

Dual P-channel MOSFET

ELM54943WSA-N

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

General description

ELM54943WSA-N uses advanced trench technology to provide excellent $R_{ds(on)}$ and low gate charge.

Features

- $V_{ds} = -20V$
- $I_d = -9.0A$
- $R_{ds(on)} = 23m\Omega$ ($V_{gs} = -4.5V$)
- $R_{ds(on)} = 28m\Omega$ ($V_{gs} = -2.5V$)
- $R_{ds(on)} = 35m\Omega$ ($V_{gs} = -1.8V$)

Maximum absolute ratings

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

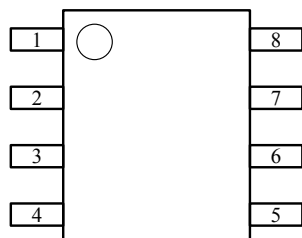
Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{ds}	-20	V
Gate-source voltage	V_{gs}	± 12	V
Continuous drain current ($T_j = 150^\circ C$)	I_d	$T_a = 25^\circ C$	-9.0
		$T_a = 70^\circ C$	-7.0
Pulsed drain current	I_{dm}	-30	A
Power dissipation	P_d	$T_c = 25^\circ C$	2.8
		$T_c = 70^\circ C$	1.8
Operating junction temperature	T_j	150	$^\circ C$
Storage temperature range	T_{stg}	-55 to 150	$^\circ C$

Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal resistance junction-to-ambient	$R_{\theta ja}$		62.5	$^\circ C/W$

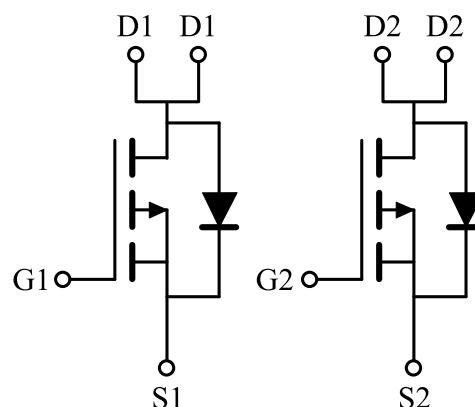
Pin configuration

SOP-8(TOP VIEW)



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

Circuit



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■Electrical characteristics

Ta=25°C. Unless otherwise noted.

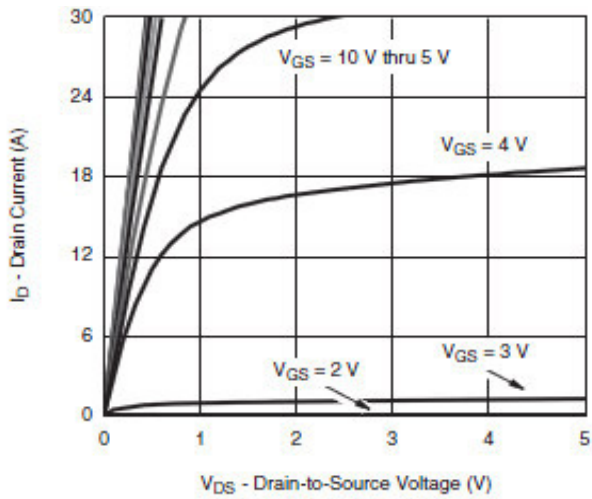
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Id=-250μA, Vgs=0V	-20			V
Zero gate voltage drain current	Idss	Vds=-16V, Vgs=0V Ta=85°C			-1	μA
					-30	
Gate-body leakage current	Igss	Vds=0V, Vgs=±12V			±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA	-0.4		-1.0	V
On state drain current	Id(on)	Vgs=-10V, Vds≥-5V	-30			A
Static drain-source on-resistance	Rds(on)	Vgs=-4.5V, Id=-9.0A		18	23	mΩ
		Vgs=-2.5V, Id=-7.0A		23	28	
		Vgs=-1.8V, Id=-3.0A		30	35	
Forward transconductance	Gfs	Vds=-10V, Id=-9.0A		22		S
Diode forward voltage	Vsd	Is=-7.0A, Vgs=0V		-0.7	-1.3	V
Max. body-diode continuous current	Is				-1.7	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=-10V, f=1MHz		1850		pF
Output capacitance	Coss			450		pF
Reverse transfer capacitance	Crss			380		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=-4.5V, Vds=-10V Id≐-7.0A		20	30	nC
Gate-source charge	Qgs			6		nC
Gate-drain charge	Qgd			10		nC
Turn-on delay time	td(on)	Vgs=-10V, Vds=-10V Id≐-7.0A, RL=1.5Ω Rgen=1Ω		15	25	ns
Turn-on rise time	tr			12	24	ns
Turn-off delay time	td(off)			35	55	ns
Turn-off fall time	tf			10	20	ns

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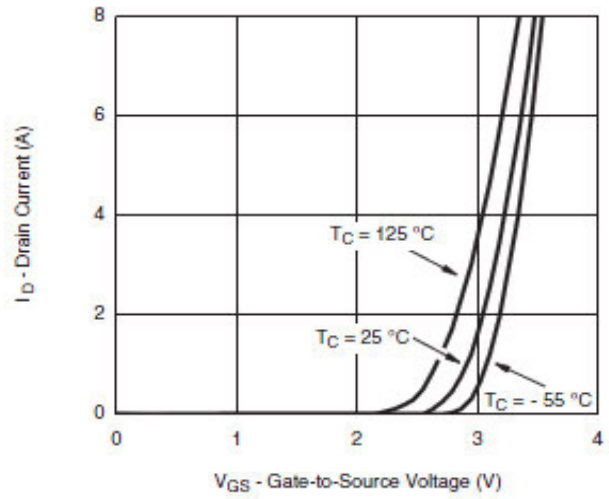
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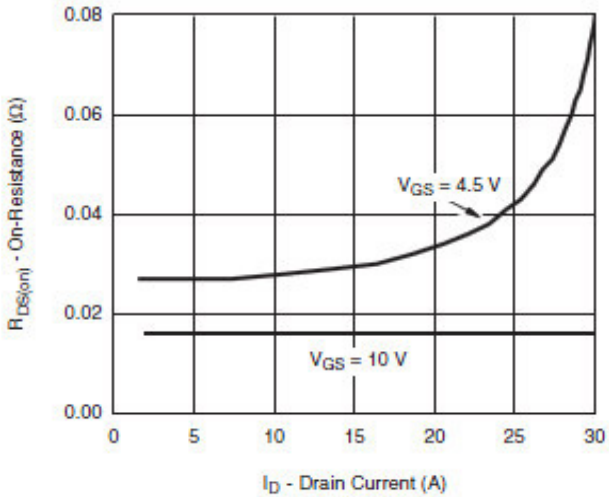
Typical electrical and thermal characteristics



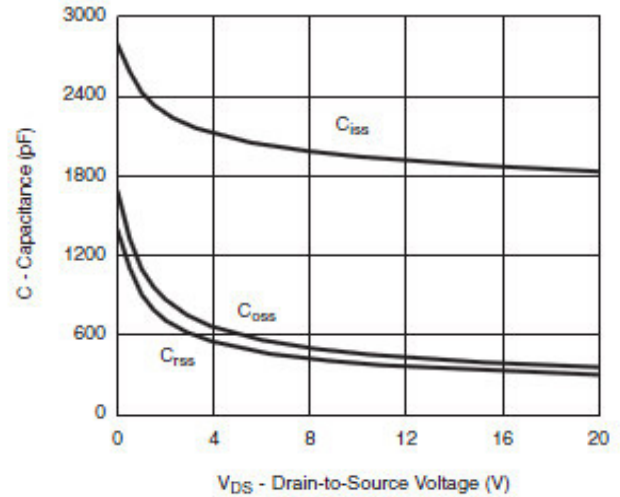
Output Characteristics



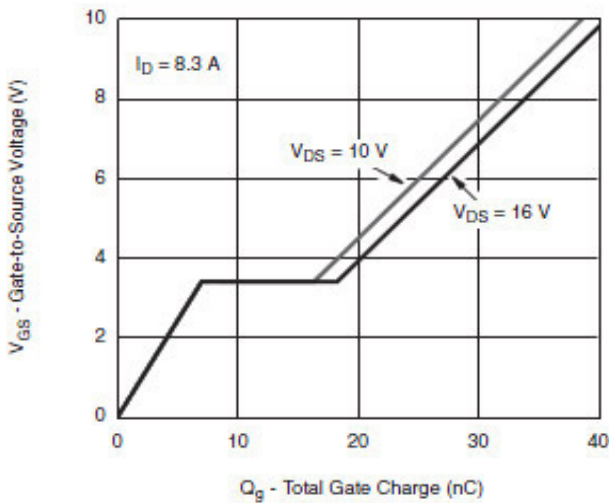
Transfer Characteristics



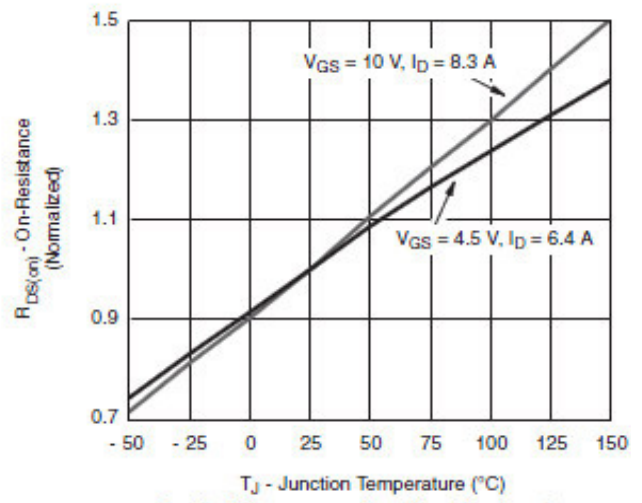
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



Gate Charge

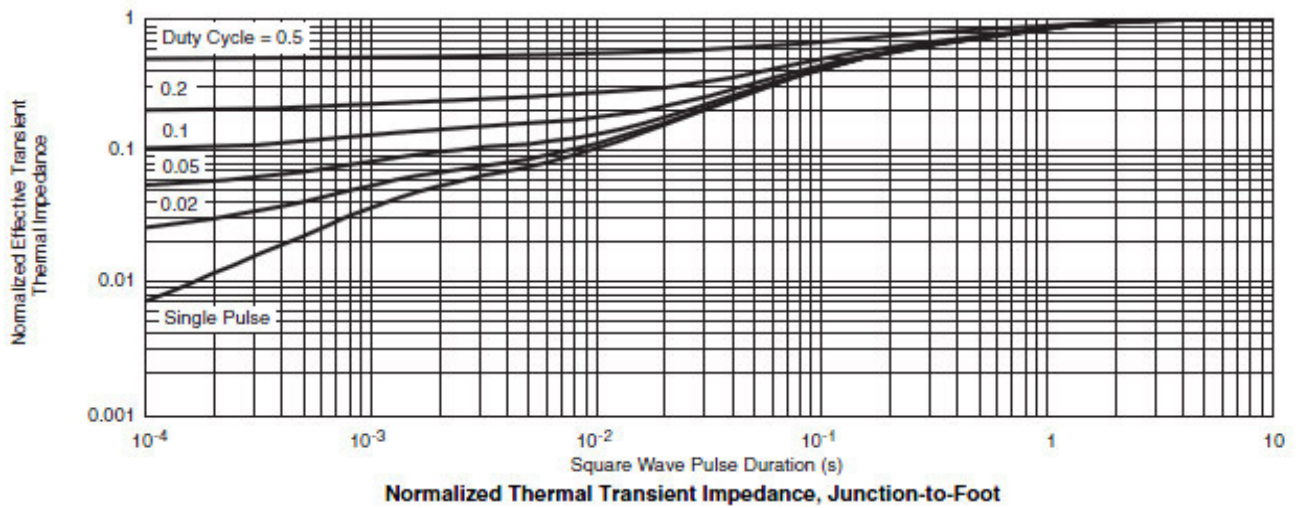
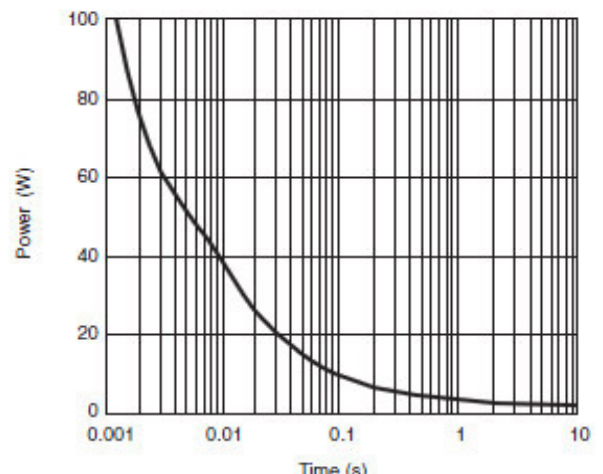
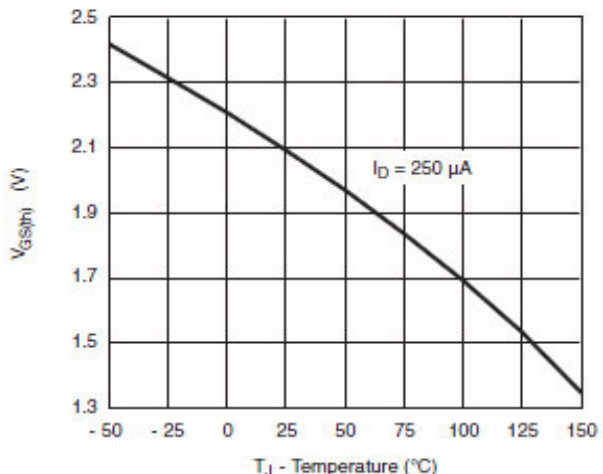
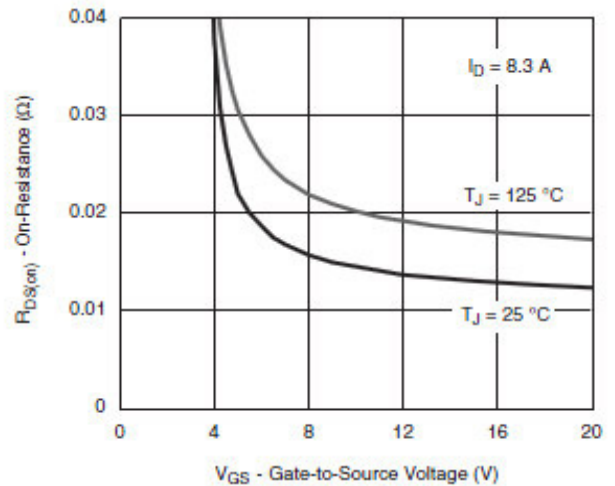
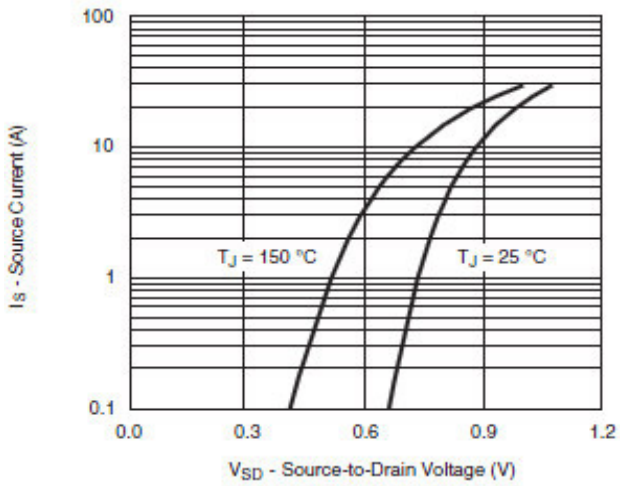


On-Resistance vs. Junction Temperature

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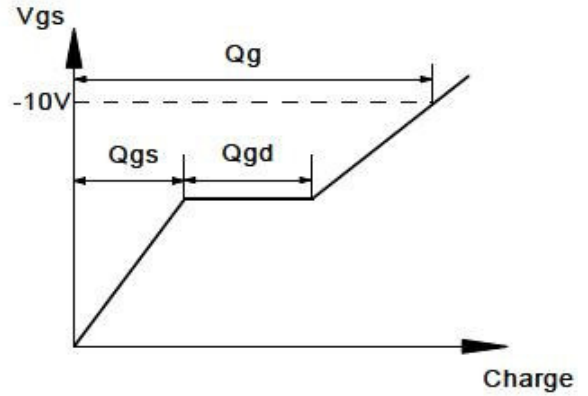
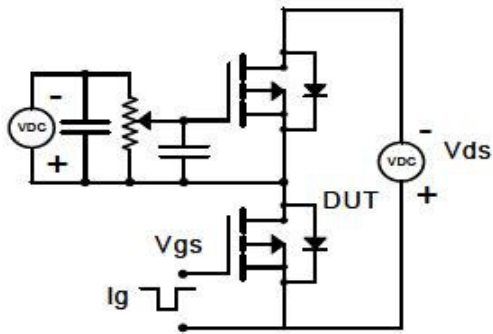
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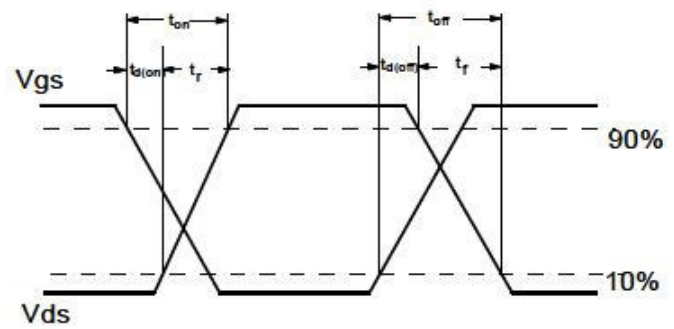
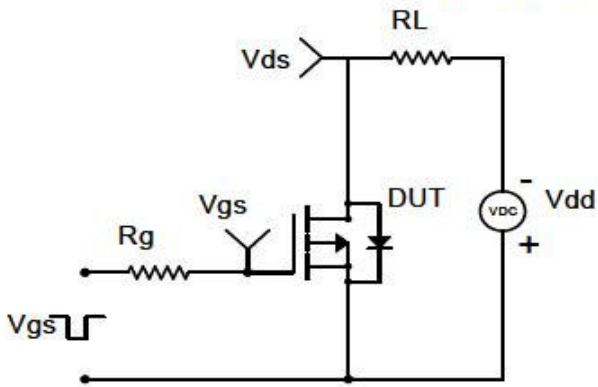
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■ Test circuit & waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

