

Single N-channel MOSFET

ELM33408CA-S

■ General description

ELM33408CA-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

■ Features

- $V_{ds}=20V$
- $I_d=3A$
- $R_{ds(on)} < 50.8m\Omega$ ($V_{gs}=4.5V$)
- $R_{ds(on)} < 100m\Omega$ ($V_{gs}=2.5V$)

■ Maximum absolute ratings

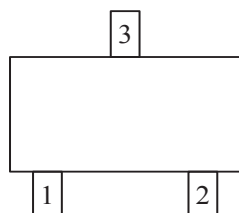
Parameter	Symbol	Limit	Unit	Note
Gate-source voltage	V_{gs}	± 16	V	
Continuous drain current	I_d	Ta=25°C	3	A
		Ta=100°C	2	
Pulsed drain current	I_{dm}	20	A	3
Power dissipation	P_d	Ta=25°C	0.6	W
		Ta=100°C	0.5	
Junction and storage temperature range	T_j, T_{stg}	-55 to 150	°C	

■ Thermal characteristics

Parameter		Symbol	Typ.	Max.	Unit	Note
Maximum junction-to-case	Steady-state	$R\theta_{jc}$		65	°C/W	
Maximum junction-to-ambient	Steady-state	$R\theta_{ja}$		230	°C/W	

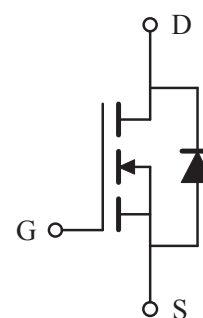
■ Pin configuration

SOT-23(TOP VIEW)



Pin No.	Pin name
1	GATE
2	SOURCE
3	DRAIN

■ Circuit



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■Electrical characteristics

Ta=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V	20			V	
Zero gate voltage drain current	Idss	Vds=16V, Vgs=0V			1	μA	
		Vds=16V, Vgs=0V, Tj=125°C			10		
Gate-body leakage current	Igss	Vds=0V, Vgs=±16V			±100	nA	
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	0.45	0.75	1.20	V	
On state drain current	Id(on)	Vgs=4.5V, Vds=10V	6			A	1
Static drain-source on-resistance	Rds(on)	Vgs=4.5V, Id=3A		42.0	50.8	mΩ	1
		Vgs=2.5V, Id=1.5A		60.0	100.0	mΩ	
Diode forward voltage	Vsd	If=Is, Vgs=0V			1.3	V	1
Max. body-diode continuous current	Is				2.3	A	
Pulsed body-diode current	Ism				4.6	A	3
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=15V, f=1MHz		450		pF	
Output capacitance	Coss			100		pF	
Reverse transfer capacitance	Crss			60		pF	
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=4.5V, Vds=10V, Id=3A		12.0	25.0	nC	2
Gate-source charge	Qgs			3.0		nC	2
Gate-drain charge	Qgd			4.5		nC	2
Turn-on delay time	td(on)	Vgs=4.5V, Vds=10V, Id≈1A Rl=1Ω, Rgen=0.2Ω		6	12	ns	2
Turn-on rise time	tr			5	10	ns	2
Turn-off delay time	td(off)			16	40	ns	2
Turn-off fall time	tf			5	20	ns	2

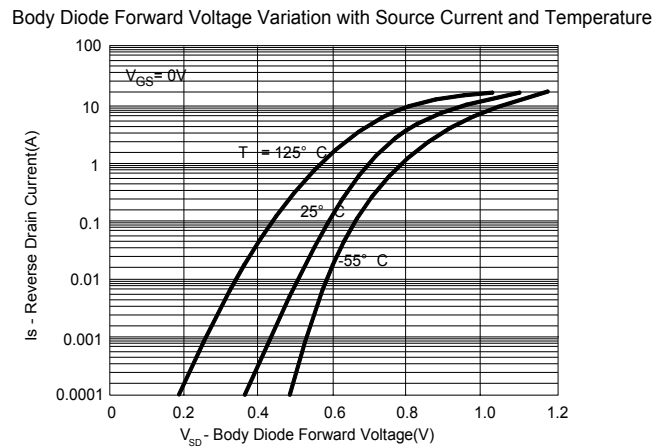
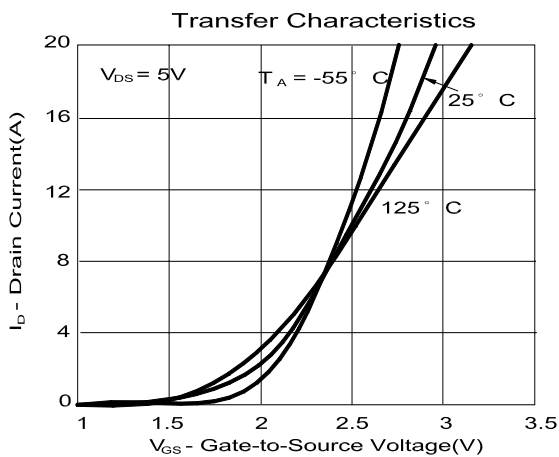
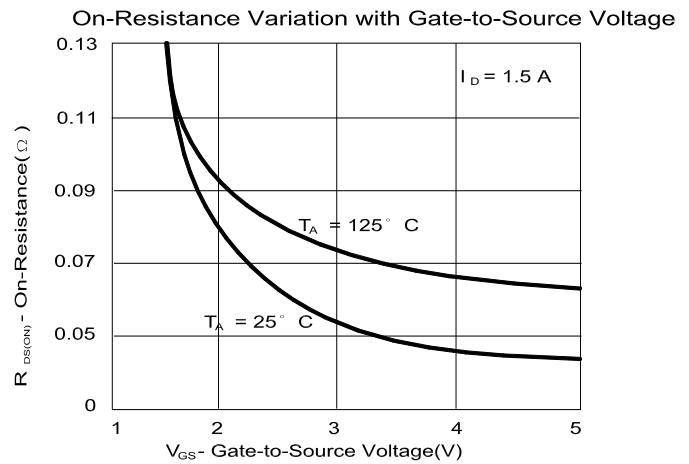
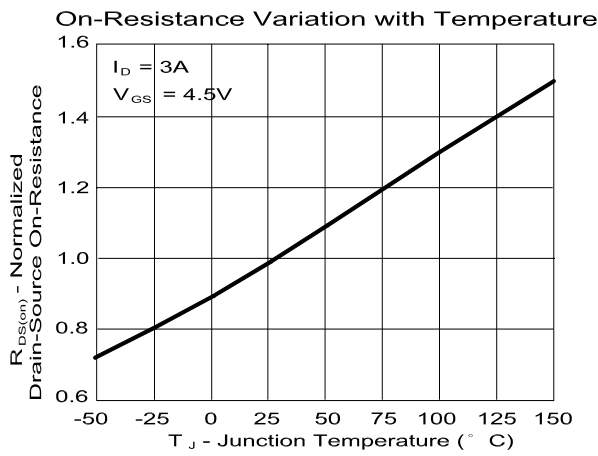
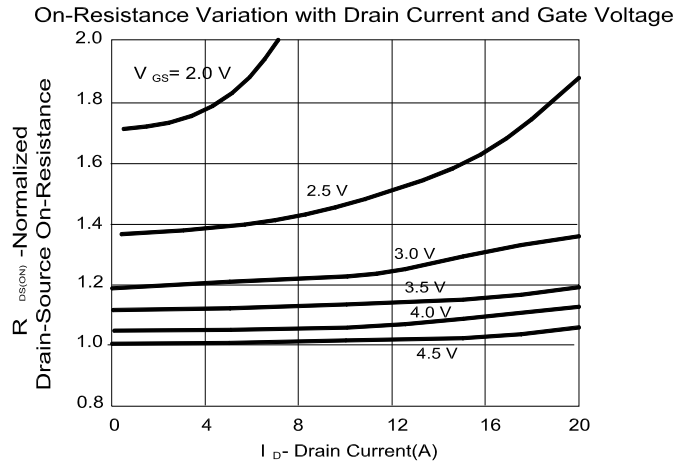
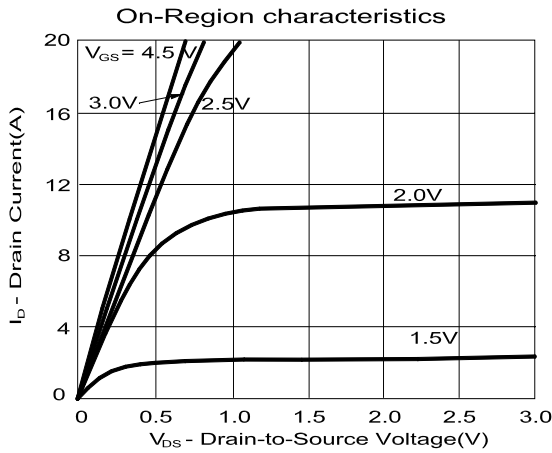
NOTE :

1. Pulse test : Pulsed width $\leq 300\mu\text{sec}$ and Duty cycle $\leq 2\%$.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Duty cycle $\leq 1\%$.

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■ Typical electrical and thermal characteristics



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