

## N-Channel Enhancement Mode MOSFET

- **Features**

VDS	VGS	RDSon TYP	ID
30V	±20V	20mR@10V	8.5A
		30mR@4V5	

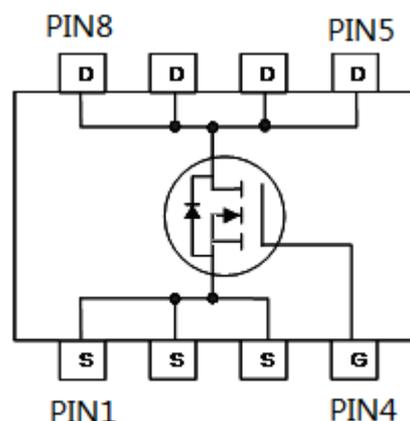
- **Applications**

- Load Switch
- Portable Devices
- DCDC conversion

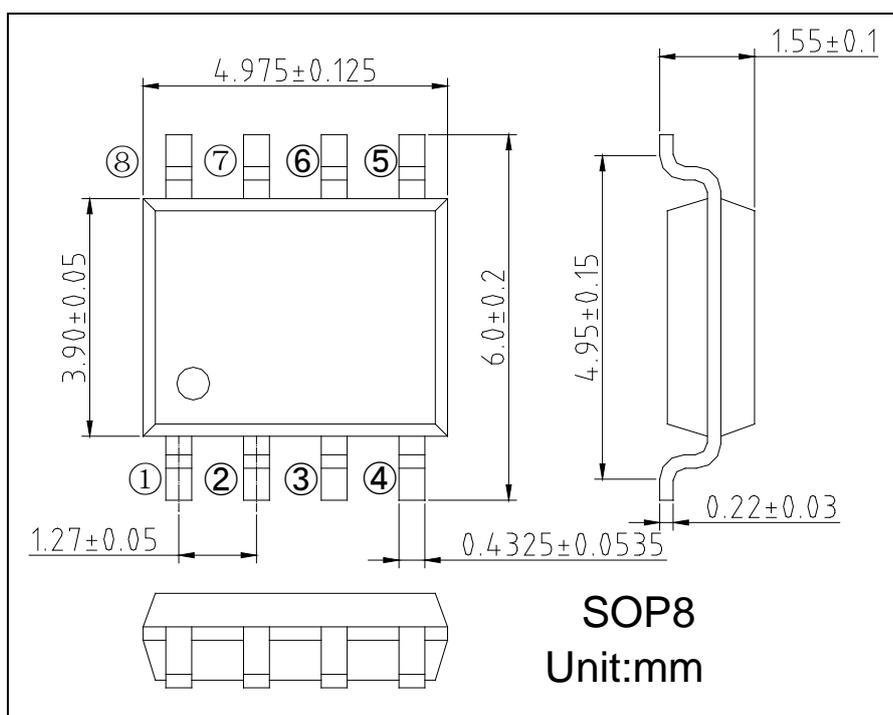
- **General Description**

This device uses advanced trench technology to provide excellent RDS(ON) and low gate charge. This device is suitable for use as a load switch or in PWM applications.

- **Pin configuration**



- **Package Information**





● **Absolute Maximum Ratings** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		$V_{DSS}$	30	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$	8.5	A
	Pulse	$I_{DM}$	50	
Total Power Dissipation <sup>(note1)</sup>	$T_A = 25^\circ\text{C}$	$P_D$	3	W
	$T_A = 75^\circ\text{C}$		2.1	
Operating and Storage Junction Temperature Range		$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

Note1: Surface Mounted on  $1\text{in}^2$  pad area.

● **Electrical Characteristics** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

Parameter <sup>(note2)</sup>	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>STATIC CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$	30	--	--	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$	--	--	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	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1	1.5	3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 10\text{ V}, I_D = 5.5\text{ A}$	--	20	28	mR
		$V_{GS} = 4.5\text{ V}, I_D = 4.5\text{ A}$	--	30	43	
<b>DYNAMIC CHARACTERISTICS</b>						
Total Gate Charge	$Q_G$	$V_{DS}=15\text{V}, I_D=8.5\text{A},$ $V_{GS}=10\text{V}$		7.58		nC
Gate-Source Charge	$Q_{GS}$			1.26		
Gate-Drain Charge	$Q_{GD}$			1.66		
Input Capacitance	$C_{ISS}$	$V_{DS} = 15\text{ V}, V_{GS} = 0\text{ V},$ $F = 1\text{MHz}$	--	390.07	--	pF
Output Capacitance	$C_{OSS}$		--	86.16	--	
Reverse Transfer Capacitance	$C_{RSS}$		--	59.31	--	
Turn-On Delay Time	$T_{D(ON)}$	$V_{GEN}=10\text{V}, V_{DD}=15\text{V},$ $R_L=15\Omega,$ $R_{GEN}=3\Omega, I_D=1\text{A}$	--	--	10.12	nS
Turn-On Rise Time	$T_R$		--	--	3.12	
Turn-Off Delay Time	$T_{D(OFF)}$		--	--	22.16	
Turn-Off Fall Time	$T_F$		--	--	2.96	
<b>DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS</b>						
Max. Diode Forward Current	$I_S$		--	--	4.3	A
Diode Forward Voltage	$V_{SD}$	$V_{GS} = 0\text{ V}, I_S = 1\text{ A}$	--	--	1.0	V

Note2: Short duration test pulse used to minimize self-heating effect.

## Typical Performance Characteristics

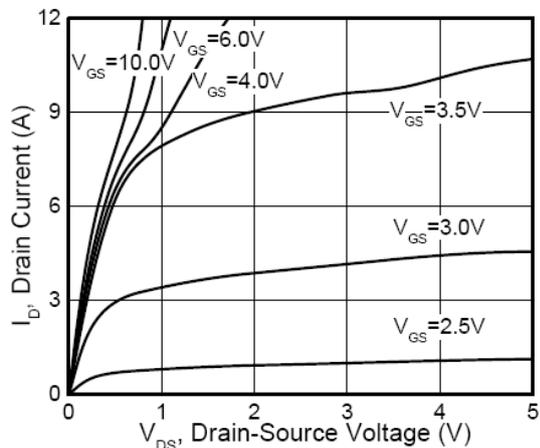


Figure 1. Output Characteristics

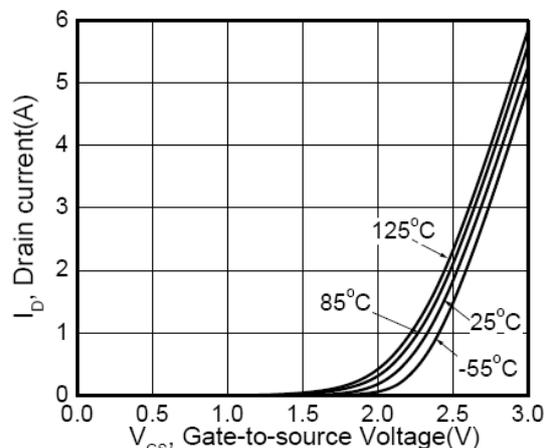


Figure 2. Transfer Characteristics

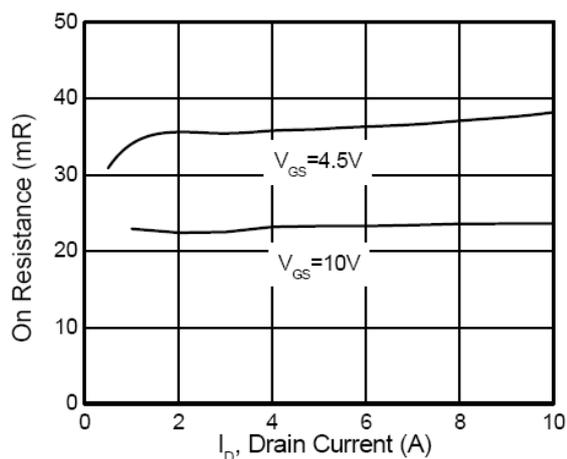


Figure 3. On Resistance vs. Drain Current

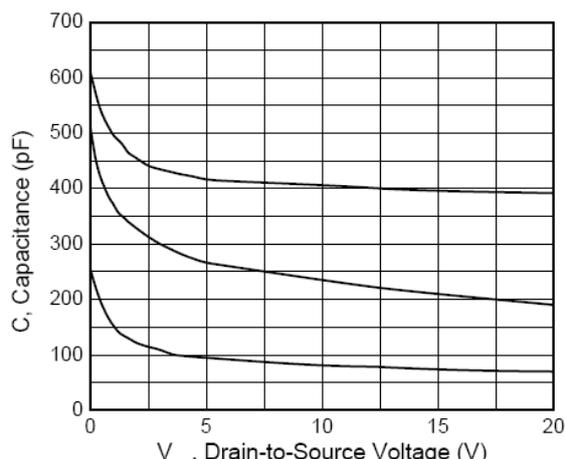


Figure 4. Capacitance

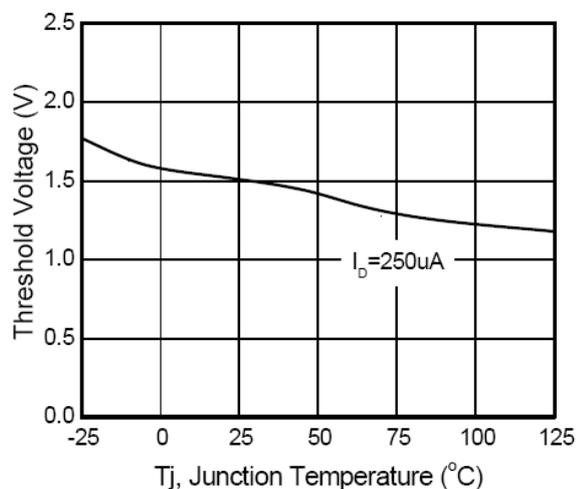


Figure 5. Gate Threshold vs. Temperature

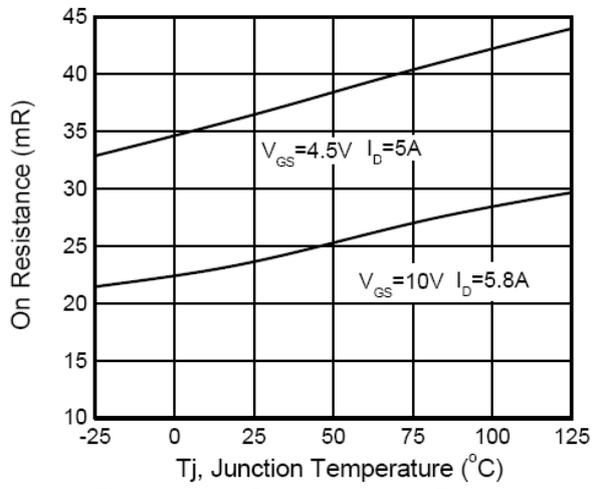
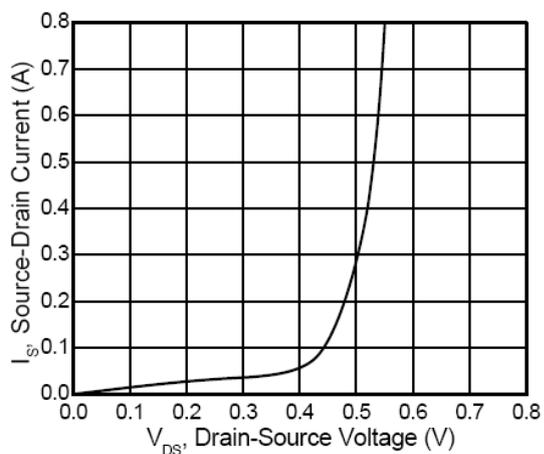
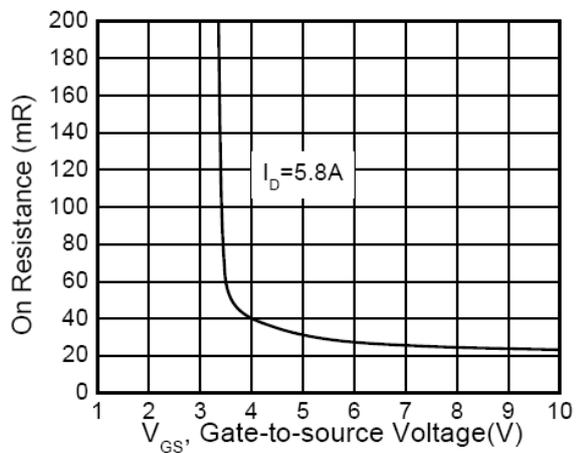


Figure 6. On Resistance vs. Temperature



**Figure 7. Diode Forward Characteristics**



**Figure 8. Threshold Characteristics**



---

## DISCLAIMER

AFSEMI RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. AFSEMI DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENCE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

THE GRAPHS PROVIDED IN THIS DOCUMENT ARE STATISTICAL SUMMARIES BASED ON A LIMITED NUMBER OF SAMPLES AND ARE PROVIDED FOR INFORMATIONAL PURPOSE ONLY. THE PERFORMANCE CHARACTERISTICS LISTED IN THEM ARE NOT TESTED OR GUARANTEED. IN SOME GRAPHS, THE DATA PRESENTED MAY BE OUTSIDE THE SPECIFIED OPERATING RANGE (E.G., OUTSIDE SPECIFIED POWER SUPPLY RANGE ) AND THEREFORE OUTSIDE THE WARRANTED RANGE.