

Dual P-channel MOSFET

ELM51933A-S

<http://www.elm-tech.com>

■ General description

ELM51933A-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate threshold voltage.

■ Features

- $V_{ds} = -30V$
- $I_d = -0.55A$
- $R_{ds(on)} = 900m\Omega$ ($V_{gs} = -10V$)
- $R_{ds(on)} = 1000m\Omega$ ($V_{gs} = -4.5V$)
- $R_{ds(on)} = 1800m\Omega$ ($V_{gs} = -2.5V$)

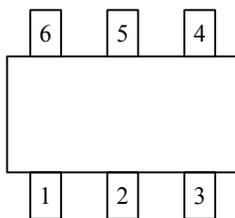
■ Maximum absolute ratings

$T_a = 25^\circ C$. Unless otherwise noted.

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{ds}	-30	V
Gate-source voltage	V_{gs}	± 12	V
Continuous drain current ($T_j = 150^\circ C$)	I_d	$T_a = 25^\circ C$	-0.55
		$T_a = 70^\circ C$	-0.15
Pulsed drain current	I_{dm}	-1.0	A
Power dissipation	P_d	$T_c = 25^\circ C$	0.3
		$T_c = 70^\circ C$	0.2
Junction and storage temperature range	T_j, T_{stg}	-55 to 150	$^\circ C$

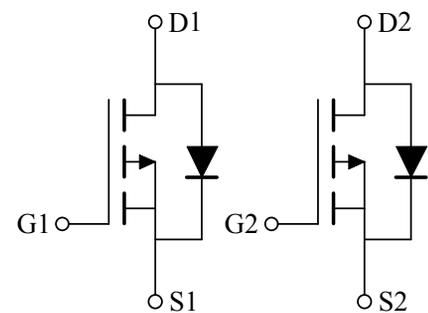
■ Pin configuration

SC-70-6 (TOP VIEW)



Pin No.	Pin name
1	SOURCE1
2	GATE1
3	DRAIN2
4	SOURCE2
5	GATE2
6	DRAIN1

■ Circuit



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■ Electrical characteristics

Ta=25°C. Unless otherwise noted.

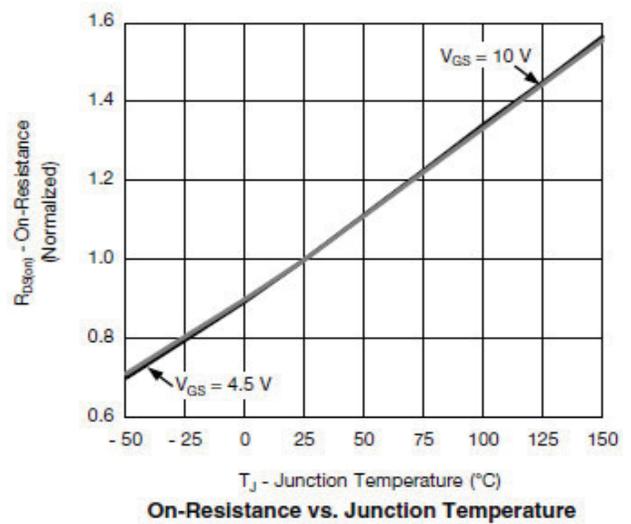
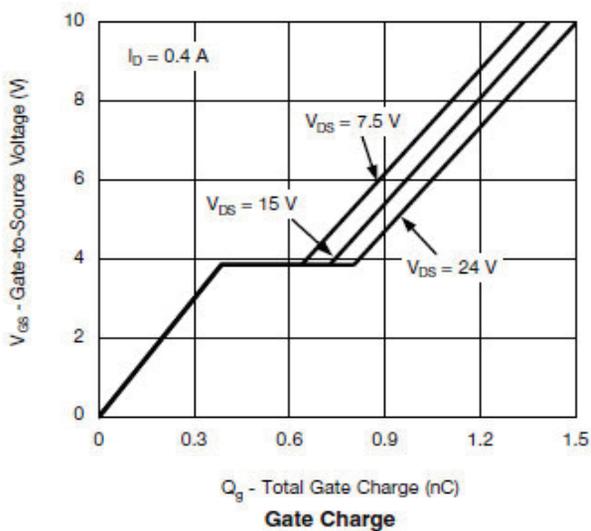
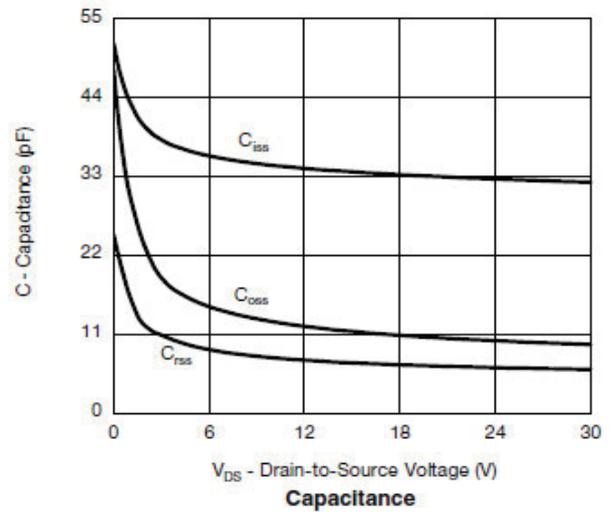
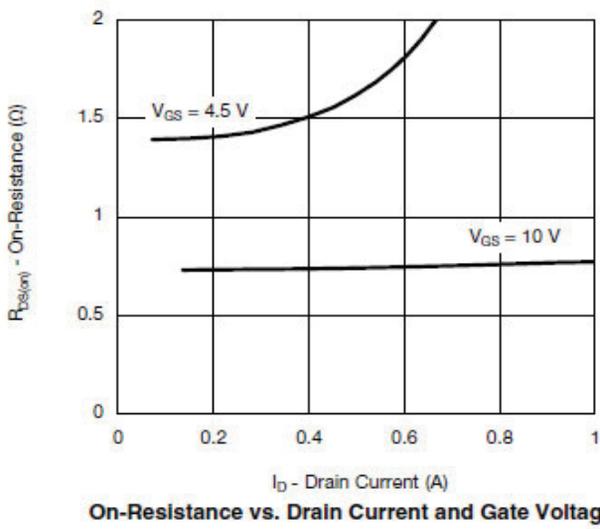
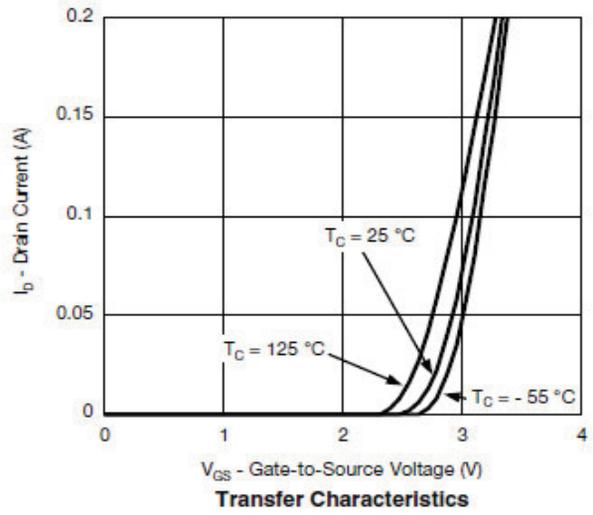
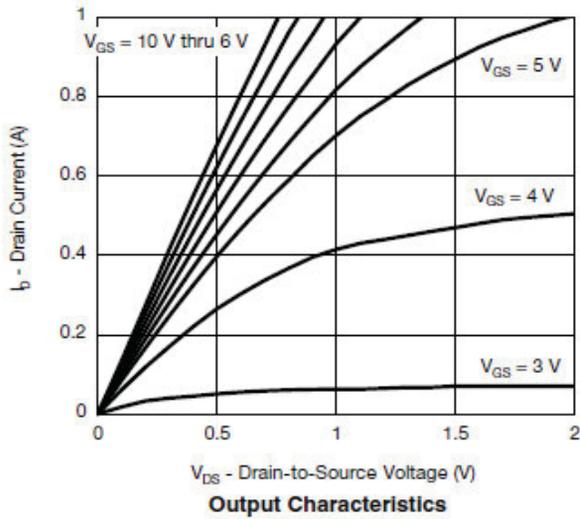
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Id=-250μA, Vgs=0V	-30			V
Zero gate voltage drain current	Idss	Vds=-24V, Vgs=0V Ta=85°C			-1	μA
					-5	
Gate-body leakage current	Igss	Vds=0V, Vgs=±12V			±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA	-0.7		-1.5	V
On state drain current	Id(on)	Vgs=-4.5V, Vds≥-5V	-0.5			A
Static drain-source on-resistance	Rds(on)	Vgs=-10V, Id=-0.55A		650	900	mΩ
		Vgs=-4.5V, Id=-0.35A		800	1000	
		Vgs=-2.5V, Id=-0.15A		1200	1800	
Forward transconductance	Gfs	Vds=-15V, Id=-0.5A		1		S
Diode forward voltage	Vsd	Is=-0.15A, Vgs=0V		-0.65	-1.30	V
Max. body-diode continuous current	Is				-0.3	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=-15V, f=1MHz		34		pF
Output capacitance	Coss			12		pF
Reverse transfer capacitance	Crss			8		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=-4.5V, Vds=-15V Id≐-0.15A		0.8	1.3	nC
Gate-source charge	Qgs			0.4		nC
Gate-drain charge	Qgd			0.4		nC
Turn-on delay time	td(on)	Vgs=-4.5V, Vds=-15V RL=38Ω, Id≐-0.15A Rgen=1.0Ω		35	50	ns
Turn-on rise time	tr			20	30	ns
Turn-off delay time	td(off)			10	20	ns
Turn-off fall time	tf			10	20	ns

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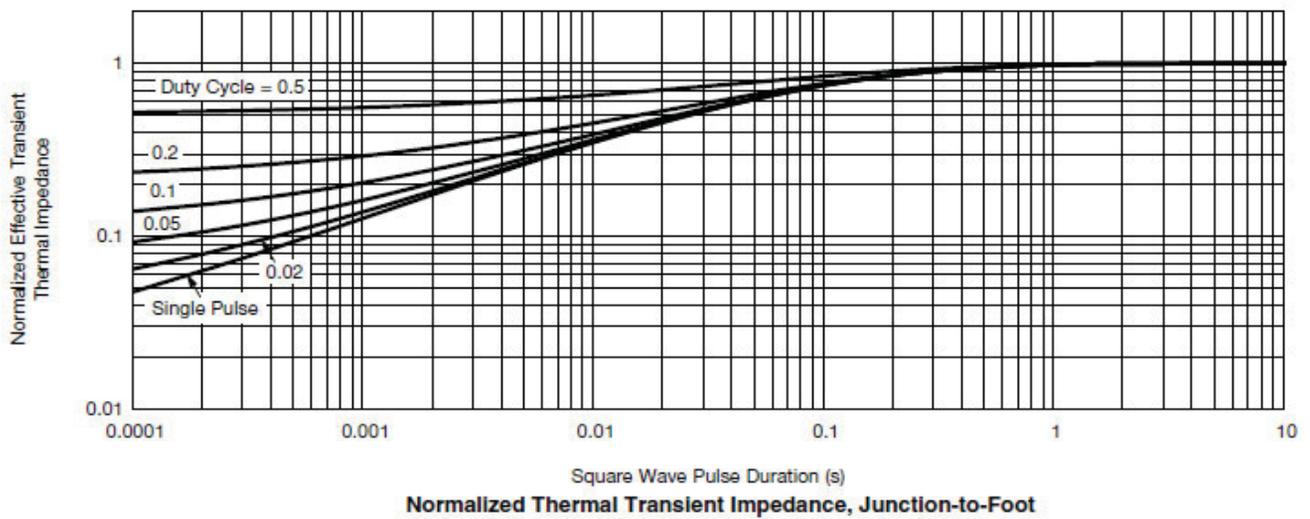
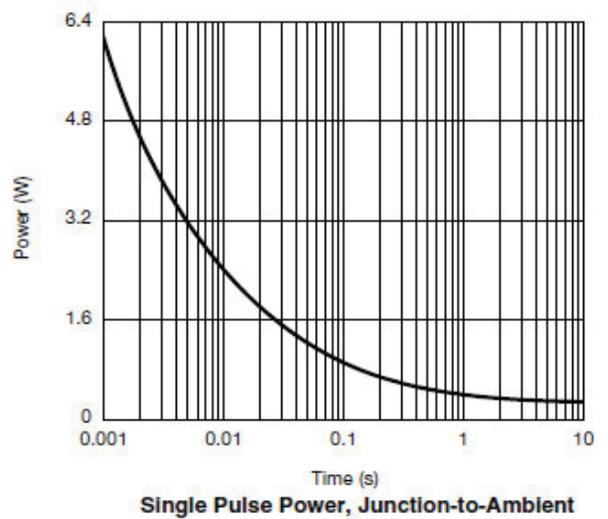
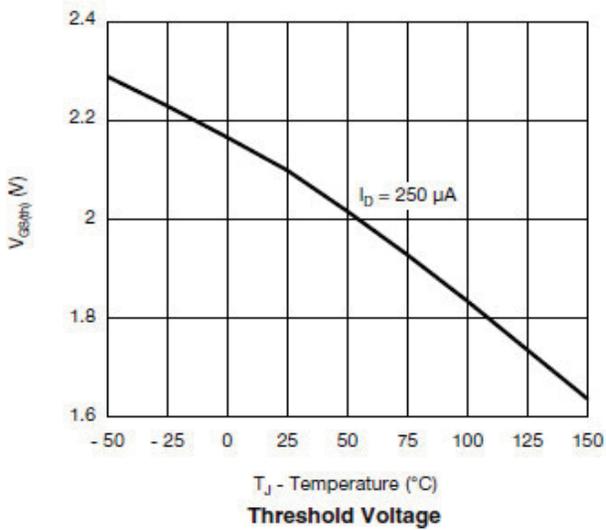
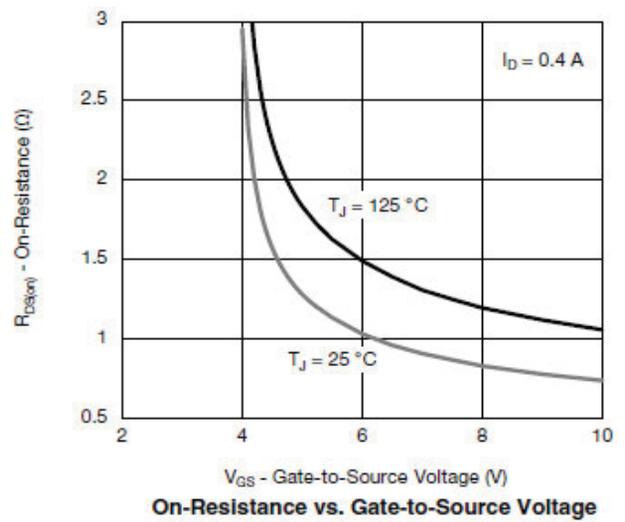
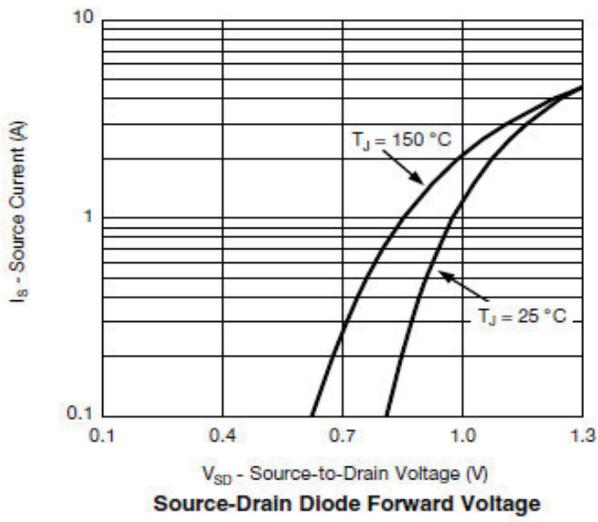
Typical electrical and thermal characteristics



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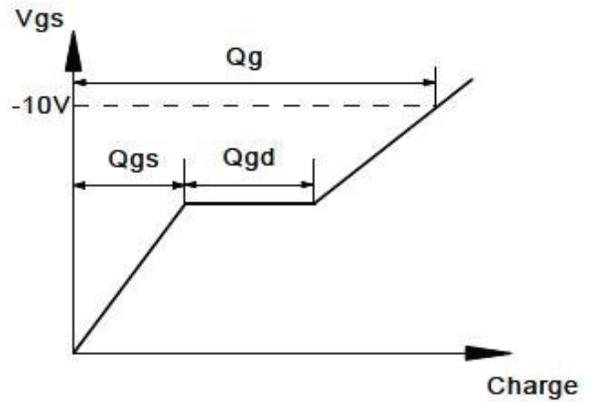
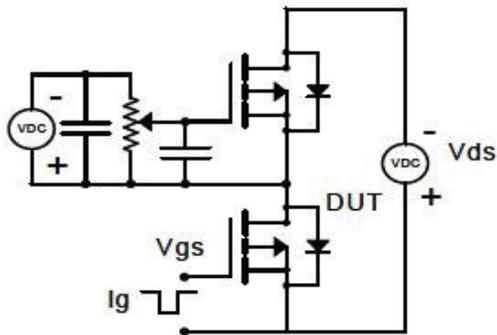
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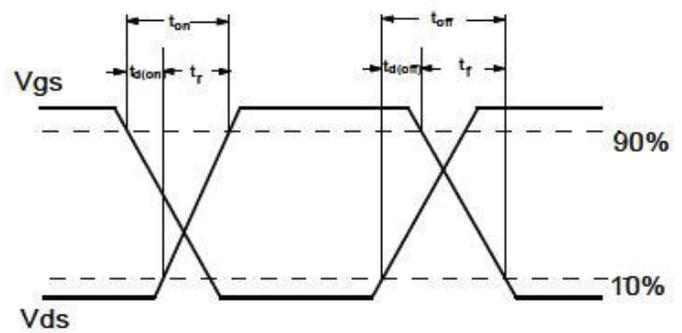
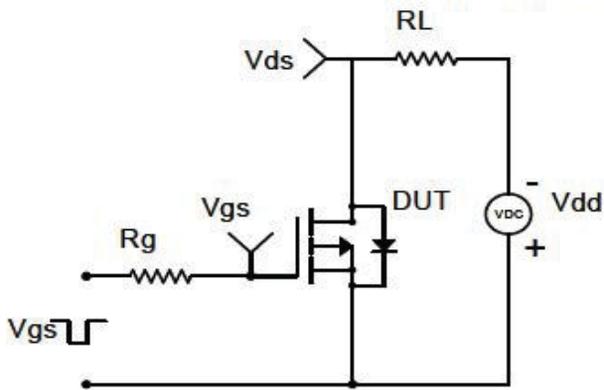
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■ Test circuit & waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

