

Single P-channel MOSFET

ELM33405CA-S

■ General description

ELM33405CA-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

■ Features

- $V_{ds} = -30V$
- $I_d = -2A$
- $R_{ds(on)} < 150m\Omega$ ($V_{gs} = -10V$)
- $R_{ds(on)} < 250m\Omega$ ($V_{gs} = -4.5V$)

■ Maximum absolute ratings

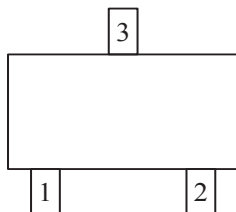
Parameter	Symbol	Limit	Unit	Note	
Drain-source voltage	V_{ds}	-30	V		
Gate-source voltage	V_{gs}	± 20	V		
Continuous drain current	I_d	$T_a = 25^\circ C$	-2.0	A	
		$T_a = 70^\circ C$	-1.4		
Pulsed drain current	I_{dm}	-10	A	3	
Power dissipation	P_d	$T_a = 25^\circ C$	1.25	W	
		$T_a = 70^\circ C$	0.80		
Junction and storage temperature range	T_j, T_{stg}	-55 to 150	$^\circ C$		

■ Thermal characteristics

Parameter		Symbol	Typ.	Max.	Unit	Note
Maximum junction-to-ambient	Steady-state	$R_{\theta ja}$		166	$^\circ C/W$	

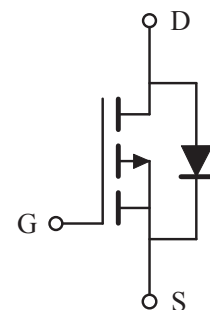
■ Pin configuration

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	Vgs=0V, Id=-250μA	-30			V	
Zero gate voltage drain current	Idss	Vds=-24V, Vgs=0V			-1	μA	
		Vds=-20V, Vgs=0V, Tj=125°C			-10		
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±100	nA	
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA	-1.0	-1.5	-2.5	V	
On state drain current	Id(on)	Vgs=-10V, Vds=-5V	-5			A	1
Static drain-source on-resistance	Rds(on)	Vgs=-10V, Id=-2A		100	150	mΩ	1
		Vgs=-4.5V, Id=-1A		180	250	mΩ	
Forward transconductance	Gfs	Vds=-5V, Id=-2A		16		S	1
Diode forward voltage	Vsd	Is=-1A, Vgs=0V			-1.2	V	1
Max. body-diode continuous current	Is				-1.6	A	
Pulsed body-diode current	Ism				-3	A	3
DYNAMIC PARAMETERS							
Input capacitance	Ciss			410		pF	
Output capacitance	Coss	Vgs=0V, Vds=-15V, f=1MHz		220		pF	
Reverse transfer capacitance	Crss			85		pF	
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=-10V, Vds=-15V Id=-2A		5.80	10.00	nC	2
Gate-source charge	Qgs			0.85		nC	2
Gate-drain charge	Qgd			1.70		nC	2
Turn-on delay time	td(on)	Vgs=-10V, Vds=-15V Id≈-1A, Rgen=6Ω		13		ns	2
Turn-on rise time	tr			36		ns	2
Turn-off delay time	td(off)			42		ns	2
Turn-off fall time	tf			34		ns	2

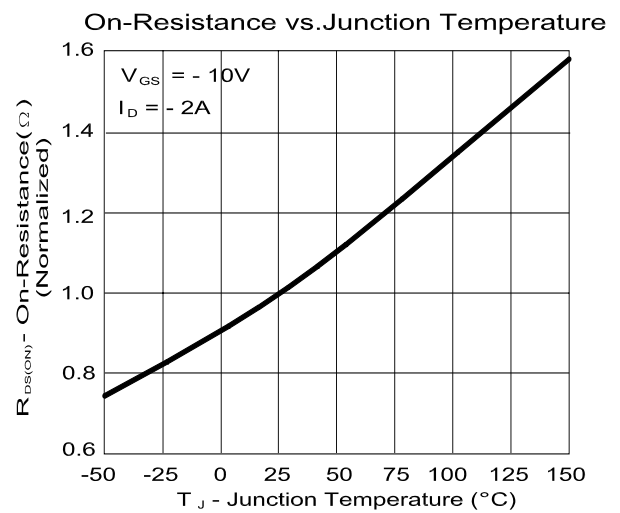
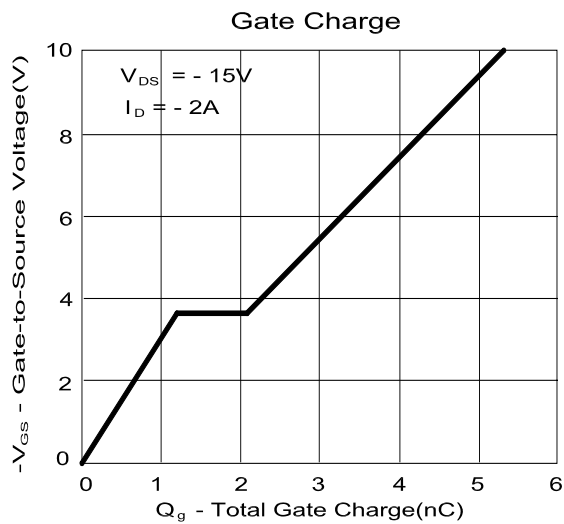
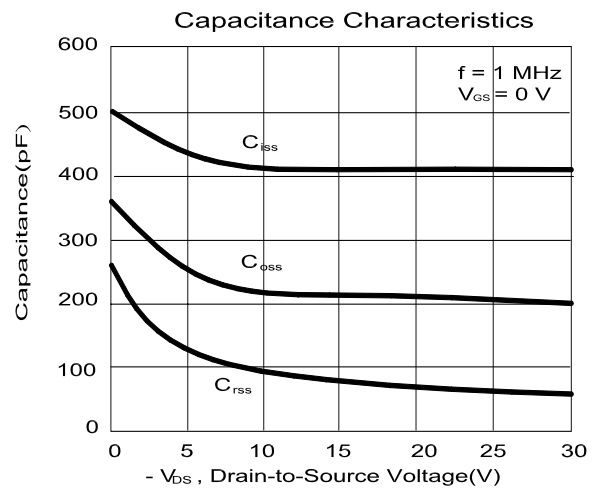
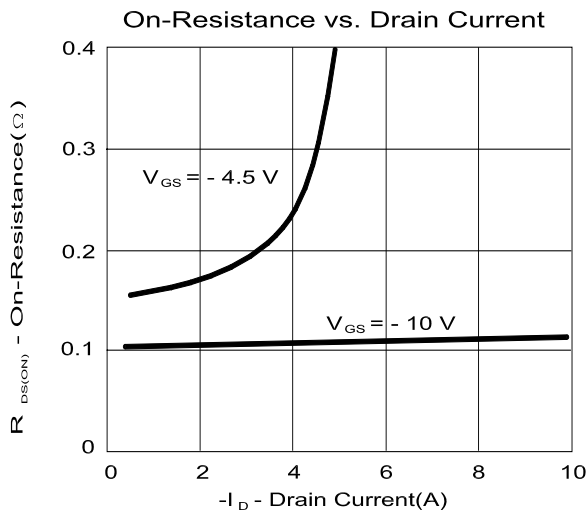
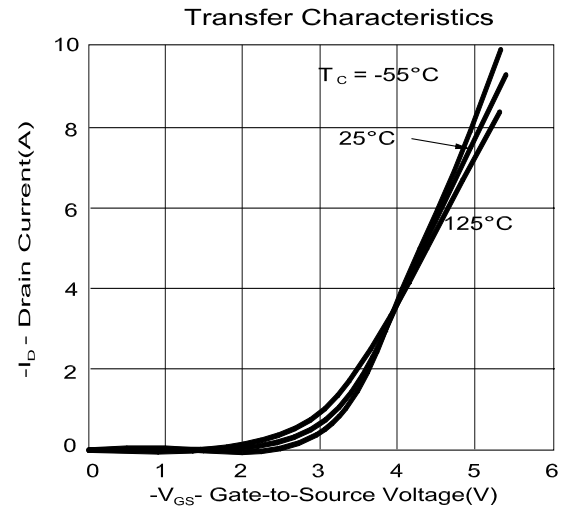
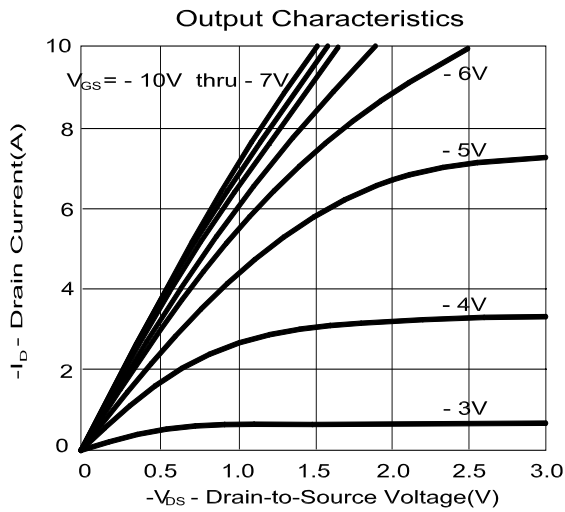
NOTE :

1. Pulsed width ≤ 300μsec and Duty cycle ≤ 2%.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Duty cycle ≤ 1%.

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■ Typical electrical and thermal characteristics



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