

Dual P-channel MOSFET

ELM53981A-S

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

■General description

ELM53981A-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate threshold voltage.

■Features

- $V_{ds}=-20V$
- $I_d=-3.2A$, $R_{ds(on)}=100m\Omega$ ($V_{gs}=-4.5V$)
- $I_d=-2.6A$, $R_{ds(on)}=135m\Omega$ ($V_{gs}=-2.5V$)
- $I_d=-1.5A$, $R_{ds(on)}=190m\Omega$ ($V_{gs}=-1.8V$)

■Maximum absolute ratings

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

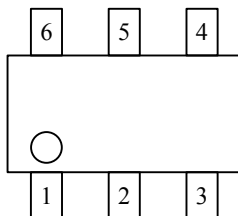
Parameter		Symbol	Limit	Unit
Drain-source voltage		V_{ds}	-20	V
Gate-source voltage		V_{gs}	± 12	V
Continuous drain current	$T_a=25^{\circ}C$	I_d	-3.2	A
	$T_a=70^{\circ}C$		-2.6	
Pulsed drain current		I_{dm}	-20	A
Power dissipation	$T_c=25^{\circ}C$	P_d	2.0	W
	$T_c=70^{\circ}C$		1.3	
Junction and storage temperature range		T_j, T_{stg}	-55 to 150	$^{\circ}C$

■Thermal characteristics

Parameter		Symbol	Typ.	Max.	Unit
Thermal resistance junction-to-ambient	Steady-state	$R_{\theta ja}$		120	$^{\circ}C/W$

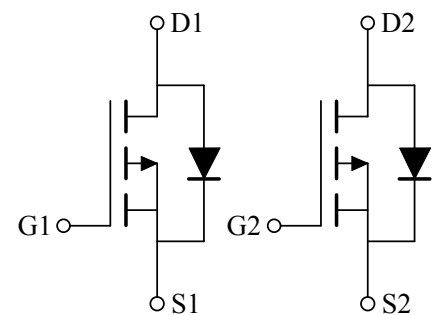
■Pin configuration

SOT-26(TOP VIEW)



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

■Circuit



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■Electrical characteristics

Ta=25°C. Unless otherwise noted.

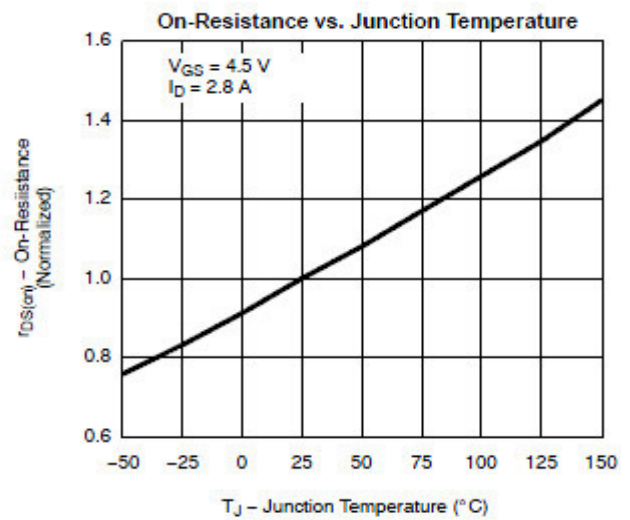
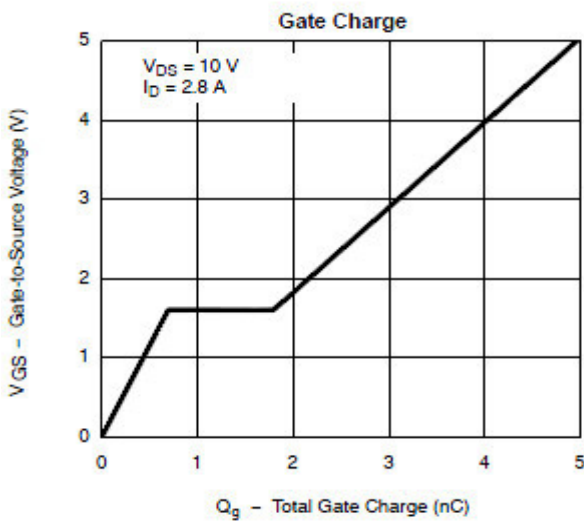
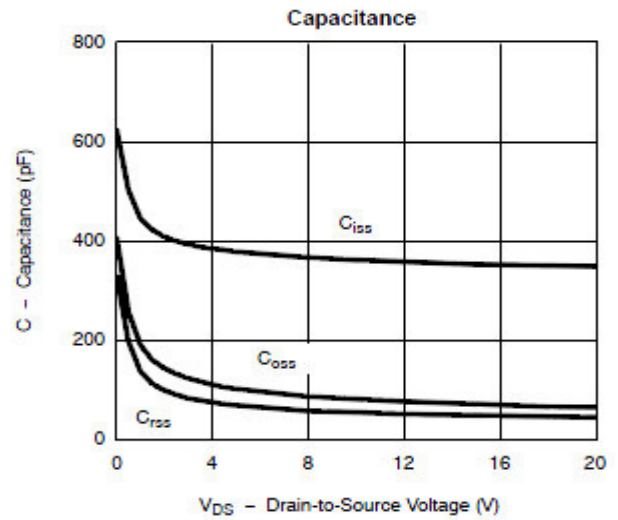
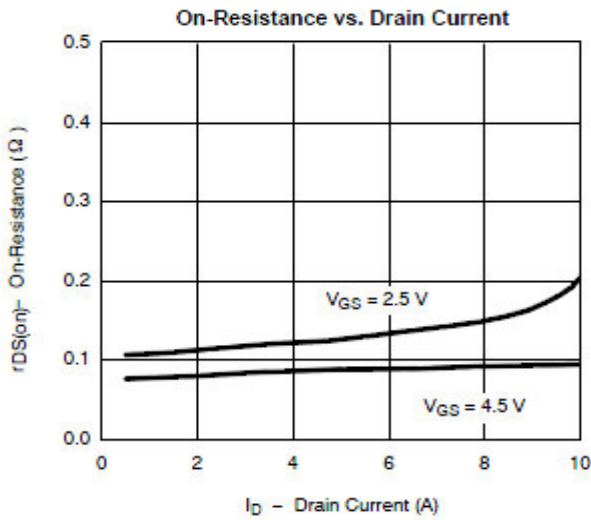
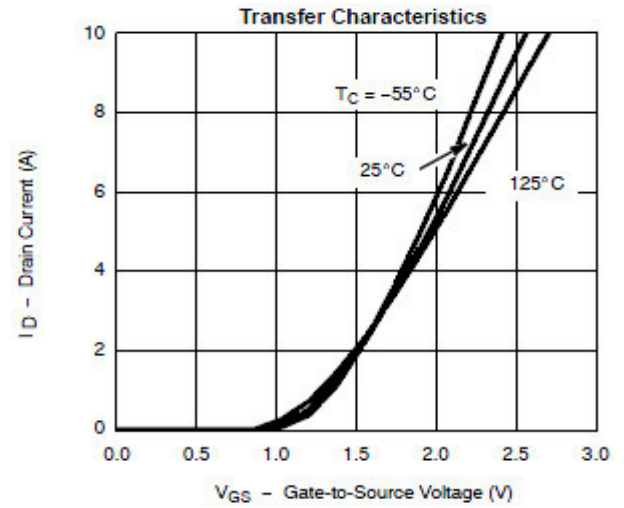
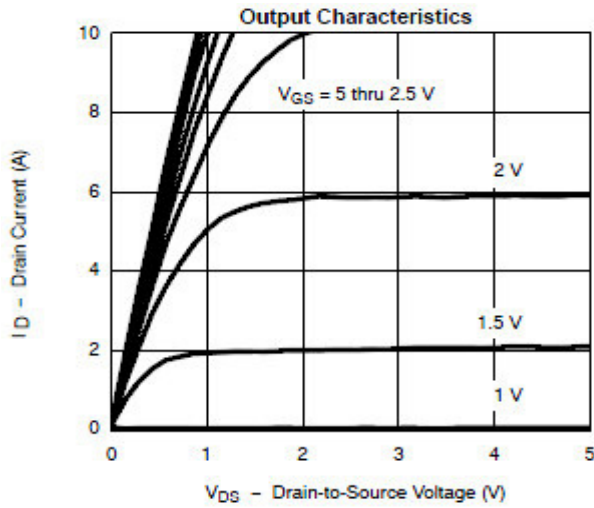
Parameter	Symbol	Condition		Min.	Typ.	Max.	Unit
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Id=-250μA, Vgs=0V		-20			V
Zero gate voltage drain current	Idss	Vds=-16V, Vgs=0V				-1	μA
			Ta=85°C			-30	
Gate-body leakage current	Igss	Vds=0V, Vgs=±12V				±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA		-0.3		-0.7	V
On state drain current	Id(on)	Vgs=-4.5V, Vds=-5V		-6			A
		Vgs=-2.5V, Vds=-5V		-3			
Static drain-source on-resistance	Rds(on)	Vgs=-4.5V, Id=-3.2A			92	100	mΩ
		Vgs=-2.5V, Id=-2.6A			122	135	
		Vgs=-1.8V, Id=-1.5A			168	190	
Forward transconductance	Gfs	Vds=-5V, Id=-2.8A			6.5		S
Diode forward voltage	Vsd	Is=-1.25A, Vgs=0V			-0.75	-1.30	V
Max. body-diode continuous current	Is					-1.7	A
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=-6V, f=1MHz			415		pF
Output capacitance	Coss				223		pF
Reverse transfer capacitance	Crss				87		pF
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=-4.5V, Vds=-6V Id=-2.8A			5.80	10.00	nC
Gate-source charge	Qgs				0.85		nC
Gate-drain charge	Qgd				1.70		nC
Turn-on delay time	td(on)	Vgs=-4.5V, Vds=-6V, Id=-1.0A RL=6Ω, Rgen=6Ω			13	25	ns
Turn-on rise time	tr				36	60	ns
Turn-off delay time	td(off)				42	70	ns
Turn-off fall time	tf				34	60	ns

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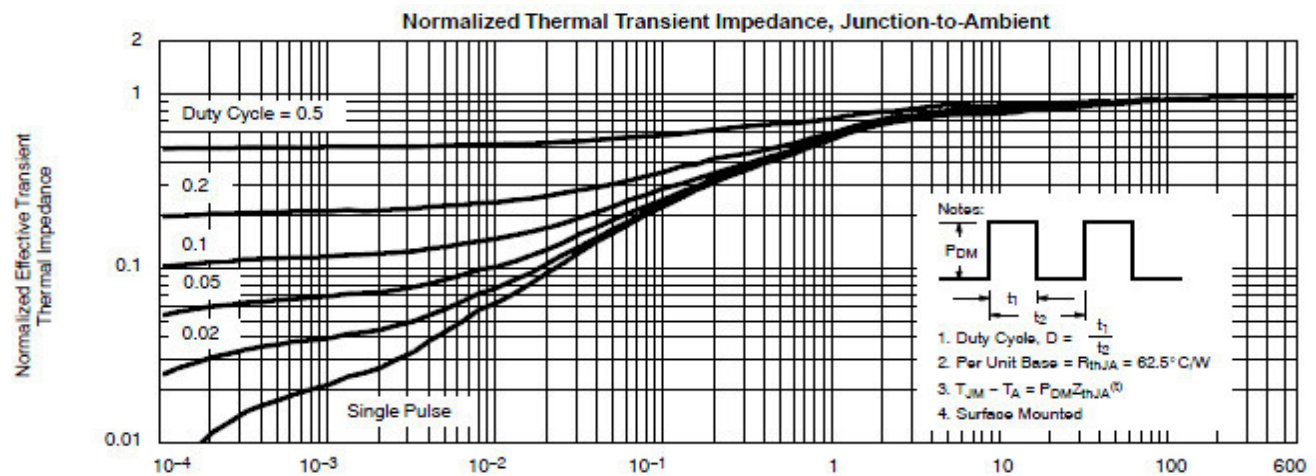
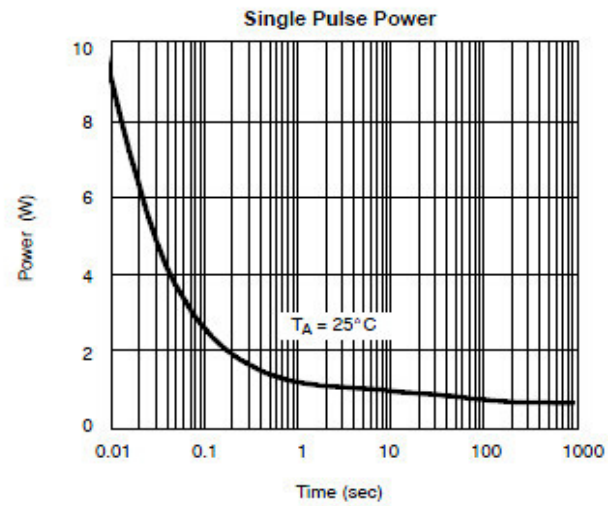
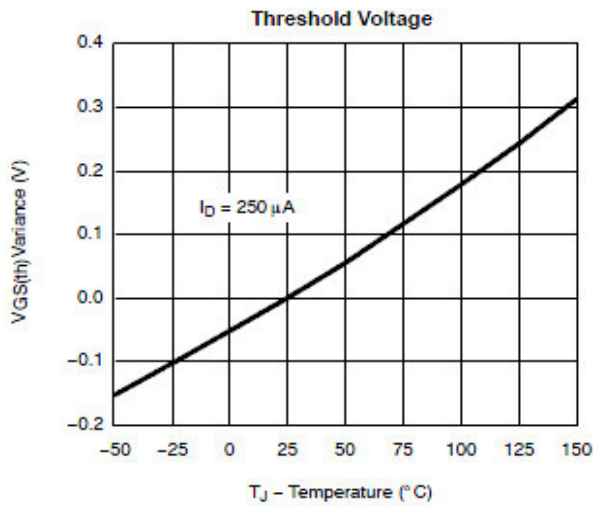
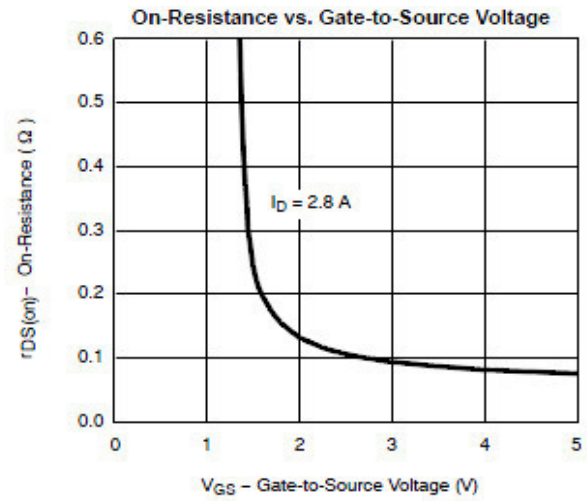
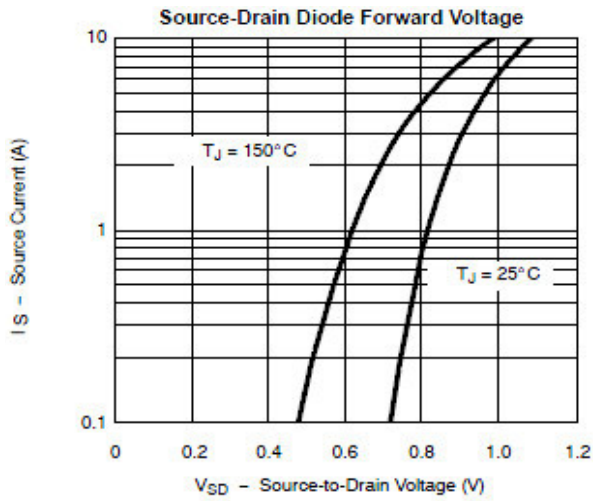
■ Typical electrical and thermal characteristics



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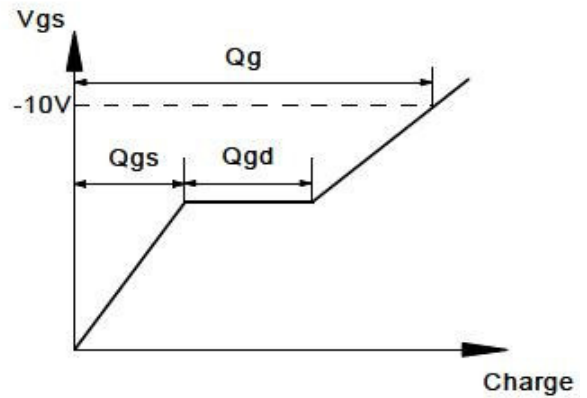
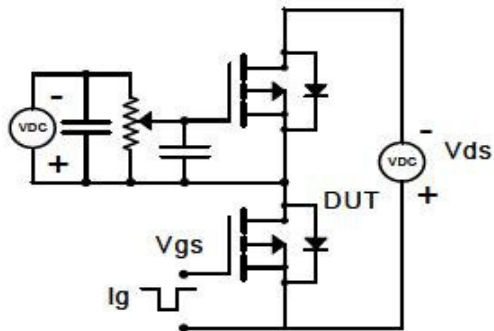
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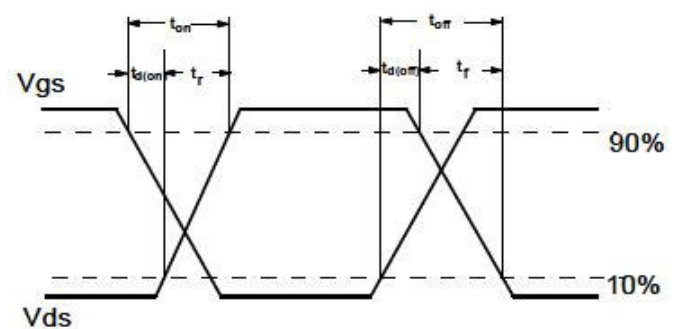
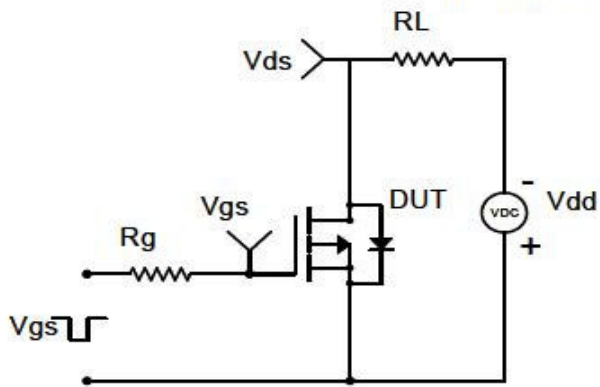
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■ Test circuit & waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

