

Single P-channel MOSFET

ELM57113WSA-N

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

■General description

ELM57113WSA-N uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate threshold voltage.

■Features

- $V_{ds} = -100V$
- $I_d = -9.0A$
- $R_{ds(on)} = 87m\Omega$ ($V_{gs} = -10V$)
- $R_{ds(on)} = 95m\Omega$ ($V_{gs} = -4.5V$)

■Maximum absolute ratings

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

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{ds}	-100	V
Gate-source voltage	V_{gs}	± 20	V
Continuous drain current($T_j = 150^\circ C$)	I_d	-9.0	A
		-6.0	
Pulsed drain current	I_{dm}	-15	A
Power dissipation	P_d	28	W
		18	
Operating junction temperature	T_j	150	$^\circ C$
Storage temperature range	T_{stg}	- 55 to 150	$^\circ C$

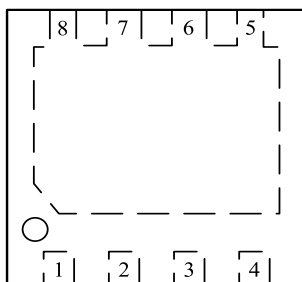
■Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal resistance junction-to-ambient	$R_{\theta ja}$		40	$^\circ C/W$

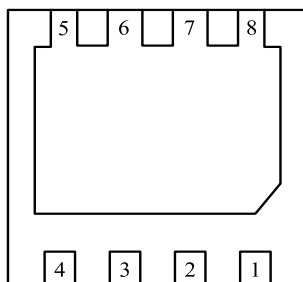
■Pin configuration

DFN8-3×3

(TOP VIEW)

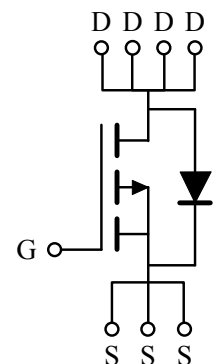


(BOTTOM VIEW)



Pin No.	Pin name
1	SOURCE
2	SOURCE
3	SOURCE
4	GATE
5	DRAIN
6	DRAIN
7	DRAIN
8	DRAIN

■Circuit



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■Electrical characteristics

Ta=25°C. Unless otherwise noted.

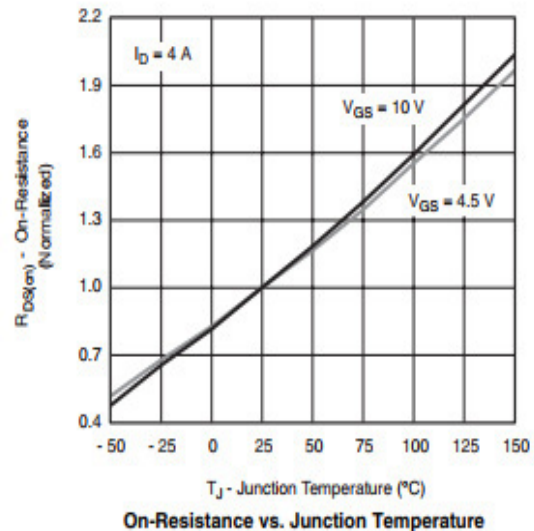
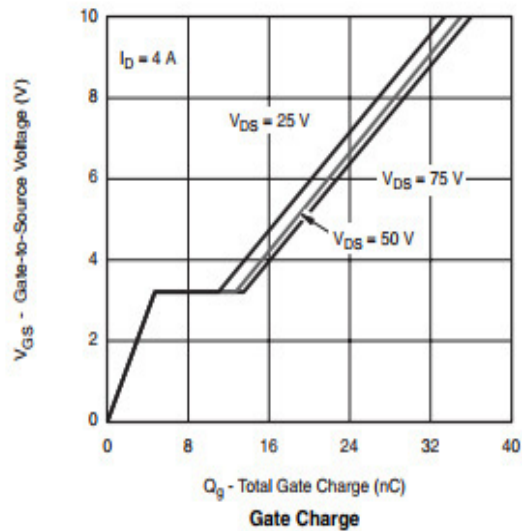
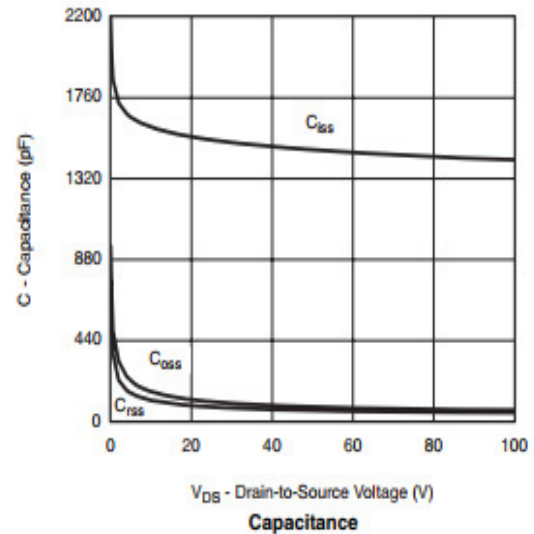
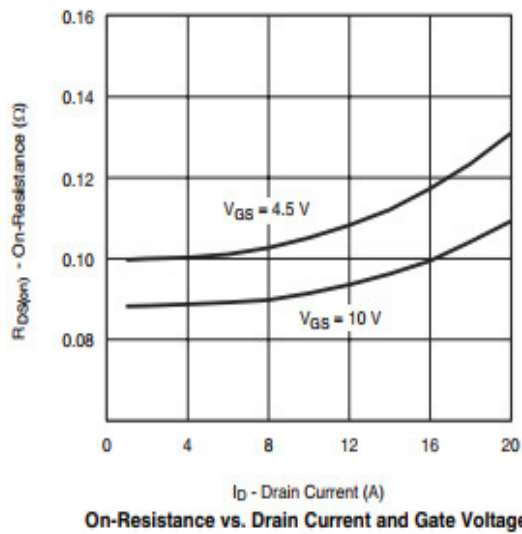
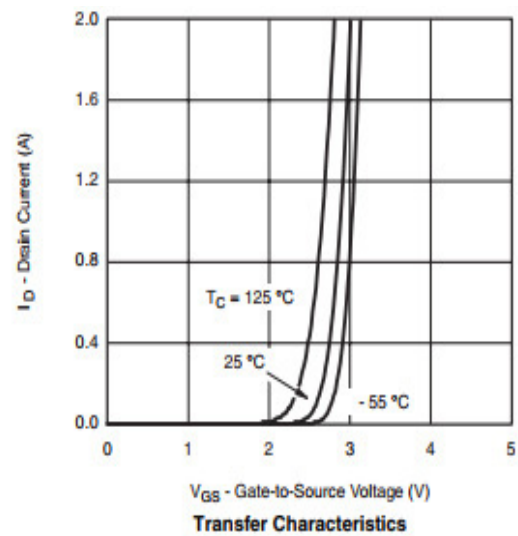
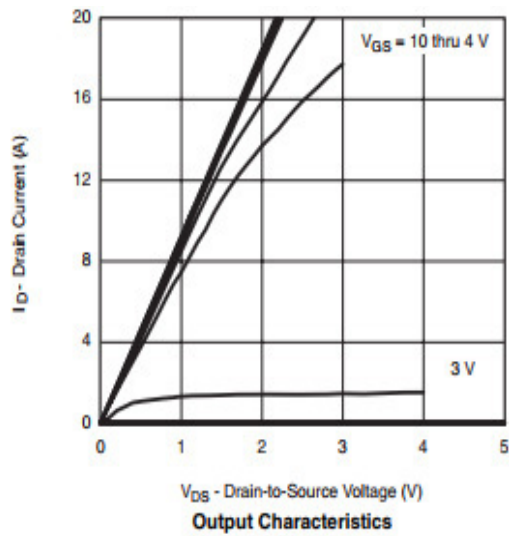
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Vgs=0V, Id=-250μA	-100			V
Zero gate voltage drain current	Idss	Vds=-80V, Vgs=0V			-1	μA
		Vds=-80V, Vgs=0V, Ta=85°C			-30	
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA	-1.0		-2.5	V
On state drain current	Id(on)	Vgs=-10V, Vds≥-10V	-25			A
Static drain-source on-resistance	Rds(on)	Vgs=-10V, Id=-7.0A		77	87	mΩ
		Vgs=-4.5V, Id=-5.0A		85	95	
Forward transconductance	Gfs	Vds=-15V, Id=-3.5A		19		S
Diode forward voltage	Vsd	Is=-2.0A, Vgs=0V		-0.8	-1.3	V
Max. body-diode continuous current	Is				-9.0	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=-50V, f=1MHz		1800		pF
Output capacitance	Coss			150		pF
Reverse transfer capacitance	Crss			100		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=-4.5V, Vds=-50V Id=-4.0A		20	40	nC
Gate-source charge	Qgs			5		nC
Gate-drain charge	Qgd			10		nC
Turn-on delay time	td(on)	Vgs=-10V, Vds=-50V RL=12.5Ω, Id=-4.0A Rgen=1.0Ω		15	30	ns
Turn-on rise time	tr			15	30	ns
Turn-off delay time	td(off)			45	90	ns
Turn-off fall time	tf			15	30	ns

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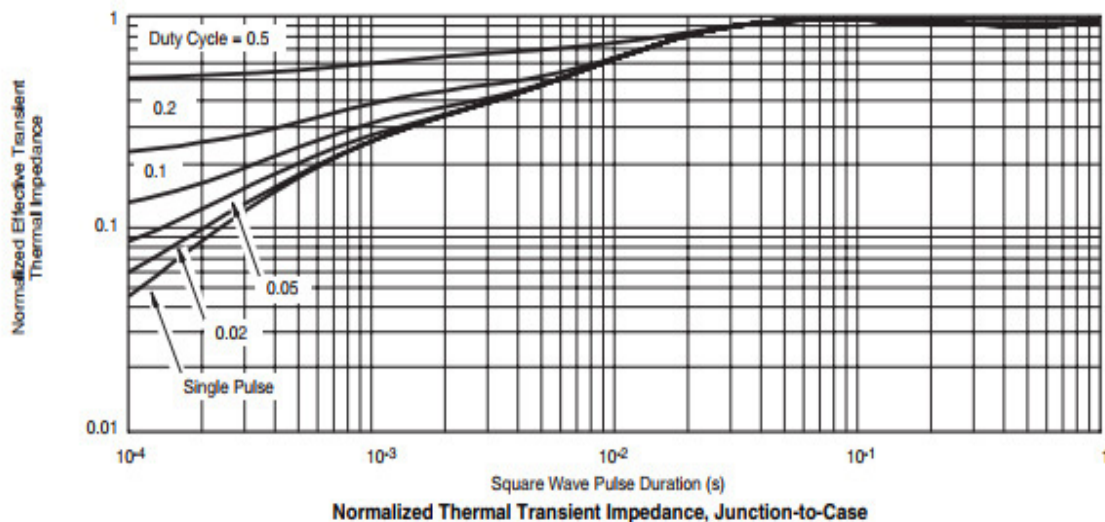
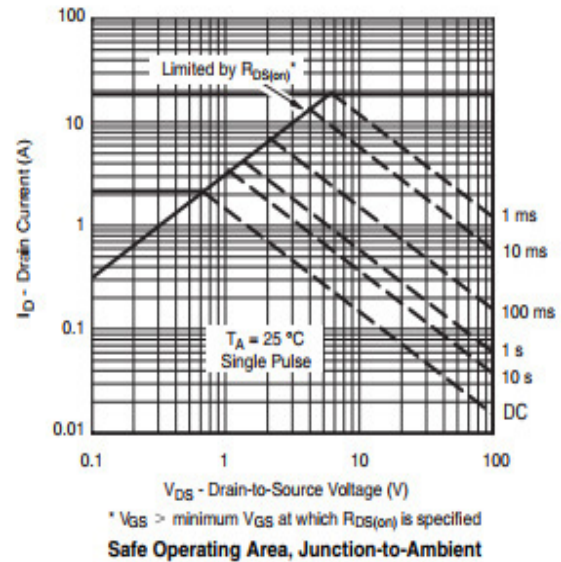
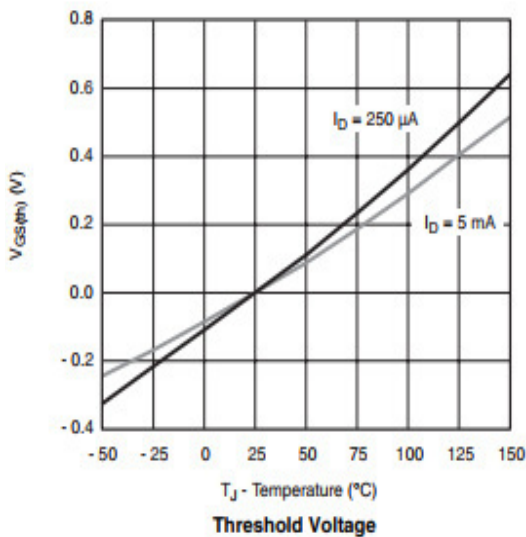
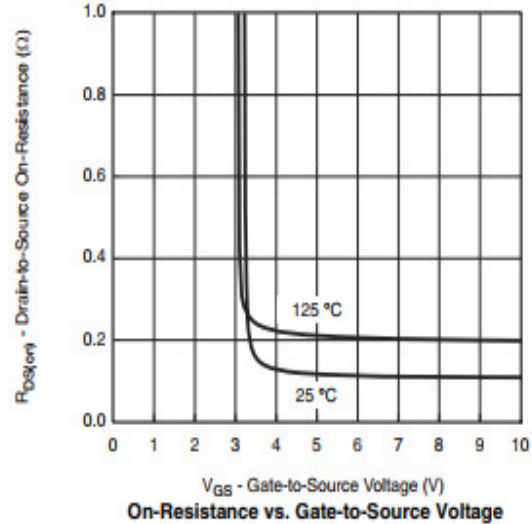
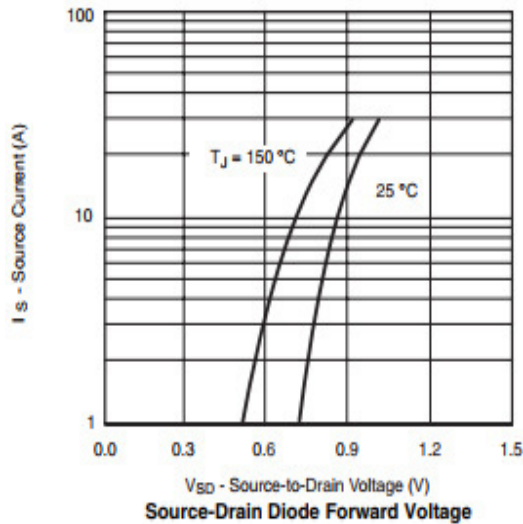
■ Typical electrical and thermal characteristics



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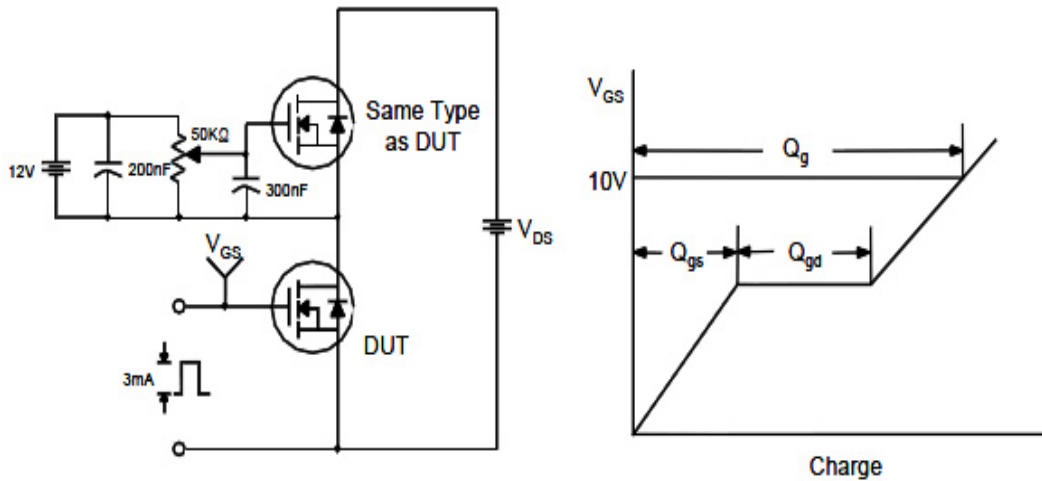
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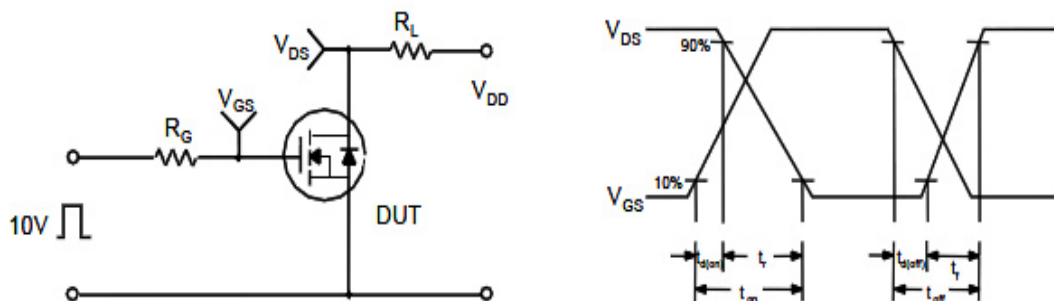
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■ Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

