



## General Description

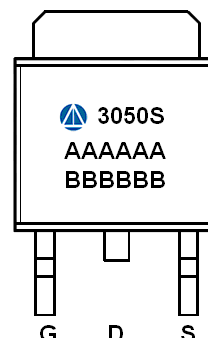
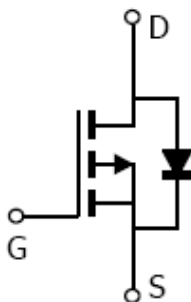
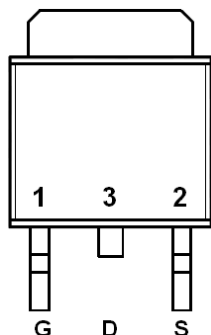
AFP3050S, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge.

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

- -30V/-9A,  $R_{DS(ON)}=60m\Omega@V_{GS}=-10V$
- -30V/-7A,  $R_{DS(ON)}=72m\Omega@V_{GS}=-4.5V$
- -30V/-5A,  $R_{DS(ON)}=108m\Omega@V_{GS}=-2.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- TO-252-2L package design

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



## Application

- LED Display
- Load Switch
- CCFL Inverter
- Power Management in Notebook Computer,

## Pin Define

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

## Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFP3050ST252RG	3050S	TO-252-2L	Tape & Reel	2500 EA

※ A Lot code

※ B Date code

※ AFP3050ST252RG : 13" Tape & Reel ; Pb- Free ; Halogen- Free



**Absolute Maximum Ratings**

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

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	$V_{DSS}$	-30	V
Gate –Source Voltage	$V_{GSS}$	$\pm 12$	V
Continuous Drain Current( $T_J=150^{\circ}\text{C}$ )	$I_D$	$T_A=25^{\circ}\text{C}$	-15.0
		$T_A=70^{\circ}\text{C}$	-9.0
Pulsed Drain Current	$I_{DM}$	-45	A
Continuous Source Current(Diode Conduction)	$I_S$	-9.0	A
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	$^{\circ}\text{C/W}$

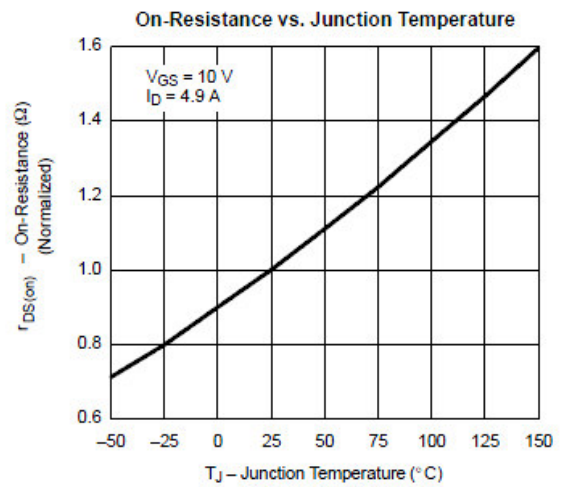
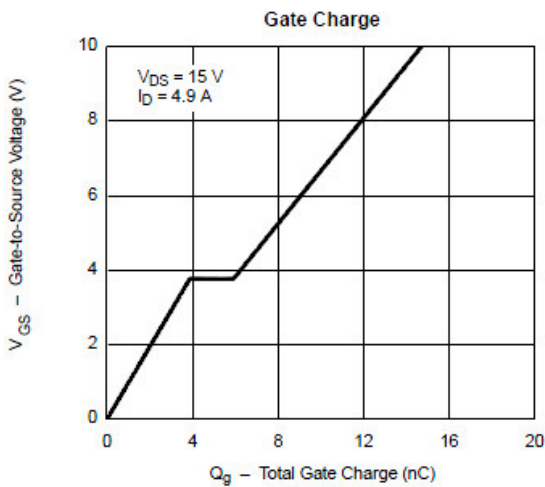
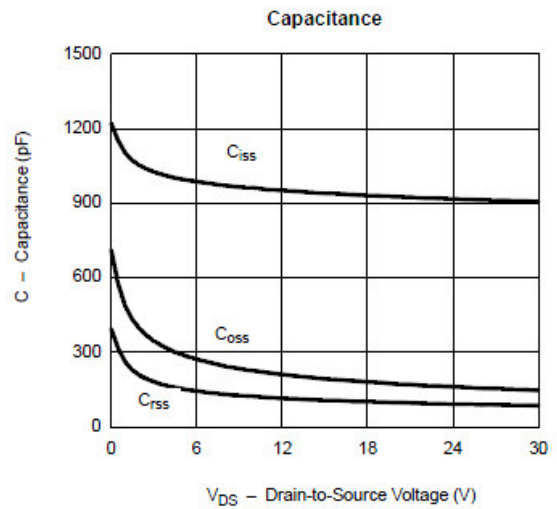
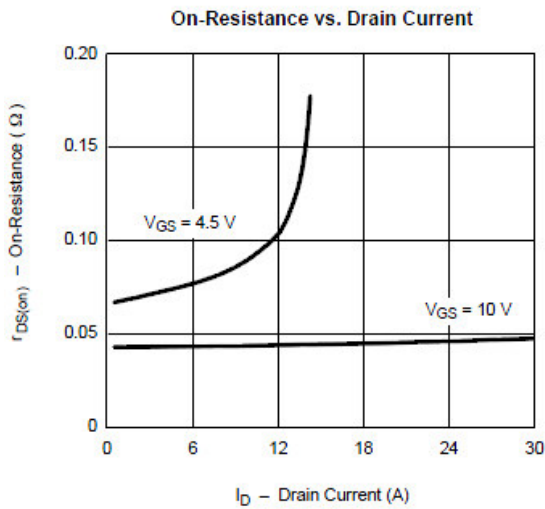
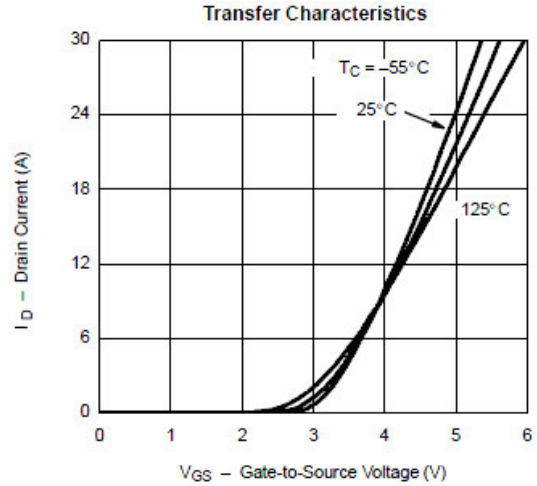
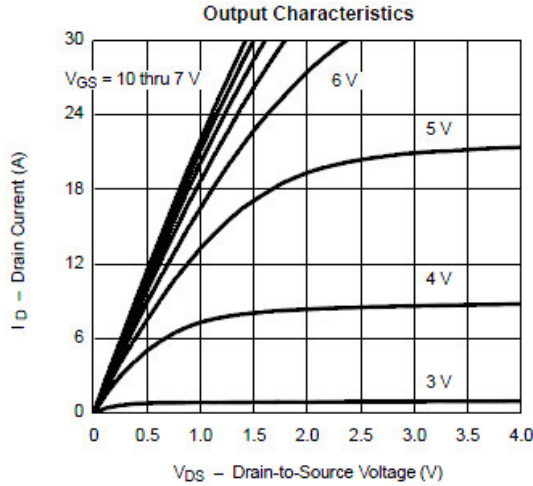
**Electrical Characteristics**

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

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.6		-1.1	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 12V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-24V, V_{GS}=0V$			-1	uA
		$V_{DS}=-24V, V_{GS}=0V$ $T_A=85^{\circ}\text{C}$			-30	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \leq -5V, V_{GS}=-4.5V$	-9			A
		$V_{DS} \leq -5V, V_{GS}=-2.5V$	-5			
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10.0V, I_D=-9.0A$		50	60	m $\Omega$
		$V_{GS}=-4.5V, I_D=-7.0A$		57	72	
		$V_{GS}=-2.5V, I_D=-5.0A$		70	108	
Forward Transconductance	$g_{FS}$	$V_{DS}=-5V, I_D=-2.8A$		6.5		S
Diode Forward Voltage	$V_{SD}$	$I_S=-1.0A, V_{GS}=0V$		-0.7	-1.3	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=-15V, V_{GS}=-10V$ $I_D \equiv -4.0A$		10	18	nC
Gate-Source Charge	$Q_{gs}$			1.6		
Gate-Drain Charge	$Q_{gd}$			3.0		
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V$ $f=1\text{MHz}$		450		pF
Output Capacitance	$C_{oss}$			95		
Reverse Transfer Capacitance	$C_{rss}$			55		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-15V, R_L=15\Omega$ $I_D \equiv -1.0A, V_{GEN}=-10V$ $R_G=6\Omega$		8	18	ns
	$t_r$			8	18	
Turn-Off Time	$t_{d(off)}$			25	50	
	$t_f$			25	35	

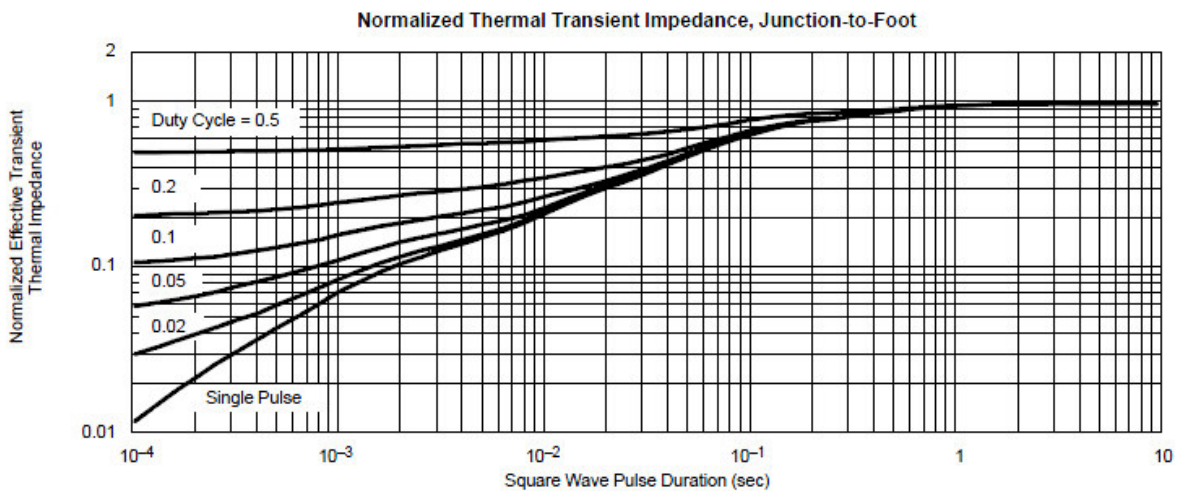
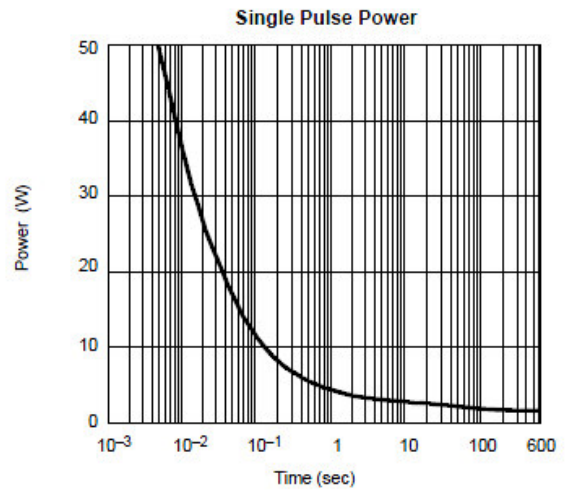
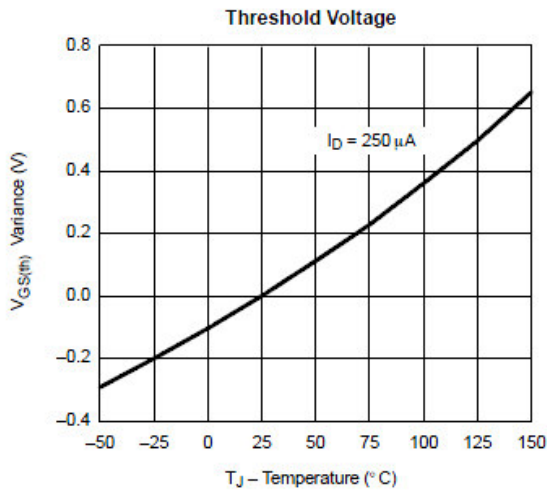
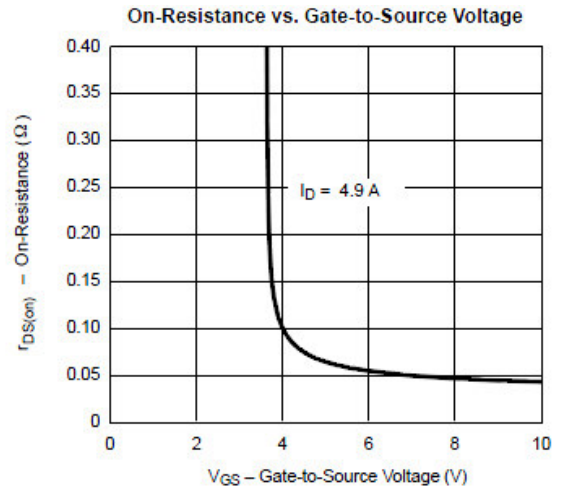
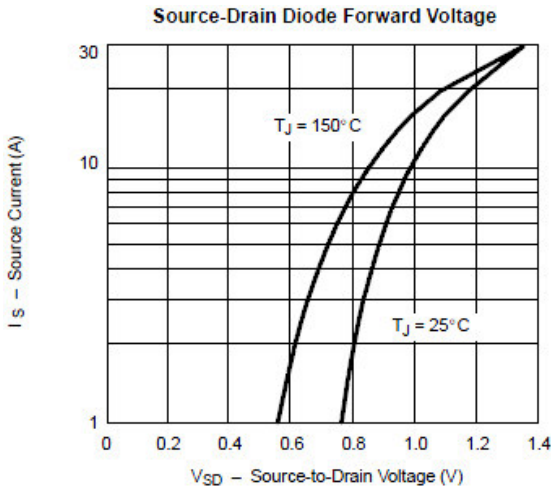


## Typical Characteristics





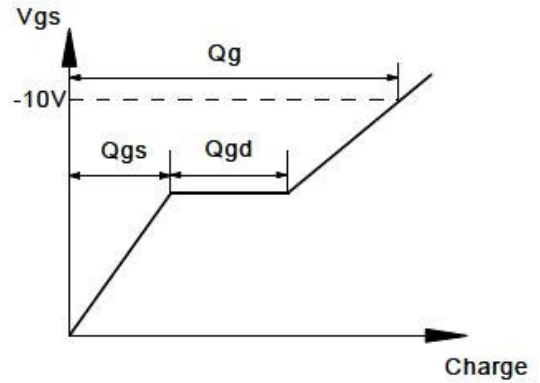
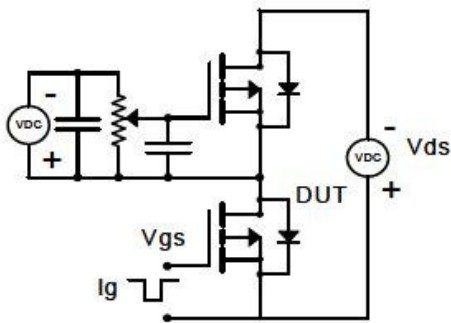
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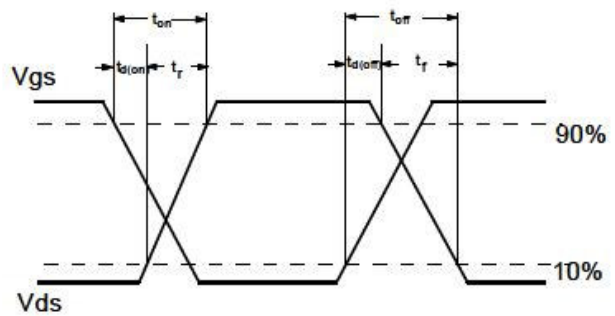
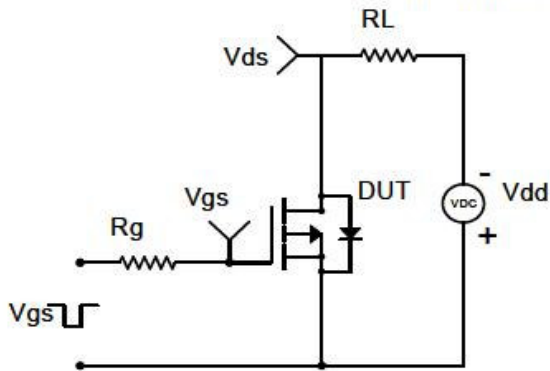


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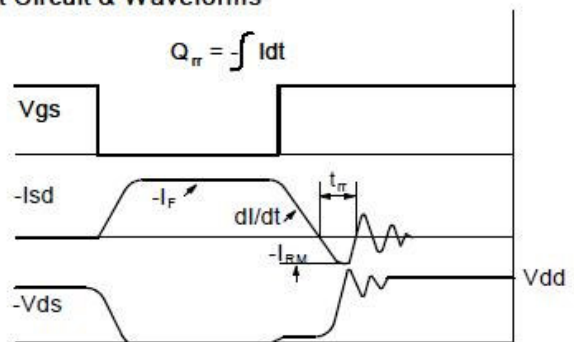
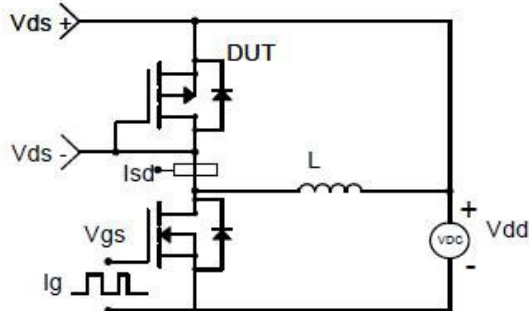
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

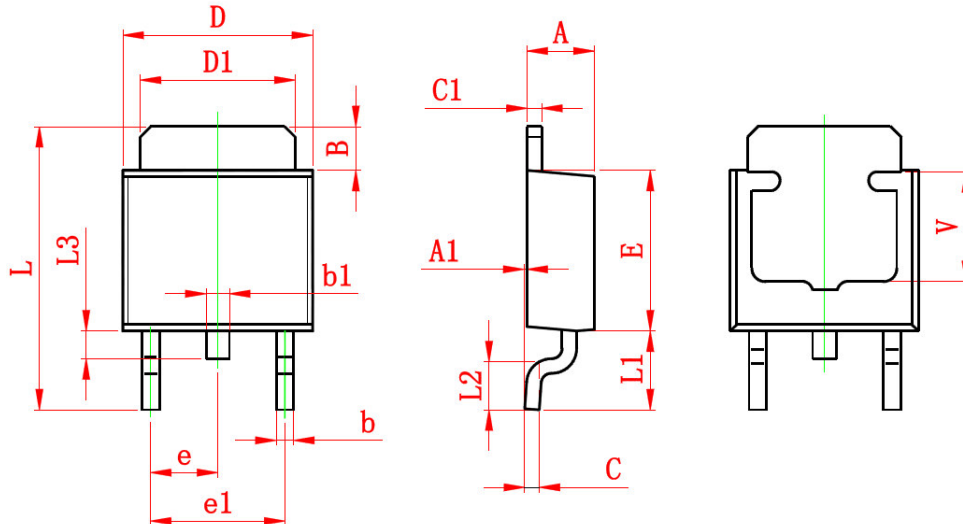


### Diode Recovery Test Circuit & Waveforms





**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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