



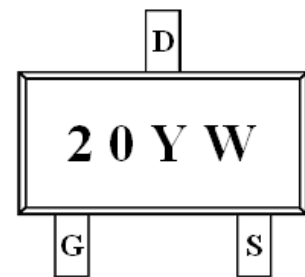
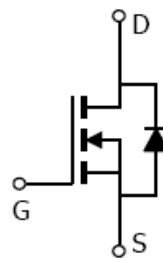
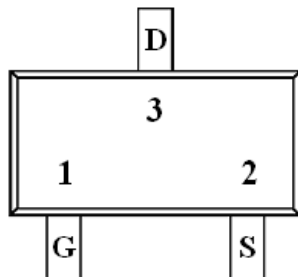
### General Description

AFN7420, N-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, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

### Features

- 30V/3.6A,  $R_{DS(ON)}=68m\Omega@V_{GS}=10V$
- 30V/2.6A,  $R_{DS(ON)}=84m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-323 package design

### Pin Description ( SOT-323 )



### Application

- Portable Equipment
- Battery Powered System
- Net Working System

### Pin Define

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

### Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN7420S32RG	20YW	SOT-323	Tape & Reel	3000 EA

- ※ 20 parts code
- ※ Y year code ( 0 ~ 9 )
- ※ W week code ( A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52 )
- ※ AFN7420S32RG : 7" 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	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current( $T_J=150^{\circ}\text{C}$ )	$I_D$	$T_A=25^{\circ}\text{C}$	3.6
		$T_A=70^{\circ}\text{C}$	2.6
Pulsed Drain Current	$I_{DM}$	10	A
Continuous Source Current(Diode Conduction)	$I_S$	1.6	A
Power Dissipation	$P_D$	$T_A=25^{\circ}\text{C}$	0.35
		$T_A=70^{\circ}\text{C}$	0.22
Operating Junction Temperature	$T_J$	150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-55/150	$^{\circ}\text{C}$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	120	$^{\circ}\text{C/W}$

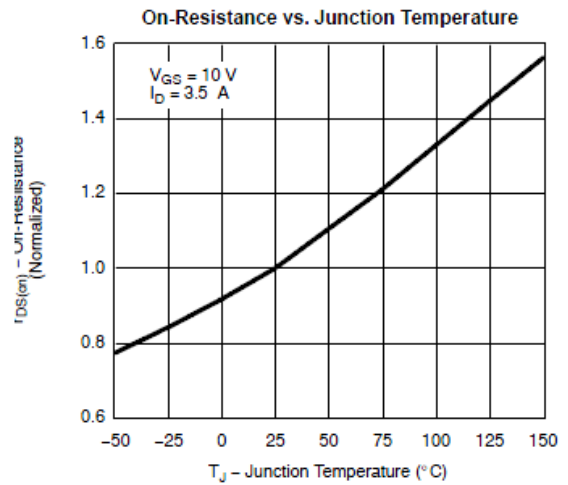
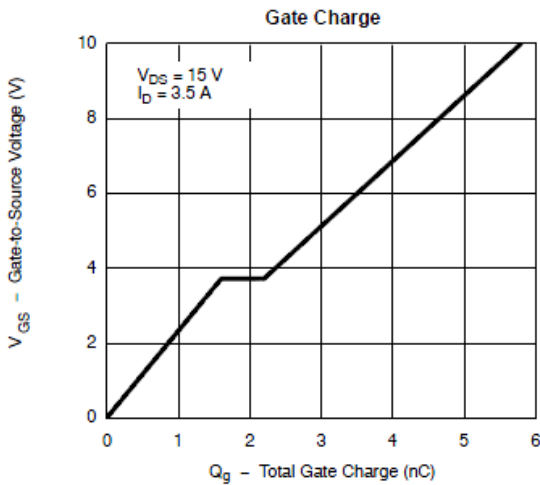
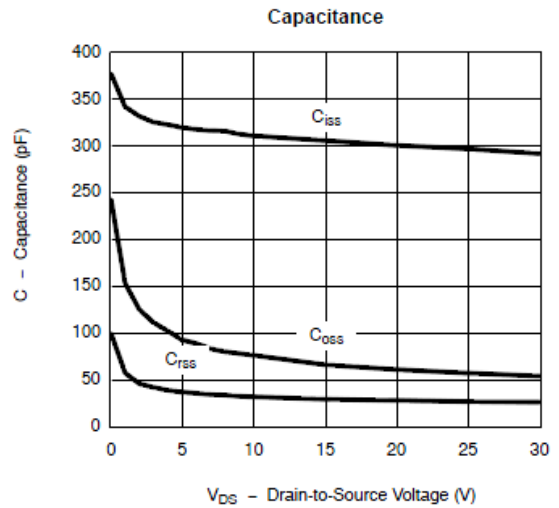
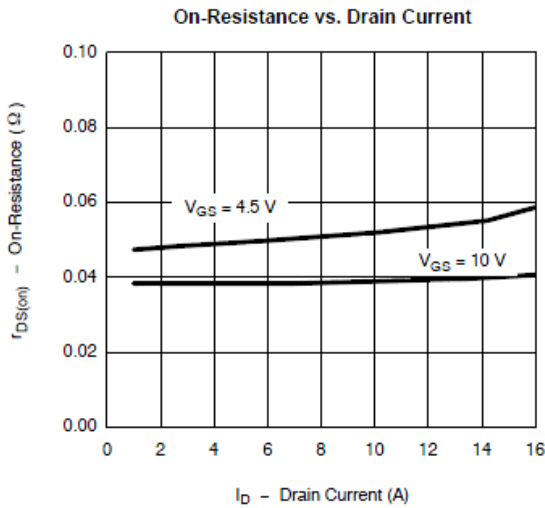
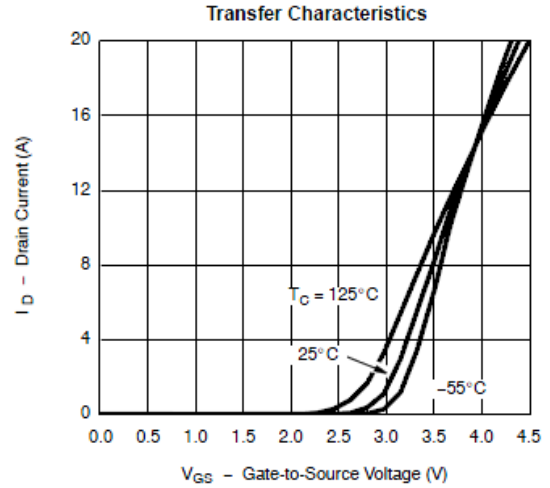
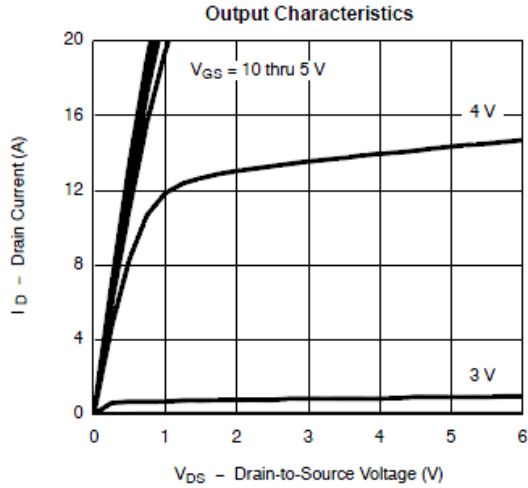
### Electrical Characteristics

( $T_A=25^{\circ}\text{C}$  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	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0		2.0	V
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$			1	uA
		$V_{DS}=30V, V_{GS}=0V$ $T_J=85^{\circ}\text{C}$			30	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 4.5V, V_{GS}=10V$	6			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=3.6A$		58	68	m $\Omega$
		$V_{GS}=4.5V, I_D=2.6A$		73	84	
Forward Transconductance	$g_{FS}$	$V_{DS}=4.5V, I_D=2.5A$		8		S
Diode Forward Voltage	$V_{SD}$	$I_S=1.6A, V_{GS}=0V$		0.8	1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=15V, V_{GS}=10V$ $I_D=2.6A$		3.0	4.5	nC
Gate-Source Charge	$Q_{gs}$			1.6		
Gate-Drain Charge	$Q_{gd}$			0.6		
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V$ $f=1\text{MHz}$		320		pF
Output Capacitance	$C_{oss}$			70		
Reverse Transfer Capacitance	$C_{rss}$			30		
Turn-On Time	$t_{d(on)}$	$V_{DD}=15V, R_L=15\Omega$ $I_D=1.0A, V_{GEN}=10V$ $R_G=6\Omega$		8	12	ns
	$t_r$			12	18	
Turn-Off Time	$t_{d(off)}$			15	30	
	$t_f$			8	15	

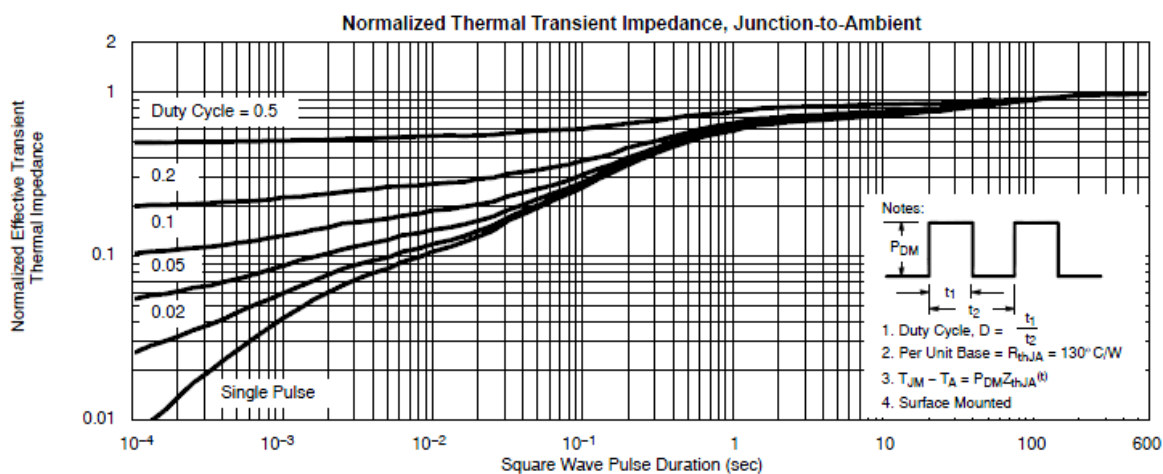
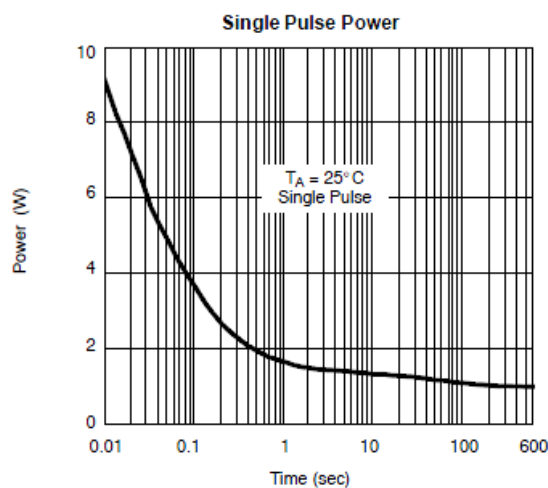
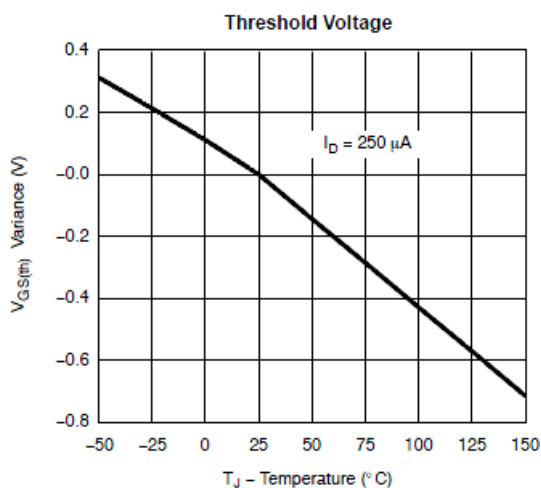
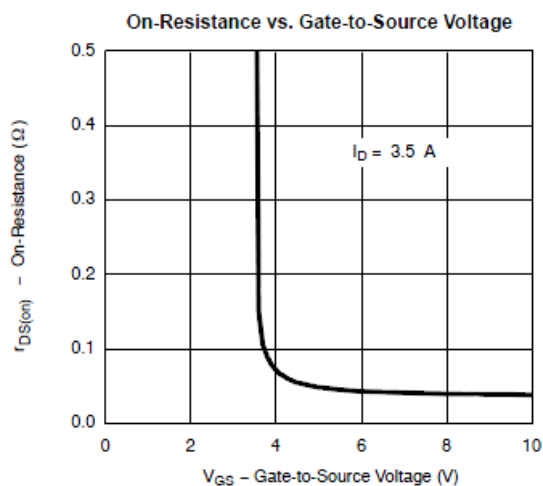
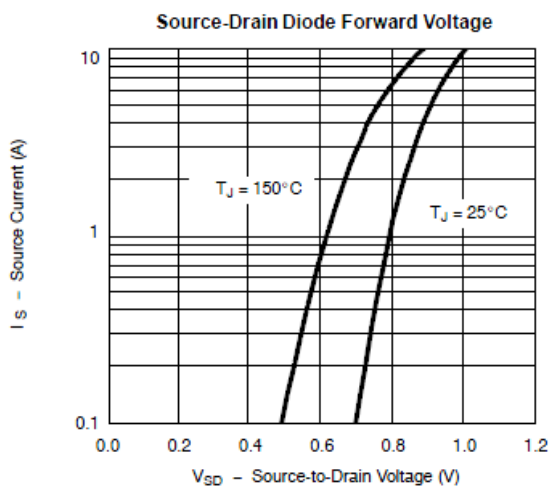


## Typical Characteristics





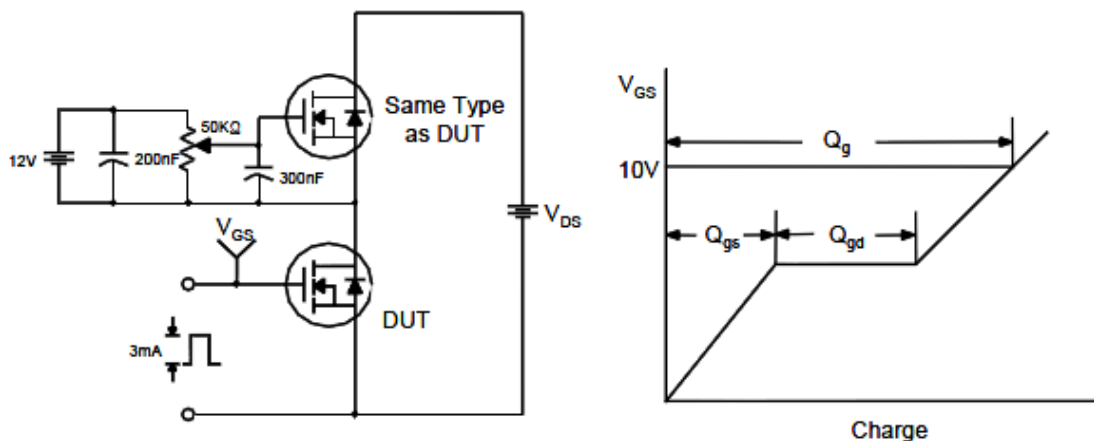
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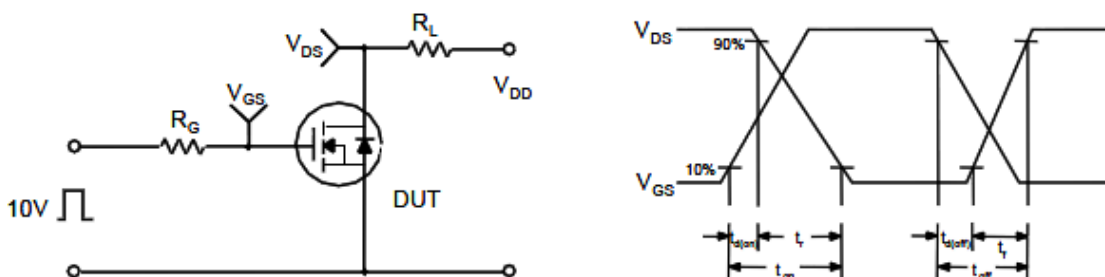


## Typical Characteristics

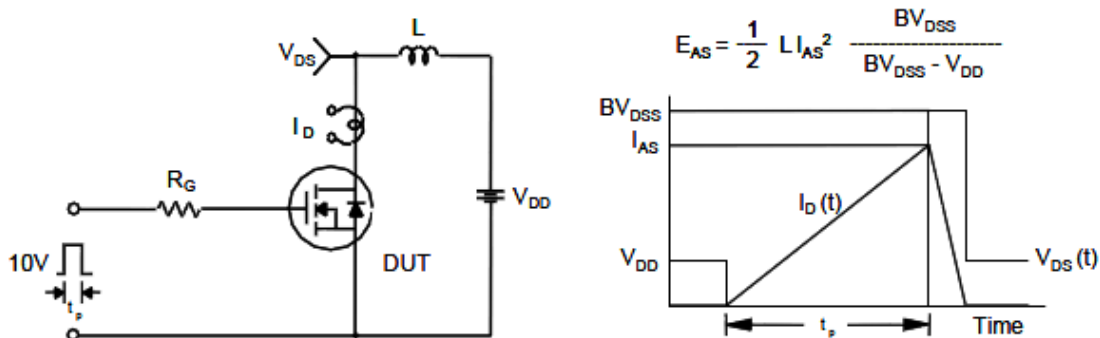
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

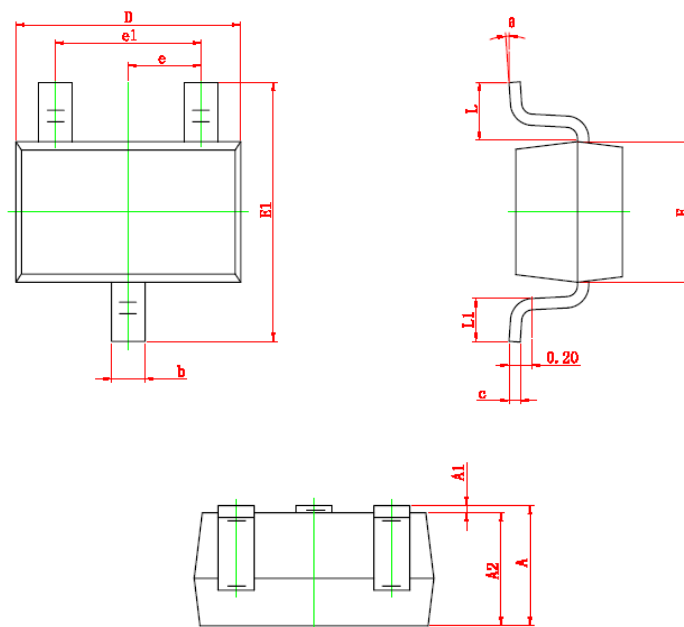


Unclamped Inductive Switching Test Circuit & Waveforms





**Package Information ( SOT-323 )**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

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 5F-1, No.28, Lane 123, Sec. 6, Min Chuan E. Rd., Nei-Hu Dist., Taipei, 114, Taiwan  
 Tel : 886 2) 8791 0162  
 Fax : 886 2) 8791 7482  
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