



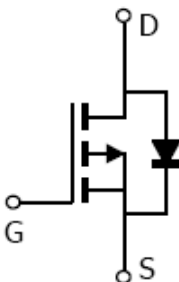
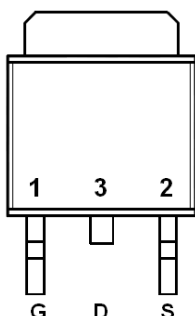
### General Description

AFP9565S, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge. These devices are particularly suited for low voltage power management, and low in-line power loss are needed in commercial industrial surface mount applications.

### Features

- -40V/ -8.6A,  $R_{DS(ON)} = 58m\Omega @ V_{GS} = -10V$
- -40V/ -6.2A,  $R_{DS(ON)} = 86m\Omega @ V_{GS} = -4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- TO-252-2L package design

### Pin Description ( TO-252-2L )



### Application

- Backlight Inverter for LCD Display
- Full Bridge DC/DC Converter
- LED Display
- Load Switch
- CCFL Inverter

### Pin Define

Pin	Symbol	Description
1	G	Gate
2	S	Source
3	D	Drain

### Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFP9565ST252RG	9565S	TO-252-2L	Tape & Reel	2500 EA

- ※ A Lot code
- ※ B Date code
- ※ AFP9565ST252RG : 13" Tape & Reel ; Pb- Free ; Halogen -Free



### Absolute Maximum Ratings

( $T_A=25^\circ\text{C}$  Unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	-40	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current ( $T_J=150^\circ\text{C}$ )	$I_D$	$T_A=25^\circ\text{C}$	-17
		$T_A=70^\circ\text{C}$	-11
Pulsed Drain Current	$I_{DM}$	-30	A
Continuous Source-Drain Diode Current	$I_S$	-8	A
Single Pulse Avalanche Current	$I_{AS}$	-30	A
Avalanche Energy	$E_{AS}$	35	mJ
Power Dissipation	$P_D$	$T_A=25^\circ\text{C}$	40
		$T_A=70^\circ\text{C}$	15
Operating Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55/150	$^\circ\text{C}$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$

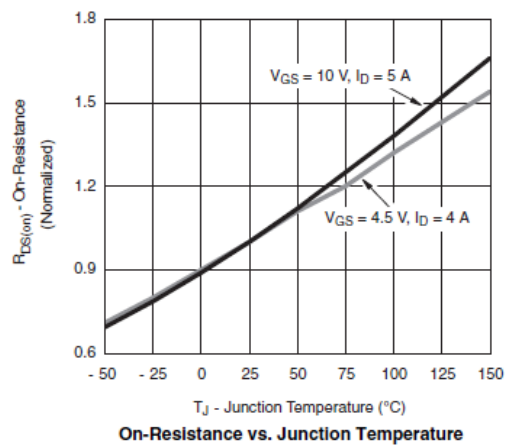
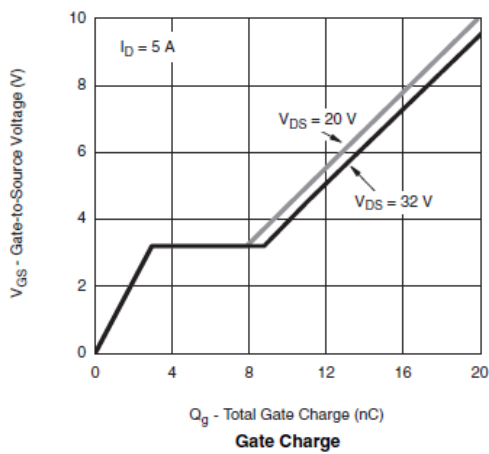
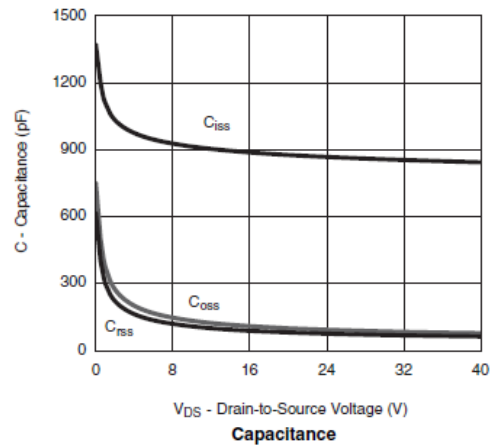
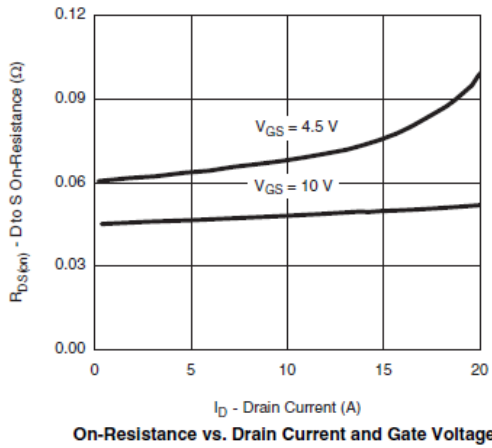
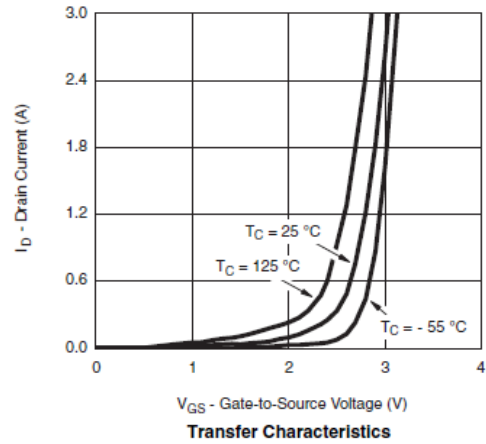
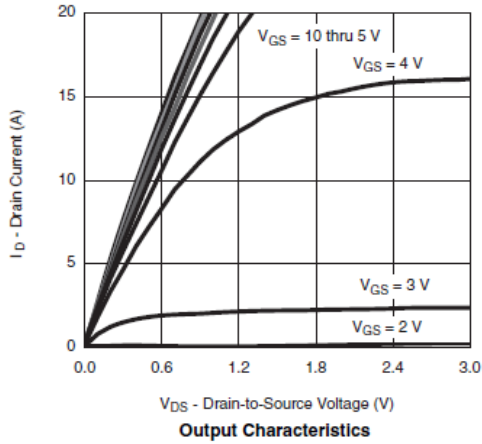
### Electrical Characteristics

( $T_A=25^\circ\text{C}$  Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D = -250\mu\text{A}$	-40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D = -250\mu\text{A}$	-1.0		-2.0	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS} = \pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -32V, V_{GS}=0V$			-1	uA
		$V_{DS} = -32V, V_{GS}=0V$ $T_J=85^\circ\text{C}$			-20	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq -5V, V_{GS} = -10V$	-17			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -8.6A$		48	58	m $\Omega$
		$V_{GS} = -4.5V, I_D = -6.2A$		70	86	
Forward Transconductance	$g_{FS}$	$V_{DS} = -15V, I_D = -5A$		20		S
Diode Forward Voltage	$V_{SD}$	$I_S = -2A, V_{GS}=0V$		-0.8	-1.3	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=-20V, V_{GS}=-4.5V$ $I_D = -5.0A$		10	16	nC
Gate-Source Charge	$Q_{gs}$			3		
Gate-Drain Charge	$Q_{gd}$			5		
Input Capacitance	$C_{iss}$	$V_{DS}=-20V, V_{GS}=0V$ $f=1\text{MHz}$		850		pF
Output Capacitance	$C_{oss}$			100		
Reverse Transfer Capacitance	$C_{rss}$			80		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-20V, R_L=5\Omega$ $I_D=-4.0A, V_{GEN}=-4.5V$ $R_G=1\Omega$		45	65	ns
	$t_r$			100	150	
Turn-Off Time	$t_{d(off)}$			25	40	
	$t_f$			12	20	

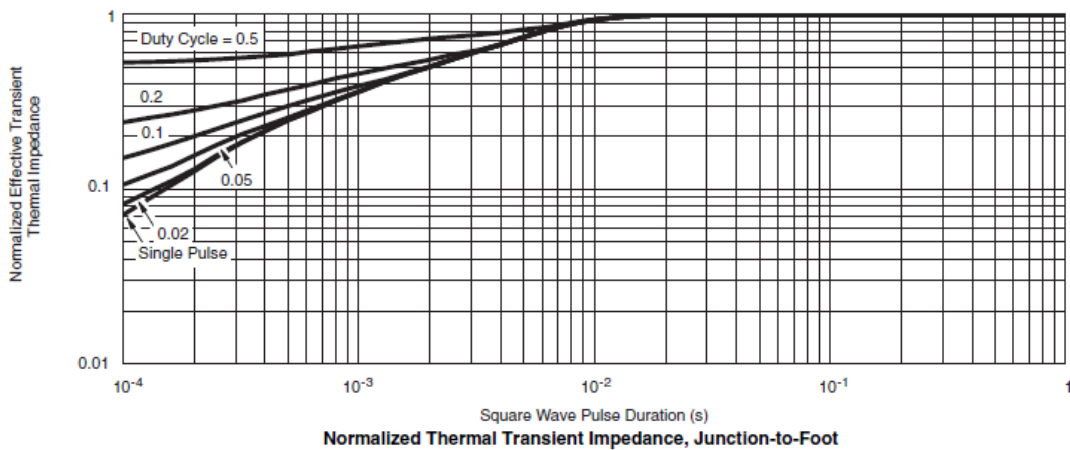
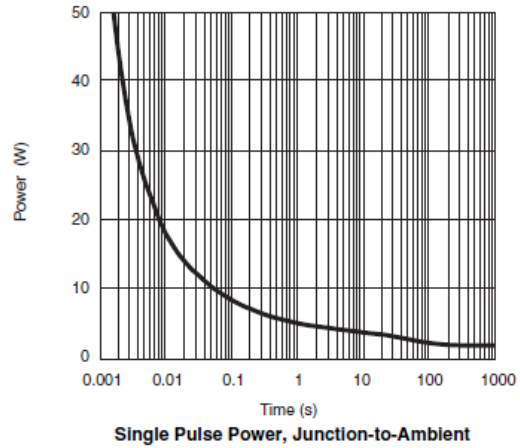
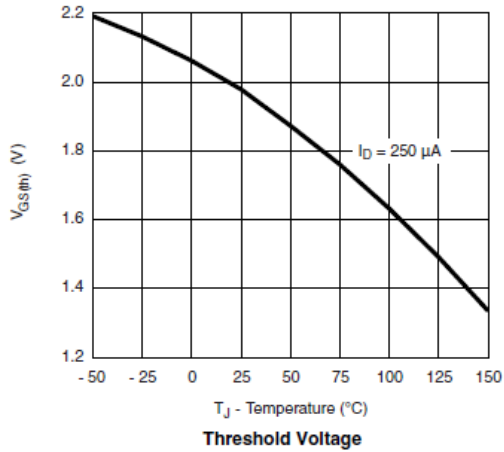
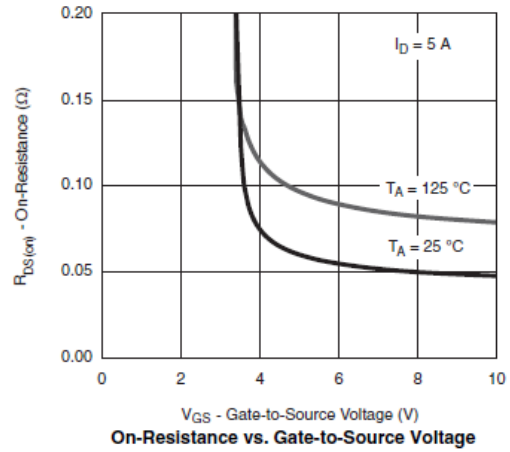
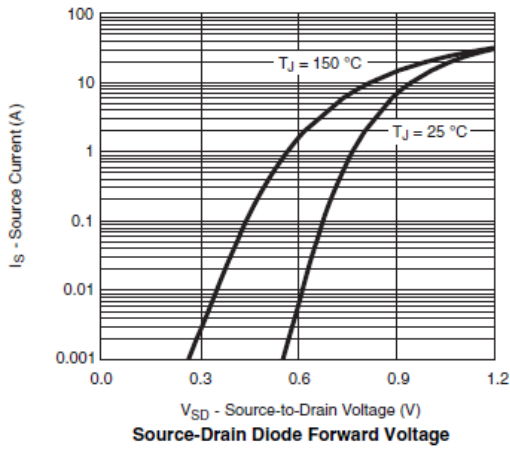


## Typical Characteristics





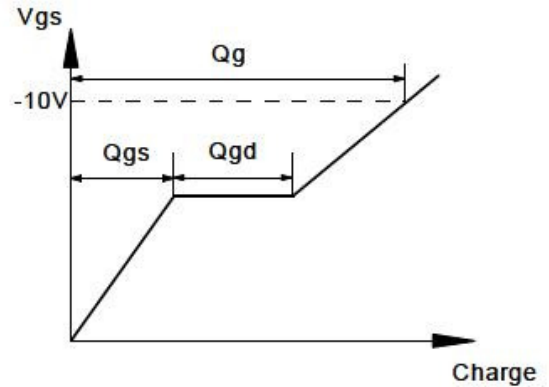
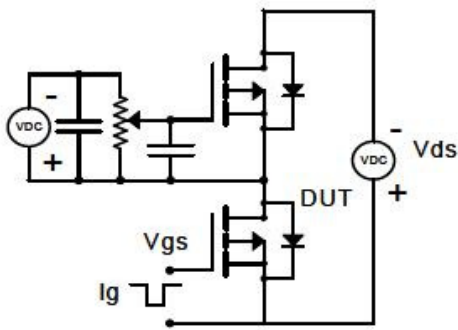
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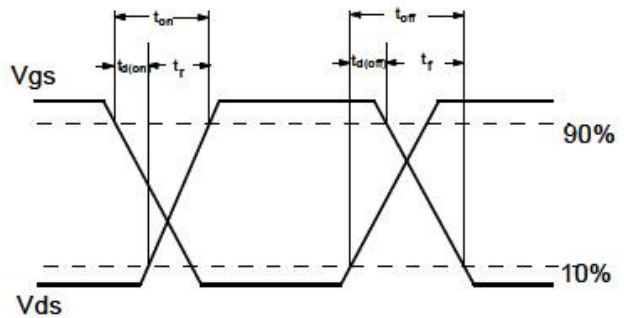
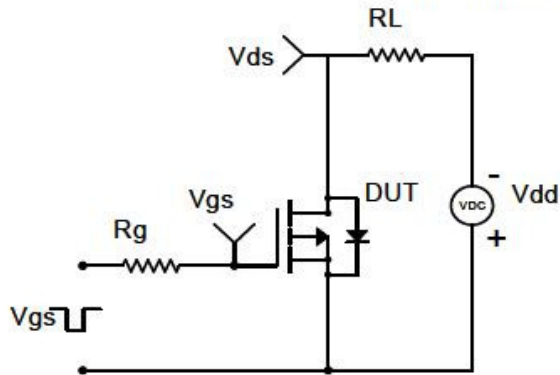


**Typical Characteristics**

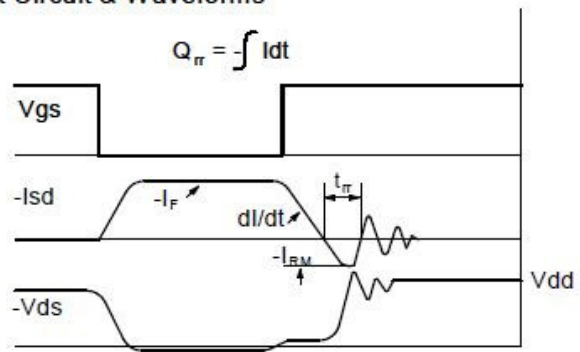
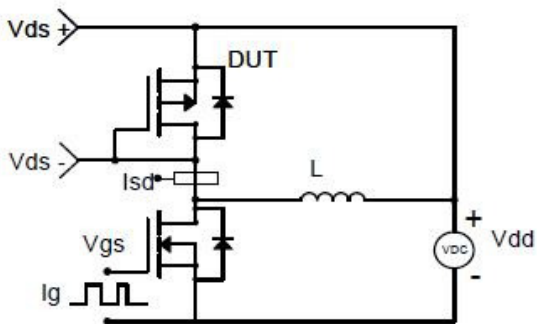
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

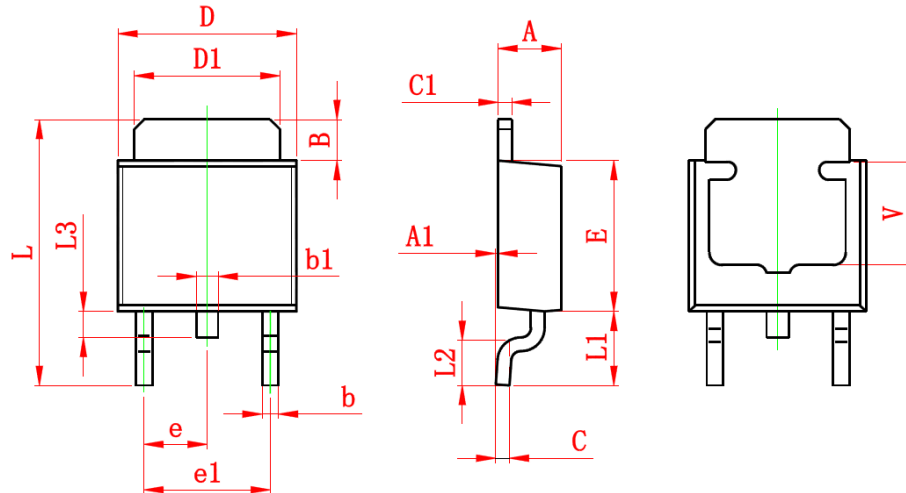


Diode Recovery Test Circuit & Waveforms





**Package Information ( TO-252-2L )**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
L	9.500	9.900	0.374	0.390
L1	2.550	2.900	0.100	0.114
L2	1.400	1.780	0.055	0.070
L3	0.600	0.900	0.024	0.035
V	3.800 REF.		0.150 REF.	

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