Single N-channel MOSFET

ELM4N0026FAA-N

■General description

ELM4N0026FAA-N uses advanced trench technology to provide excellent Rds(on), low gate charge and low gate threshold voltage.

■Features

- Vds=100V
- Id=7.5A (Vgs=10V)
- Rds(on) = 20mΩ (Vgs=10V)
- Rds(on) = 25mΩ (Vgs=4.5V)

■Maximum absolute ratings

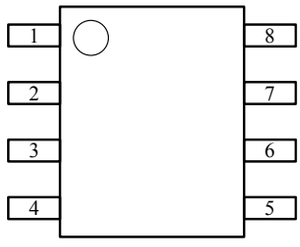
Parameter		Symbol	Limit	Unit	Note
Drain-source voltage		Vds	100	V	
Gate-source voltage		Vgs	±20	V	
Continuous drain current (Vgs=10V)	Ta=25°C	Id	7.5	A	1
	Ta=70°C		6.0		
Pulsed drain current		Idm	40	A	2
Single pulse avalanche energy		EAS	16	mJ	3
Avalanche current		Ias	18	A	
Total power dissipation	Ta=25°C	Pd	2.5	W	4
Storage temperature range		Tstg	- 55 to 150	°C	
Operating junction temperature range		Tj	- 55 to 150	°C	

■Thermal characteristics

Parameter		Symbol	Typ.	Max.	Unit	Note
Thermal resistance junction-ambient	t≤10s	Rθja	-	50	°C/W	1
Thermal resistance junction-ambient	Steady-state		-	85	°C/W	

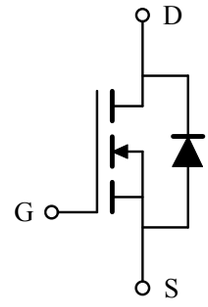
■Pin configuration

SOP-8(TOP VIEW)



Pin No.	Pin name
1	SOURCE
2	SOURCE
3	SOURCE
4	GATE
5	DRAIN
6	DRAIN
7	DRAIN
8	DRAIN

■Circuit



■Electrical characteristics

Tj=25°C. Unless otherwise noted.

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Vgs=0V, Id=250μA	100	-	-	V	
BVdss temperature coefficient	$\frac{\Delta BVdss}{\Delta Tj}$	Reference to 25°C, Id=1mA	-	0.08	-	V/°C	
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=7A	-	16	20	mΩ	2
		Vgs=4.5V, Id=5A	-	19	25		
Gate threshold voltage	Vgs(th)	Vgs=Vds, Id=250μA	1.2	-	2.5	V	
Vgs(th) temperature coefficient	ΔVgs(th)		-	-5.5	-	mV/°C	
Drain-source leakage current	Idss	Vds=80V, Vgs=0V	-	-	10	μA	
		Vds=80V, Vgs=0V, Tj=55°C	-	-	100		
Gate-source leakage current	Igss	Vgs=±20V, Vds=0V	-	-	±100	nA	
Forward transconductance	Gfs	Vds=5V, Id=7A	-	24	-	S	
Continuous source current	Is	Vgs=Vds=0V, Force current	-	-	7	A	1, 5
Pulsed source current	Ism		-	-	40	A	2, 5
Diode forward voltage	Vsd	Vgs=0V, Is=1A	-	-	1.2	V	2
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vds=15V, Vgs=0V, f=1MHz		1930		pF	
Output capacitance	Coss			245		pF	
Reverse transfer capacitance	Crss			125		pF	
Gate resistance	Rg	Vds=0V, Vgs=0V, f=1MHz	-	1.6	-	Ω	
SWITCHING PARAMETERS							
Total gate charge (10V)	Qg	Vds=80V, Vgs=10V Id=7A	-	36	-	nC	
Gate-source charge	Qgs		-	5	-	nC	
Gate-drain charge	Qgd		-	10	-	nC	
Turn-on delay time	td(on)	Vds=50V, Vgs=10V Rgen=3.3Ω, Id=7A	-	11.5	-	ns	
Turn-on rise time	tr		-	29.0	-	ns	
Turn-off delay time	td(off)		-	42.0	-	ns	
Turn-off fall time	tf		-	18.0	-	ns	
Reverse recovery time	trr	If=7A, di/dt=100A/μs	-	48	-	nS	
Reverse recovery charge	Qrr		-	29	-	nC	

Note :

1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
3. The EAS data shows Max. rating . The test condition is Vdd=25V, Vgs=10V, L=0.1mH.
4. The power dissipation is limited by 150°C junction temperature.
5. The data is theoretically the same as Id and Idm, in real applications, should be limited by total power dissipation.

■Typical electrical and thermal characteristics

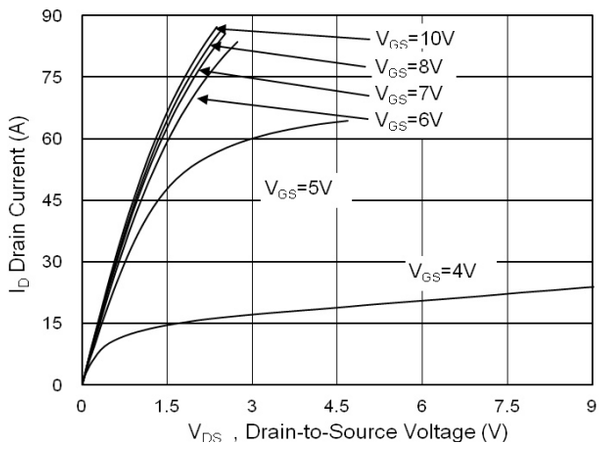


Fig.1 Typical Output Characteristics

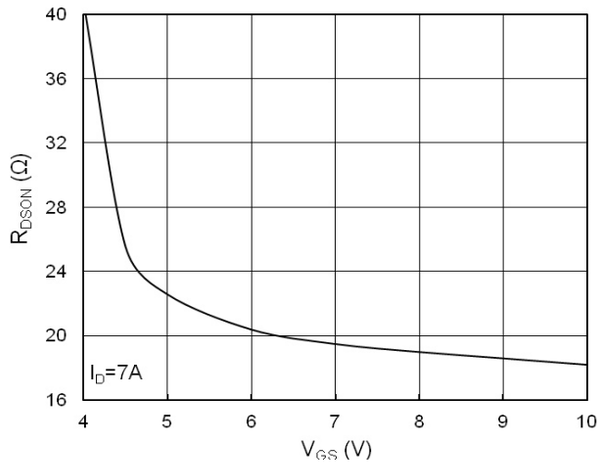


Fig.2 On-Resistance vs. Gate-Source

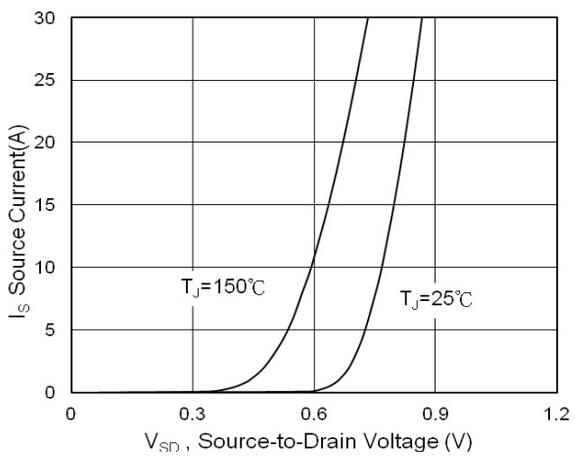


Fig.3 Forward Characteristics Of Reverse

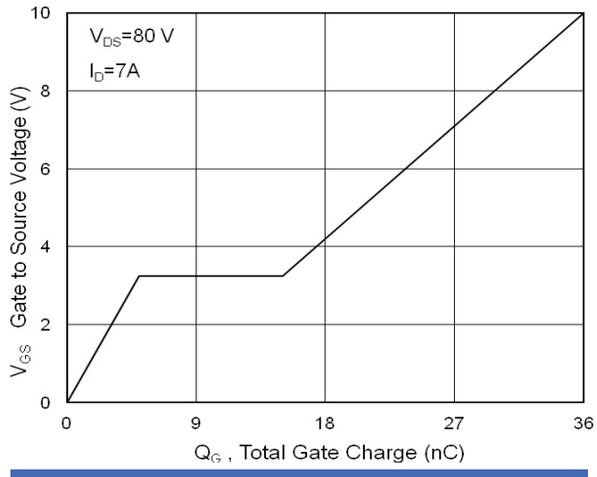


Fig.4 Gate-Charge Characteristics

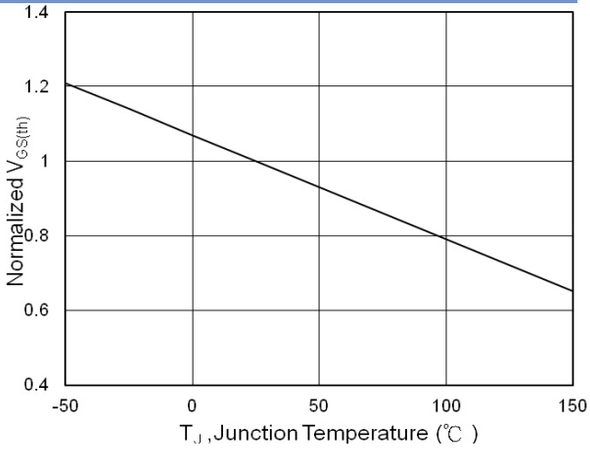


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

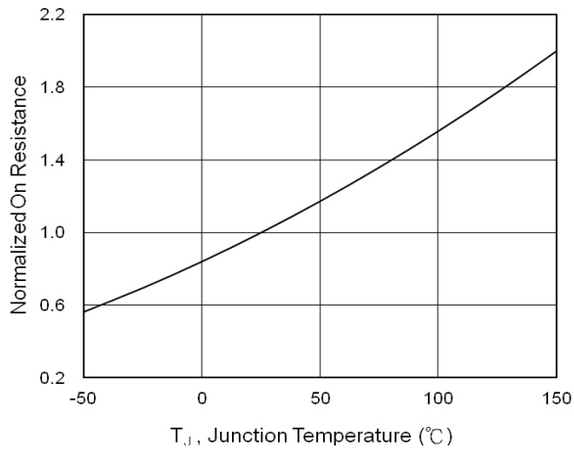


Fig.6 Normalized R_{DSON} vs. T_J

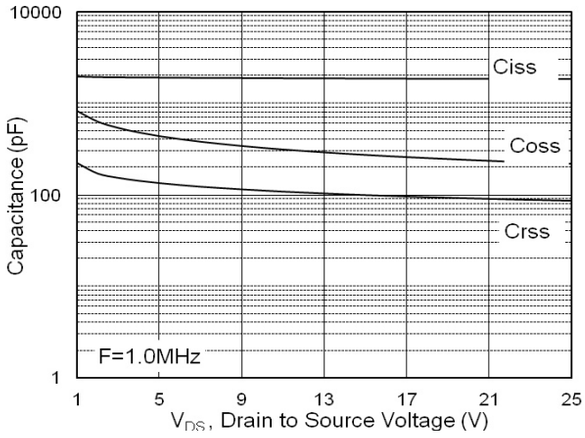


Fig.7 Capacitance

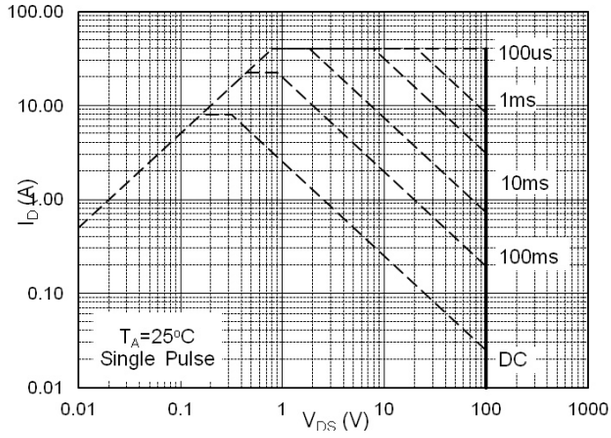


Fig.8 Safe Operating Area

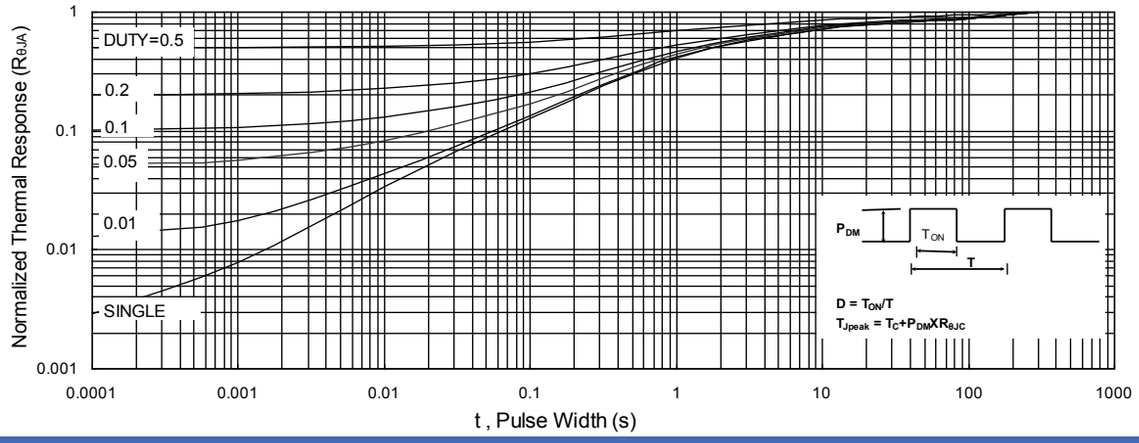


Fig.9 Normalized Maximum Transient Thermal Impedance

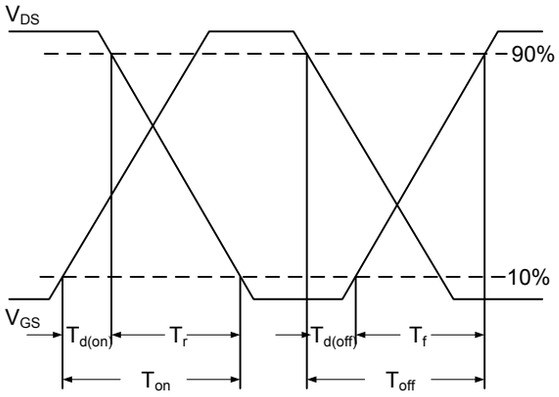


Fig.10 Switching Time Waveform

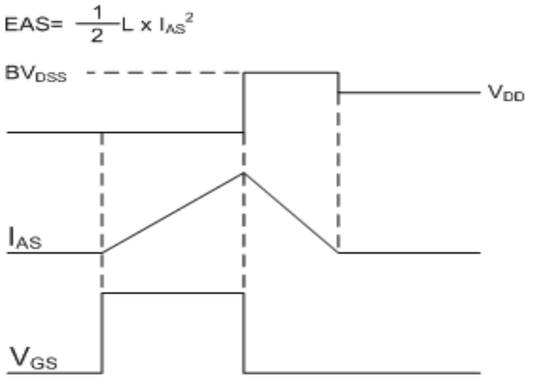
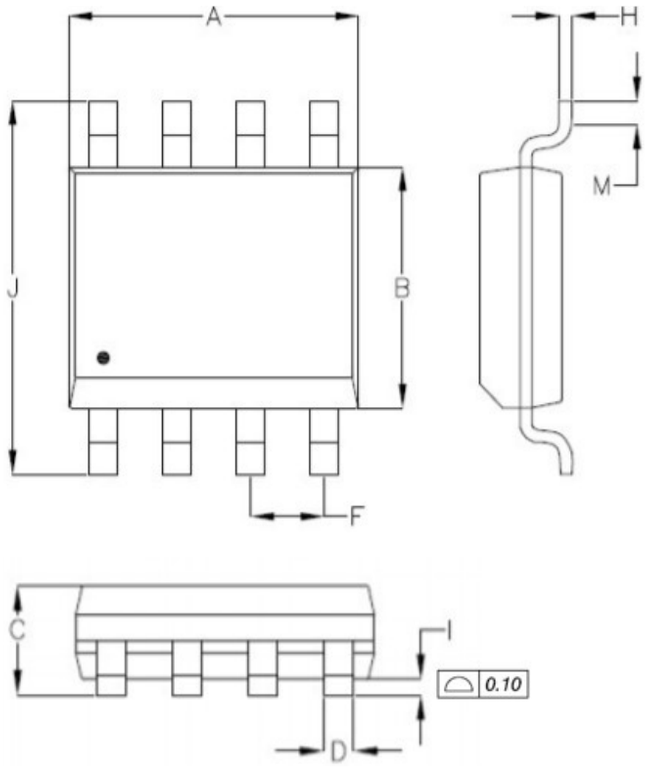


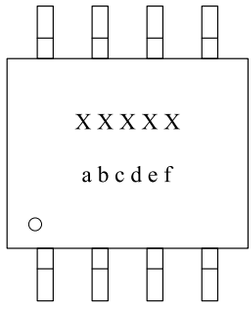
Fig.11 Unclamped Inductive Switching Waveform

■SOP-8 dimension (2,500pcs/reel)



Symbols	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.700	5.150	0.185	0.203
B	3.700	4.100	0.146	0.161
C	1.230	1.753	0.048	0.069
D	0.310	0.510	0.012	0.020
F	1.070	1.470	0.042	0.058
H	0.160	0.254	0.006	0.010
I	0.050	0.254	0.002	0.010
J	5.750	6.250	0.226	0.246
M	0.400	1.270	0.016	0.050

■Marking



Symbols	Content
xxxxx	Product code
a	Yearly code: 2019=K, 2020=L, 2021=M, 2022=N...
b, c	Weekly code: 01 to 53
d, e	Sequence: 01 to 99 or 0A to 0Z
f	Assembly code: A to Z (I, O excepted)