



General Description

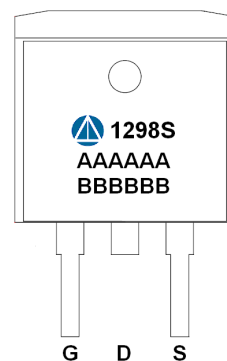
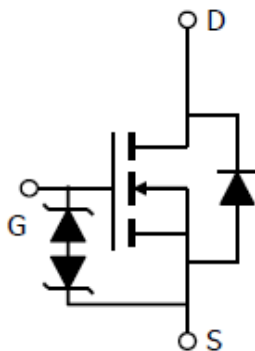
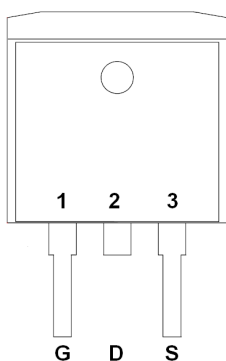
AFN1298S, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

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

- 100V/30A, $R_{DS(ON)} = 12m\Omega @ V_{GS} = 10V$
- 100V/15A, $R_{DS(ON)} = 18m\Omega @ V_{GS} = 6V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- TO-263-2L package design

Pin Description (TO-263-2L)



Application

- DC/DC Primary Side Switch
- POL Synchronous buck converter
- LED Backlight for LCD TV industrial

Pin Define

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

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN1298ST263RG	1298S AAAAAA BBBBBB	TO-263-2L	Tape & Reel	800 EA

- ※ A Lot code
- ※ B Date code
- ※ AFN1298ST263RG : Tube ; Pb- Free ; Halogen- Free



Absolute Maximum Ratings

(T_A=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V _{DSS}	100	V
Gate –Source Voltage	V _{GSS}	±20	V
Continuous Drain Current(T _J =150°C)	I _D	T _C =25°C	60
		T _C =70°C	40
Pulsed Drain Current	I _{DM}	100	A
Continuous Source Current(Diode Conduction)	I _S	50	
Single Pulse Avalanche Current	I _{AS}	40	
Power Dissipation	P _D	T _C =25°C	100
		T _A =25°C	3.1
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

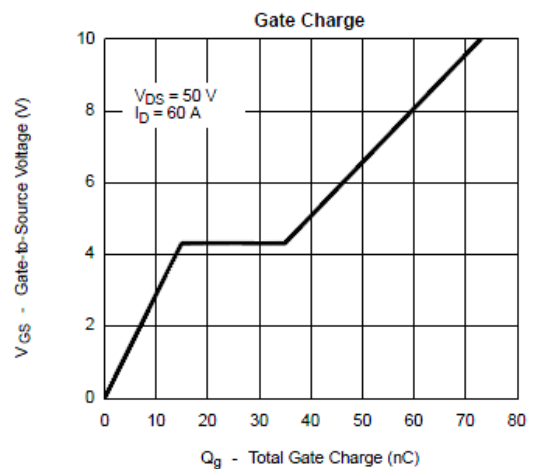
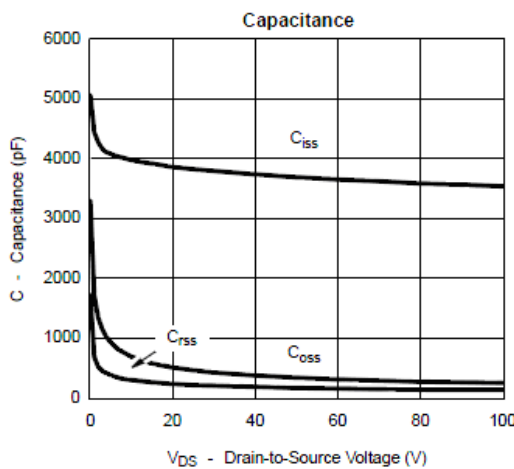
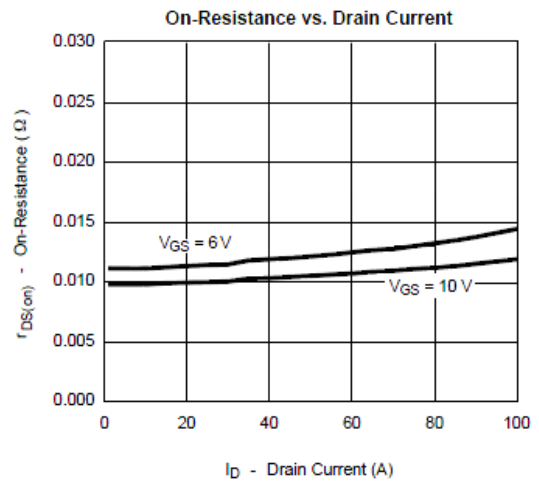
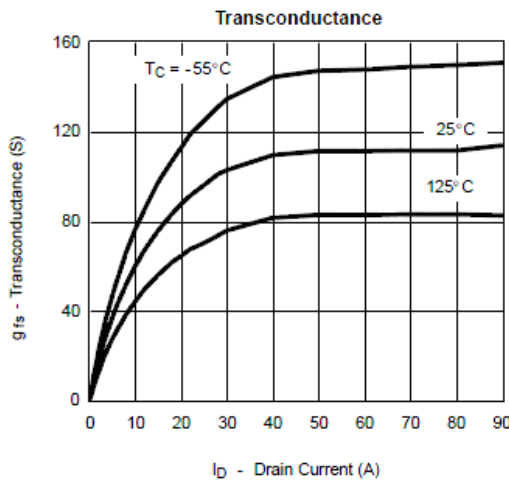
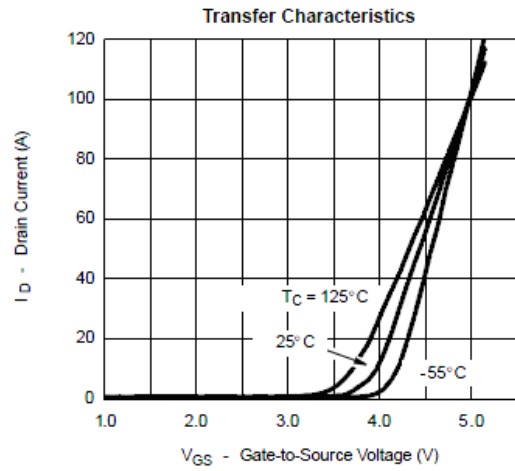
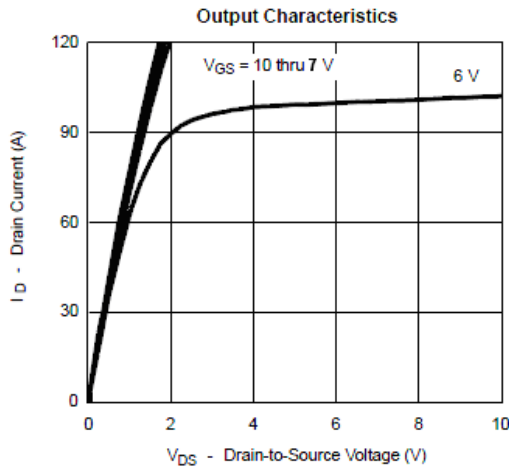
Electrical Characteristics

(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	100			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	2.0		4.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±5	uA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =80V, V _{GS} =0V			1	uA
		V _{DS} =80V, V _{GS} =0V T _J =85°C			30	
On-State Drain Current	I _{D(on)}	V _{DS} ≥ 10V, V _{GS} =10V	130			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =30A		9.05	12	mΩ
		V _{GS} =6V, I _D =15A		11.05	18	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =20A		30		S
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V		0.8	1.3	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =10V I _D ≡60A		75	150	nC
Gate-Source Charge	Q _{gs}			15		
Gate-Drain Charge	Q _{gd}			20		
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V f=1MHz		3800		pF
Output Capacitance	C _{oss}			450		
Reverse Transfer Capacitance	C _{rss}			210		
Turn-On Time	t _{d(on)}	V _{DD} =50V, R _L =0.8Ω I _D ≡60A, V _{GEN} =10V R _G =2.5Ω		15	30	ns
	t _r			80	150	
Turn-Off Time	t _{d(off)}			50	100	
	t _f			130	250	

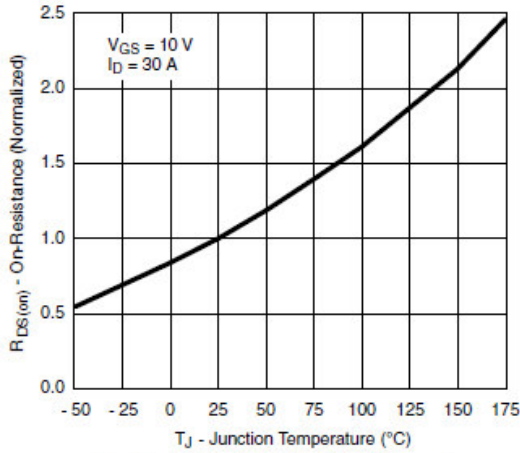


Typical Characteristics

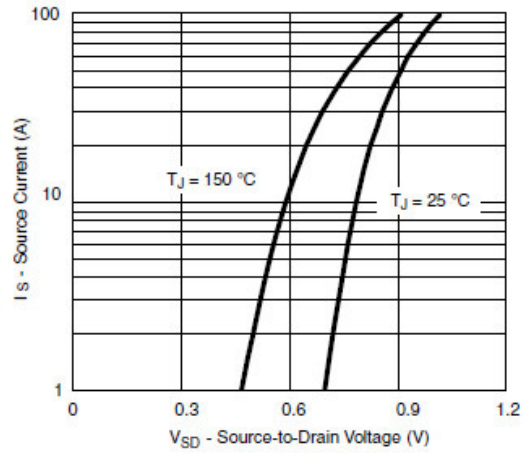




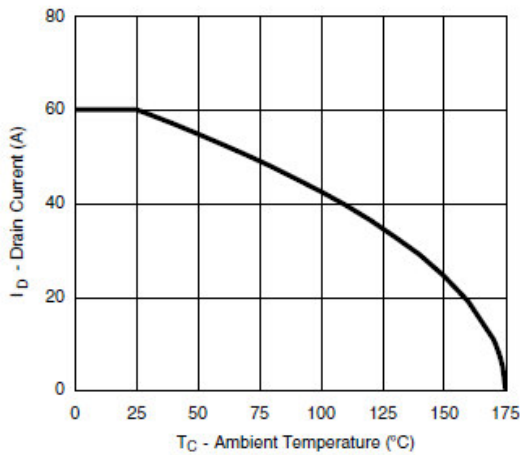
Typical Characteristics



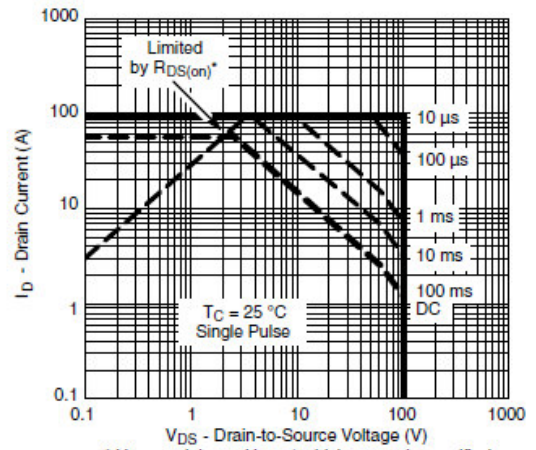
On-Resistance vs. Junction Temperature



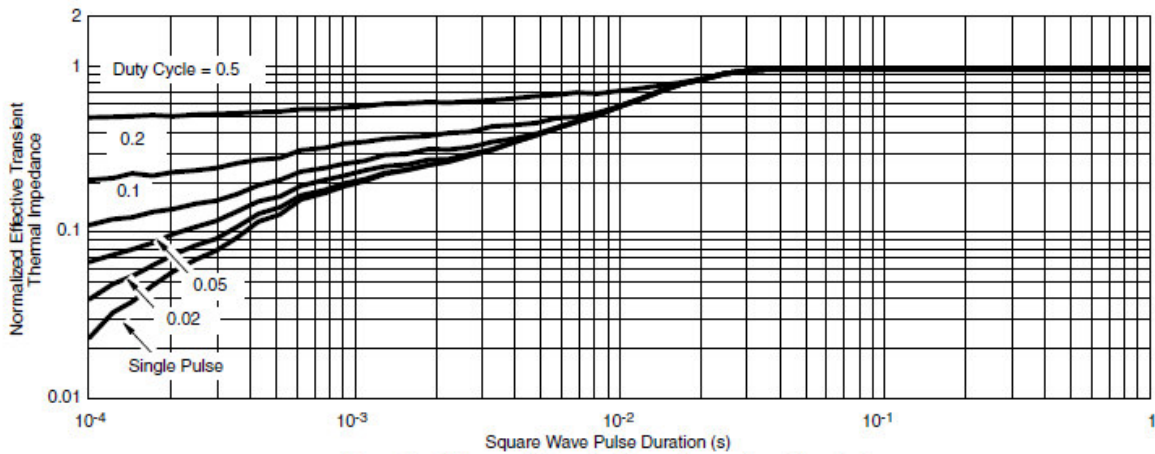
Source-Drain Diode Forward Voltage



Maximum Avalanche and Drain Current vs. Case Temperature



* $V_{GS} >$ minimum V_{GS} at which $r_{DS(on)}$ is specified
Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case



Typical Characteristics

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

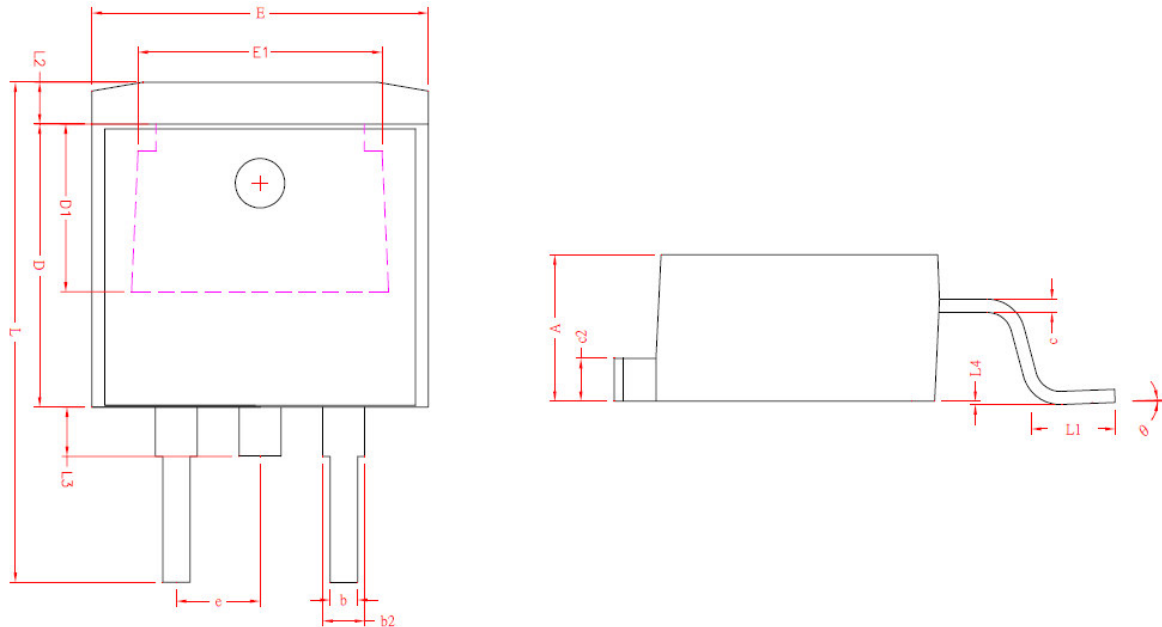


Unclamped Inductive Switching Test Circuit & Waveforms





Package Information (TO-263-2L)



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.80	c2	1.25	1.45
b	0.76	1.0	b2	1.17	1.47
L4	0.00	0.254	D	8.6	9.0
c	0.36	0.50	D1	5.10 REF.	
L3	1.50 REF.		e	2.54 REF.	
L1	2.29	2.79	L	14.6	15.8
E	9.80	10.4	θ	$0^\circ \pm 3^\circ$	
E1	7.40 REF.		L2	1.27 REF.	

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