



General Description

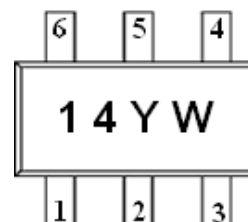
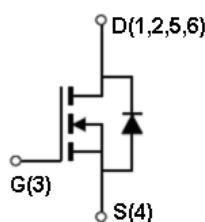
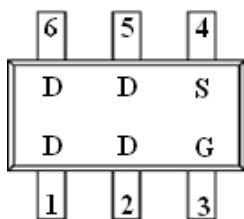
AFN1414, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

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/4.0A, $R_{DS(ON)}=35m\Omega@V_{GS}=10V$
- 30V/3.6A, $R_{DS(ON)}=40m\Omega@V_{GS}=4.5V$
- 30V/2.4A, $R_{DS(ON)}=45m\Omega@V_{GS}=2.5V$
- 30V/1.2A, $R_{DS(ON)}=58m\Omega@V_{GS}=1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-363 package design

Pin Description (SOT-363)



Application

- DC/DC converters
- Boost converters
- Load switches

Pin Define

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

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN1414S36RG	14YW	SOT-363	Tape & Reel	3000 EA

- ※ 14 parts code
- ※ Y year code (0 ~ 9)
- ※ W week code (A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52)
- ※ AFN1414S36RG : 7" Tape & Reel ; Pb- Free ; Halogen -Free



Absolute Maximum Ratings

(T_A=25°C Unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	30	V
Gate-Source Voltage	V _{GSS}	±12	V
Continuous Drain Current(T _J =150°C)	I _D	T _A =25°C	4.0
		T _A =70°C	3.6
Pulsed Drain Current	I _{DM}	15	A
Continuous Source Current(Diode Conduction)	I _S	1.3	A
Power Dissipation	P _D	T _A =25°C	1.56
		T _A =70°C	1.0
Operating Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient	R _{θJA}	120	°C/W

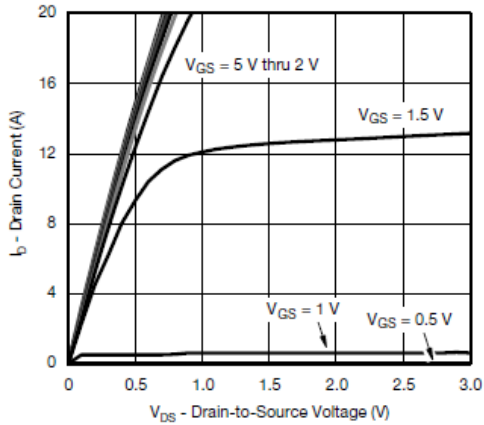
Electrical Characteristics

(T_A=25°C Unless otherwise noted)

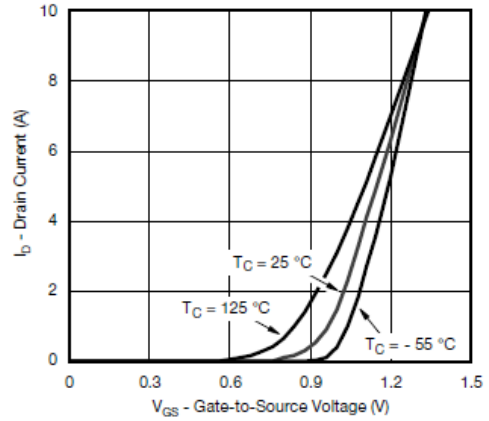
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.5		1.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±16V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =24V, V _{GS} =0V			1	μA
		V _{DS} =24V, V _{GS} =0V T _J =85°C			30	
On-State Drain Current	I _{D(on)}	V _{DS} ≥ 5V, V _{GS} =4.5V	30			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =4.0A		25	35	mΩ
		V _{GS} =4.5V, I _D =3.6A		27	40	
		V _{GS} =2.5V, I _D =2.4A		32	45	
		V _{GS} =1.8V, I _D =1.2A		44	58	
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =6.1A		20		S
Diode Forward Voltage	V _{SD}	I _S =1.7A, V _{GS} =0V		0.8	1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =4.5V I _D ≅3.4A		5.6	9.0	nC
Gate-Source Charge	Q _{gs}			1.0		
Gate-Drain Charge	Q _{gd}			0.8		
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V f=1MHz		550		pF
Output Capacitance	C _{oss}			60		
Reverse Transfer Capacitance	C _{rss}			30		
Turn-On Time	t _{d(on)}	V _{DD} =15V, R _L =4.3Ω I _D ≅3.5A, V _{GEN} =4.5V R _G =1Ω		6	12	ns
	t _r			10	20	
Turn-Off Time	t _{d(off)}			20	40	
	t _f			10	20	



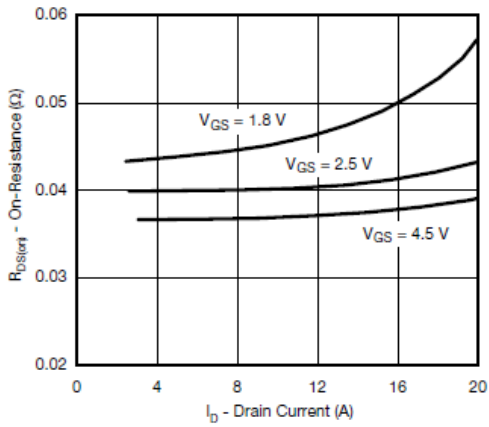
Typical Characteristics



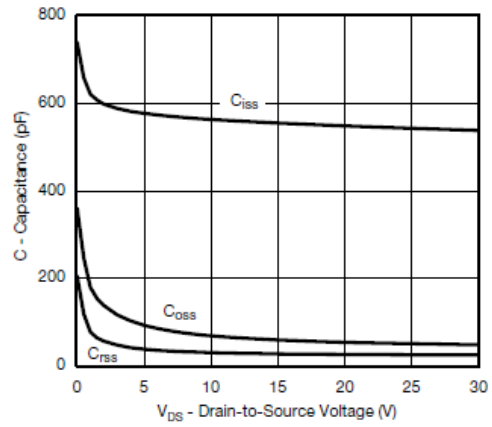
Output Characteristics



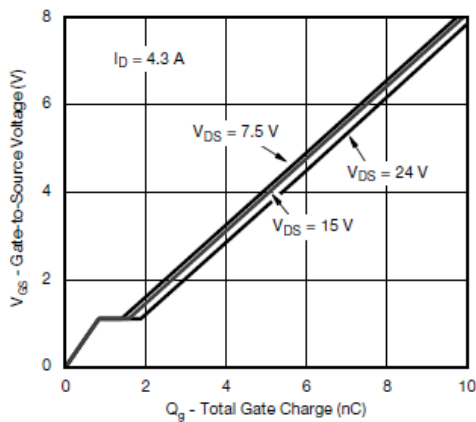
Transfer Characteristics



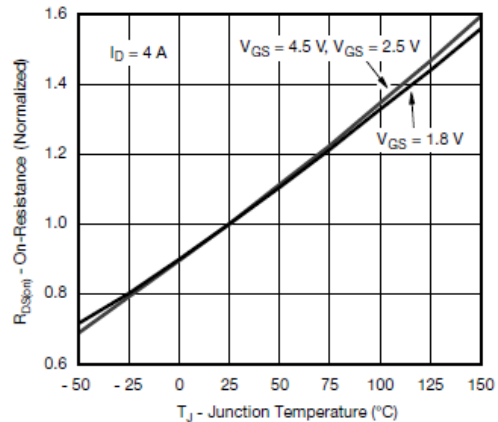
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



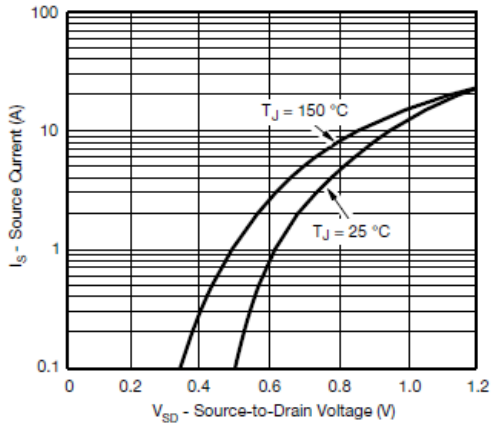
Gate Charge



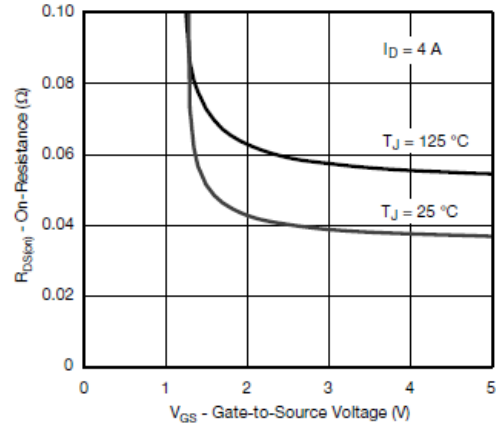
On-Resistance vs. Junction Temperature



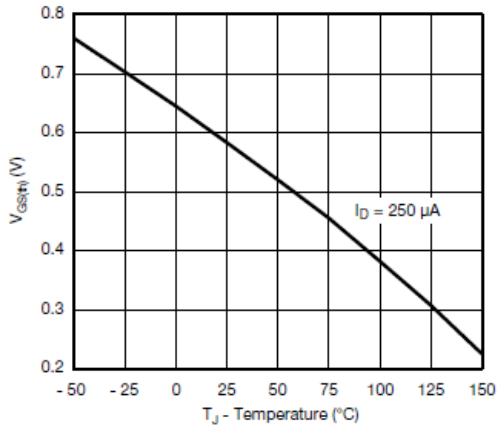
Typical Characteristics



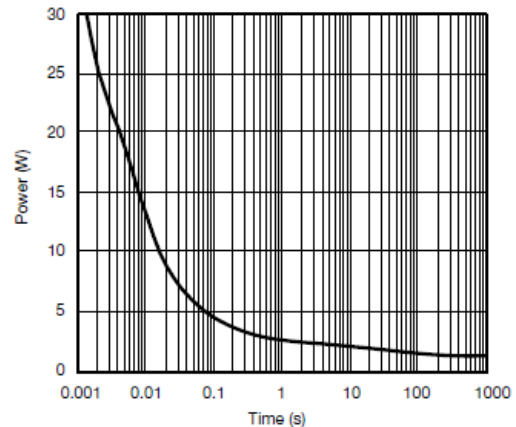
Source-Drain Diode Forward Voltage



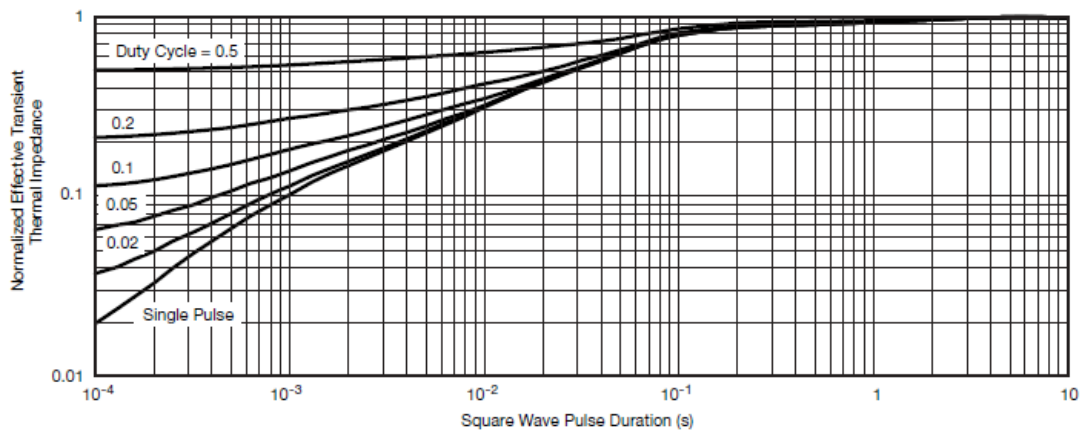
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Foot



Typical Characteristics

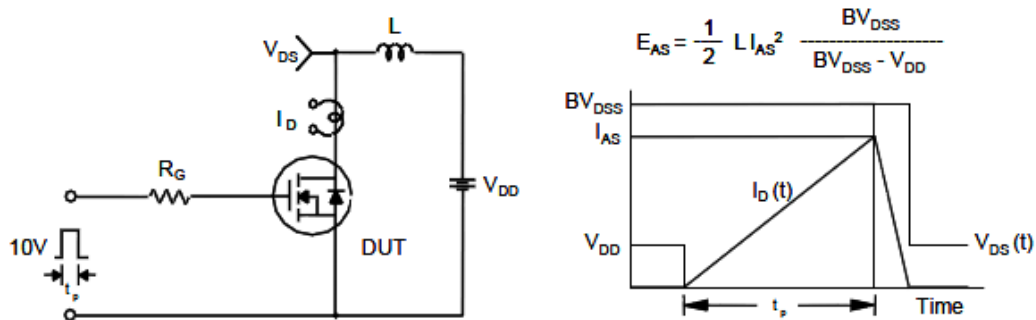
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

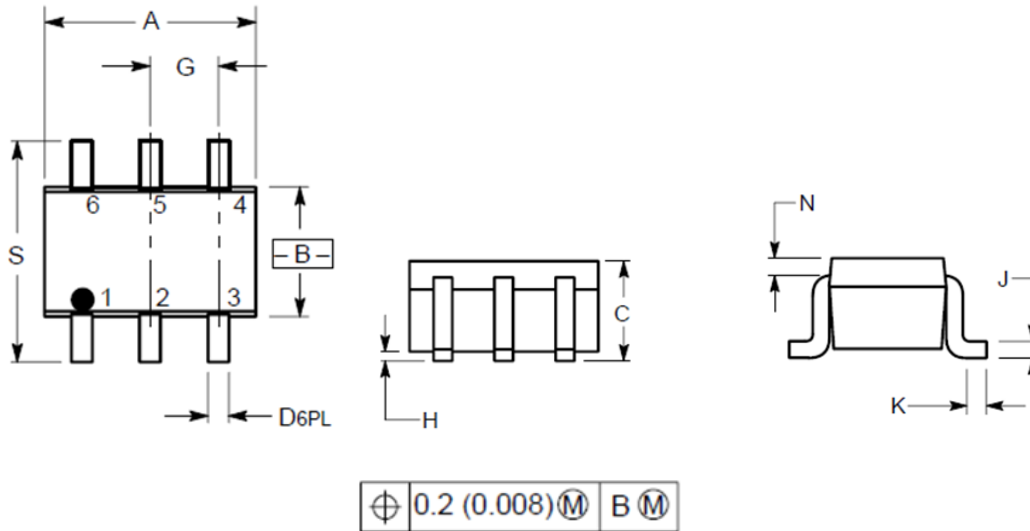


Unclamped Inductive Switching Test Circuit & Waveforms





Package Information (SOT-363)



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.031	0.043	0.80	1.10
D	0.004	0.012	0.10	0.30
G	0.026 BSC		0.65 BSC	
H	---	0.004	---	0.10
J	0.004	0.010	0.10	0.25
K	0.004	0.012	0.10	0.30
N	0.008 REF		0.20 REF	
S	0.079	0.087	2.00	2.20

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