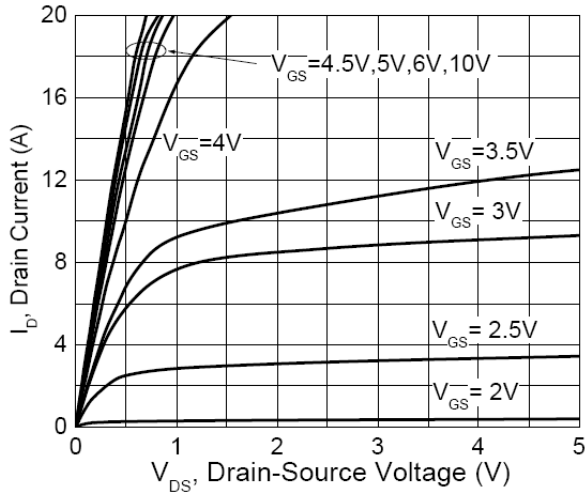


Figure 1. Output Characteristics

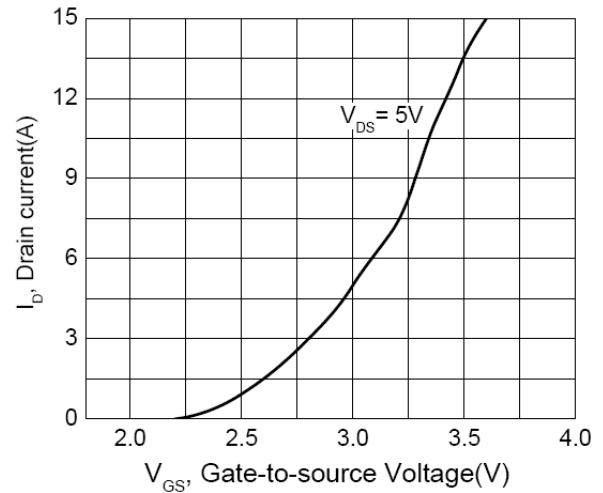


Figure 2. Transfer Characteristics

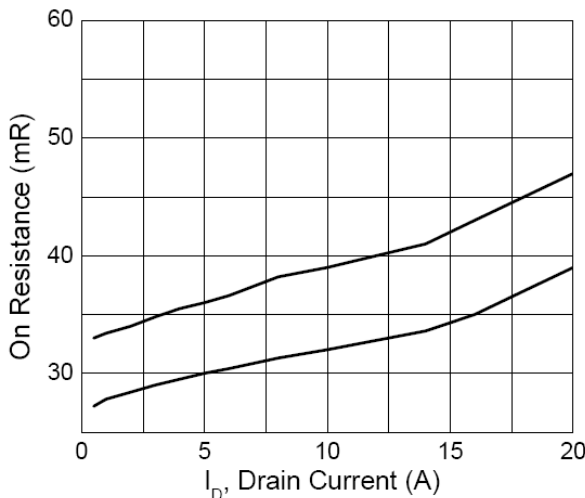


Figure 3. On-Resistance

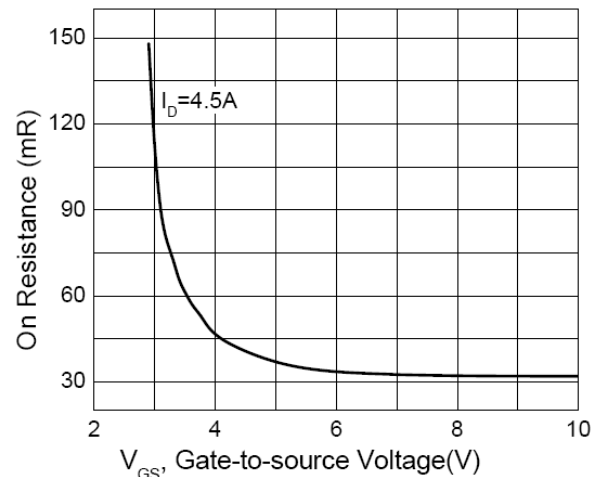


Figure 4. On-Resistance vs. Threshold Voltage

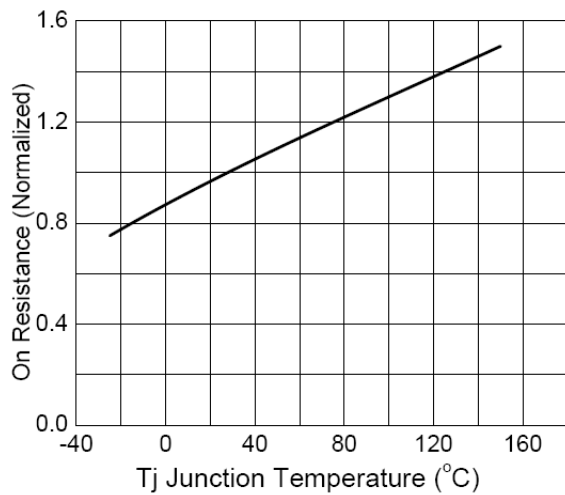


Figure 5. On-Resistance vs. Temperature

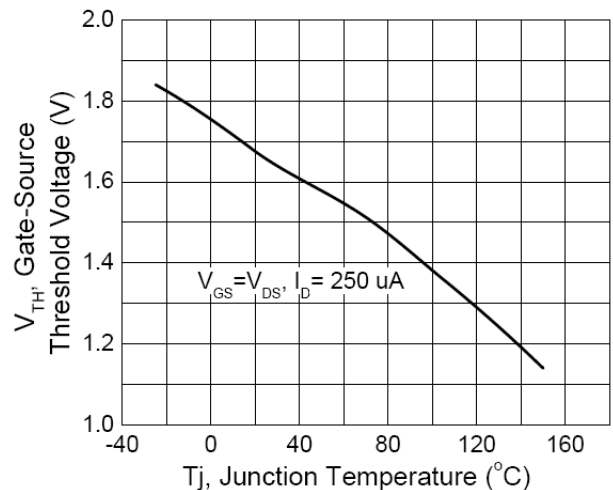
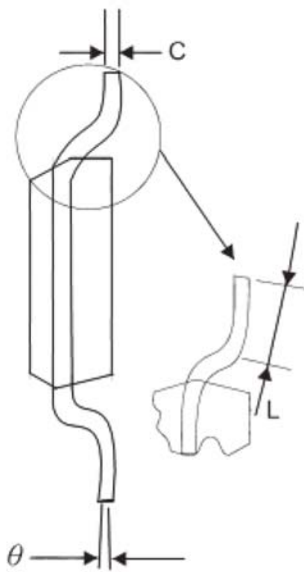
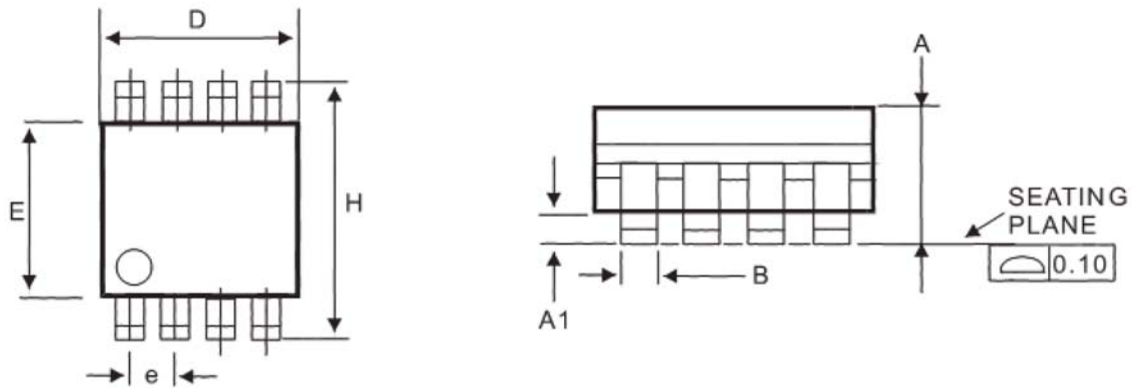


Figure 6. Gate Threshold Vs. Temperature

- Package Information

## SOP-8 Package Outline



DIM	MILLIMETERS (mm)	
	MIN	MAX
A	1.35	1.75
A1	0.10	0.25
B	0.35	0.49
C	0.18	0.25
D	4.80	5.00
E	3.80	4.00
e	1.27 BSC	
H	5.80	6.20
L	0.40	1.25
$\theta$	0°	7°

Note: 1. Refer to JEDEC MS-012AA.

2. Dimension "D" does not include mold flash, protrusions or gate burrs. Mold flash, protrusions or gate burrs shall not exceed 0.15 mm per side.