



General Description

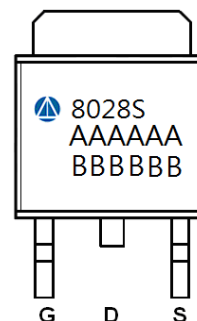
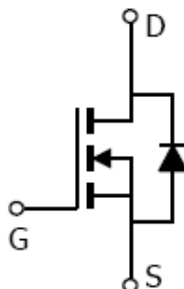
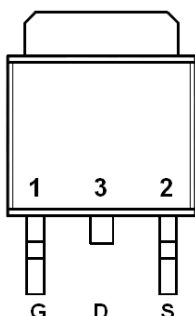
AFN8028S, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

These devices are particularly suited for low voltage power management, and low in-line power loss are needed in commercial industrial surface mount applications.

Features

- 80V/15A, $R_{DS(ON)}=8.5m\Omega@V_{GS}=10V$
- 80V/10A, $R_{DS(ON)}=12.5m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- TO-252-2L package design

Pin Description (TO-252-2L)



Application

- Motor and Load Control
- Power Management in White LED System
- Push Pull Converter
- LCD TV Inverter & AD/DC Inverter Systems.

Pin Define

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

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN8028ST252RG	8028S	TO-252-2L	Tape & Reel	2500 EA

※ A Lot code

※ B Date code

※ AFN8028ST252RG : 13" Tape & Reel ; Pb- Free ; Halogen -Free



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

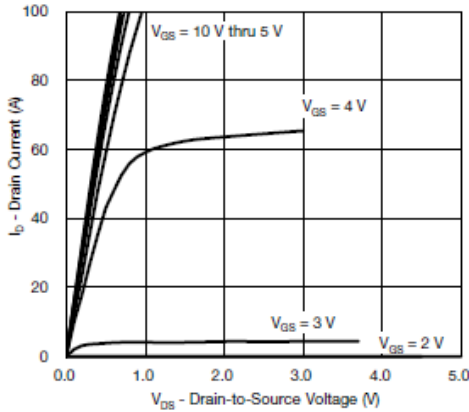
Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V_{DS}	80	V
Gate –Source Voltage	V_{GS}	± 20	V
Continuous Drain Current($T_J=150^{\circ}\text{C}$)	I_{DSM}	$T_C=25^{\circ}\text{C}$ $T_C=70^{\circ}\text{C}$	A
		$T_A=25^{\circ}\text{C}$ $T_A=70^{\circ}\text{C}$	
Pulsed Drain Current ($t=100\mu\text{s}$)	I_{DM}	150	A
Continuous Source Current(Diode Conduction)	I_S	$T_C=25^{\circ}\text{C}$	
		$T_A=25^{\circ}\text{C}$	4.5
Single Pulse Avalanche Current	I_{AS}	30	mJ
	E_{AS}	45	
Power Dissipation	P_D	$T_C=25^{\circ}\text{C}$ $T_C=75^{\circ}\text{C}$	W
		$T_A=25^{\circ}\text{C}$ $T_A=75^{\circ}\text{C}$	
Operating Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55/150	$^{\circ}\text{C}$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	20	$^{\circ}\text{C}/\text{W}$
Maximum Junction-to-Case (Drain)	$R_{\theta JA}$	1.5	

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

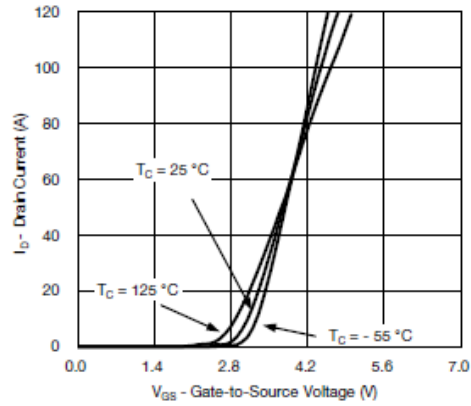
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	80			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1.0		2.5	
Gate Leakage Current	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=64\text{V}, V_{GS}=0\text{V}$			1	uA
		$V_{DS}=64\text{V}, V_{GS}=0\text{V}$ $T_J=85^{\circ}\text{C}$			10	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5\text{V}, V_{GS}=10\text{V}$	30			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}, I_D=15\text{A}$		7.2	8.5	m Ω
		$V_{GS}=4.5\text{V}, I_D=10\text{A}$		10.5	12.5	
Forward Transconductance	g_{FS}	$V_{DS}=10\text{V}, I_D=20\text{A}$		60		S
Diode Forward Voltage	V_{SD}	$I_S=5\text{A}, V_{GS}=0\text{V}$		0.75	1.2	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=40\text{V}, V_{GS}=4.5\text{V}$ $I_D \equiv 10\text{A}$		18	36	nC
Gate-Source Charge	Q_{gs}			7.5		
Gate-Drain Charge	Q_{gd}			8.5		
Gate Resistance	R_g	$f=1\text{MHz}$	0.4	1.4	2.4	Ω
Input Capacitance	C_{iss}	$V_{DS}=40\text{V}, V_{GS}=0\text{V}$ $f=1\text{MHz}$		1850		pF
Output Capacitance	C_{oss}			950		
Reverse Transfer Capacitance	C_{rss}			75		
Turn-On Time	$t_{d(on)}$	$V_{DD}=40\text{V}, R_L=4.0\Omega$ $I_D \equiv 10\text{A}, V_{GEN}=10\text{V}$ $R_G=1\Omega$		12	24	ns
	t_r			8	16	
Turn-Off Time	$t_{d(off)}$			32	64	
	t_f			7	14	



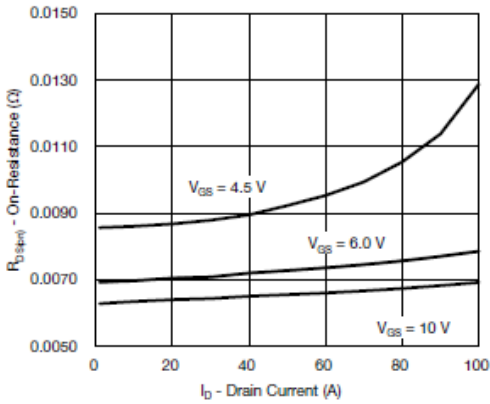
Typical Characteristics



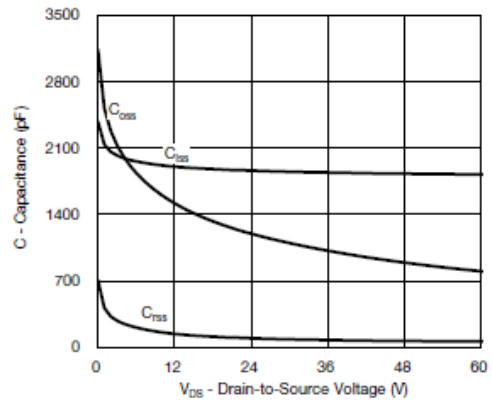
Output Characteristics



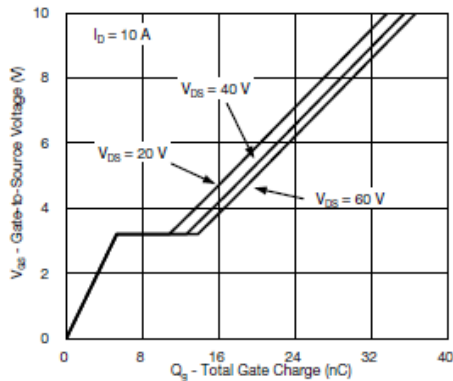
Transfer Characteristics



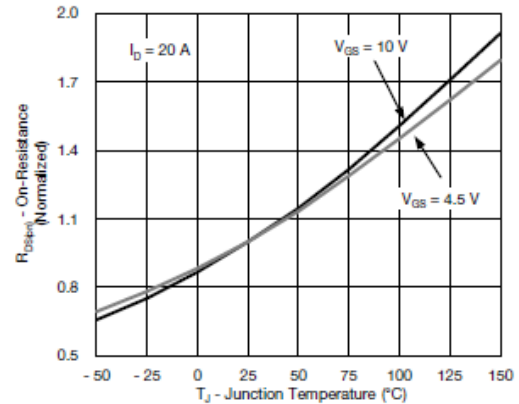
On-Resistance vs. Drain Current



Capacitance



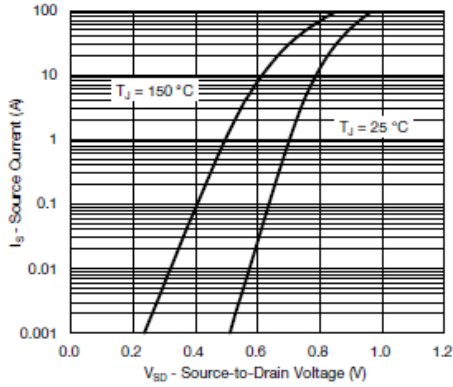
Gate Charge



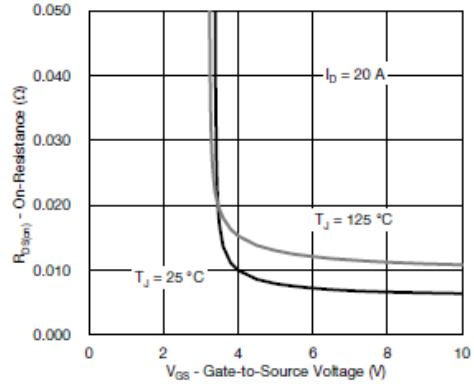
On-Resistance vs. Junction Temperature



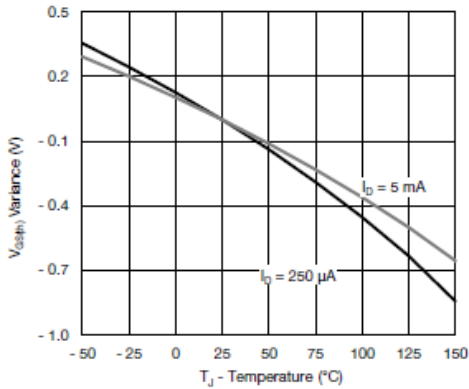
Typical Characteristics



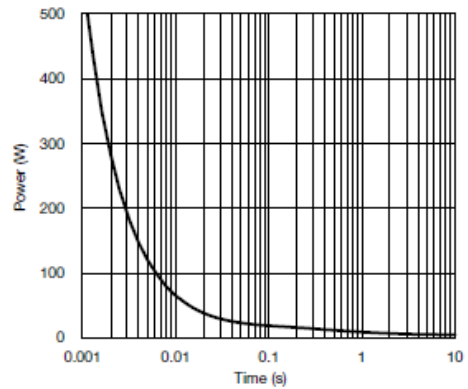
Source-Drain Diode Forward Voltage



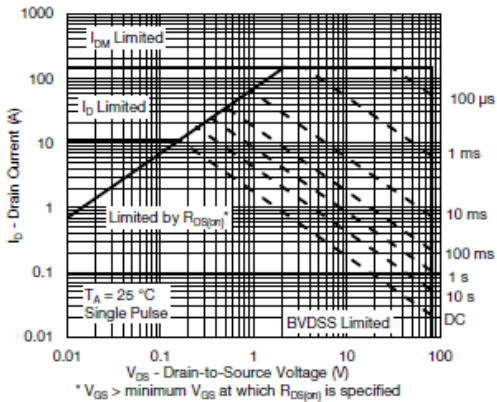
On-Resistance vs. Gate-to-Source Voltage



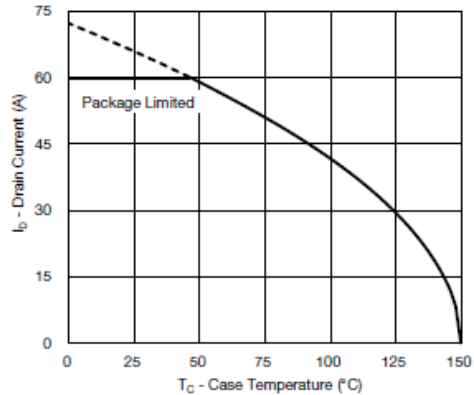
Threshold Voltage



Single Pulse Power, Junction-to-Ambient



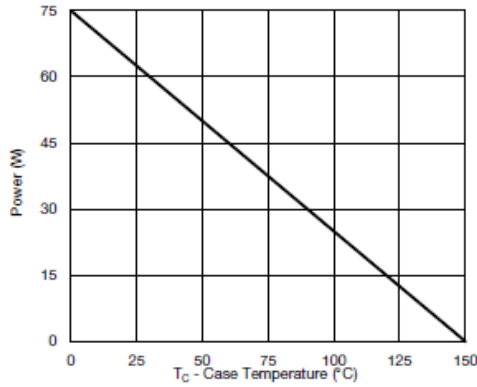
Safe Operating Area, Junction-to-Ambient



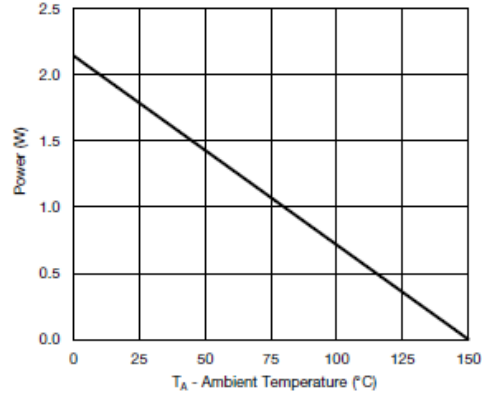
Current Derating ^a



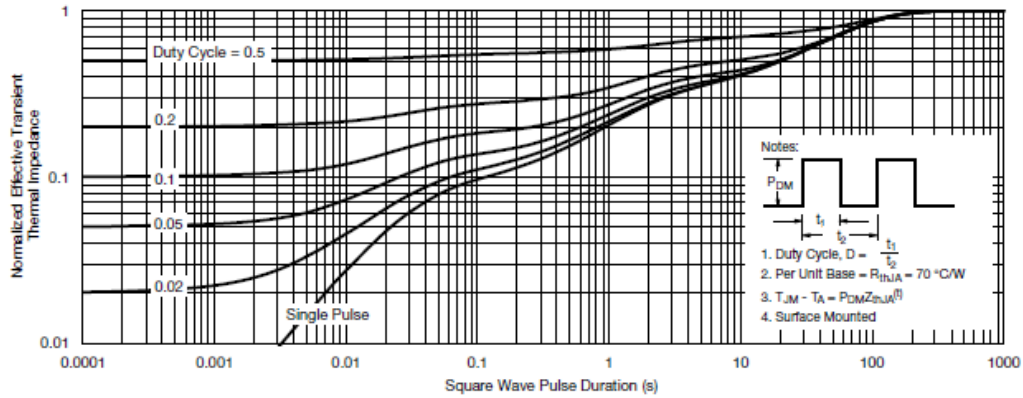
Typical Characteristics



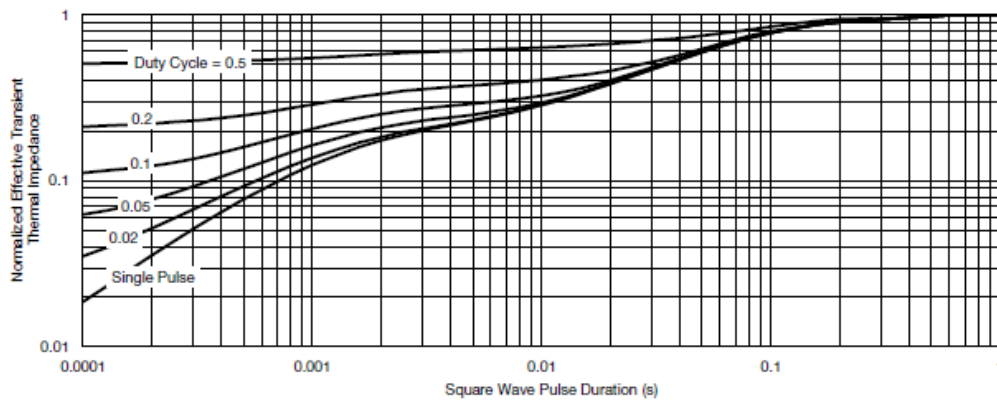
Power, Junction-to-Case



Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

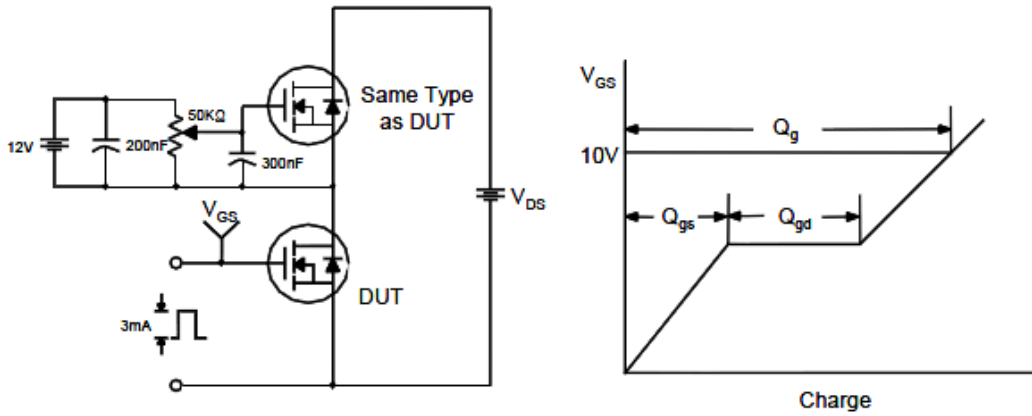


Normalized Thermal Transient Impedance, Junction-to-Case

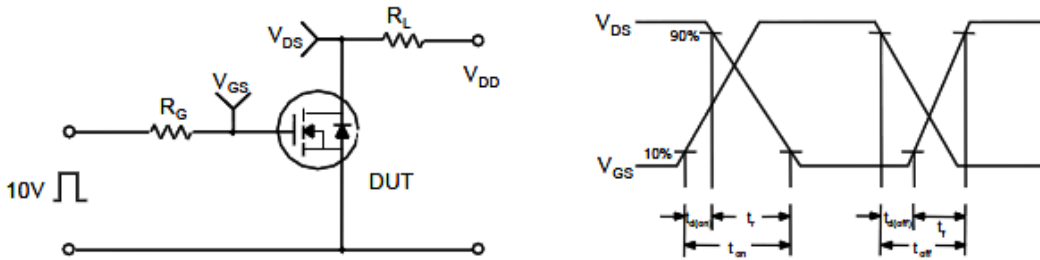


Typical Characteristics

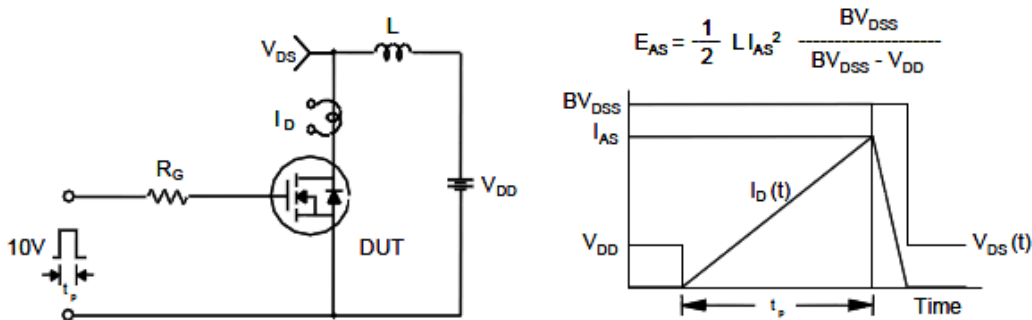
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

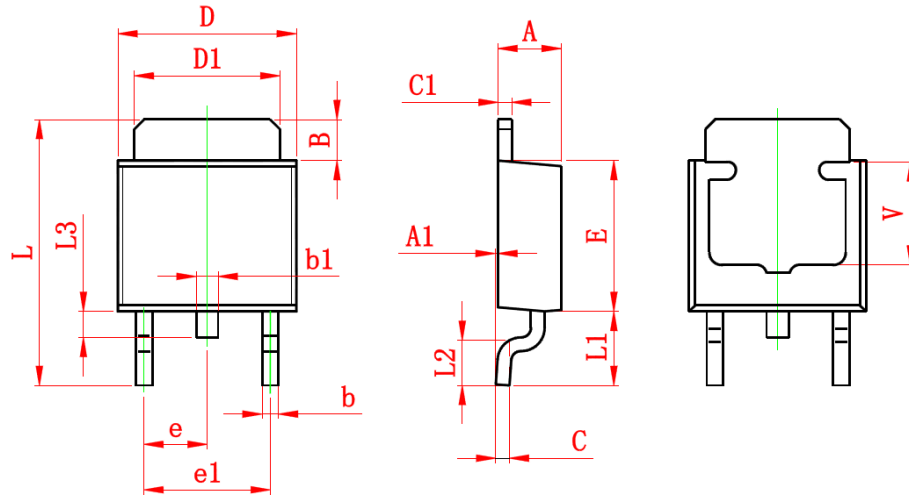


Unclamped Inductive Switching Test Circuit & Waveforms





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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