



General Description

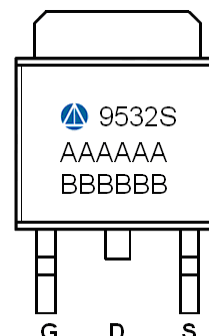
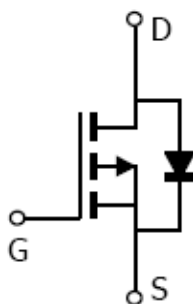
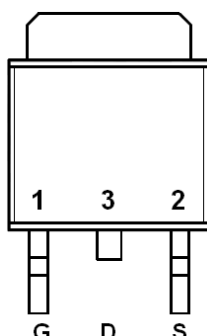
AFP9532S, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

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/-20A, $R_{DS(ON)} = 37m\Omega @ V_{GS} = -10V$
- -60V/-10A, $R_{DS(ON)} = 45m\Omega @ V_{GS} = -4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- TO-252-2L package design

Pin Description (TO-252-2L)



Application

- Load Switches
- Half-Bridge Motor Drives
- High Voltage Non-Synchronous Buck Converters

Pin Define

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

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFP9532ST252RG	9532S	TO-252-2L	Tape & Reel	2500 EA

※ A Lot code

※ B Date code

※ AFP9532ST252RG : 13" Tape & Reel ; Pb- Free ; Halogen- Free



Absolute Maximum Ratings

(T_A=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V _{DSS}	-60	V
Gate –Source Voltage	V _{GSS}	±20	V
Continuous Drain Current(T _J =150°C)	I _D	T _c =25°C	-20
		T _c =70°C	-10
Pulsed Drain Current	I _{DM}	-25	A
Continuous Source-Drain Diode Current	I _S	-6	A
Power Dissipation	P _D	T _A =25°C	40
		T _A =70°C	15
Operating Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient	R _{θJA}	62.5	°C/W

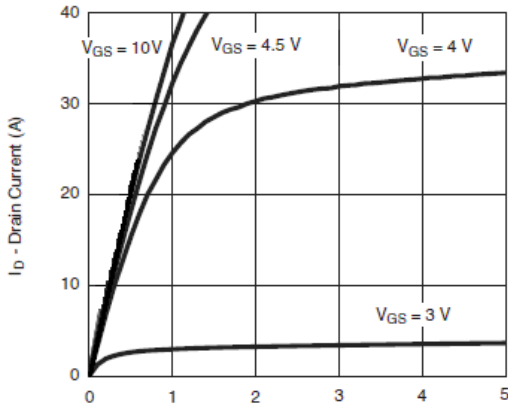
Electrical Characteristics

(T_A=25°C Unless otherwise noted)

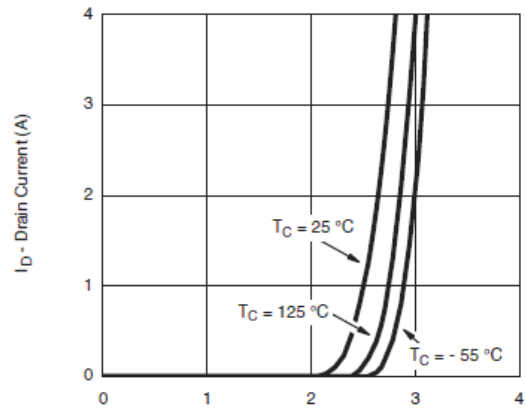
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D = -250uA	-60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = -250uA	-1.0		-2.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -48V, V _{GS} =0V			-1	
		V _{DS} = -48V, V _{GS} =0V T _J =85°C			-20	uA
On-State Drain Current	I _{D(on)}	V _{DS} ≥ -5V, V _{GS} = -10V	-10			A
Drain-Source On-Resistance	R _{Ds(on)}	V _{GS} = -10V, I _D =-20A		31	37	mΩ
		V _{GS} = -4.5V, I _D =-10A		35	45	
Forward Transconductance	g _{FS}	V _{DS} = -15V, I _D = -10A		25		S
Diode Forward Voltage	V _{SD}	I _S = -3A, V _{GS} =0V		-0.8	-1.3	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =-30V, V _{GS} =-4.5V I _D = -9.0A		20	38	nC
Gate-Source Charge	Q _{gs}			8		
Gate-Drain Charge	Q _{gd}			10		
Input Capacitance	C _{iss}	V _{DS} =-30V, V _{GS} =0V f=1MHz		1900		pF
Output Capacitance	C _{oss}			210		
Reverse Transfer Capacitance	C _{rss}			170		
Turn-On Time	t _{d(on)}	V _{DD} =-30V, R _L =5.0Ω I _D ≡-9.0A, V _{GEN} =-10V R _G =1.0Ω		10	20	ns
	t _r			12	25	
Turn-Off Time	t _{d(off)}			30	60	
	t _f			10	20	



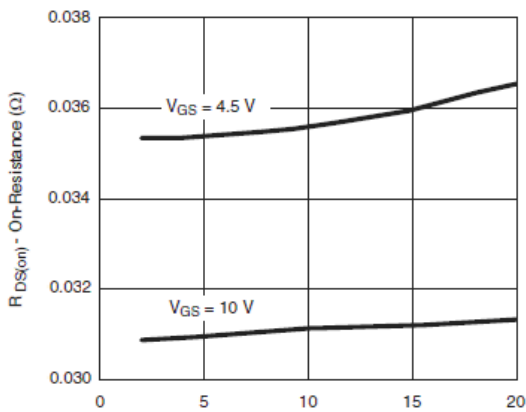
Typical Characteristics



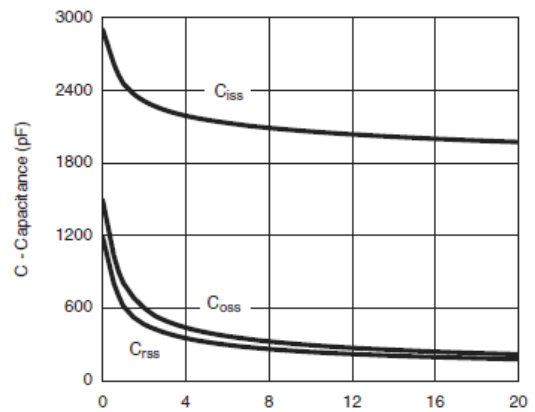
V_{GS} - Drain-to-Source Voltage (V)
Output Characteristics



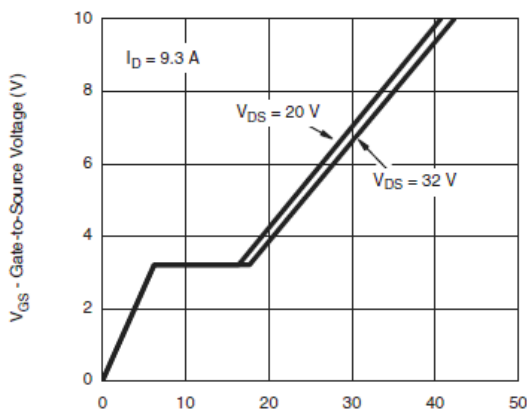
$T_C = 25\text{ }^\circ\text{C}$
 $T_C = 125\text{ }^\circ\text{C}$
 $T_C = -55\text{ }^\circ\text{C}$
 V_{GS} - Gate-to-Source Voltage (V)
Transfer Characteristics



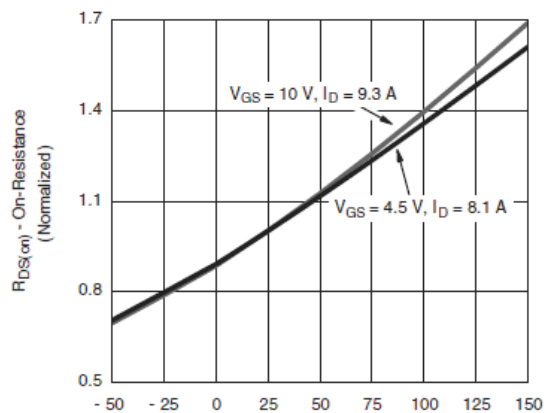
$V_{GS} = 4.5\text{ V}$
 $V_{GS} = 10\text{ V}$
 I_D - Drain Current (A)
On-Resistance vs. Drain Current and Gate Voltage



C_{iss}
 C_{oss}
 C_{rss}
 V_{DS} - Drain-to-Source Voltage (V)
Capacitance



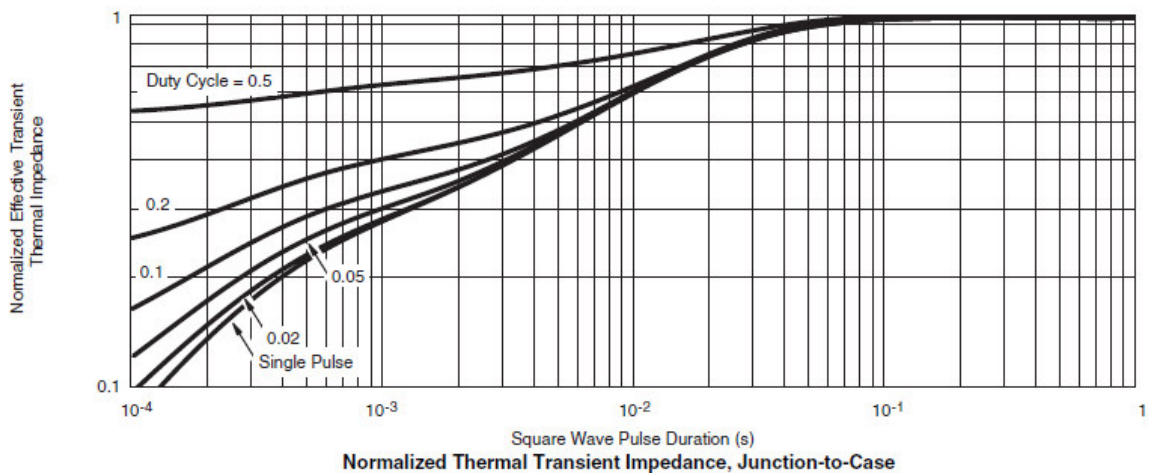
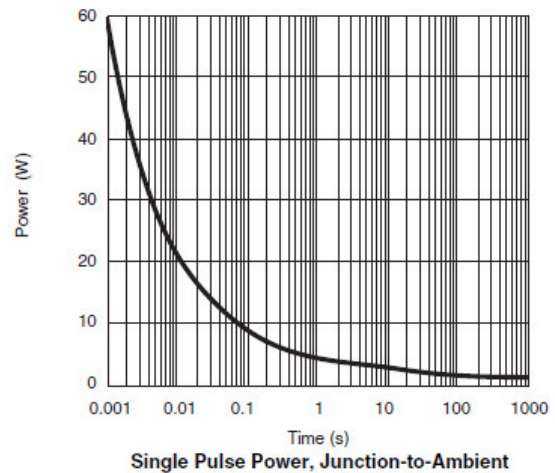
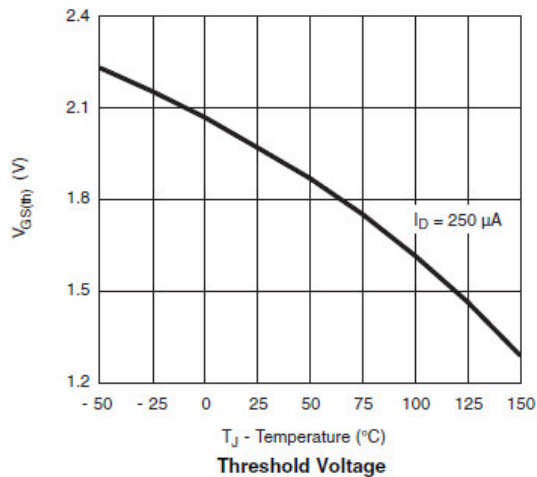
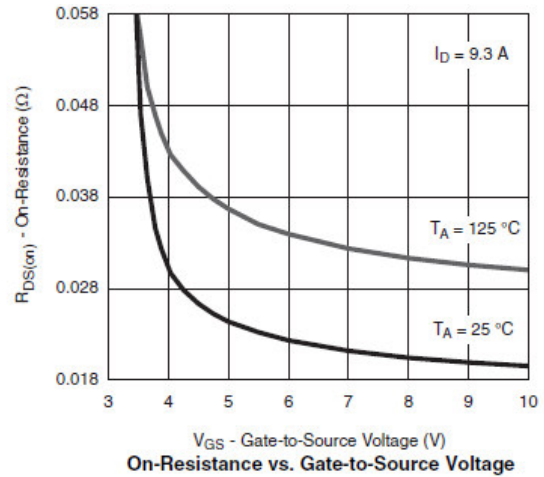
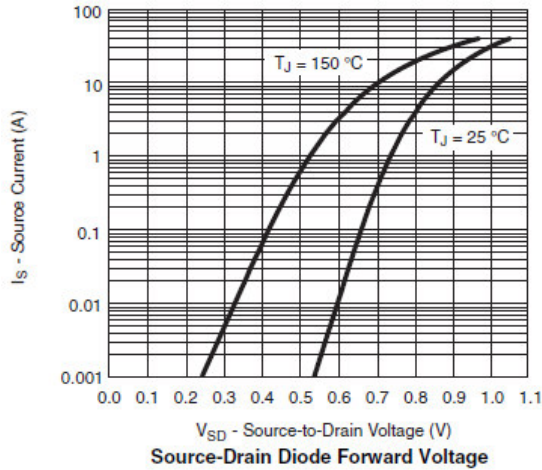
$I_D = 9.3\text{ A}$
 $V_{DS} = 20\text{ V}$
 $V_{DS} = 32\text{ V}$
 Q_g - Total Gate Charge (nC)
Gate Charge



$V_{GS} = 10\text{ V}, I_D = 9.3\text{ A}$
 $V_{GS} = 4.5\text{ V}, I_D = 8.1\text{ A}$
 T_J - Junction Temperature ($^\circ\text{C}$)
On-Resistance vs. Junction Temperature



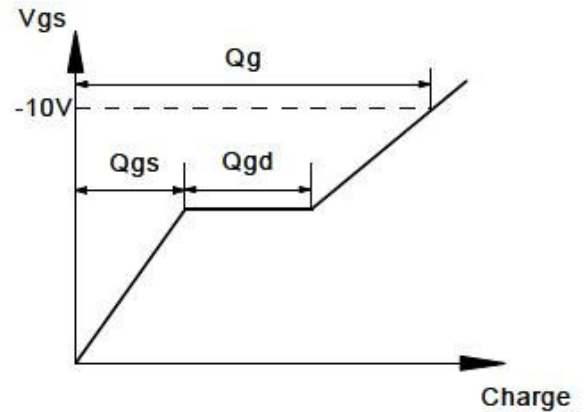
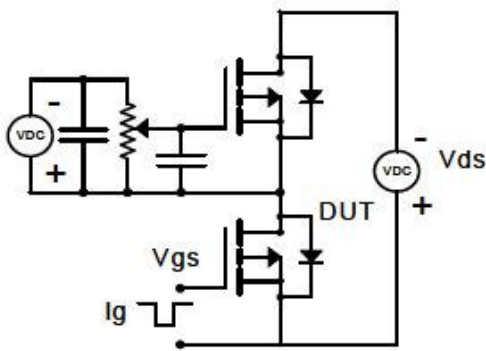
Typical Characteristics



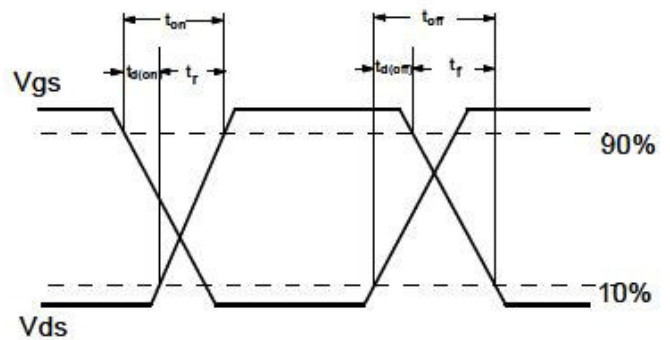
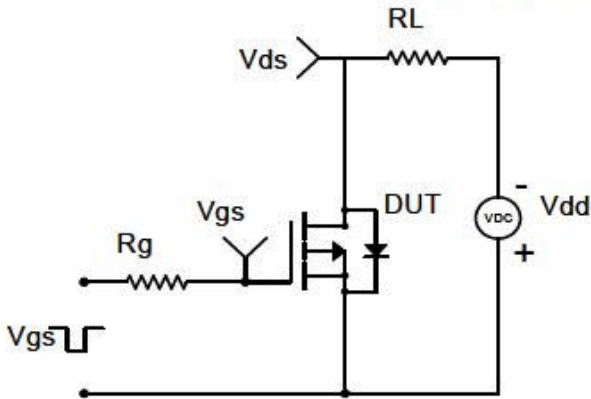


Typical Characteristics

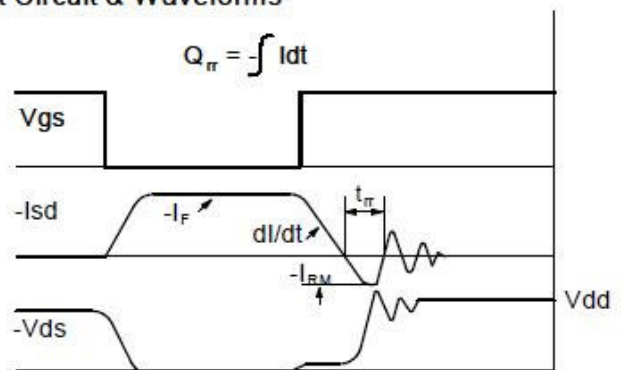
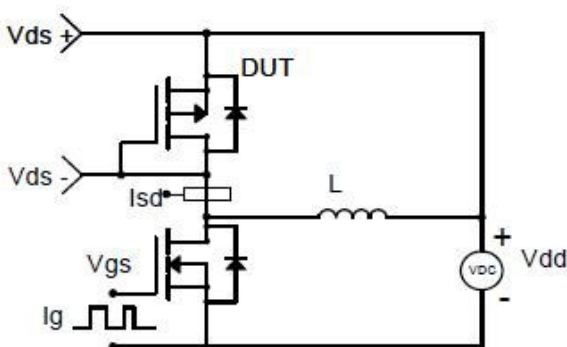
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

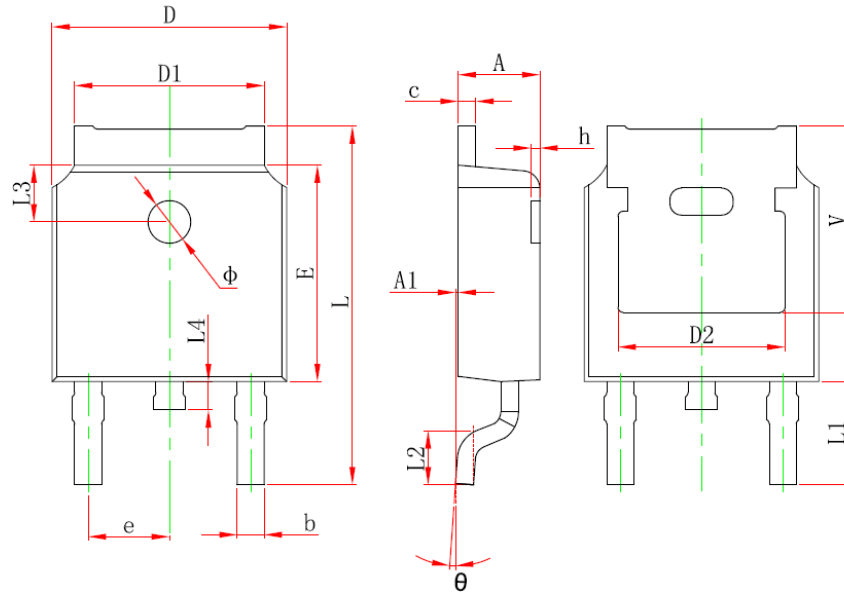


Diode Recovery Test Circuit & Waveforms





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	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	

©2010 Alfa-MOS Technology Corp.
2F, No.80, Sec.1, Cheng Kung Rd., Nan Kang Dist., Taipei City 115, Taiwan (R.O.C.)
Tel : 886 2) 2651 3928
Fax : 886 2) 2786 8483
©http://www.alfa-mos.com