



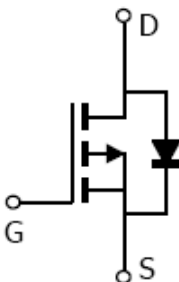
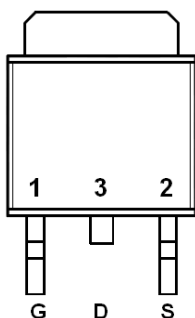
### General Description

AFP9575S, 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

- -60V/-18A,  $R_{DS(ON)} = 68m\Omega @ V_{GS} = -10V$
- -60V/-12A,  $R_{DS(ON)} = 78m\Omega @ V_{GS} = -4.5V$
- 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
AFP9575ST252RG	9575S	TO-252-2L	Tape & Reel	2500 EA

- ※ A Lot code
- ※ B Date code
- ※ AFP9575ST252RG : 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	$V_{DSS}$	-60	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current ( $T_J=150^\circ\text{C}$ )	$I_D$	$T_A=25^\circ\text{C}$	-18
		$T_A=70^\circ\text{C}$	-12
Pulsed Drain Current	$I_{DM}$	-50	A
Continuous Source-Drain Diode Current	$I_S$	-10	A
Single Pulse Avalanche Current	$I_{AS}$	-12	A
Avalanche Energy	$E_{AS}$	23	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	$^\circ\text{C/W}$

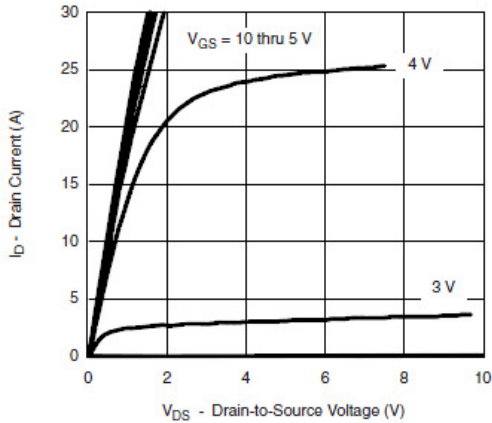
## Electrical Characteristics

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

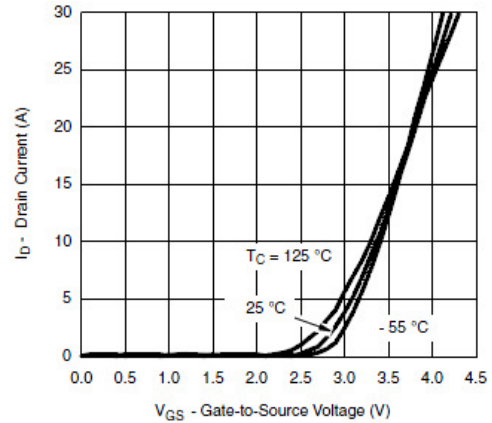
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D = -250\mu\text{A}$	-60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D = -250\mu\text{A}$	-1.0		-2.5	V
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS} = \pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -48V, V_{GS}=0V$			-1	uA
		$V_{DS} = -48V, V_{GS}=0V$ $T_J=85^\circ\text{C}$			-20	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq -5V, V_{GS} = -10V$	-20			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -18A$		55	68	m $\Omega$
		$V_{GS} = -4.5V, I_D = -12A$		65	78	
Forward Transconductance	$g_{FS}$	$V_{DS} = -15V, I_D = -3.2A$		12		S
Diode Forward Voltage	$V_{SD}$	$I_S = -3A, V_{GS}=0V$		-0.8	-1.3	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=-30V, V_{GS}=-10V$ $I_D = -10.0A$		25	40	nC
Gate-Source Charge	$Q_{gs}$			5		
Gate-Drain Charge	$Q_{gd}$			8		
Input Capacitance	$C_{iss}$	$V_{DS}=-25V, V_{GS}=0V$ $f=1\text{MHz}$		1200	2000	pF
Output Capacitance	$C_{oss}$			140		
Reverse Transfer Capacitance	$C_{rss}$			90		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-30V, R_L=3.0\Omega$ $I_D=-18A, V_{GEN}=-10V$ $R_G=2.5\Omega$		10	20	ns
	$t_r$			10	20	
Turn-Off Time	$t_{d(off)}$			45	80	
	$t_f$			25	40	



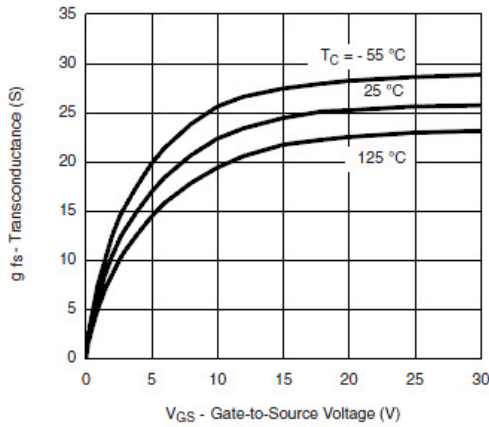
## Typical Characteristics



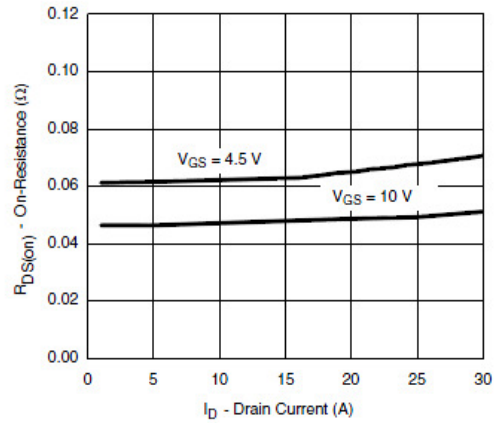
Output Characteristics



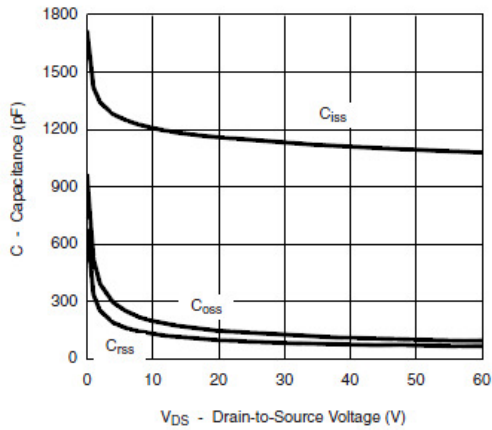
Transfer Characteristics



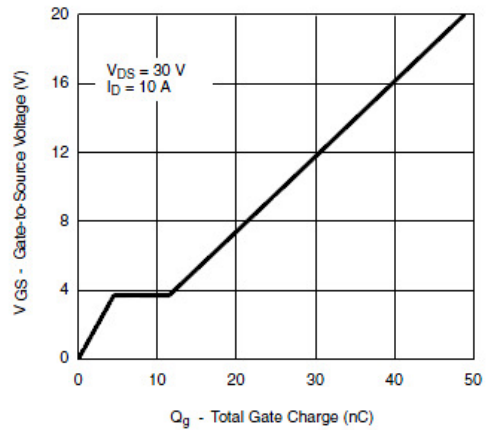
Transconductance



On-Resistance vs. Drain Current



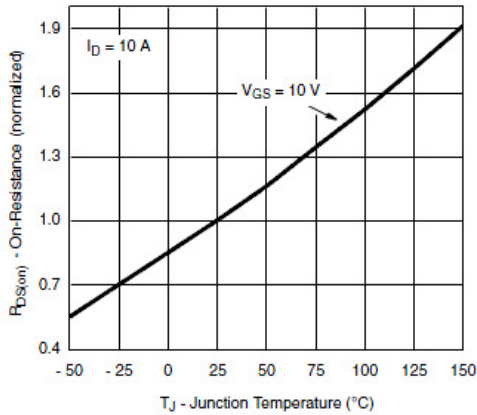
Capacitance



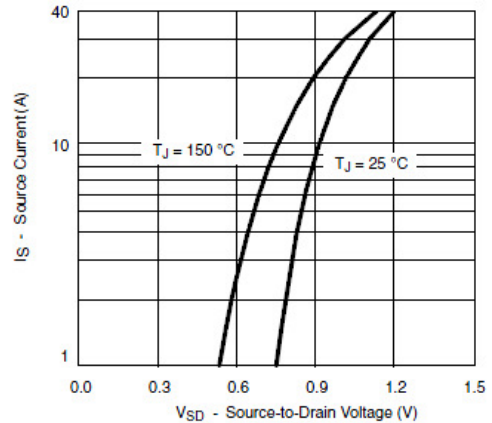
Gate Charge



## Typical Characteristics

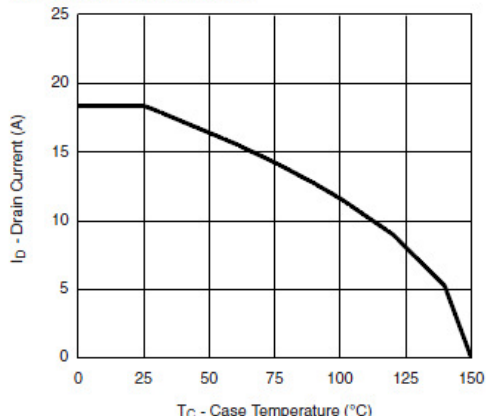


On-Resistance vs. Junction Temperature

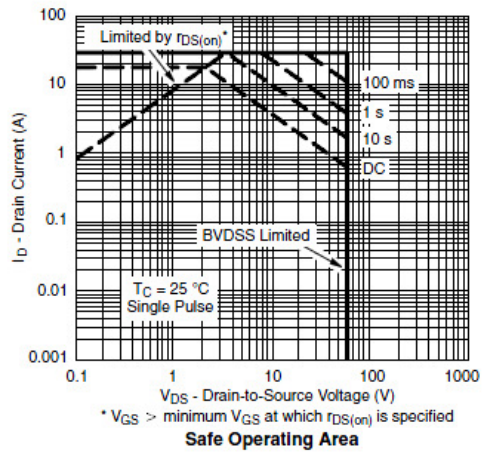


Source-Drain Diode Forward Voltage

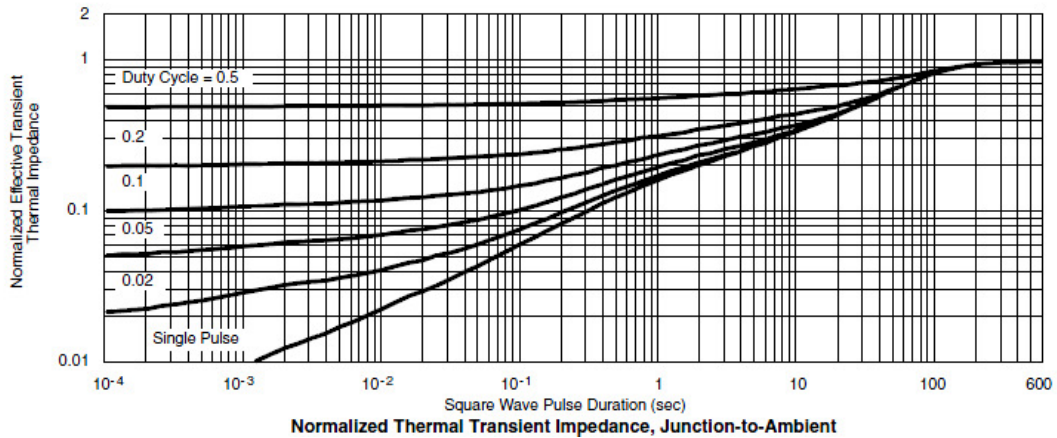
## THERMAL RATINGS



Maximum Drain Current  
vs. Case Temperature



Safe Operating Area

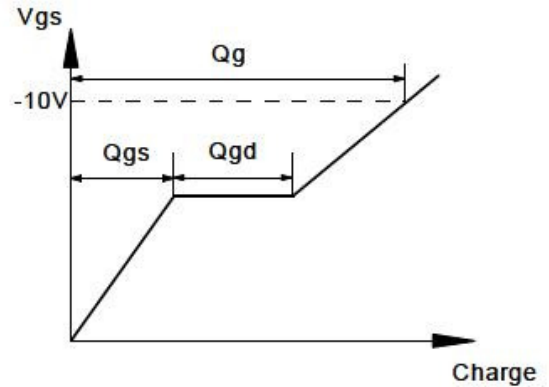
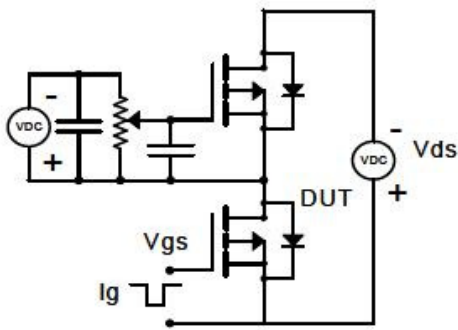


Normalized Thermal Transient Impedance, Junction-to-Ambient

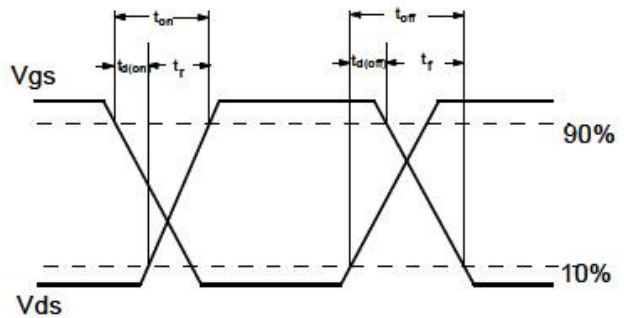
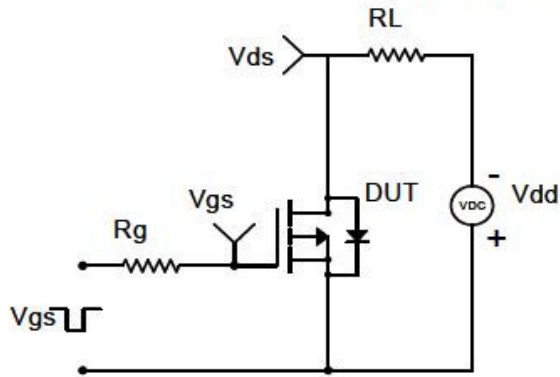


**Typical Characteristics**

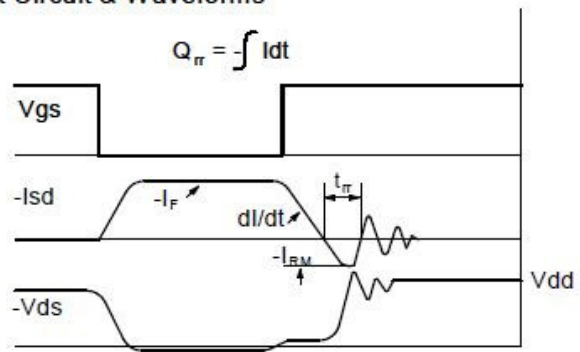
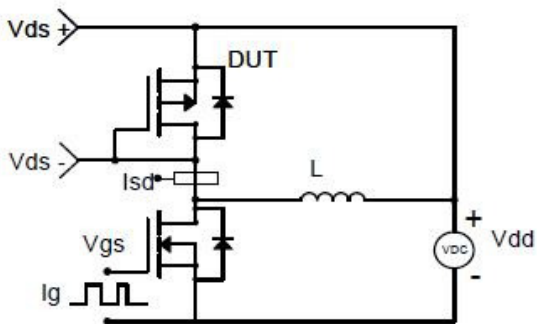
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

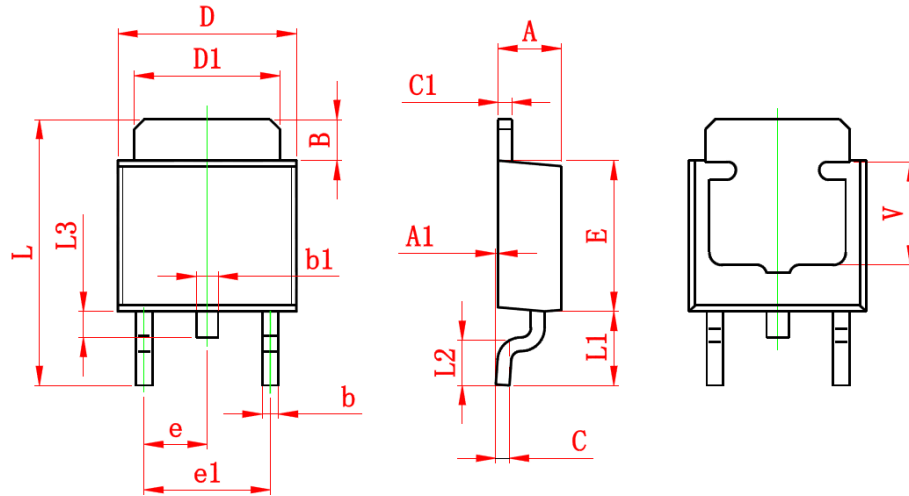


Diode Recovery Test Circuit & Waveforms





**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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