Dual P-channel MOSFET

ELM51913A-S

■General description

ELM51913A-S uses advanced trench technology to provide excellent Rds(on), low gate charge and low gate threshold voltage.

■Features

• Vds=-20V
• Id=-1.4A
• Rds(on) = 600mΩ (Vgs=-4.5V)
• Rds(on) = 800mΩ (Vgs=-2.5V)
• Rds(on) = 1600mΩ (Vgs=-1.8V)

■Maximum absolute ratings

Ta=25°C. Unless otherwise noted.

Parameter		Symbol	Limit	Unit
Drain-source voltage		Vds	-20	V
Gate-source voltage		Vgs	±12	V
Continuous drain current(Tj=150°C)	Ta=25°C	Id	-1.4	A
	Ta=70°C		-1.0	
Pulsed drain current		Idm	-6	A
Power dissipation	Tc=25°C	Pd	0.3	W
	Tc=70°C		0.2	
Junction and storage temperature range		Tj, Tstg	-55 to 150	°C

■Pin configuration

SC-70-6(TOP VIEW)
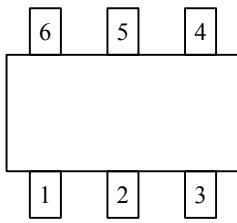
Pin No.	Pin name
1	SOURCE1
2	GATE1
3	DRAIN2
4	SOURCE2
5	GATE2
6	DRAIN1

■Circuit
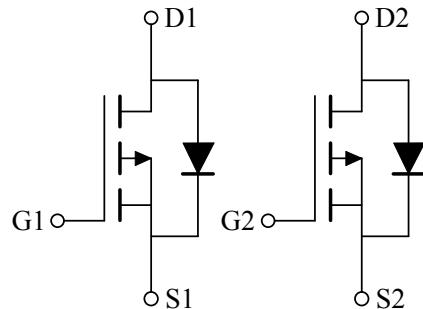
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■Electrical characteristics

Ta=25°C. Unless otherwise noted.

| Parameter	Symbol	Condition		Min.	Typ.	Max.	Unit
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Id=-250µA, Vgs=0V		-20			V
Zero gate voltage drain current	Idss	Vds=-20V, Vgs=0V				-1	µA
			Ta=85°C			-5	
Gate-body leakage current	Igss	Vds=0V, Vgs=±12V				±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250µA		-0.4		-1.0	V
On state drain current	Id(on)	Vgs=-4.5V, Vds≥-5V		-0.7			A
Static drain-source on-resistance	Rds(on)	Vgs=-4.5V, Id=-0.6A			460	600	mΩ
		Vgs=-2.5V, Id=-0.5A			680	800	
		Vgs=-1.8V, Id=-0.4A			1200	1600	
Forward transconductance	Gfs	Vds=-10V, Id=-0.4A			1		S
Diode forward voltage	Vsd	Is=-0.15A, Vgs=0V			-0.65	-1.20	V
Max. body-diode continuous current	Is					-1	A
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=-10V, f=1MHz			70	100	pF
Output capacitance	Coss				20		pF
Reverse transfer capacitance	Crss				10		pF
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=-4.5V, Vds=-10V Id=-0.25A			1.0	1.3	nC
Gate-source charge	Qgs				0.1		nC
Gate-drain charge	Qgd				0.3		nC
Turn-on delay time	td(on)	Vgs=-4.5V, Vds=-10V RL=30Ω, Id=-0.2A Rgen=10Ω			10	15	ns
Turn-on rise time	tr				10	15	ns
Turn-off delay time	td(off)				40	60	ns
Turn-off fall time	tf				30	50	ns

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## ■Typical electrical and thermal characteristics

Output Characteristics

Transfer Characteristics

On-Resistance vs. Drain Current

Capacitance
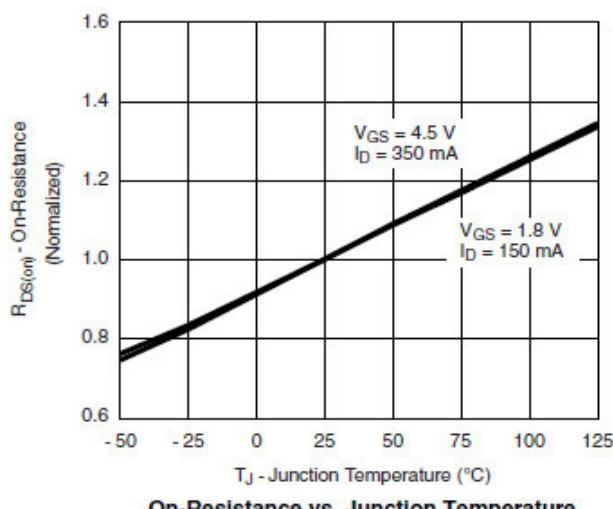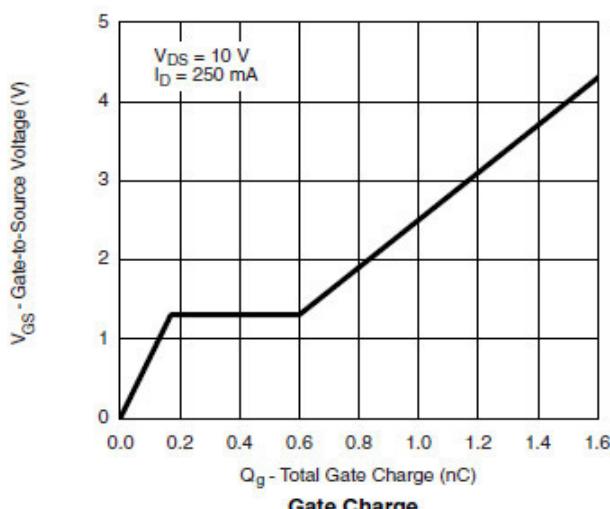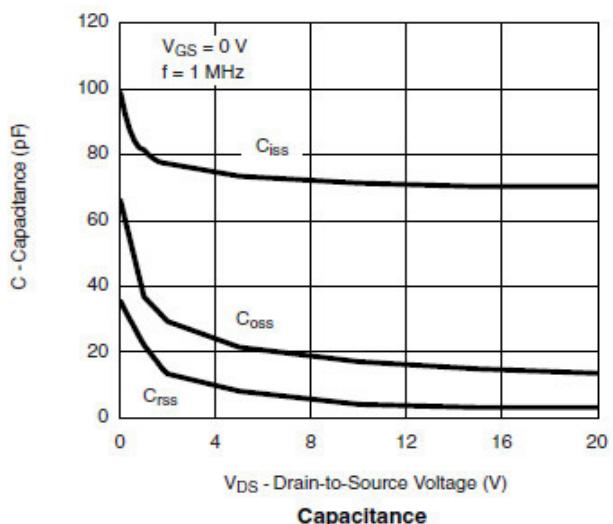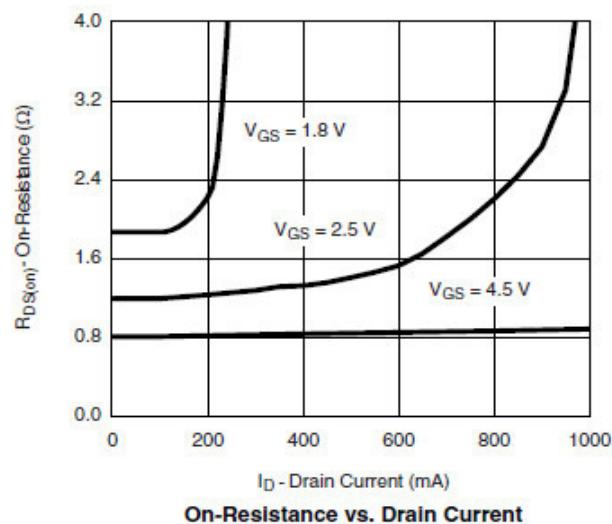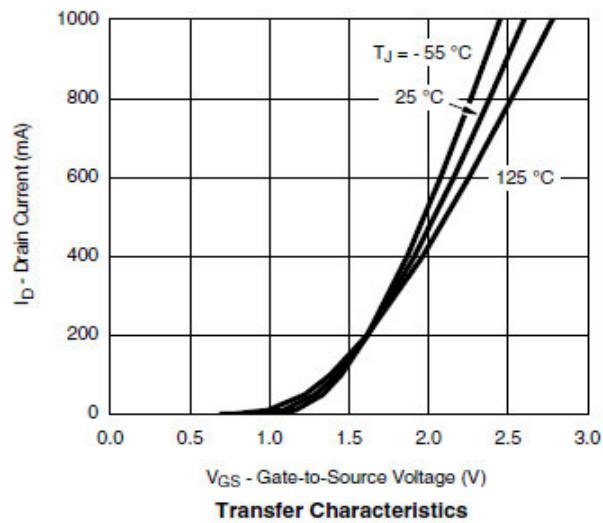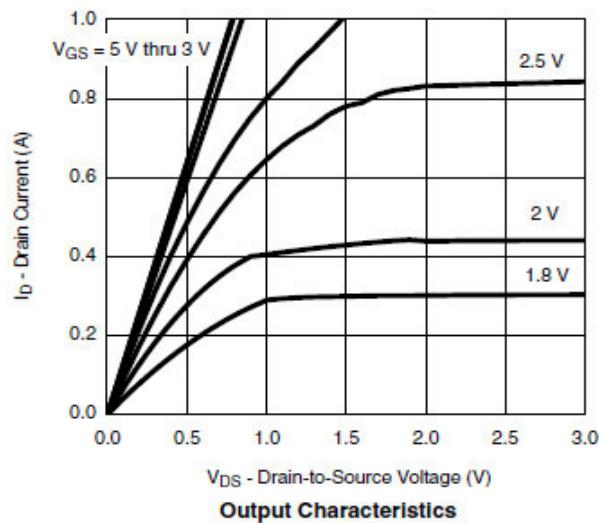
Gate Charge

On-Resistance vs. Junction Temperature
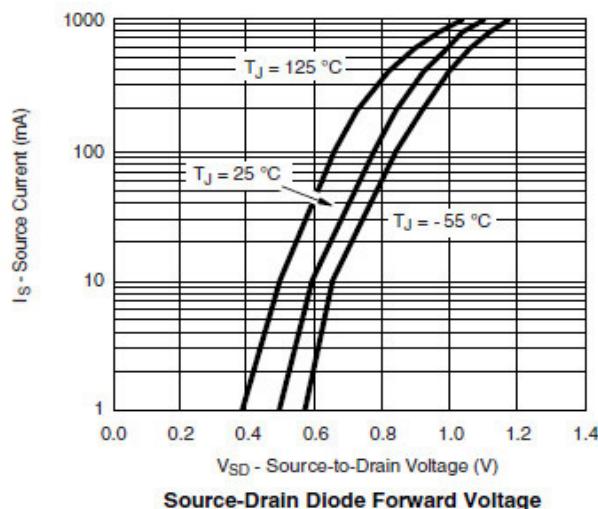
**Source-Drain Diode Forward Voltage**
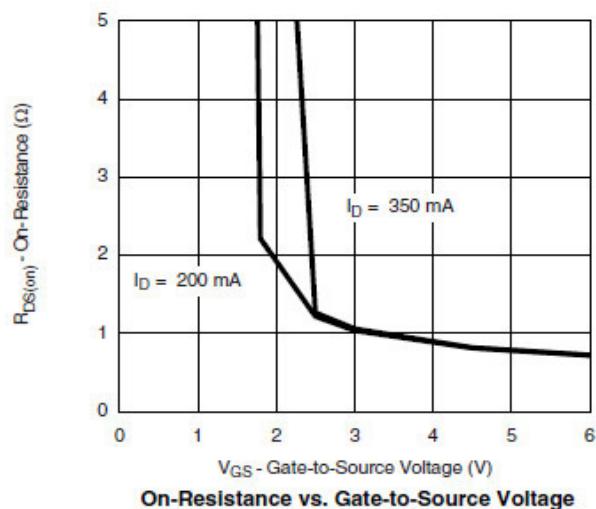
On-Resistance vs. Gate-to-Source Voltage
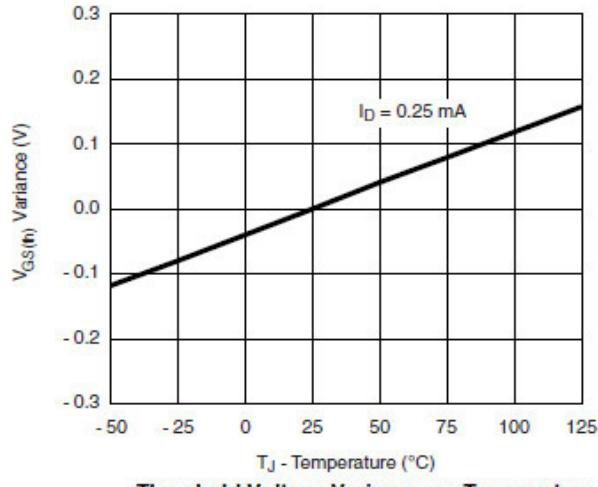
Threshold Voltage Variance vs. Temperature

I_{GSS} vs. Temperature

Notes:
1. Duty Cycle, D = $\frac{t_1}{t_2}$
2. Per Unit Base = R_{thJA} = 500 °C/W
3. $T_{JM} - T_A = P_{DM}Z_{thJA}^{(t)}$
4. Surface Mounted

Normalized Thermal Transient Impedance, Junction-to-Ambient
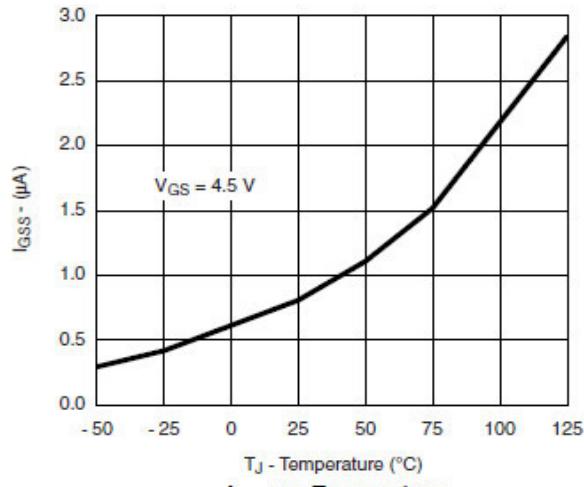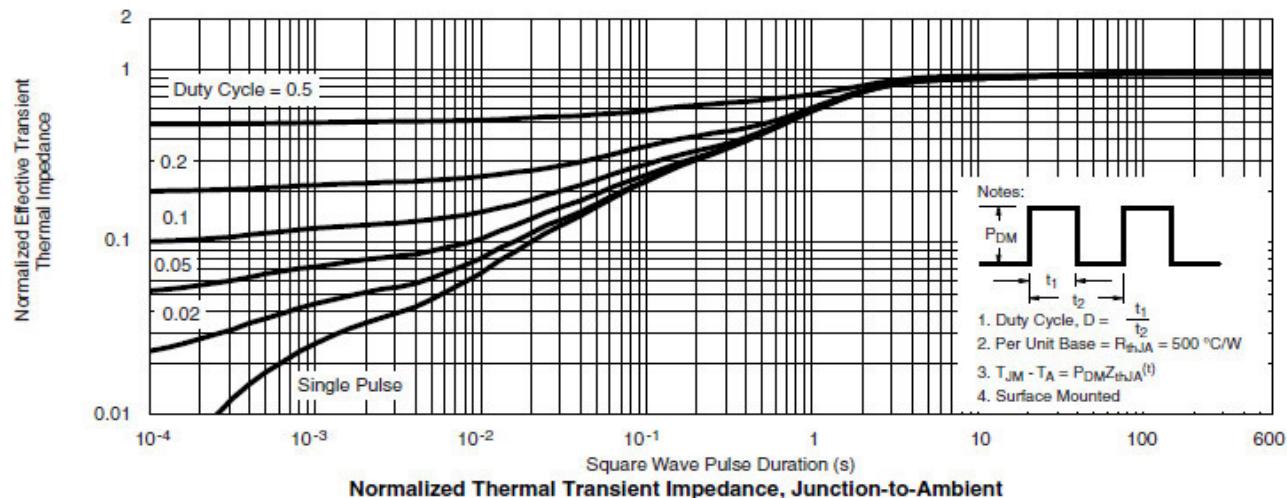
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■Test circuit & waveform

Gate Charge Test Circuit & Waveform
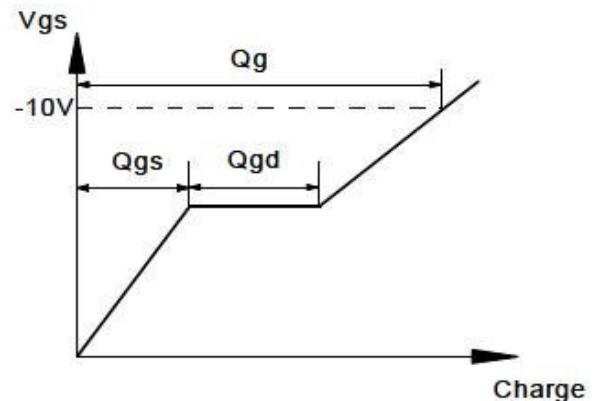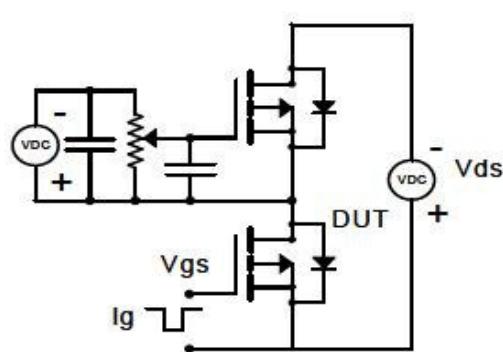
Resistive Switching Test Circuit & Waveforms
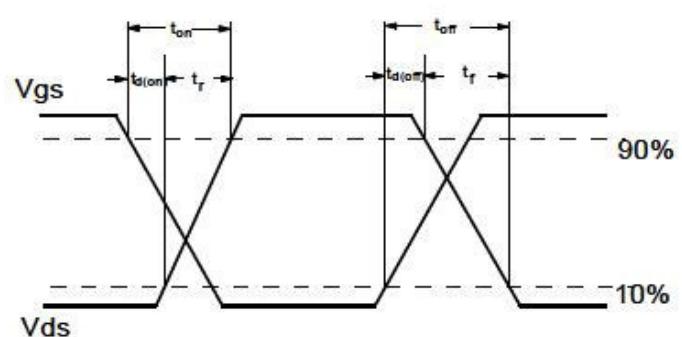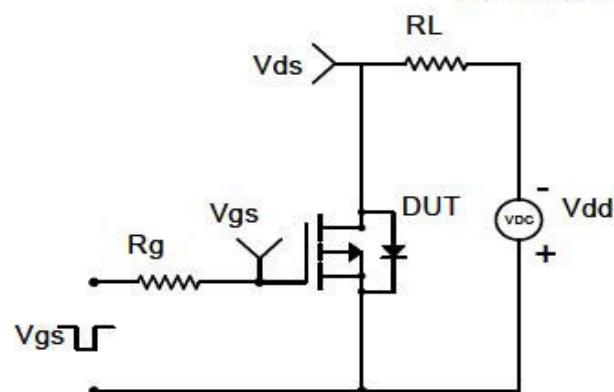
Diode Recovery Test Circuit & Waveforms

$$Q_{rr} = \int Idt$$